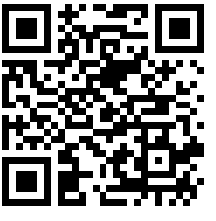

THE

PHOTOGRAPHIC JOURNAL

OF

AMERICA

THOMAS COKE WATKINS, EDITOR

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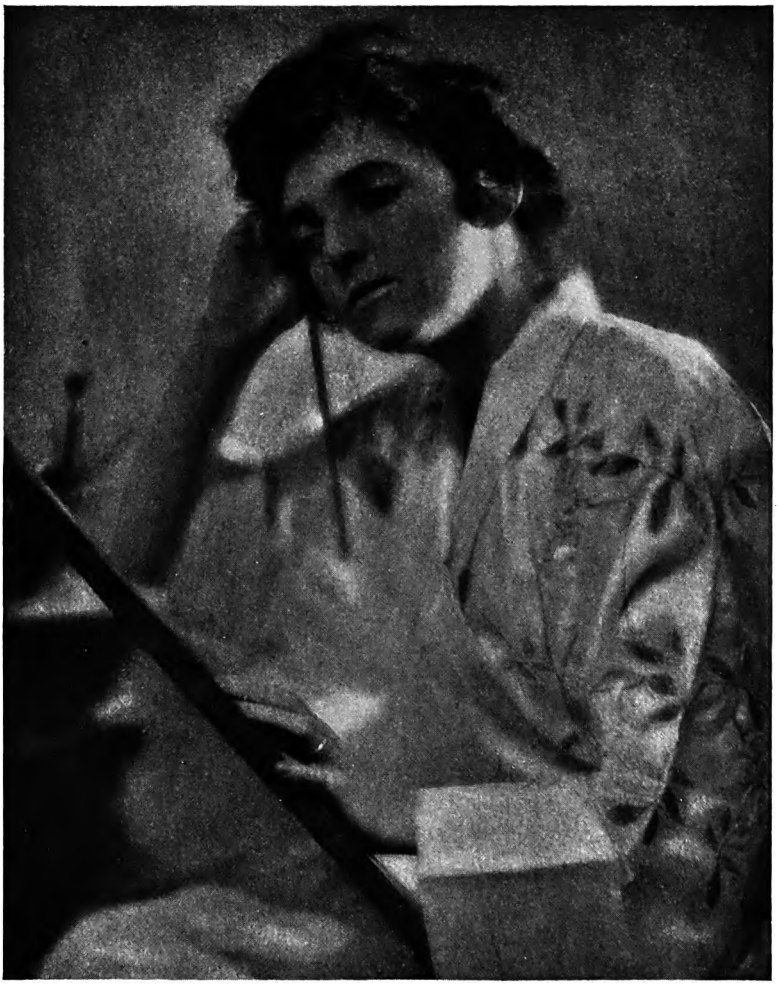


"THE ART STUDENT"
BY RYLAND W. PHILLIPS
PHILADELPHIA, PA.

The
PHOTOGRAPHIC JOURNAL of AMERICA

VOLUME LII JANUARY, 1915 NUMBER 1

"WHAT'S IN A NAME?"

WHEN Edward L. Wilson, the founder of this Magazine, began his life-work fifty-one years ago, photography in America was at a low ebb. The individual photographer and the fraternity as a craft were in great need of help, direction, and encouragement. With the full realization of these conditions, Mr. Wilson began the publication, in 1864, of the *Philadelphia Photographer*.

During the following years, Mr. Wilson turned his tireless energy to the improvement of photographic work, and it is not exaggerating to state that the high standard of excellence seen in American photography today is largely due to the unceasing instruction and example given by him through the Magazine and at gatherings of the craft.

In the year 1885 the office of the publication was moved to New York City, and as the magazine had then grown in size and importance, its editor so closely identified with its many activities, it was quite appropriate that the name of the *Philadelphia Photographer* be changed to WILSON'S PHOTOGRAPHIC MAGAZINE.

During the year 1903 he who had inspired and guided the work of the MAGAZINE for forty years passed to his reward.

The high standard and usefulness of WILSON'S, as established by its founder, has been maintained, and with steadily broadening interests, is universally recog-

nized in this day of changing standards as a periodical of permanent value and usefulness among photographic workers of all classes. The MAGAZINE in its long history has never been more alive than now to the requirements and needs of the present time, nor more intent upon leading the way toward the propagation and advancement of the science and art of photography in America.

With a view of increasing its usefulness, broadening its scope, and establishing on a still firmer basis an authoritative and representative magazine, the publishers have decided to rechristen WILSON'S, and the magazine hereafter will be known as THE PHOTOGRAPHIC JOURNAL OF AMERICA.

Thus we choose our steps and future, remembering that this change means progression. There is abundant and obvious reasons to confidently believe the opportune time is at hand for this move, and this JOURNAL now, as in the past, stands ready to serve its readers. We have repeatedly stated in these pages, and wish again to emphasize, that we firmly believe a photographic magazine is of little or no value unless of *real value*.

This change of name is not accompanied by any change in ownership or in management; both the business and the editorial staff remain as before, with the aid of the ablest authorities on all photographic topics. It does not indicate any change in principles, nor presage any radical departure from the traditions of the past, only a clearer consciousness of higher aims than ever before and larger appreciations of their application.

THE PHOTOGRAPHIC JOURNAL OF AMERICA will be conservative, free from personalities or politics, revering the memory and honoring the achievements of its founder. Progressive in fostering and exploiting the latest appliances and methods by brief, right-to-the-point articles covering a wide range of subjects and ideas. We shall maintain illustrations at the highest point that method will permit. Our plans involve an interesting and important year. We realize there is a higher use for pictures than the mere selection and display of effective and admirable specimens. One picture is often more descriptive and suggestive than pages of skilful text, and we propose to reproduce freely, for the benefit of our readers, examples illustrating the most important tendencies in photographic art.

If any of our readers are at first inclined to feel that they have lost an old friend because of this change in name, we ask them to wait a while before accepting this as a conclusion. The new cover, of two years ago, brought to them the same friend, and the new name will prove consistent to the test of a long acquaintance.

After all it is with the magazine, as with the individual, the real substance is *character*.

This magazine has no other aim than to be worthy of the name it bears.

THOMAS COKE WATKINS,
Editor.

D. O. HILL, R.S.A., AND HIS WORK

By FRANCIS CAIRD INGLIS, F.S.A. (Scot.)

Photographer to His Majesty the King at Edinburgh

ALMOST in the centre of Edinburgh, a few hundred yards from Princes Street, there is, on the side of the Calton Hill, a house and studio where it has been my good fortune to live for over a quarter of a century. It is in the midst of the hum of the town, yet how far one feels from it all in the garden! To the east, the Calton Hill rises with its sentinel-like monuments watching over the city. To the north, overlooking Greenside, where in the old days the witches were burned and tournaments held. It is on record that it was down the almost precipitous bank that Bothwell rode his horse, and so attracted the charming but unfortunate Mary. The spot is now planted with young trees. Beyond this the Leith Walk: Leith with the towering masts of the shipping; the Firth of Forth stretching out in all its beauty from Donibristle Bay to the May, with its islands dotted here and there; the coming and going of the shipping; the towns of Fifeshire, each marked by a ribbon of blue smoke, which, trailing upward, is lost in the blue background of hills which caps this truly noble prospect. Again to the south and west we have the roofs and spires of the Old Town, climbing one above another: the Tron, St. Giles, the Tolbooth, the Bank of Scotland, and finally the Castle, with its ragged turrets, the whole bound together by the smoke of "Auld Reekie."

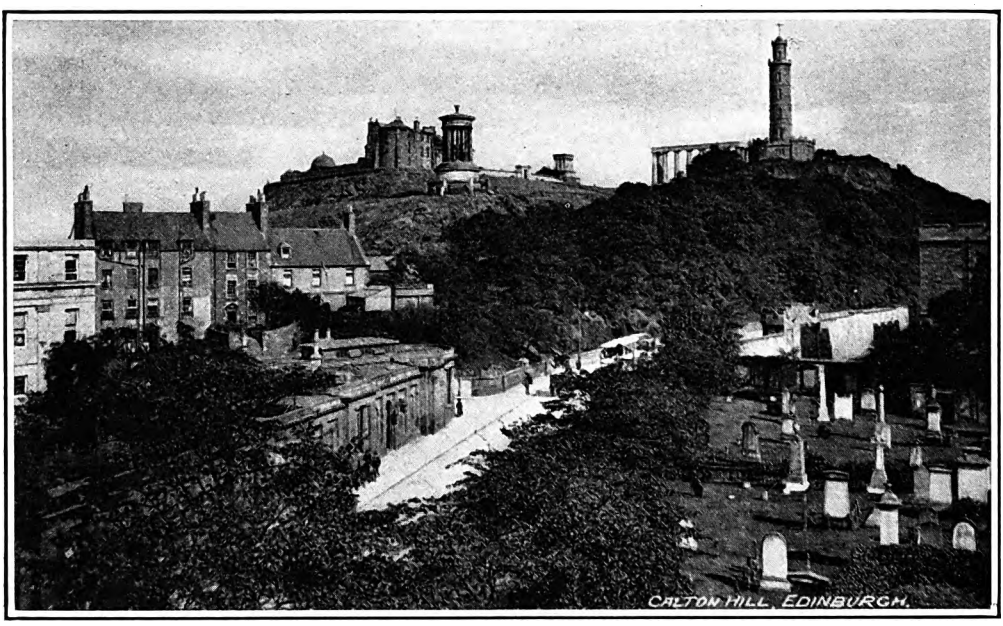
Such were the surroundings amidst which D. O. Hill made his very many beautiful photographs between the years 1843 and 1867. This legacy of portraits and views is an invaluable historical record quite apart from its artistic intrinsic merit.

Among the visitors to the Calton Hill we find the most notable men of the time: Ruskin, Millais, Dean Ramsay, Hogg (the Ettrick Shepherd), Dr. John Brown, James Nasmyth (inventor of the steam hammer), Sir James Y. Simpson (discoverer of chloroform), John Philips, David Scott, William Etty, Sir William Allan, P.R.S.A., Lord Cockburn, Hugh Miller, John Gibson Lockhart, Dr. Knox. Of most of these we have calotype portraits, some of which are reproduced here.

David Octavius Hill was born in 1802 at Perth, where his father was engaged in business as a bookseller. Of his boyhood and scholastic education I have been unable to find any record, excepting the fact that in early life he displayed considerable artistic talent. His father, desiring to encourage this taste, sent him to Edinburgh, where he became a pupil of the late Andrew Wilson, Superintendent of the School of Art at that time. His attention was principally directed toward landscape painting, and among his first pictures were "Dunkeld at Sunset" and two views of the Tay at Perth. These were exhibited in 1823, and gave good promise of Hill's future success as an artist.

He acted as Secretary to the Society of Scottish Artists in Edinburgh for eight years before the charter was granted, in 1838, incorporating it into the Royal Scottish Academy, for which he also acted as Secretary till March, 1870, when the Academy voted as a pension the full amount of his salary. The Royal Scottish Academy is under a deep debt to him for his labors and exertion toward providing for Scottish art a local habitation and a name. As Secretary he was compelled to be in the front of not a few of the many hard battles the artists of Scotland were obliged to fight ere they attained their present honorable position.

The Scottish Academy, at this time, 1838, had thrown off, at all hazards,



HOME OF D. O. HILL, CALTON HILL, EDINBURGH

the trammels of fortuitous patronage, and it remained to the institution in its freedom to find a new means for the disposal of its works. It was then that Mr. Hill suggested the idea of "The Association for the Promotion of the Fine Arts in Scotland," the first Art Union established in the kingdom. After years of searching for a gentleman qualified to be the public exponent of the scheme, and sufficiently independent to give his time to the requisite duties of the Association, Mr. Hill succeeded in obtaining the invaluable aid of his friend, Mr. Henry Glassford Bell, advocate, afterward Sheriff of Lanarkshire, who in conjunction with himself and Mr. Steel, R.S.A., the distinguished sculptor, devised a constitution for the new society. Its benefits and aims were publicly and most ably advocated by Mr. Bell; and, as Mr. Hill ventured to predict, it proved the parent of many similar institutions throughout the United Kingdom, under the title of Art Unions. The truth of this prediction of Mr. Hill's is illustrated by the fact that an Act for regulating Art Unions was passed in 1846.

As Secretary to the Academy, he secured the appointment of a Commission, which gave a report so favorable to its claims that the result was the erection on the Mound, Edinburgh, of the Scottish National Gallery at a cost of £50,000, and on a site valued at £30,000; and in 1840, Mr. Hill and the President of the Academy received the honorable distinction of being appointed by the Government Commissioners of the Board of Manufactures in Scotland — a body of noblemen and gentlemen which had under its direction the Government Schools of Art and the National Gallery of Scotland.

As a painter, his most important pictures were "Old and New Edinburgh from the Castle," "The Braes of Ballochmyle," "The River Tay from the Bridge at Perth," "The Ruins of Dean Castle," "King John's Castle, Ardfinnan, Ireland;" "Edinburgh from Mons Meg," exhibited 1852; "Dunure Castle," exhibited at the Royal Academy, 1861; "The River Tay," exhibited at the Royal Academy, 1862; and the "Vale of the Forth," exhibited at the Royal Academy, 1868.

The last great picture on which D. O. Hill was engaged was the historic

work commemorative of the Disruption of 1843. It was entitled and represents "The Signing of the Deed of Demission and Act of Separation," by which nearly five hundred clergymen voluntarily resigned, on a point of principle, their livings, manses, gardens, and, dearer than all, their positions as ministers of the Church of Scotland. The canvas includes no fewer than four hundred and seventy portraits. As the work neared completion it attracted the attention of a number of the leading laymen of the Free Church, who consulted Sir George Harvey, President of the Royal Scottish Academy, on its value. He gave it as his opinion that it was worth not less than 3000 guineas. These generous-hearted men, nothing daunted by this large sum, resolved to attempt to raise the amount in thirty 100-guinea subscriptions; but as they found a difficulty in procuring more than £1500, the artist intimated that on receiving that sum for his picture, and retaining the copyright, he would relieve the committee of all further pecuniary responsibility. The transaction was completed on these terms, the artist receiving for his work £1500—£1200 of which was raised in £100 subscriptions—an honor which he warmly appreciated. He also retained the copyright in the picture, which was subsequently reproduced in autotype. The picture was presented by the subscribers to the then Free Church of Scotland, and was hung in the offices of that body. It measures 11 feet 4 inches by 5 feet.

When this extensive work was begun, in 1843, Mr. Hill consulted Sir David Brewster about the new process of photography. The first calotype portrait taken in Scotland was produced in May, 1840, the negative being taken by the Talbot process, and obtained by the use of a temporary camera obscura made with a common small lens, or burning glass, an inch and a half in diameter. The portrait is that of a lady, and is still extant in the very

BY DAVID O. HILL, R.S.A.

valuable collection of Mrs. Tulloch, a daughter of Dr. Adamson, When Mr. Fox-Talbot communicated his discovery by letter to Sir David Brewster, the scientist was the guest of Lord Kinnaird at Rossie Priory, Perthshire. Sir David constructed an apparatus for Lord Kinnaird, and the first experiment resulted in a blurred and hazy outline of an old lady who had been kept sitting for twenty minutes in full sunlight. Fascinated by the work, Sir David persevered: the work improved, and he induced Dr. John Adamson, of St. Andrews, to take up the art, who persuaded his younger brother, Robert Adamson, to learn it. We fear Sir David Brewster has received less than due credit in this connection, as he at this early stage acted as teacher and demonstrator of the art. A most patient and painstaking teacher he was, taking his full share in the work and preparation of the sensitive papers, etc.

Sir David recommended D. O. Hill to utilize the new art as an aid to secure the four or five hundred likenesses he wished to introduce into the Disruption picture, and Hill, interesting himself in the photographic experiments then being made by Robert Adamson, determined to make use of the process. Robert Adamson, at the invitation of the artist, joined him in Edinburgh, and the many hundreds of calotypes taken at his studio on the Calton Hill, now occupied by me, are still in existence. Hill attended to the grouping of the sitters, the attitudes, and light and shade, while Adamson manipulated the camera and chemicals.

Apparatus, Slides, Lens, etc.—Mr. Hill was thus the first to apply the new art to portraiture. Of those calotypes I would now speak, but it may be well before doing so to refer to the calotype process, which I have gone into fully and have written up, intending to embody it into this paper; but as it is somewhat lengthy I propose to treat it as another paper at a future date.

In the collection there are one or two fine portraits of John Gibson Lockhart, who in a letter to Professor John Wilson ("Christopher North"), dated 28th March, 1844, referring to the calotypes of D. O. Hill, said: "That of Sir David Brewster is by far the best specimen of the art I have ever seen. It is so good that I should take it very kind if you would sit to the man whom Brewster patronizes for me" (doubtless referring to D. O. Hill). "This art is about to revolutionize book illustration entirely." Hugh Miller, whose portrait figures among the rest, in an article on the invention in the *Witness*, also said, like Lockhart, that it would furnish "a new mode of design for the purposes of the engraver, especially for all the illustrations of books." These statements are now more than an accomplished fact.

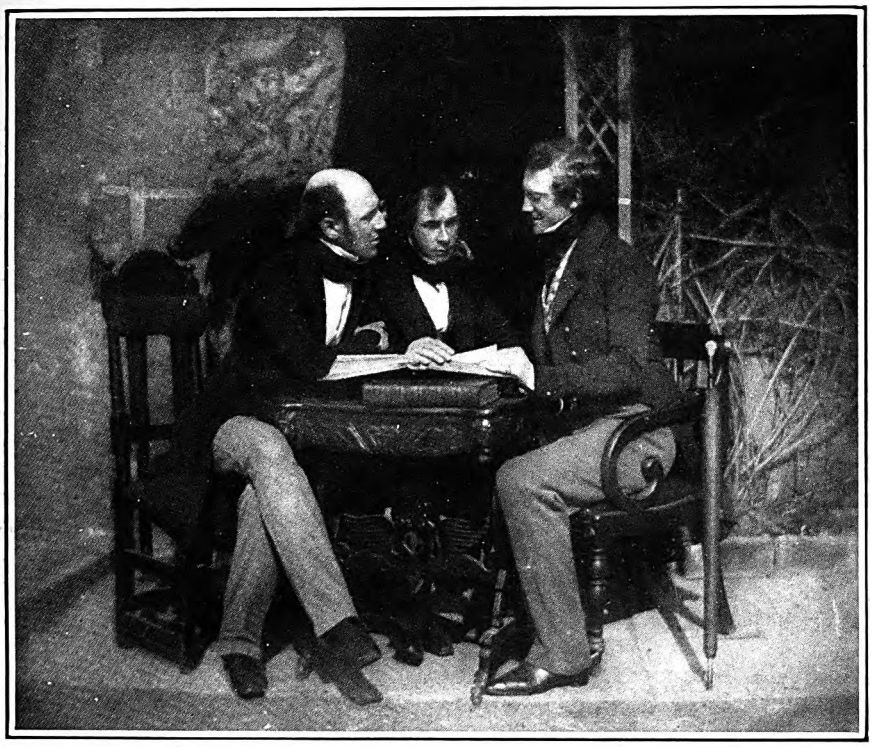
One cannot speak too highly of these pictures. The composition, the breadth of light and shade, and power of them are only to be found in the works of the great masters. The late J. M. Gray, Curator of the National Portrait Gallery of Scotland, said about the finer of the calotypes "that they resembled nothing so much as powerful mezzotints printed in warm-colored ink." "There is," he says further, "the same broad and effective distribution of light; the same care for composition and the suppression of irrelevant details, and that pleasant dead surface—delicate in the light portions and rich and bloomy in the shadows—which is obtained in such engravings. Stanfield said of the calotypes, "I would rather have a set of them than the finest Rembrandts I ever saw." According to Brewster, however, the rough grain of the paper prevented justice being done to the delicate lines of the human countenance.

THE greater the work the more care it needs and the more difficult the planning.

EFFICIENCY means doing your work as well as you know how with as little waste of material and energy as possible.

CONTENTMENT is not sloth, nor laziness, but it means taking care of the responsibilities that are nearest at hand.

WELCOME trials, for remember it is usually difficulties and responsibilities that bring a man to the fore.



BY DAVID O. HILL, R.S.A.

THE GUM-BICHROMATE PROCESS

By ROBERT DEMACHY

IT has been said already that gum-bichromate is but a means to an end. Ready-made sayings are not often as true as this one. For it must be well understood that a gum print, if not interfered with during development or the first stage of drying, is not worth the trouble taken to make it. Also, that the process is perhaps the only one through which the photographer is absolutely responsible for everything—from the choosing of the white paper to the mounting of the finished print. After this it would seem that no treatise on gum could have any educational value, since the results of gum printing are given by the man more than by the process. At any rate, one can say that an expert in gum is only an expert in his own gum prints. This can be proved by comparing the contradictory working formulæ of the different writers on the subject—and their results. Nor must these be judged from half-tone reproductions only, for nothing is more treacherous to a fine, juicy gum and more flattering to a thin, poorly colored one than the translation by the half-tone block.

Only one course remains for the writer on gum: To describe his own methods, and to trust that his readers

are seeking the same kind of effects as he does.

The object of the first, and also most important, manipulations of the gum process is to construct a colored coating on paper—of such a nature that when it has been correctly exposed under a negative it will be able to resist the action of water, and occasionally of friction, in such a ratio that it will come off where it is not wanted and stay where you want it to stay; and, lastly, that, when dry, it will retain as much as possible the oily and juicy aspect that it had when it was wet.

It is possible, but by no means easy, to fulfil the above conditions. Even if they are fulfilled it does not follow, though some people seem to expect it, that the resulting print will be a *picture*. The photographer, to reach the stage of picture-making, will have to learn elsewhere—with his eyes and with his brain—the why and wherefore of the beauty that is found in the works of famous artists in black and white—from Rembrandt to Rops. Now that this is understood, though perhaps not approved of, we will see what is the shortest way out of the purely experimental period. You will have to do the rest.

Materials

Any sort of gum arabic will do for the stock solution provided it *is* gum arabic. For this reason do not buy it ready powdered. Try to make a 50 per cent. solution of gum by hanging it, wrapped up in a muslin bag, in a jar half-full of water, and you will get a 45 per cent. syrup, and also a mucilaginous residue, which it is best to throw away. Get this gum up, or down, to 25 degrees (French densitometer pese sirop), and keep it at 25 degrees. It will have to be looked after, for during the first week or so the solution will get thinner as it becomes more and more acid. After a fortnight add a sufficient quantity of fresh thick gum to work the solution up again to 25 degrees, also a few drops of formol. The formol will keep it at the same degree of acidity and thickness for months, barring evaporation, of course. Finally, make a saturated solution of bichromate of potash and a 20 per cent. solution of ammonium bichromate in separate bottles.

For pigmentation it is best to use moist water-colors in tubes; they are by far the most convenient. There is no waste and no extra grinding, and it is easy to gauge the quantity of the pigment with the eye by the length of the little cylinder squirted out of the tube, for its diameter is constant. Choose permanent colors, of course, and rich tones. With lampblack warmed with a speck of orange cadmium for blacks, and with Venetian red, brown-red, and a small quantity of vandyke brown for sanguine, one can attempt the treatment of any subject, severe or graceful.

As to the choice of the paper, one condition only is of absolute necessity—that it should be sufficiently sized to prevent any staining by the colored gum rubbed over its surface. All drawing or water-color papers fulfil this condition except perhaps Whatman paper, the sizing of which appears to be very irregular. More prudence will have to be exerted with papers of unknown brands, but of interesting textures, such as those that are used for book-binding, etc. Begin with samples of a medium grain; these are the easiest to coat. Coarse papers take the color well, but are apt to lose it from the apex of each of the protruding grains of their surface during the passage of the dry brush. On very smooth and shiny papers the mixture clings to the brush, follows it more or less, and is difficult to spread smoothly and quickly.

The Sensitive Mixture

Now comes the most important of all the gum manipulations, the making of the sensitive colored mixture. Coating is supposed to be the stumbling-block of every beginner. It is so in a way, but because of the wrong proportions used earlier. Nothing is easier than to coat a sheet of paper with a mixture of the right gummy feel; it is next to impossible to do it with an extra

What I mean to say is that the consistency of such a mixture is the best one for coating. A less sensitive compound can be made by taking three parts of ammonium bichromate instead of four and a half, and adding the difference—viz., one part and a half—of water to the gum solution; a still less sensitive mixture by using potassium bichromate. The exposure will change, but the thickness of the mixture will have remained constant. That is the important factor. Remember that badly coated paper will turn out as many failures as there are coated sheets, while error in the time of exposure means one failure perhaps, that ought to lead to constant success with the same batch of prepared paper.

Coating

For coating, three different sorts of brushes are wanted—one for mixing, one for smearing the necessary quantity of misture over the paper, one for smoothing the irregular layer thus obtained. All three are made of hogs' hair, and may be bought for a small sum. The first is the common cylindrical brush for oils, with the hairs cut clean, so as to leave about two-thirds of their original length. The second one is a flat oil-brush about two inches wide. The third is also flat, but four inches in width, with a short, flat handle. Get two or three of these last ones. No. 2 and No. 3 are apt to lose a quantity of hairs during the coating, and any delay for the purpose of removing these will be fatal to the success of this manipulation. I have succeeded lately in cementing quite firmly the roots of these hairs with a solution of sealing-wax in alcohol. It must be poured on the roots from one side, holding the brush-handle down. Let it dry in this position. Since then I have had no recurrence of this very annoying trouble, which I am told is general amongst gum-workers. The brush must necessarily be bone-dry before the solution is applied.

Mix the pigments thoroughly with the gum, using No. 1 brush; add the bichromate solution and mix anew. Then pin your sheet of paper by the two upper corners on a drawing-board covered with a sheet of blotting-paper, which you will take care to change when it becomes creased. Take No. 2 brush, dip it boldly into the sensitive mixture, smear the paper with a thick St. George's cross, and immediately spread the pigment across and into the white triangles of bare paper, and level the whole surface roughly with four or five downward strokes; then, without stopping, take hold of the No. 3 brush and give several hard strokes from top to bottom right down to the paper. Parallel lines will appear; break them with several strokes from left to right perpendicularly to the first one, but with a lighter pressure; continue brushing, each stroke at right angles from last, and with lighter and lighter the touches. Watch your coating, and if the surface is uniform and does not coagulate into ridges or round spots, hang the sheet up to dry in a dark room, preferably in a warm current of air, for it must dry quickly and thoroughly. A whole-plate sheet ought to be coated in one minute and dry in ten—bone-dry, with a tendency to curl up. If the mixture has been made too thick, the No. 3 brush will come too late, and the ridges left by the rough smearing of No. 2 will refuse to merge into one another. The coating will be wavy, and will develop unevenly, because exposure ought to be proportionate to thickness, and is obviously invariable for one same sheet of paper. If too thin, the mixture will follow the No. 3 brush up and down and from side to side without setting, and later on will coagulate in lumps, spots, and ridges.

Exposure

Most writers (are all of them workers?) on the gum process advocate very full exposure, and they expound freely on the great latitude allowed by the process in that quarter. I am of a totally different opinion, perhaps because it is not only an *image* in gum that I would like to produce, but something better, with rich and transparent tones. At any rate, I have found that

over-exposure is fatal to the beauty of the blacks, and that correct exposure—viz., the minimum of exposure that will allow the coating to stick to the paper and stay there—is an absolute necessity.

I use the Artigue photometer—not a complicated instrument by any means. Paint a strip of white paper with a saturated solution of bichromate, dry it, slip it between the leaves of a book, letting the tinted paper protrude for an inch or so; expose it to the same light that will be used for printing, and leave it there for ten, fifteen, or thirty minutes, according to the weather, until the yellow protruding paper has become quite brown; now pull it out, the same length, look at your watch, and when the unexposed portion has darkened to the same tone as the exposed one the time elapsed will be the length of the Artigue degree for the actual state of light. If you ascertain by experience that your negative requires two Artigue degrees of exposure (viz., the time necessary to darken two portions of bichromated paper one after the other) you will always be able to duplicate the exact exposure, though the degree will be apt to vary from three minutes to an hour, according to the season and the weather. The average exposure for thin negatives is of one or two degrees; for medium, of three or four; but, of course, the percentage of chromic salts in the coating will modify these conditions; consequently, a trial exposure followed by immediate development is almost a necessity.

Development

Gum prints can be developed one day, or even a week, after exposure, but the final aspect of a picture developed on the spot is immeasurably superior. The conclusion is obvious.

As I have said before, local development is the *raison d'être* of the process. Yet it is safer to begin development mechanically, by letting the print float face downward in a tray quite full of cold water. Watch the print for the first five minutes. If the pigmented gum melts after a minute or two's immersion the print is irretrievably lost through under-exposure. A faint image appearing in the space of ten minutes will give you a fair chance of success, while twenty minutes' soaking before depigmentation will not necessarily indicate failure. In this case a gentle flow of tepid or warm water will generally start development. The print may be left with advantage in the cold bath until the development of the portion of it that will give the deepest tone is judged to be sufficient, for we must bear in mind that the process of washing down does not allow us to add any blacks to our picture; consequently, we shall have to keep those that are on the paper, and by local suppression create the necessary contrasts as we find fit. At this stage the print is removed from the tray and placed on an inclined plane of glass or ebonite, the lower part of which is immersed in a developing tray half-full of water—and the photographer, with sponges, cold or hot water, and brushes of different descriptions, acts according to his lights.

No definite instructions can be given for a class of work that must be entirely personal, and there is no use in obvious truths that will teach nothing to an observant man, and will be of no use to the one who has not found things out for himself.

Once dry, the print must be cleared of all trace of yellow chromic salts by a bath of weak bisulphite of soda (5 per cent.). If this bath is used warm, and stronger, it will soften the film enough for renewed local development by friction.

During development this bath, or a bath of sodium or potassium carbonate, can be used, either generally or locally, to soften the film. It must be applied carefully, for it has a *disintegrating* action, and the portions of the coating that have been in contact with it keep very little hold on the paper.

On Failures

Gum prints, quite outside of their artistic merit, can fail in many ways:

1. By extra thickness in the coating. Result: Probable under-exposure, and,

with proper exposure, probable breaking off of the film during development.

2. By extra thinness of coating. Result: Probable over-exposure, and in all cases poor blacks and a weak print.

3. Too much color. Result: Granular whites.

4. Not enough gum. Result: Stained paper.

5. Over-exposure. Result: Different degrees of hardness of film. Different degrees in the sunken-in, dull aspect of the shadows when once dry.

6. Under-exposure, Result: Melting of the coating during or after development.

7. Gum too acid. Result: Symptoms of over-exposure, however short the exposure.

8. Gum too alkaline. Symptoms of under-exposure with normal exposure. Loss of half-tones with prolonged exposure.

This is quite a formidable list; but the beginner must realize that all these failures cannot all happen at once. They will be discreetly distributed over the average of his productions, and will serve to enhance the value of his successful ones; though after some time he will find that, as he despises more and more the purely good gum print, and seeks after the gum picture, so will the former become more and more frequent and normal, but the latter remains always the exception.

Before finishing this short sketch of *one* way of printing with gum, I must warn my readers that there are many other ways of producing a complete gum image, most of them founded on over-exposure and brush development, and that the aforesaid indications will not produce similar results. It is for them to choose. Also that the ready-made gum bichromate papers on the market, to be developed with sawdust, have totally different characteristics, due to the admixture of other colloids than gum, and that the treatment of such papers, and the final aspect of the pictures produced on their specially prepared surface, will have nothing in common with the treatment or the results of pure gum-bichromate papers.

Lastly, one humble word in favor of my countryman, Poitevin, who, in 1855, presented to the Académie des Sciences the description of the gum-bichromate process. I quite sympathize with the late Mr. Pouncy, who took up the process four years after, in 1859, but he no more discovered it than I did, and certainly failed to make it in any way popular.

HOME PORTRAITURE

By TEMPLE SCOTT

PHOTOGRAPHY has been called a fine art, but the definition is justifiable only when the photographer is an artist. If art means anything at all it means personal expression—an embodiment of an idea in such form as will be independent of the thinker, and give in the pleasure it arouses a sufficient reason for its creation and existence. Now the photographer has rarely understood this. His camera and the chemical and mechanical operations necessary to the production of a photograph have played so large a part in his so-called art, that the individual behind the camera and the hands performing the operations have been considered as merely supernumeraries. The photographer did nor realize that camera and chemicals are but additions to himself—the camera a more-seeing eye, and the chemicals defter and more magic-working hands. It thus came to pass that the machine mastered the man. The result, of course, is a machine-made product—a joyless thing which may be

remarkable and lifelike, but which is really commonplace and lifeless, and, certainly, which is not art.

Let us, for a moment, consider the average so-called portraits, by the professional photographer, which may be seen any day displayed for our admiration in the show-cases before the studios. What are most of these at best? Surely nothing more than mechanical products. The features are there, no doubt; the eyes, mouth and hair and clothes are also, of a certainty, there; but is there really a living human being there? Far from it. The representation is so fixed and hard that it is more like a cameo or a bas-relief in marble than it is a plastic portrait. And yet the photographer has been working with a plastic medium—with the one medium, indeed, which is at the foundation of all plastic art, namely, with light. Instead of using light plastically, he permits the machine to do what it can, and the artist is not only never evident, but, seemingly, is never necessary for the purpose of bringing about the result. The collar round the man's neck is of the same color as the neck itself, a chalky whiteness that never could be a flesh tint. The lady's hands are of the same dead white as is the lace round them; the black background is flat and without depth—an asphyxiation of space so that it never could have seen the result of shadows; a black in which there is not a scintilla of light. The eyes look at you as if they were glass beads, not as if a soul were appealing to you through the shining windows of the face. Why are these things so?

The answer is not far to seek. The simplicity with which a camera can be manipulated and the comparative ease with which developing and printing can be performed have proven fatal attractions to the little-gifted or the ungifted. It looked so simple—this taking of photographs—that, given the money for an outfit, the rest would take care of itself. Well, the rest did not and cannot take care of itself; for the rest is the soul of the artist, and this money cannot buy. And the curious part of this tale of photography is that it has taken several generations of automatic workers in the medium to pass away and be forgotten before even we began to realize that something more than a machine was necessary to the making of a photograph which shall in any sense be deemed art or accepted as an expression of personality. We have been like children with a wonder-working toy, too fascinated of what it could do for us to think of what we should do with it.

The average photographer, who is trying to make a living with his camera, has no ready answer to this criticism. He serves his customers servilely, and gives the thing asked for. He knows no better than his customers. Were he an artist he would serve his art first, knowing that in doing this he would best serve his clients also. That has been the way with all artists who were worth employing. It is the Van Dycks only who have grown rich by a fortunate marriage of a pretty person with a pretty art, and it is not given to every photographer to be blessed with a handsome face, to help him in making a fashion take the place of art. A Titian, a Rubens, a Velasquez or a Rembrandt comes but rarely to refresh us with the ever-springing fountain of his genius.

The photographer, once cursed with the fatal facility of his machine, continues to be cursed by it. Rather than travel the hard way of achievement and self-realization he takes the common high-road with the crowd. And he is lost in the crowd. His art is not distinguished and, therefore, little esteemed. But he occasionally changes his gait and attracts some attention to himself. Just now he is realizing that the stupid, dead portraits of the snapping machine are become a weariness to the flesh as well as the spirit. Since he cannot, by his genius, remedy the defects, he does what seems to him to be the next best thing, he brings to his aid all the ready-at-hand elements which go to make up the seeming real. He has hit upon the happy idea of home portraiture. As he cannot create life, he will catch it where it is being made. In his own studio the sitter "posed" and was "operated" on; in the sitter's home, it will be otherwise. There, at any rate, he will be natural and simple. In the studio

the properties were after all not a whit different from stage properties; and in the midst of these the man or woman to be photographed must be more than human to rise or sit superior to them. In the home, on the other hand, the "sitter" is at home, unconscious of himself and at ease with the world. Mahomet shall then go to the mountain! And thus once again is the way made smooth and easy for the artist-photographer. He shall now take to home portraiture and be an artist, indeed.

But is he, even now, on the way to become an artist? Certainly, the change is for the better, insofar as it seems to demand less of the photographer. He is helped by his subject's congenial surroundings and natural atmosphere. There is no room for the interference of the dreadful feeling of an "operation" in this accustomed place of repose. He has brought nature herself to assist him. But what shall he do now? That is the question. Hitherto he was obsessed with the conviction that he must have a studio with special lighting arrangements; now his studio is the room of a house, with the regulation windows only. Here he is at once confronted with his first problem—the all-important problem of light—and until he has solved it his work will be but hesitating and unaccomplished. If this business of home portraiture will do nothing more than compel the photographer to use light as the painter does his palette of colors, it will have done more for photography as an art than all the inventions, dodges and tricks since the days of Daguerre.

There is no place at any time of the day or night in which there is no light. Light is everywhere at all times. It is the pigment of pigments; it is productive of the most delicate lines of shadow as it is of the finest thread of gleam or the faintest spot of high-light. The photographer must, therefore, fully realize that in taking a picture he is working, not merely with a camera and lens, but with light and only light. The camera with its lens is but a means by which he holds light so that he may, so to speak, paint with it on his sensitized plate. In any ordinary room lighted by, say, two windows there is an infinite number of points on which light plays, and in each case with different effects of color. It is for the artist to find out which of those points or groups of points are best adapted for his purpose. A variation of five degrees in an angle of position with respect to the origins of light will suffice to produce an entirely new series of contrasts. Even the change in the inclination of the head to a very slight angle will not only affect the color of the face but will add to or detract from its mobility and modeling. But these are matters which any amateur knows. What few photographers, however, appreciate properly is that the camera will do their work for them if they will first do what the camera by itself cannot do, namely, take advantage of all the light given them.

But my purpose is not a practical demonstration of how a photograph should be taken in a home; my purpose is rather to point out to the photographer the necessity for studying the problem of light and to emphasize the value of this study as a means for his education as an artist. It is because of the opportunities home portraiture affords for independent research into the field of light, and independent solutions to the many problems that arise in that research, that I welcome its inclusion in the sphere of the photographer's activity. I know no more direct method for testing him as an artist; and if he has anything of the artist in him, the serious and determined exercise in home portraiture will certainly bring it to flower and fruit. Each place he visits must inevitably present a new problem, which must be solved at once, for there is no time in which to experiment. His own studio he knows; he has worked in it for years, probably, and exhausted, as he thinks, all its possibilities; but a room in a home which he enters for the first time is an entirely different thing. Here his genius alone will stand him in good stead. He will be like Rubens on a visit to Spain or to the homes of the nobles of Mantua; or like Titian and Velasquez leaving their native towns to paint the great men of the courts of Rome and Madrid.

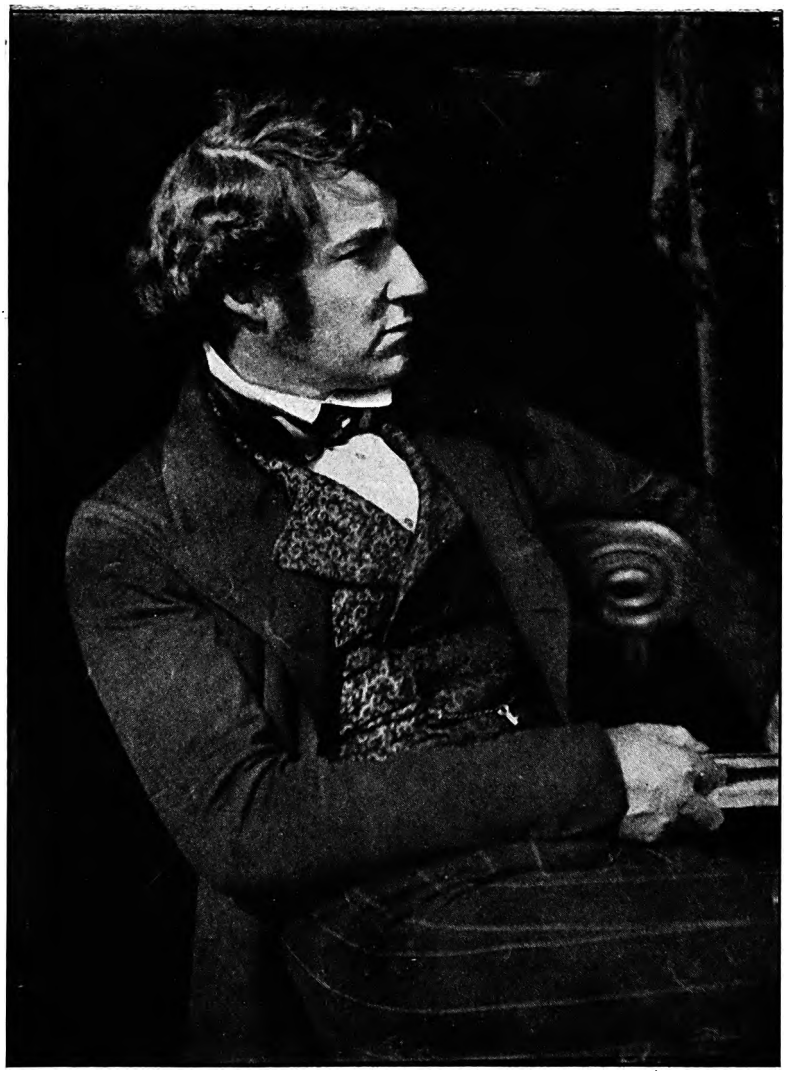
He will be like these men if he be really in earnest with himself and true to the best he knows. If he be merely a photographer he will do as he has often done before—study, not the problems, but the poses and arrangements of Van Dyck's pictures, and copy them. But, then, he will never be an artist. If he is to study the works of any man, let him study Rembrandt—that will give him enough to do for many a day. There was a wizard of light if you like! But whether he study a master or set himself the task to solve the problems for himself, let him never forget that a photographer is not a man with a camera, but a painter with light.

I harp on this matter of light, because it is the last thing considered as necessary in the education of a photographer. It should properly be the first subject taught him; and no one should be allowed to use any kind of a camera until he has been made familiar with at least the elementary problems of light and shade. After all is said and done, there is no more valuable method for an education in art than that which employs the camera. Some day every school and academy of art will include a course of instruction in photography as a part of its curriculum. And properly so, because the camera compels the photographer to employ his power of selection, and the power to select is the first step toward artistic expression. Here is where the personal element comes in; for here the work done will show what the worker thought; and it will also show what of the worker himself went into the making of the result. To copy another man's work is to accept his selection; to select and combine for yourself is to do your own work in your own way. And it is better for you to fail doing this than to succeed doing what another man did before you. Your work is yourself, and there is no joy like the joy which we experience in fulfilling ourselves in our work. For this is the way by which we invite all men and women to participate with us in the refreshing fruits of life. That is, truly, the religion of art.

BY JANE REECE, DAYTON, OHIO

BY DAVID O. HILL, R.S.A.
FROM THE COLLECTION OF FRANCIS C. INGLIS
EDINBURGH, SCOTLAND

BY DAVID O. HILL, R.S.A.
FROM THE COLLECTION OF FRANCIS C. INGLIS
EDINBURGH, SCOTLAND



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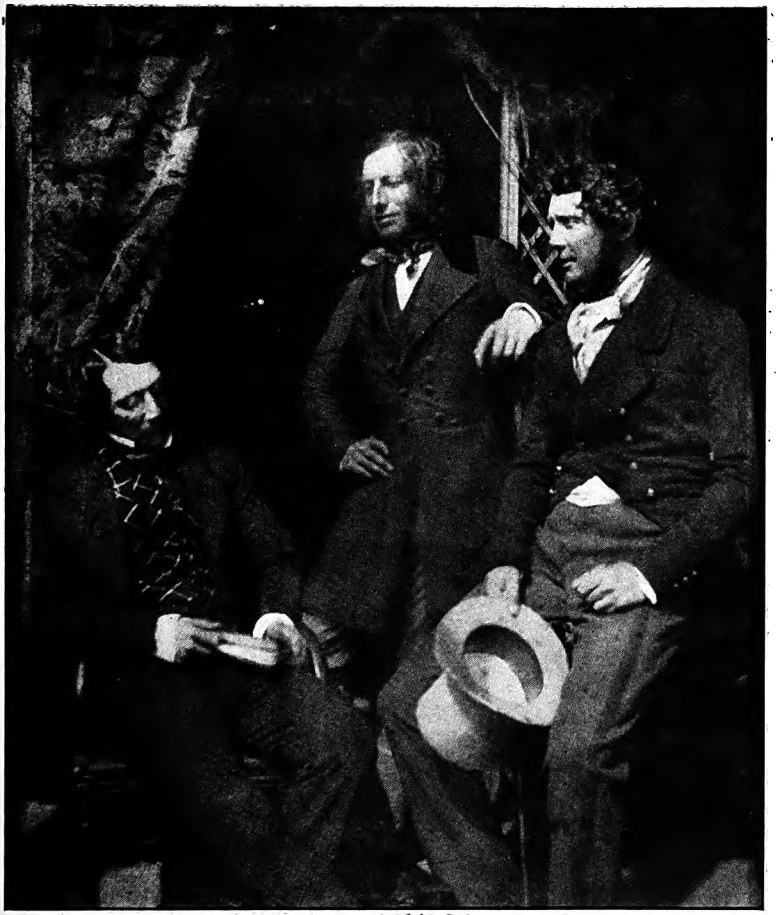
EDINBURGH, SCOTLAND



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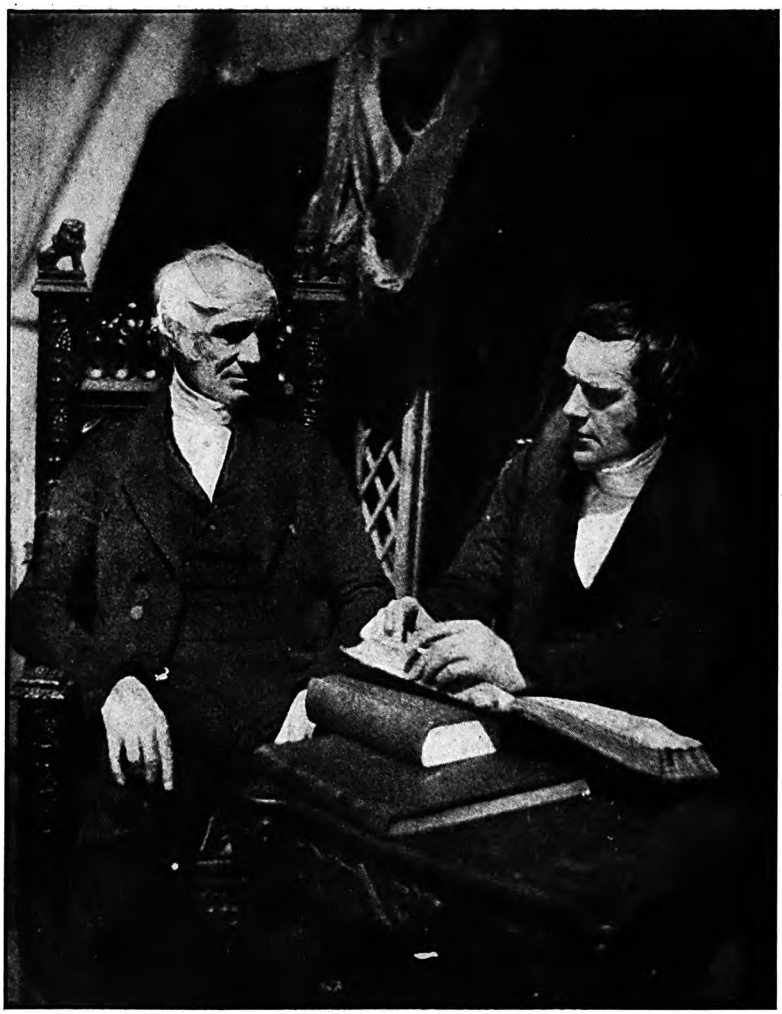

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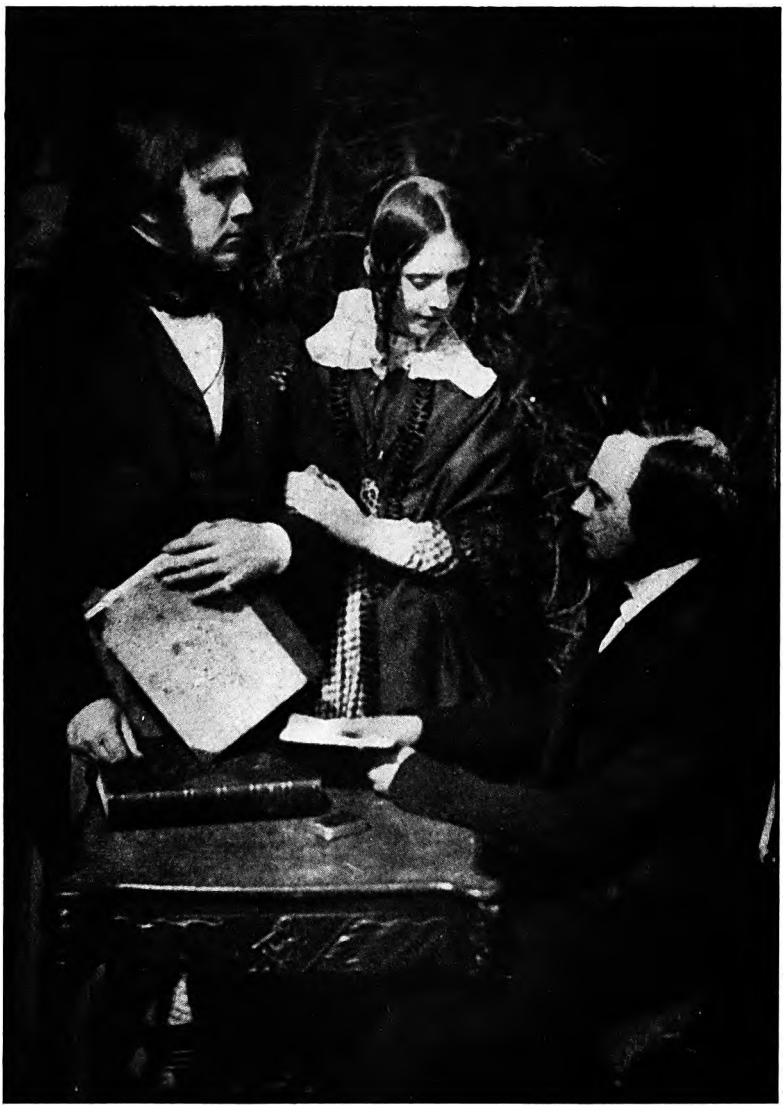

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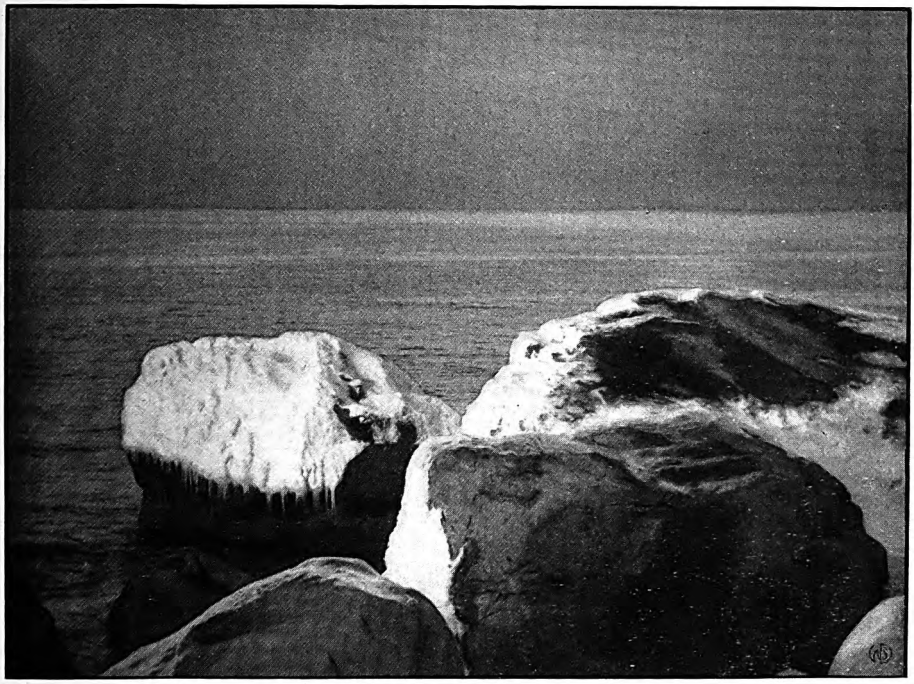


BY WM. S DAVIS, ORIENT, N. Y.

WINTER VIEWS

By WILLIAM S. DAVIS

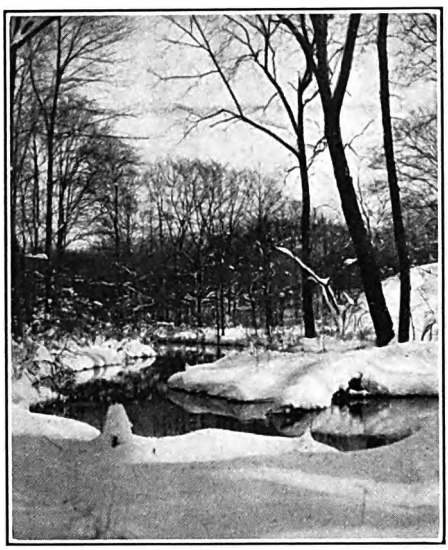
SNOW pictures of the right sort are among the most attractive outdoor scenes, and in many instances subjects of very commonplace character are completely transformed as a result of a snow or ice storm into visions of fairy-like beauty.

Owing to the charm of such subjects, I believe many photographers would find it worth their while to break away from ordinary business now and then when good opportunities are offered for obtaining such studies, for these might be sold later in various forms, such as calendars or greeting cards, possessing an individual character not found in the commercial article, or good-sized prints suitable for framing, or better yet, complete in mat and frame of harmonious design.

Aside from any commercial considerations, however, it is worth while to get out and tramp the roads and fields for the beneficial effect upon both mind and body of exercise in keen, bracing air, and with a camera added for travelling companion one unconsciously becomes possessed of the hunting spirit, giving additional zest to an outing and luring one on and on in a chase for the wonderful subjects which always lie just ahead.

When even a short walk frequently reveals a mass of beautiful material, it is often a difficult matter to decide as to just how much should be included in each composition; but here, as with

others ubjects, simplicity makes for strength and harmony, although the actual amount of material which can be used varies greatly according to its character.

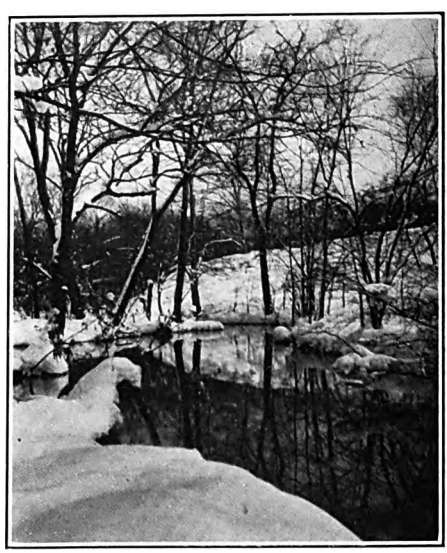


BY ALBERT S. HAVILAND
BLOOMFIELD, N. J.

Where the charm lies in the lace-like effect of snow-laden bushes and tree branches, care must be taken not to include too much, otherwise the detail will be microscopic in size, resulting in confusion and a weak composition. Much better results are obtained by selecting a characteristic bit, such as a few heavily laden tree branches or prominent bushes, as a foreground feature against an unobtrusive background of sufficient contrast; or in a town view a portico or gateway might furnish something of definite character with pleasing lines.

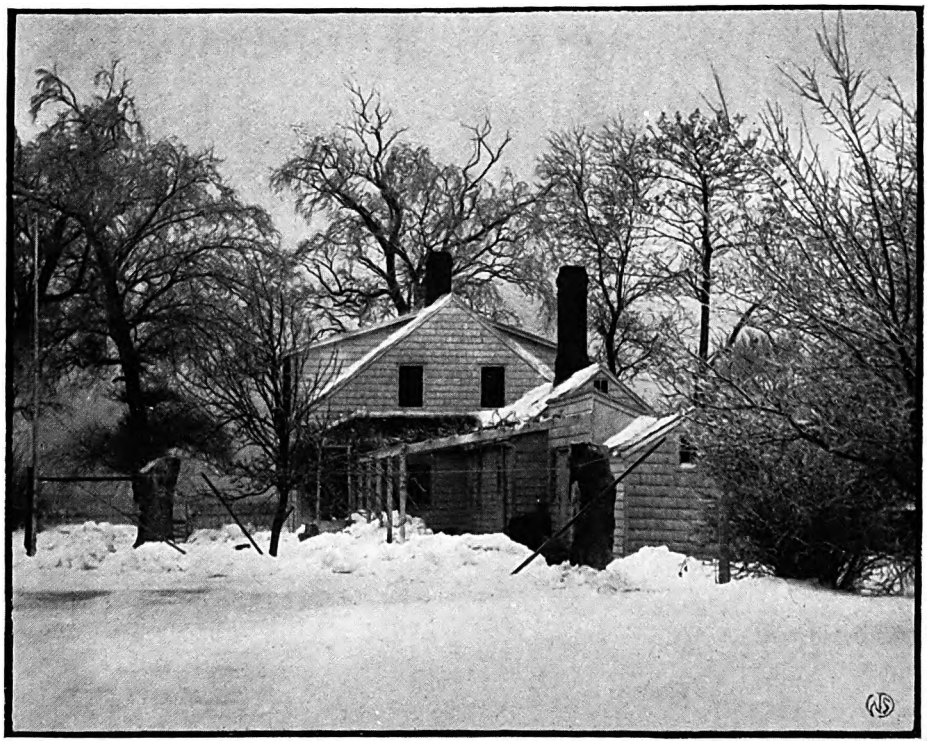
In subjects of the open lanscape class, minute details become of secondary importance in interest, and the picture must be built up more with large masses of tone; therefore, a greater quantity of material can be made use of. Since the charm of these compositions lies in their decorative quality and the subtle gradations running through the major tones, particular care should be taken to try and secure interesting space divisions within the boundaries of the picture and preserve color-values in a truthful manner.

Unnatural tone and color-values have ruined many photographs of winter scenes which contained all the elements for successful pictures, and in many cases this might be traced more to carelessness, or a superficial study of the actual conditions prevailing in nature, rather than lack of technical control over the results obtained. A few points may therefore be suggested as worthy of observation when an opportunity is presented. In the first place, the popular idea that snow is white is but partly true, for as a matter of fact it is only comparatively so, every undulation upon its surface producing a modification in the degree of whiteness. Were this not true, all sense of surface texture and perspective would be lost to the eye. Small areas under strong lighting may closely approach absolute white, and the brilliant effect so produced be suggested in a photograph by rendering them thus,



BY ALBERT S. HAVILAND
BLOOMFIELD, N. J.

but this feeling of sparkle and snap is only felt in a picture when the pure white is *very* sparingly made use of, being dependent upon contrast with other parts of less intensity for its effectiveness.



BY WM. S. DAVIS. ORIENT, N. Y.

simplified, for in this way one learns in time the causes back of particular effects, and with this knowledge in mind it is also possible to judge quite accurately as to when a scene may be secured under the best conditions.

The choice of equipment for winter work is largely a matter of personal taste, but considering the convenience with which enlargements of any reasonable size may now be made—and the inconvenience of taking a large instrument on a large tramp—it seems advisable to use a camera of comparatively small size, say 4 x 5. This, together with one of the modern steel tripods, makes a light outfit. Among the extras which should be included is some form of lens shade, for on bright days light is reflected from all directions upon the surface of the lens, and if not cut off is very likely to produce general foggyness in the negatives, which is not infrequently laid to over-exposure rather than its true cause. Next comes the selection of at least one ray filter, as it is quite impossible to do justice to many snow subjects without such an aid. As a rule, one of about 4x strength is most useful, although when it is necessary to make the most of very delicate gradations, or one is dealing with a subject having an exceptionally long scale of contrasts, a stronger filter is helpful. If any rule is wanted as to when a filter should be employed, it is —always use when in doubt. In other words, while not always essential, it is not likely to injure the result. However, its value is most apparent whenever clear blue and violet tints play an important part in a scene, especially in conjunction with deep shadows formed by trees or other objects of much less actinic color.

In regard to materials. When plates are used a good brand of color-sensitive grade should always be chosen, preferably of the backed or double-coated variety. Experiments made last winter with one of the well-known brands of imported "anti-screen" plates proved them well adapted to the work under

consideration. For snap-shots they gave very good results without a filter, as of course they are intended to do; but in addition I also tried them with a light filter on the lens, the result being similar to that obtained upon ordinary orthochromatic plates with one of a stronger shade.

Exposures must be full enough to penetrate the shadows and bring out their gradations in the negative without forcing development. Using suitable plates and filters, as indicated above, this can be done without loss of quality in the snow, provided of course the contrasts prevailing are anywhere within reasonable limits, which they will be if a suitable time is selected for doing the work. Since the various factors governing exposure vary so widely, it is difficult to give useful data, but other things being equal it should be increased practically in proportion to the amount of contrast in the scene, for a flat, softly lighted view might stand full development when another of the opposite sort would be quite spoilt by the same treatment. As a starting point, however, I may say my experience indicates that 1 second, stop F. 16, and a 4 x filter would be about right when dealing with open subjects of medium contrast on bright days between the hours of 9 A.M. and 3 P.M.

Any of the developing agents in common use are suitable, there being little or nothing to choose between them so far as final results are concerned. The main thing when developing by the tray method is to use a solution of moderate strength at a temperature of 60° to 65° F., and stop its action before the highlights have a chance to block up.

"CURSES ON MY FATAL BEAUTY"

ETCHING PORTRAITS UPON GLASS BY PHOTOGRAPHY

By A. J. JARMAN

THE many uses to which photography has been put, either in developing new industries or aiding in the improvement of an old one, are considerable. The etching of metal plates by the halftone process or in line is an industry that has been entirely brought about by the discovery of photography. By the use of a sensitized surface upon metal with some preparation that contains gelatin, in some form or other, in combination with a salt of chromium, such as potassium or ammonium bichromate, the action of light causing some parts to become insoluble in water as well as in some

BY F. W. BANCROFT, ORANGE, N. J.

chemical solutions, has created a branch of photographic industry that today gives employment to tens of thousands of men, and may yet be the means of creating new industries that will be of inestimable value to mankind.

The introduction of etching portraits upon glass was discovered accidently by the writer, two years ago, when cleaning off some glass plates which had held a well-hardened gelatin image in relief for moulding purposes. It was found upon stripping the film in a solution containing fluoride of sodium that, owing to the length of time that was required to permit the solution to permeate the film, etching of the glass plate had taken place, and where the film was thin the action upon the glass plate had been somewhat more intense than through the thicker parts, so that as soon as the gelatin film had been released and the plate washed there was left upon the surface, etched, a number of small portraits the exact counterpart of the film that had been stripped from the plate. This etching process occurred with every plate that was permitted to lie for a sufficient time in the stripping solution.

That there shall be no mystery about the method, a full description will be

given here, so that others may make a trial, or develop it to a greater extent and form a new process of engraving.

The material employed to secure the image in relief is a special kind of carbon tissue, known under the name of relievotype tissue. A piece or a number of pieces of this tissue may be cut—9 inches by 11 inches is a convenient size. This may be recut to pieces 4 x 5 after sensitizing and drying, thus giving four pieces for trial before using larger sizes.

This tissue is sensitized in a solution made up as follows:

SENSITIZER FOR RELIEVOTYPE TISSUE

Filtered water	50 fl. ozs.
Bichromate of potash (cp.)	1½ oz. av.
Carbonate of ammonia	1 dram
Glycerin	2 drams

The bichromate of potash and the carbonate of ammonia may be tied in a piece of cheesecloth and suspended in the water which contains the glycerin, by being tied to a wood strip placed across the top of a bottle. As soon as this solution is prepared, pour it into a clean tray, immerse the tissue by unrolling it beneath the liquid, using rubber finger-tips upon the fingers to protect them from the action of the bichromate. The tissue, owing to its thick coating of gelatin, will require some coaxing to get it to lie flat. The time of immersion will vary according to temperature, but as soon as it lies flat, this may be taken to indicate that the bichromate solution has penetrated sufficiently. Now remove it and place it face down upon a clean, cold, glass plate; cover this with a piece of rubber sheeting; apply the squeegee all over the cloth with moderate pressure; remove the cloth, and wipe the back all over with a piece of clean rag, so as to free the back of the tissue as much as possible of the excess of liquid. Lift the tissue by two corners, insert a wooden spring clip, and suspend the tissue to dry in a dark, dry closet. It will require about four hours to dry. When dry, cut the tissue to the size required, then place it under pressure in a printing frame fitted with a glass plate covered with black paper so as to cut off any rays of light. By this means the tissue will be quite flat when required for use.

A negative may now be taken that has been made with either an eighty-five, one-hundred, or a one-hundred-and-ten line screen, as used for halftone work. The negative may be made by either the wet collodion process or with a gelatin plate such as is employed for contrast or process work. The shadows must be quite clear. Make a print from this negative, which must be provided with a safe edge. The right depth of printing may be ascertained by placing a strip of gelatin P. O. P. upon another negative, in another frame, of the same density. Then when the paper shows a print about two-thirds done the print upon the tissue will be complete.

BY SARA F. S. PRICE
MT. AIRY, PA.

As soon as the print is made remove the tissue and place it to soak in a tray of cold water until it lies flat; then place it face down upon a glass plate, also wetted, this plate having previously been coated with a thin film of unsoluble gelatin or albumen; squeegee the two

into contact by covering the back of the tissue with a piece of rubber sheeting; apply the squeegee with some force; then let the plate lie in a horizontal position for half an hour, when development may be proceeded with by placing the plate and tissue into warm water until the tissue becomes loose, when the paper backing may be lifted and the development continued by placing the plate in a grooved box, either 4 x 5 or 5 x 7, and allowing it to soak in warm water until the image is well developed, removing it occasionally for inspection and to pour some warm water over the surface. Development by this means may require from a quarter to half an hour, but the image will be perfect for the purpose required.

As soon as development is complete, wash the plate in a gentle stream of cold water, then place it into a bath of formalin, consisting of one ounce of formaldehyde to sixteen of water. Let it soak in this for five minutes, then, without washing, stand it in a rack to dry. As soon as it is dry it will be ready for the etching process, which is accomplished in the following manner. The solution is made up with the ordinary commercial fluoride of sodium (the chemically pure is not necessary) which may be purchased for twenty-five cents per pound. The chemically pure will cost that much per ounce and give no better results:

THE ETCHING FLUID

Fluoride of sodium	1 oz. av.
Water	10 fl. ozs.
Sulphuric acid	½ fl. oz.
Water	8 fl. ozs.

Mix and keep these solutions separate; allow the acid mixture to become cold before using. Now take five ounces of the fluoride mixture and place it in a hard-rubber tray; brush around the edges of the hardened carbon image either rubber cement, to the depth of one-eighth of an inch or to the depth of the safe edge; or gutta percha may be used, dissolved in benzol or chloroform; the latter solvent is the best. Add to the fluoride mixture four ounces of the acid solution. Pour a stream of water, with force, over the carbon image; insert it at once into the mixture; rock the tray slightly; then let it rest for a few minutes. Then as soon as there are signs of the carbon film lifting, remove the plate, wash under the faucet, and pull the film from the plate. Rinse it well; dab it dry with a piece of chamois leather, when it will be seen that a well-defined image is etched into the surface of the glass, presenting an unusual effect. The stronger the solution the deeper will be the etching; but as soon as the film begins to lift the plate must be removed and washed. With care a second etching may be carried out sometimes, which will give greater depth.

From all the trials that have been made there is in this process the elements for an entirely new line of plate production which may form the base for a new branch of photography.

Of course in such a case the glass plates would have to be much thicker, or mounted upon a strong plaster support. In any case, the process appeared to be new to the writer, and the results as they were produced have been given here so that they may prove of service, and form a new branch in the line of the photographic art.

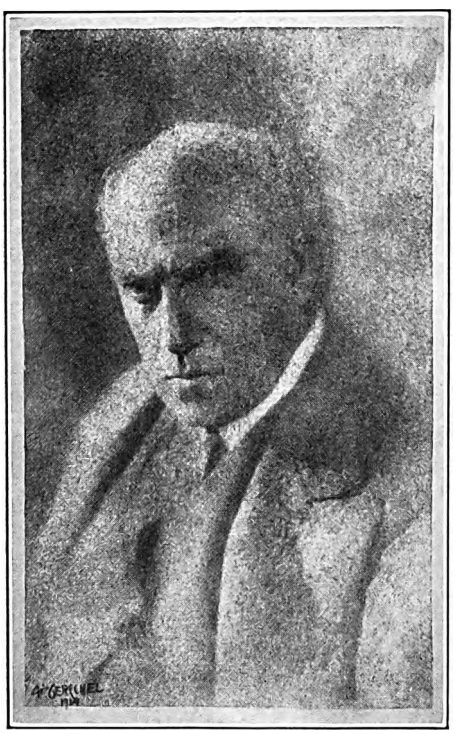
A NEW EUROPEAN DEPARTURE

BY SIDNEY ALLAN

IN looking at these prints from abroad, recent productions from the workshops of Charles Gerschel, of Paris, and Rudolf and Minya Dührkoop, we realize at once that they have artistic intentions beyond the ordinary portrait. Whatever one may think of the technique, they have an unusual and dis-

tinguished appearance. It is the peculiar texture of these oil and bromoil prints that attracts our attention.

In the past months I had occasion to correspond with quite a number of European photographers, and what they had to say about their work and some of the specimens they sent to me showed most clearly that the majority of advanced practitioners had ventured forth on a new departure. They all seemed to be particularly interested in the



BY CHARLES GERSCHEL
PARIS, FRANCE

hand-manipulated print. And although the smooth-surface print still served its purposes, no ambitious photographer would dream of scoring or making an impression at an exhibition unless the contributions consisted of bromoil prints or at least Japan prints.

There will not be much professional activity in Europe for some time, I fear, and nobody can predict whether after the war the photographers will pursue the same path. They may be forced into something less fastidious and exceptional, as, after all, the artistic print is more of a luxury than a necessity and appealing largely to the moneyed class.

What is of special concern to us is whether this innovation would have reached our professional circles, I mean as a regular commodity, as it seems to be abroad, and not merely as an occasional stunt to display one's cleverness and ability that one can do such a thing, I do not believe that people are quite ready yet to accept this kind of ware and to pay a higher price for it, which necessarily had to be the result of individual workmanship. The big establishments, as a rule, keep aloof from it and only supply an occasional demand.

But it is worth while to analyze the merits and shortcomings of this process, and this is the main object of this paper. Its leading characteristic, as remarked previously, consists of the peculiarity of texture. Smoothness was always the bane of photographic reproduction. In this process the gradations, that generally run smoothly from one tone into another, are broken up by a grain of more or less distinct dots. It reminds one of air-brush work that becomes visible and of an old process that was used to make sepia drawings, by the means of working a sepia-filled brush over a wire strainer. I find it difficult to persuade myself that this grain is particularly beautiful. It is difficult to get it even, and in most cases it shows impurities, and, what is worse, blemishes that reveal the actual process of hand manipulation. Of course the latter show more readily in a big head than a figure piece. Still, the prints look different and have something about them that reminds one of other black-and-white processes. It is a direct approach to the graphic arts, and this is in itself an esthetic gratification.

The one pronounced advantage of this process is its facility to eliminate unessentials, to remove objectionable details, and to force all planes into a more harmonious ensemble without being obliged to lower the tonal key. It is possible to emphasize passages as well as to subdue them. It really amounts to retouching in a more direct and artis-

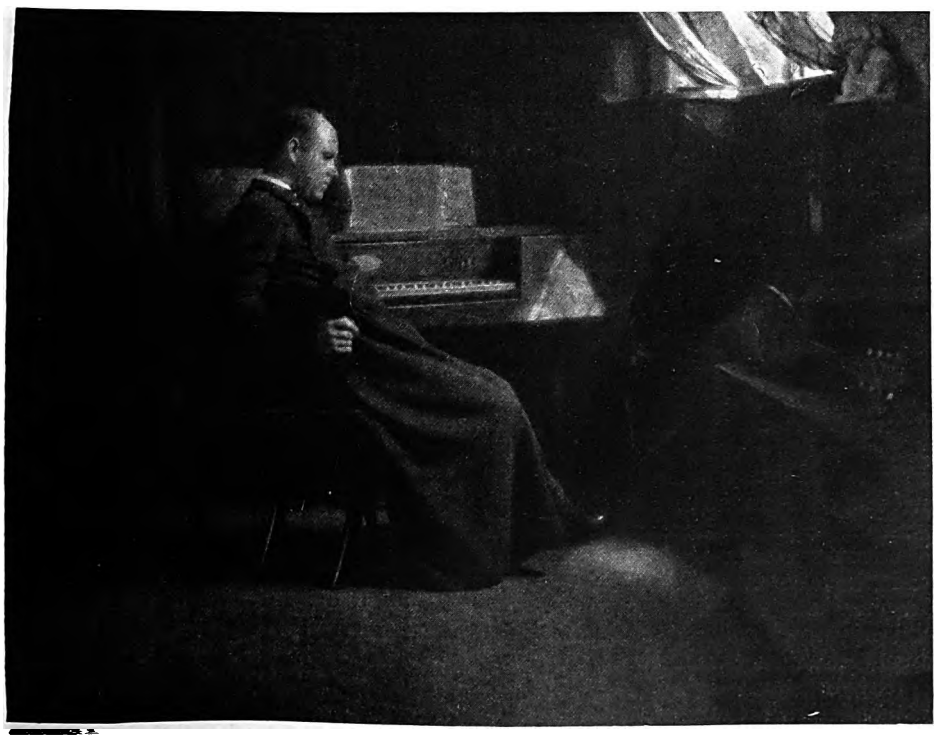
tic manner with a vague resemblance to drawing. To be able to draw is absolutely necessary, and it would be futile to practise this method without some manual skill and knowledge of form.

The Gerschel print has the delightful, soft quality of a charcoal drawing. There is little of the photographic texture left, and in this respect Gerschel goes much farther than the Dührkoops. The print is a portrait of Lucien Guitry, the best character actor in Paris today; no doubt the possessor of strong and impressive features. Whether they have been done justice to in this interpretation is rather doubtful. The picture, although clear, is too vague for that.

The girl resting the chin on her wrist shows the additional technique much more plainly. There is a charm about the pose and a judicious elimination of detail which make the print most acceptable, but the back of the head does not look quite right, and the spottiness of the grain (in the original) rather mars than enhances the textural quality of the print. The big head is clumsily placed, and no special technique would save it from that condemnation; but the grain as such is hardly noticeable, excepting a few places where radical changes were made in the background. The texture of the face is soft, but has no decided technical charm, being monotonous and muddy in parts.

The best print of the four, and which shows the process to the best advantage, is the portrait of the Spanish dancer, Tola Valencia. Here we have a real composition, the combination of a silhouette figure in a strangely patterned robe standing on a checkerboard floor against a light-tinted background. The print has been manipulated all over, but without obtruding upon the eye. The arrangement is so strong in contrast that it swallows up all minor unevenness.

Every process can be worked successfully. It should only be clearly understood that each style demands its own subjects. If one wants softness of texture and vagueness of representation without blurring or losing the form, the bromoil process will prove a pliable vehicle.



BY JANE REECE, DAYTON, OHIO

THE REMBRANDT STUDIO, DAYTON, OHIO

JANE REECE, OF THE REMBRANDT STUDIO

By MABEL BROWN MARTIN

PHOTOGRAPHY, with its manifold interests and pleasures, owes much of its progress along both artistic and scientific lines to the devoted women who have made this profession their life work.

Chief among these is Miss Jane Reece, of the Rembrandt Studio, Dayton, Ohio, who has been able to accomplish surprising effects through original research and continual experimenting.

There is an elusive charm about her work, similar to that exercised by a favorite painting in an art gallery, which compels the return of the art lover, by reason of its fascination.

The Rembrandt studio was established ten years ago, Miss Reece having previously devoted her attention to portraits in oil. A holiday in North Carolina, compelled by illness, suggested the possibilities of the camera as a means of artistic expression, and she selected Dayton as a field where she believed both encouragement and profit would reward her labors.

The very name Rembrandt suggested the luxuriance of color and contrasts in light and shade notable in the work of the great master painter, and Daytonians wondered if the name meant anything in particular as applied to photography. They found a woman who had ideas of her own, which were not long in being recognized as "somehow different."

Strongly imbued with the dramatic instinct herself, Miss Reece recognizes possibilities in her subjects, which she enhances by a trick of pose or gesture, and in a moment imprisons in the camera box a bit of human nature which is loved and treasured by friends of the poseur for many years to come.

Whether she has succeeded or not in the expression of her own individual ideas in photography, is answered in the recognition accorded her today, not only by Daytonians, but by the world at large, in the tributes which have been paid her by the photographic profession and public press.

The fame of the pictures issuing from the Rembrandt Studio has spread from one coast to the other, and the autographed photos of many celebrities hang upon the studio walls, as many of the world's greatest actors, artists and musicians have been delighted with Miss Reece's version of their talents, as expressed through the clear lens of the camera.

Contributions from this successful woman photographer have also been frequently sought by many of the leading magazines of the country, and scarcely a day's mail arrives which does not contain some evidence of the respectful attention which her work is attracting in the world about. Miss Reece is often also in receipt of letters from photographers over the country, asking the secret of this and that effect, which it is their despair to accomplish.

She has unusually rare powers of discernment in character reading, often surprising you by falling in with your trend of thought, or referring to certain predilections whose existence you have scarcely confessed, or at least imagined securely tucked away in one corner of your brain, indiscernible to anyone but your innermost self.

Miss Reece is frequently queried as to methods pursued to accomplish her ofttimes marvellous results. Her own words on the question may be of interest:

"I work under any conditions or lights, artificial or natural, and I may say that my methods vary with each different subject, availing myself of the material presented. I always look for the best in people, and am nearly always able to see something beautiful which will make a picture. I watch the expression of the eyes very closely, and work for graceful lines, as I am keenly interested in line composition.

"In securing a portrait, I do not endeavor to give from my personality something the sitter has not, but try to express my own individuality in bringing out that which appeals to me as being the best, strongest and most dominant characteristic in the sitter's make-up.

"I may consider myself almost wholly self-taught, as I have never received any formal instruction, even in the rudiments. I started out by experimenting, and have been keeping it up ever since, profiting by my mistakes, and lured ever onward by 'the vision beautiful.'

"This original research—if I may so term it—has been the most valuable part of my experience, for often by mere chance I have discovered a new idea or combination which has later proved invaluable in my work."

BY JANE REECE, DAYTON, OHIO

Salon Honors

While Miss Reece has been called upon for contributions of her work at exhibitions innumerable, mention of a few of the special honors which have been conferred upon her are timely.

In 1906–7, when the Photographers' Association of America convened in Dayton, first honors were awarded the Reece study of Jan Kubelik, the famous violinist.

In 1908, at the annual exhibition of the Photographers' Association of America, a head of Albert Loos, well-known Dayton artist, received salon honors in the portrait class, Her work was also specially exhibited in Boston that year.

In 1912 she appeared prominently as a recognized authority upon matters photographic, in being called upon to make a demonstration of "Negative Making" at the Association meeting in Philadelphia.

This demonstration was a marked feature of the convention, and, according to the report of one who was in attendance, one of the most dramatic events of the conclave, as the speaker entirely forgot her whereabouts in her enthusiasm, and seemed to be in her own studio, endeavoring to catch just the right effect from her imaginary subject, herself and audience becoming so absorbed that recall to mundane things was made by a supreme effort.

During the meeting of the German Photographic Association in Hamburg, Germany, "The Maid o' the Sea," and two portraits of Albert Loos, artist, attracted profound attention and were reproduced in various continental magazines.

At the exhibit of the Associated Photographers in Wheeling, W. Va., Miss Reece's study of Bishop Wright, father of the famous aviators, Wilbur and Orville, was selected as a permanent fixture, to be placed in the new Auditorium.

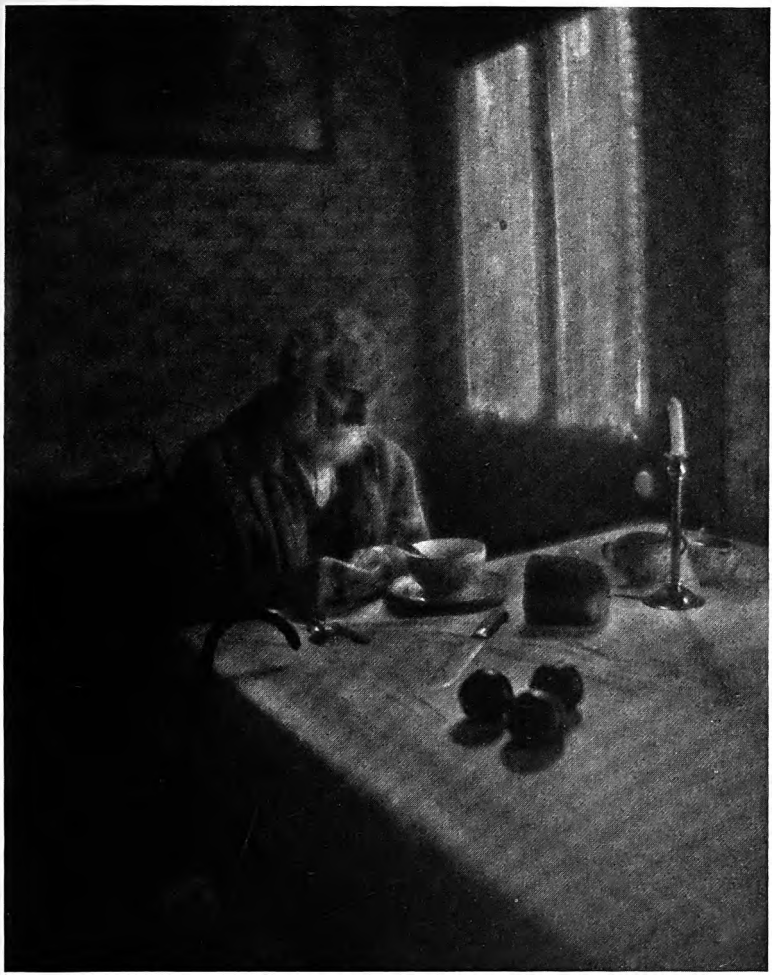
Her work was also exhibited at the Ninth American Photographic Salon at Carnegie Institute, Pittsburg, Pa., under the direction of the Toledo Art Association, and in July, 1912, her portrait entitled "Reflection," posed by a silvery-haired old veteran of the Civil War, was chosen for salon honors, she being one of but ten thus honored throughout the United States by the National Association of Photographers.

In July, 1913, Miss Reece received a certificate of especial distinction from the Indiana Association of Photographers and also, upon the same occasion, her picture "Beulah" was selected to hang in the Daguerre Memorial Institute at Winona Lake, Indiana.

Her indefatigability as a photographer is well illustrated by an amusing incident occurring during a visit made in 1911 to Los Angeles and vicinity, the Camera Club in that city having made a special exhibition of her work at their headquarters.

Jane was upon one occasion, during her stay on the coast, deeply obsessed with a poetic idea, which she desired mightily to develop by a series of photographic studies. It was at Avalon, Catalina Island, that the opportunity presented to secure a suitable model to assist her in carrying out her ideas, and the world has seen the result in her tragically beautiful camera story of "Lurline." It is not always easy to secure the services of an accommodating young woman to pose for pictures which promise to be not only difficult but even dangerous to obtain. To recline, for instance, in the nearly-nude, upon sharp-pointed, slippery rocks, while the artist painstakingly maneuvers for just the correct psychological moment, must indeed be granted as trying.

But Jane Reece, enthusiast, was fortunate in securing a young girl from Los Angeles who consented to try, and so a long, happy afternoon—for the photographer, at least—was seemingly assured. Just when Lurline had reached the deepest abandonment of despair upon the seal rocks, which afforded admirable background for the whiteness of her young body and clinging draperies, consternation was suddenly hurled into camp by the untimely arrival upon the scene of a mild and peacefully inclined aggregation of doctors, who had come over to Catalina for an afternoon's holiday, following a strenous week's session



BY JANE REECE, DAYTON, OHIO

at Los Angeles. Coming unexpectedly around a sharp curve of the beach, they produced a "scatterment" of the wildest description. The erstwhile "Lurline" abandoned the tragic idea with entirely undignified haste, seeking the shelter of a neighboring rocky cove with far more speed than grace.

While this diminutive woman has received the most flattering tributes from the metropolitan press—Boston, New York, Chicago, and Philadelphia all uniting in praise of her genius—Jane Reece is above all things unassuming in personality. Facts about herself are the hardest things in the world for her to divulge. Of her work—yes, hours, if you will; but of her success, little or nothing may be gained.

The appreciation with which the work of this painstaking artist has met has in the past frequently fortified her in hours of discouragement and difficulty. For there are such times, always, particularly in the lives of those whom the world has most crowned with its successful approval, and Jane Reece has more than once, like the great Abraham Lincoln, "been forced to her knees, because she had nowhere else to go," for the Divine help which she feels has been a great, actuating factor in whatever measure of success she may have achieved.

BY RYLAND W. PHILLIPS
PHILADELPHIA, PA.

BY JANE REECE
DAYTON, OHIO

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DAYTON, OHIO

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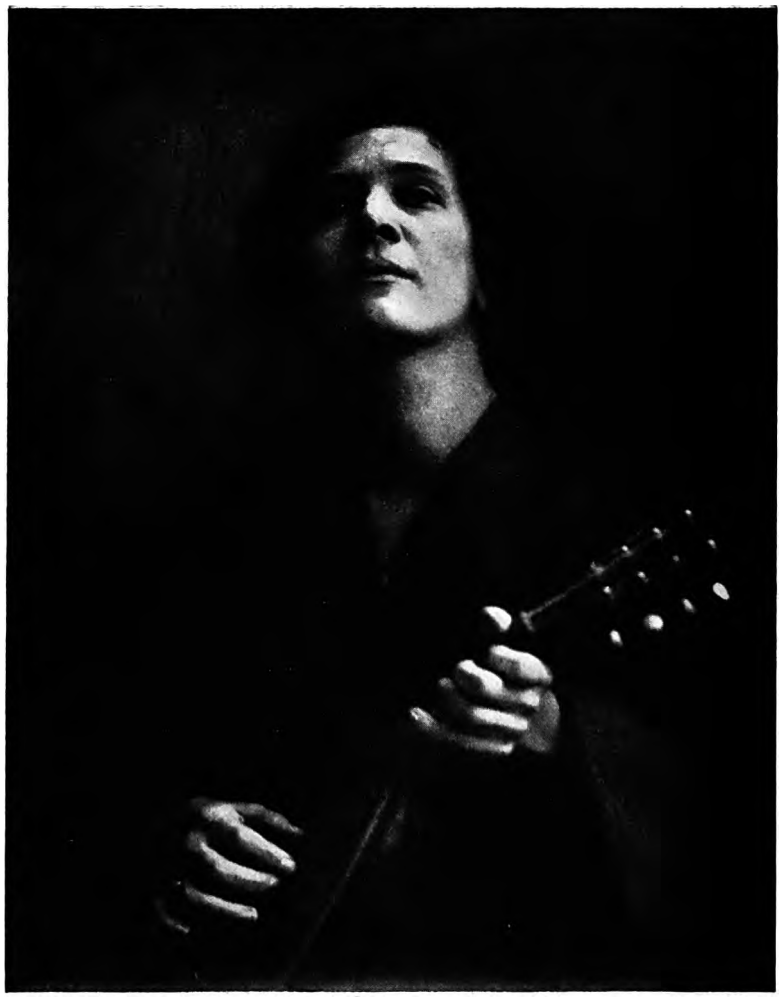
DAYTON, OHIO



BY JANE REECE
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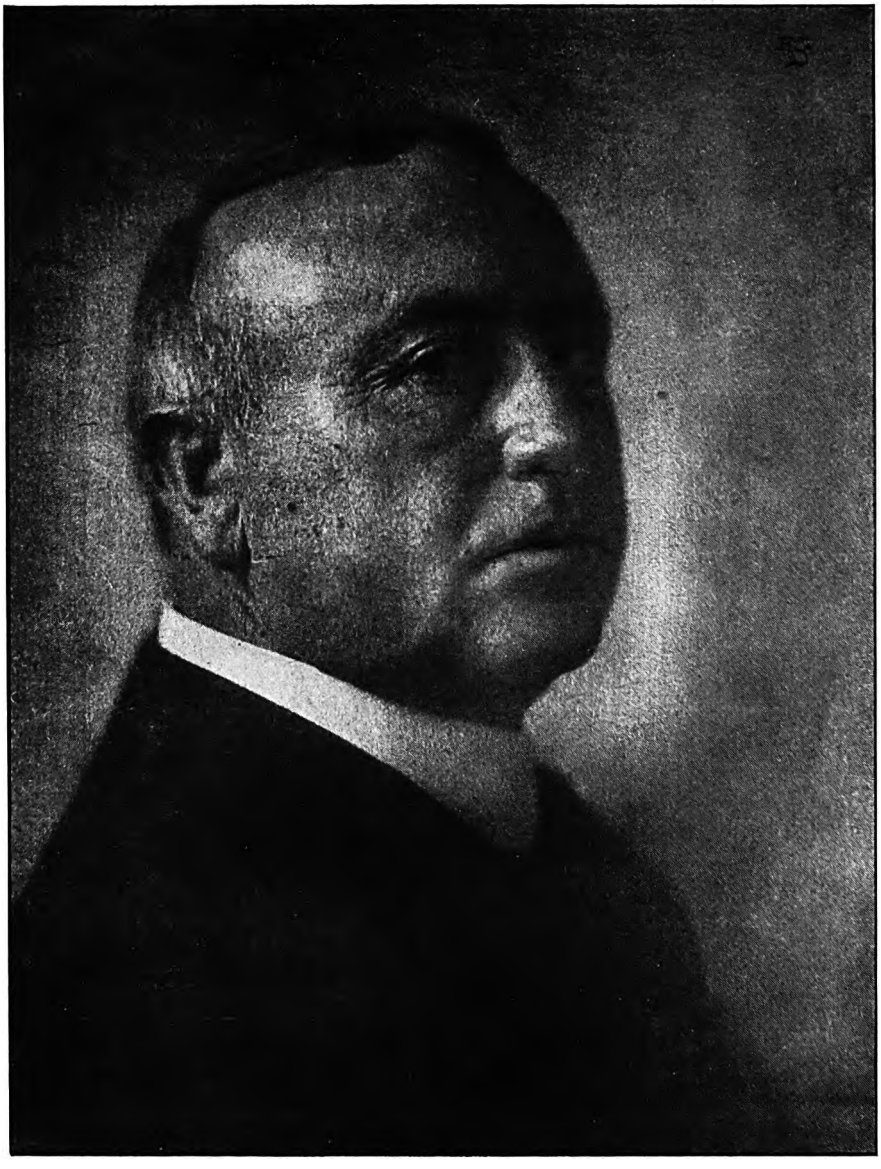
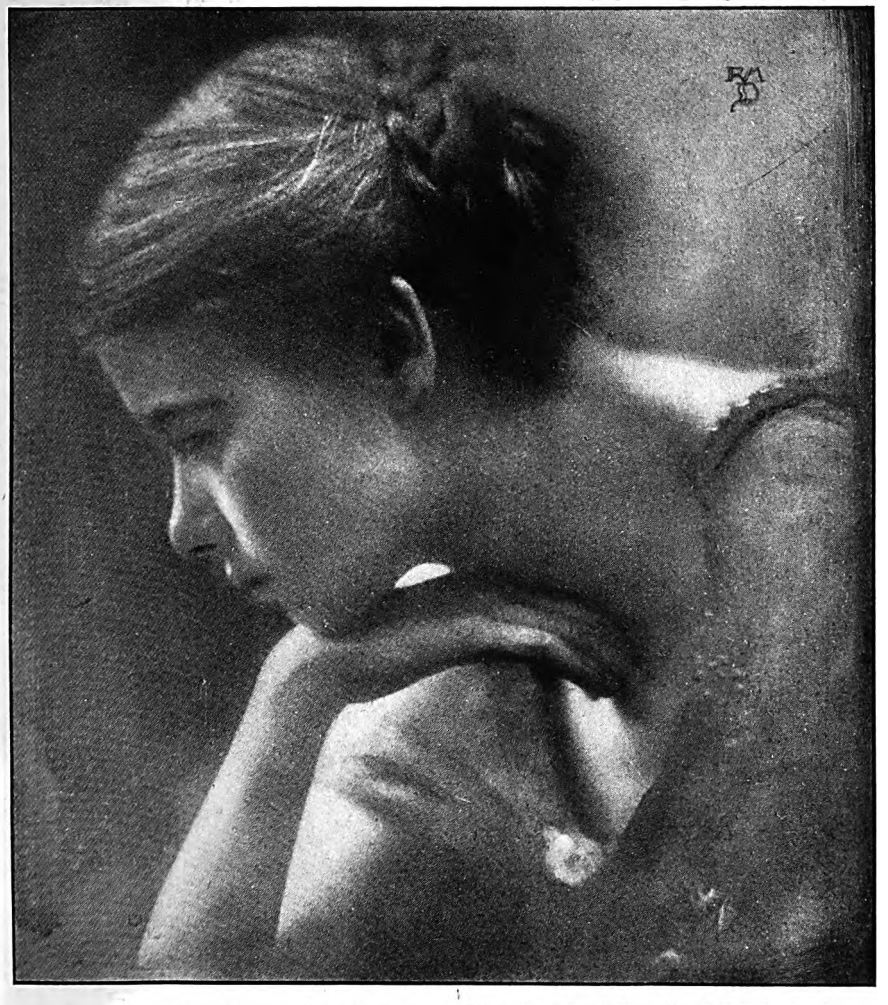


BY RUDOLF & MINYA DUHRKOOP
BERLIN, GERMANY
ILLUSTRATING SIDNEY ALLAN'S ARTICLE



BY RUDOLF & MINYA DUHRKOOP
BERLIN, GERMANY
ILLUSTRATING SIDNEY ALLAN'S ARTICLE

BY RUDOLF & MINYA DUHRKOOP
BERLIN, GERMANY
ILLUSTRATING SIDNEY ALLAN'S ARTICLE

CHILD PORTRAITURE

By JOHN A. TENNANT

UNTIL within the past few years child portraiture remained completely within the recognized sphere of professional photography. That the professional failed to take advantage of his golden opportunity is abundantly recorded in the family photograph album, now so carefully stored away among the "hidden treasures" of every home. In the course of time, modern photography and the amateur came to the rescue, awakening the professional to a keen appreciation of things before undreamt of in his photographic philosophy. Since which awakening we have had pictures of children such as painters and poets alike failed to give us, full of the roguish grace and abandon of childhood in all its innumerable moods, replete with the charm and illusion of life in its happiest phase.

The great lesson which the professional worker has to learn from the amateur is that children should be pictured as children, and not as little folk masquerading in all the seriousness of grown-ups. Those who will compare the portraits of children in this issue with those of the early sixties will appreciate the point. And yet the professional worker of 1865 had the experience of a quarter of a century in photography at his elbow. Oh! the wasted years. What joy the world has lost because this elementary lesson was completely overlooked.

In taking up the photographing of children—whether as a home hobby or as a business specialty—our little subjects themselves must have careful consideration before actual camera work can be attempted with any reasonable hope of success. You cannot take children as part of the day's work. First and last we must abandon the matter-of-fact point of view which we have acquired as one of the penalties of age, and cultivate the habit of looking at things as children look at them. While we are with them the things which interest or surprise or please them must awaken at least a semblance of the same emotions in ourselves, and the wisdom of our years should be restricted to the direction of the mental and physical activities of our subjects toward the end we have in view. There is joy in all this if we go about it in the right spirit, but we must beware of too much "make believe" or "bluff" in our fraternity with children. They have a wonderful understanding of fellowship, and their absolute simplicity possesses deeper subtlety than we can always recognize. Then there are two or three essentials which must be covered. We must have a big love for childhood and all things pertaining thereto—especially a familiar knowledge of its habits and desires. Next we must remember that children are abnormally sensitive to the influence of environment or locality. And we must learn to possess our souls in patience, without which, indeed, it were folly to approach the work we have in hand. Apart from these things we need an abundance of light, a rapid lens, quick plates, and a reasonable knowledge of photographic manipulation, for often our work must be done quickly and skilfully, and in strange corners as well as under conditions not always to our liking.

The necessity of a love for children in all who have to work with them is well understood, but it is less generally applied (or shall I say more clumsily applied?) in photography than one would suppose. The tactless, matter-of-fact way in which children are handled in many studios, for instance, is the easiest road to failure, and its result is seen in the average professional portrait of a child. It is hardly too much to say that unless one has a natural and strong liking for children one should refrain from any attempt to make pictures of them by photography. Fortunately this

love for children is the most natural thing in the world.

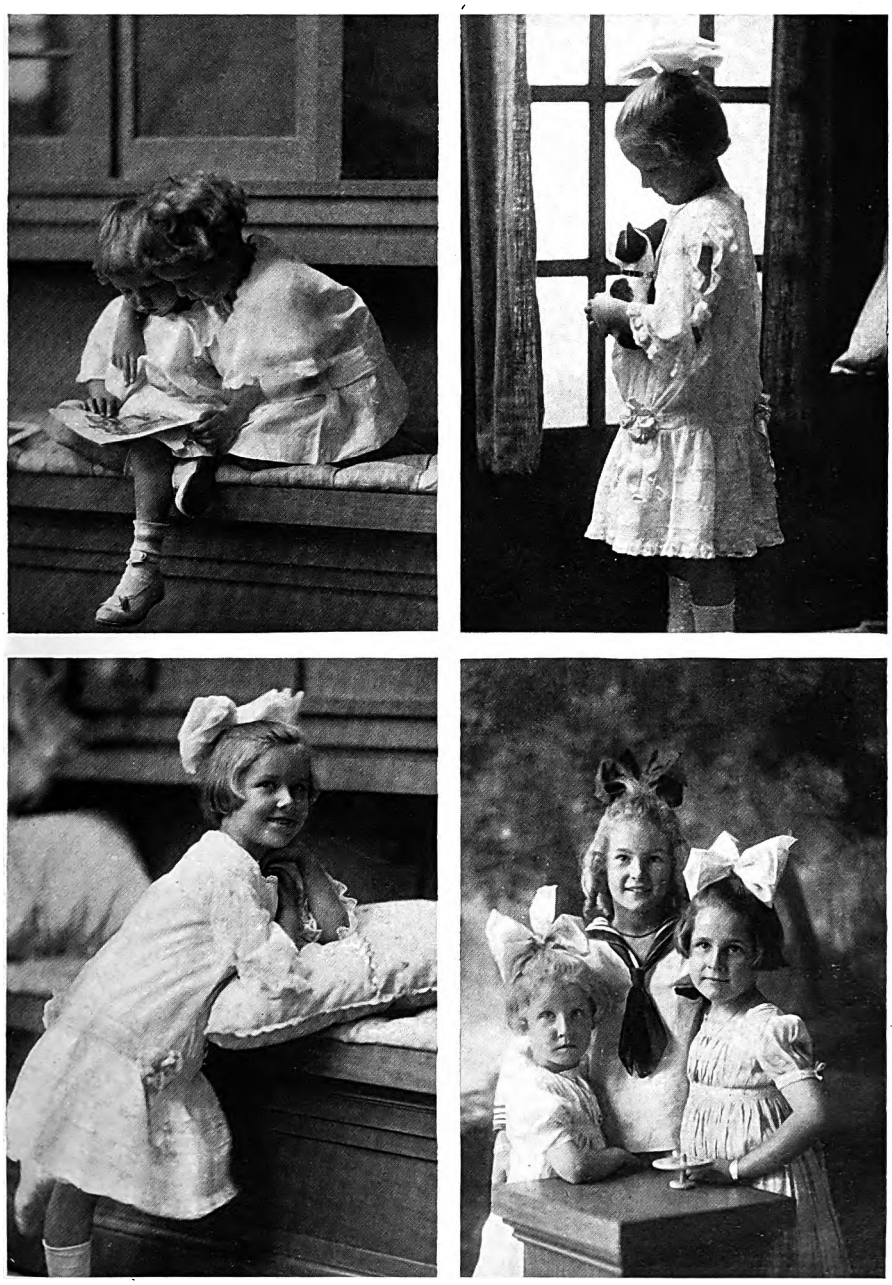
Once gain the confidence of children, and we may do with them, or get them to do, whatever we may desire. But the confidence must come first. As a general thing, it is freely given to all who show a spirit of kindliness and sincere affection —to which children are peculiarly responsive. This should not be forgotten when we are asked to photograph children with whom we have had no previous acquaintance. In such cases let the camera be put aside and a little time given to "making friends." Many very interesting children are exceedingly shy at the first meeting, but if the camerist is of the right sort their reserve melts like snow before an April sun, and they open out into the most willing and delightful of subjects.

It has been well said that children are born with a sixth sense, fully developed, which very promptly tells them whether the man with the camera "fits" or not. On this intuitive perception they build their intercourse with the stranger, showing him reserve, shyness, interest, or opposition, according to their keen appreciation of the inwardness of men and things. Those who seek to make pictures of children, therefore, must cultivate a love for them and seek by constant observation to become familiar with their ways and whims, how to approach them, and by what wiles to win and hold their interest and good-will.

In keeping with all this, wherever we find a photographer more than usually successful with children, we find men who possess the happy faculty of quickly winning the affection of children, and who have acquired the habit of quietly "sizing up" their little subjects, so that the first few minutes of the sitting (the time of most importance in professional work) shall make for success when the studio is reached.

Because of this all-important kindliness, women are peculiarly successful as photographers of children, being rich in that love for and knowledge of childhood which lead direct to the hearts of children. Of the ways by which well-known women photographers, such as Mrs. Käsebier, the Misses Selby, and many others secure their charming pictures of children, little, unfortunately, can be said. A woman's way hath ever been past finding out, and beyond analysis when she, herself, graciously explains it. That it consists of a magic winningness, a blending of simple affection and womanly tact, conveys the substance of the method but hardly helps us over the difficulties. When a mere man, naturally clumsy and awkward in such affairs, turns himself "with malice afore-thought" to so delicate a task, we may perhaps learn something by observing his methods.

There are few influences to which children are more sensitive than to the influence of locality or environment. This is a detail which intimately concerns photographing children, but it has never received the consideration its importance deserves. Let us think it over. Children are interesting wherever we find them, but nowhere so interesting as they are at home. Home is the natural playground of the child—the one place with whose nooks and corners he is quite familiar; the only place where he is free to be himself, with all his faults and graces. At home the inordinate curiosity about everything in sight, characteristic of the child in health, has already been satisfied when we come to deal with him, and in his every-day environment there is no room for that reserve, timidity or shyness which influences him so strongly amid new or unfamiliar surroundings. At the studio the strangeness of the place and of the things about him awakens these undesirable moods, making success difficult to attain under conditions otherwise favorable. Herein the reader will perceive that, for our purpose, the photographer's studio, so far from being desirable, is oftentimes a huge mistake, and that the amateur has in this detail a big advantage over the professional worker. Thus for pictures of children as we enjoy them in daily life, it may fairly be said that the golden opportunities fall to the amateur rather than to the professional. As a matter of course, where the studio is equipped to simulate the environment of the home, and in those rare instances where the photographer has mastered



BY S. AUNE, PHOTOGRAPHER OF CHILDREN
LOS ANGELES, CAL.

the gentle art of making friends of his little visitors, these objections do not apply. Nay, more; where these conditions are fulfilled the photographer, favored by his better facilities from the technical standpoint, can more easily produce pleasing pictures than the skilled amateur hampered by lack of these aids.

With very young children difficulty will be experienced in getting their attention directed to any one spot for the moment needed for exposure. The best course to follow in such cases is to get the focus, put in the plate ready for exposure, and then, in absolute quietness, gently tap the floor. This will generally attract the attention of the child, without alarming it or causing movement, and the opportunity for exposure is is gained. With older children, whose attention wanders from one thing to another without resting on any one thing long enough for our purpose, the undemonstrative recital of a childish tale will often secure the degree of repose necessary. The vivacious child, of course, can be managed by being "let into the game" and impressed with the feeling that the success of the affair rests upon him. Or we may busy our subjects with some simple occupation, picture-book, or toy, and at the desired moment get their attention for the exposure. Sometimes young children will persist in making "funny mouths," especially when the little teeth are coming. This can be overcome in part by touching the tongue with a small pinch of salt, which causes the child to close its mouth for a moment, during which the exposure should be made. There is a common desire among mothers for a picture of the baby smiling. Do not indulge it without an attempt at a second picture without the smile. A smile is pleasing at a first glance, but one wearies of it in a picture where it cannot change. Babies have as many moods as older folk, and are interesting in every mood, but the smiling baby does not wear well. Get the child interested, listening, looking for something or busy with its toes, and you will be just as gratefully remembered as if you had caught the smile.

As far as posing is concerned, the less said the better. Children from one to eight years are graceful in every move—that is, in free and spontaneous movement. From eight to fourteen years there is a little awkwardness, and simple poses will be most successful. With girls the three-quarter or full-lengths figure may be attempted; with boys the full figure should generally be avoided. But there are exceptions always. For my part I prefer Mr. Hollinger's method of letting the children loose in the studio, keeping them interested, and using a plate at every opportunity. This "wastes" plates, but insures variety of pose and expression, absolute spontaneity, and now and again a picture which could not be obtained by a hundred deliberate poses. In his studio Mr. Hollinger has a movable platform—which moves easily and noiselessly—and many of his most delightful pictures of children have been secured by its aid between "rides" and "talks."

All this, of course, has been said before. But I am convinced that the photographer needs this sort of wisdom (if wisdom it be) more than information about "eight stool groupers," hummingbirds, and similar aids to success with which the old-time articles on photographing children too often began and ended.

IT may seem foolish to take pains with small things but by so doing you make the big things in life easy.

BE sure that you have some bent for your work and after you decide on that stick to it in spite of every obstacle.

"LOVE your enemy; then he will come up close and you can take a good swat at him."—*Hubbard.*

AS soon as a man gets it through his head that there is a right way and a wrong way to every job, that man has taken the first step toward making his job interesting.—*John M. Brock.*

BE glad that you have a brain with which to work, and hands to execute your plans, these are the things that divide men from the lower animals.

S. AUNE
LOS ANGELES, CAL.

PRACTICAL TALKS ON STUDIO WORK

I. ENTRANCE AND RECEPTION ROOM

By RYLAND W. PHILLIPS

FOREWORD

THESE articles are being written for the help of those photographers who are already established in business, and if suggestions are made by me which seem to indicate a complete upsetting of any studio, I would say that such changes as seem necessary be made conservatively and always well within the earnings of the business.

It has been my desire to treat each subject as simply as possible and to put my ideas into plain English. Therefore, I hope it will be found to be wholesome reading matter that can be understood by all.

Fixed rules have been avoided in most cases and are only used when they apply to general conditions.

The psychology of the studio has been touched on to some considerable extent, and my reason is that all modern business houses are studying in this direction and are supplying methods prompted by such study. The modern salesman uses brains as an asset, not the bar and the billiard cue.

No formula for developers has been recommended, as this branch of the work is entirely dependent on local conditions, and a suggestion by me would only apply to my locality and might not suit in any other.

You will find that the whole argument is based on the troubles encountered in many studios over the country, and while much of it may not be needed by some, yet I hope that by bringing these things face to face with the photographers they may find points that will help in the general excellence of their work, the improvement of their business, and the economy of their whole establishment.

We photographers often think we are very busy, when we are really flitting from one spot to another, taking up more time in running here and there than we do in actual work. So I have written down, for the benefit of those who wish to read, a history of troubles, largely gathered from experience and observation.

The man who knows his faults and fails to correct them, is in great danger of losing his perspective.

R. W. P.

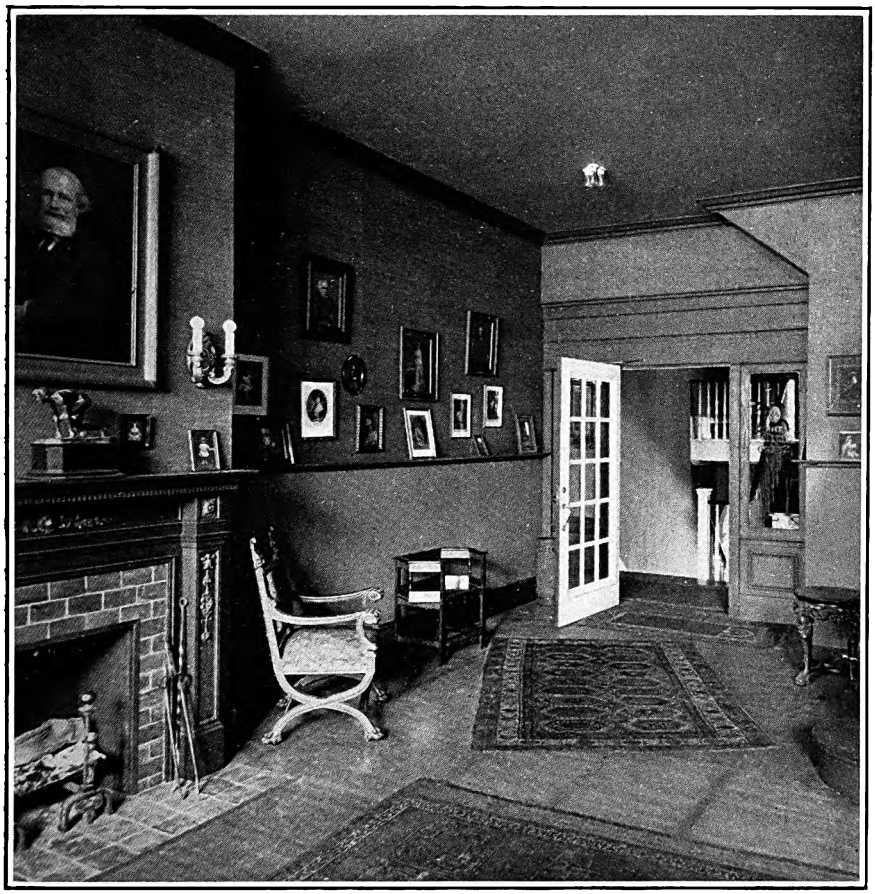
ENTRANCE AND RECEPTION ROOM

The case at the door is so closely identified with the reception room that it would be well to give it a little study, to see what it means and represents.

First of all, the case or display arrests the attention of those passing the studio. It is the bait for business getting. It should be the medium through which the personality and taste of the photographer is first impressed on the prospective customer. Therefore, your showcase must contain your best prints and be made as attractive as possible. It is the "Stop, Look, and Listen" sign for the photographer.

By applying this idea to your entrance, using the words "Stop, Linger, and Enter," you will be taking the first steps toward getting the public inside. The "Stop" is represented by some one thing, easily seen in passing, which will arrest the attention of the passer. To make this passer "Linger," you must have some picture or set of pictures that will make him wish to study them. To persuade these people to "Enter," you must make the whole show so attractive that it will create a desire to look further.

To come down to illustration, I would say, for example, that you have one large color print, of an attractive subject, placed in such a position that it catches



THE RECEPTION ROOM

the eye from a distance as far away as the opposite side of the street. A large, laughing, baby head will do the trick. Place for your "Lingerers" a set of prints of a child, in several different positions, then add a few others of adults. This will give a variety to *hold* the lingerer. Now that you have him this far, one thing that will impress the desire to enter will be a general tone of harmony and neatness in your whole display.

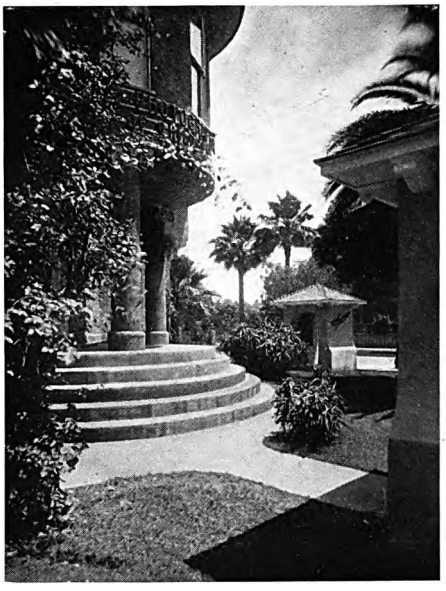
Do not place a case at the door with two or three tones of prints: Keep them all the same tone and let the beauty of good photography do its part. Do not fill the case over-full of prints, and do not try to show everything you make: Leave something to the imagination. I have often seen people come into our studio, after something entirely different from the case prints, just because they were attracted by one picture. These are only examples of ideas and are not given to be carried out literally.

The whole scheme must be done with one thing in mind: Get people to come into your reception room. Succeed in getting them there and you have your opportunity to do business. It is good to hear people talk well of certain pictures at your door, but it accomplishes little if they stop there. If you wish to enlighten yourself as to the affect of your case on the passer-by, go out and look at it from all points possible. See if it is a simple three-point proposition, or does it look like a conglomerate mass of red, yellow, and white spots?

RECEPTION ROOM

There are men in the photographic business who claim that the reception or sales room is the most important one in the whole establishment, but while I believe the selling end of the photographic business to be of great value, I do not believe it is the biggest factor in the success of the studio.

We have studied the showcase at the door and its purpose, so we will now take up the room where our business is transacted.



ENTRANCE TO STUDIO
S. AUNE, LOS ANGELES, CAL.

In considering this room, we should first think of the affect produced on the mind of the new or prospective customer. Have you ever entered a store or office and been so favorably impressed with the surroundings that you were pleased with the very atmosphere of the place? This is just the impression your room should make on the stranger. It immediately paves the way for pleasant business relations.

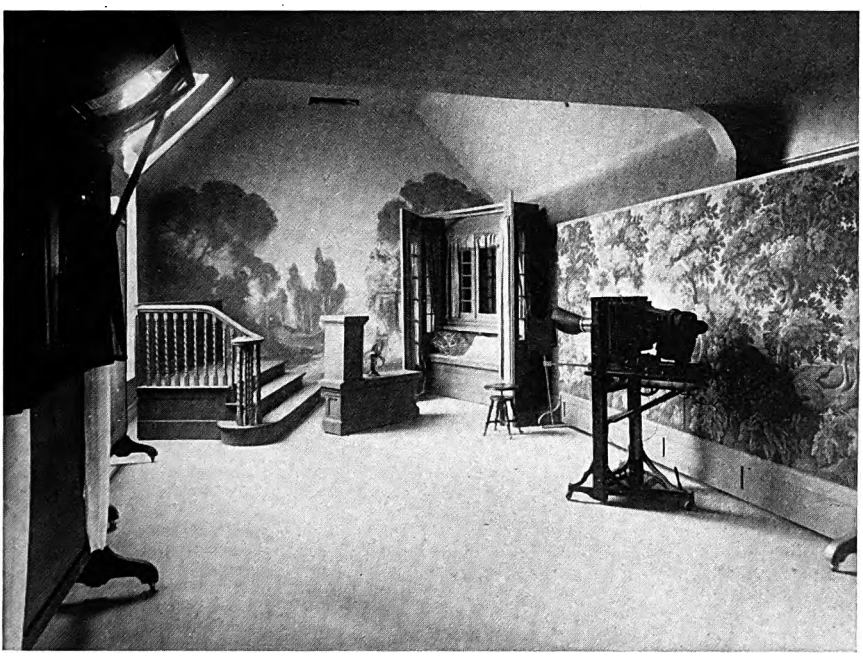
There are many methods of producing this favorable impression, and of course the class of custom in your locality has an important bearing on the general arrangement.

The room for a studio of high-class and wealthy trade will hardly be suitable for the one in a mill district, but there are some rules that are applicable to both classes. For instance, you can have the reception room clean and neat at all times, you can have simple but artistic furnishings, and you can avoid the display of quantities of different kinds and styles of prints. This last is an error that many men make. The effect on the customer is bad: It gives him too much to see and hampers the receptionist in pinning him down to one or two styles of photograph; too many things to see will prevent concentration and you must make it easy for your receptionist to bring the customer down to a decision, regardless of the fact that you may make a variety of negatives when you get to work in the studio.

Keep the walls of your reception room in harmony. Do not place a great variety of prints on them but change often. Have the wall display a part of the general decorative scheme. You will find a few well-selected pictures will attract more notice than a large quantity.

I once visited a studio in a good-sized town and was asked to give suggestions or make changes. The walls contained such an infinite variety of sizes and styles, framed and unframed, that it made my head swim to look at them. We took these all down, selected a few well-executed white-ground prints and hung them around, leaving plenty of space between each. This produced a startling change in the appearance of the room; much to the owner's satisfaction. The result, as I afterward heard from him, was noticed by most of the people who came in, and his receptionist testified that it was much easier for her to show this or that style, from the albums of samples, as "special" things.

The psychology of selling should have all the helps you can give it in your general arrangement. The wall display is a start and the *seating* of the customer will be another help. It is a well-known fact that people can be more easily talked to with their heads up than down; therefore, if you will place chairs in such positions as to induce them to sit when they first enter, while your receptionist



THE STUDIO—S. AUNE, LOS ANGELES, CAL

opens the conversation, you will have gained a point in your favor.

Do not arrange counters and tables so your saleswoman will stand back of them —facing the customer. The effect of talking over a counter is psychologically bad. A person is always complimented to have a salesman in a store come out from behind the counter and inquire for his or her wants. Therefore, arrange your room so that the customer is met on an equal footing with your people. In our own studio, one part of the room is one step higher than the main floor, which enables us to step down to them as they walk in, and we have found this to be a great advantage to us in meeting the people.

Place your office as much out of sight as possible. It may seem like a small matter, but the careful attention to small details has often made a man successful, and placing the office out of sight helps the receptionist to minimize the business side of the transaction. It will often help her to get on more intimate terms with the customer, and she can give you tips, who they are and where from, prior to their coming to you in your studio room. Very often she can inform you that a person admired a certain expensive print, but is not ready to order such a style, and if you know this when you are making the sitting, you can easily take a chance by trying one or two other things on approval. Also, if I know something about the person whom I am to photograph, I have a start for conversation, and the value of this I will take up when writing on the "studio."

In showing styles it should be possible to arrange your samples in such a way that one class of prints can be presented at a time. If one style does not suit, you can then present another and another, in much the same way as a good shoe salesman tries on shoes. Often the first set of prints will not be the ones to appeal; but the receptionist will learn something of the objections to these, and have in reserve samples that nearer fit the taste of the customer.

Never allow your people, nor do you yourself, size up at first sight the pocketbook of the prospective buyer: The man or woman who looks like a *post-card*

sale will often be able to buy your most expensive work if presented in the right way. Always have the *one best* set of prints arranged to present in entirely different form from that used in showing your other styles. It will tend to make the sample-book exclusive, and there are many people who are looking for the thing that seems different. But while planning this, do not forget that these "special" prints should be made of the best-known and most prominent people, as it will convey the idea that they are already being sold to the exclusive set.

As to proofs, *always deliver them when promised.* Make no promises that you cannot live up to. Have your proofs ready, at least, forty-eight hours after the sitting, People are always anxious to see them, and you should not let time elapse for them to forget about it. Do not disappoint them; set a time and make good by sticking to it. Make it a point to request the proofs brought back in person. Many an order is doubled where the sitter realizes that a change can be made in the general effect by careful retouching and etching. Nearly every photographer knows this to be a fact, but few plan ahead to reap the advantage. It costs very little to do up proofs in neat, attractive form, and the presentation of them often helps in starting a favorable opinion.

I would suggest that psychologically the seller's position is different, when the proofs are returned, from when the sitter was a *prospective* customer. At this stage, the sitter wishes to do the talking, and if it is possible the seller should be seated also and assume the attitude of a willing listener. It is the best way to find what the criticisms are and will most always dispel a prearranged attitude of hostility. The receptionist has previously talked with the sitter perhaps two or three times, and is well enough acquainted to seem to be on friendly terms. When one is allowed to talk freely, it does not take long to run dry of caustic language. On the other hand, if the attitude is that of favorable criticism, the seller is in a good position to help along by a judicious remark here and there.

One bad piece of business is for the receptionist to assume an attitude of antagonism, and especially is this true on the subject of resittings. We can seldom realize fully just how proofs appear to the families, and the best attitude to assume is to be perfectly willing to make sit-overs. It will often disarm the most aggressive, and will surely impress customers with the fairness of your business system. When you come to think of it, the second sitting often means an increased order, if it is done with the agreeable spirit of willingness.

We photographers are in business to satisfy people, and if we cannot do it agreeably we are running big chances of failure. The people always have and always will expect courteous and agreeable treatment. We ask it of the people we buy from, and it is necessary that we return the compliment.

One of the great lasting pleasures of a good business transaction is the knowledge of satisfaction given to our customer. Every person who goes from out studio feeling that his money is well spent is an advertisement of lasting value for future business.

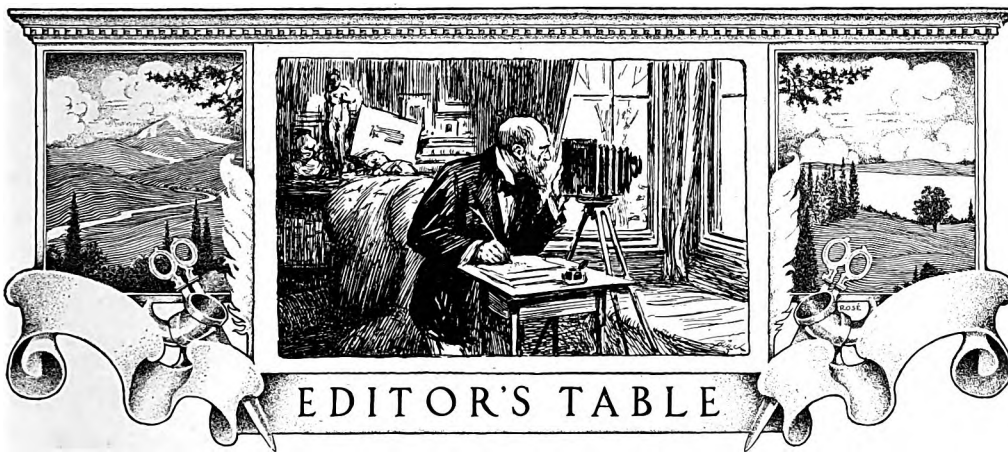
"HONEST thinkers are always stealing unconsciously from each other. Our minds are full of waifs and estrays which we think our own. Innocent plagiarism turns up everywhere."—*Oliver Wendell Holmes.*

IF your work is harder than that of many you know be glad that you have the chance to show your ability and your determination.

LEARN your pace in working and then work at an even pace. It is far wiser than to work by fits and starts.

IT is a foolish thing to quarrel over nothing and wise to stand up for your just right.

A SUCCESSFUL man is coming to mean one who knows how to play the game fair and square instead of one who wins out by foul means.



The Most Important Year

BROADLY speaking, the trend of photographic progress during the past year was toward the technical side and mechanical applications of photography rather than to the artistic side. Nevertheless there was a steady and perceptible advance in the artistic quality of the work done. This could be plainly seen at the exhibitions at home and abroad. "Naturalistic" photography and the "fuzzy" craze seem to have subsided somewhat, and found their proper place. The reaction, though slight, has been altogether healthy, and everywhere amateur and professional workers are putting more art into their work and evincing greater interest in everything pertaining to a higher standard of artistic quality. We see more feeling and observation generally in the pictures shown this year. This is a good sign.

When the picture-maker begins to see things in Nature which the commonplace and unobserving do not notice, and to catch with his camera what he alone sees, then his productions increase in value. Hidden beauty is found, and its interpretations are presented by him through his pictures; then he astonishes his admirers by the revelation of unknown truths and translates for them a language whose charms have been forbidden to them, and then he is looked upon as possessing "poetic feeling." As he goes on he becomes better and better enabled to bring forth the spirit of Nature. May this good work go on among our readers and crown the new year with results which shall redound to the honor of our art. Corot says: "In art, truth is the first thing, and the second, and the third," so if we desire artistic effects we must begin by making a truthful delineation of what we would portray. A fourth necessity seems to be, to *feel* truth as well as see it and represent it. "Nature is bountiful in providing the means of simple and acquired perception, but the latter is the result or long experience and continued effort, though we have lost the feeling of its being a voluntary effort."

Perhaps the greatest *want* expressed in much of the photographers daily work is the quality of naturalness.

The highest usefulness of photography we all know lies in its unequalled power to furnish an imperishable record of events and things which, of themselves, pass and are forgotten, in the irresistible progress of the world. The war abroad has called forth untold opportunities and the war-photographer who has gone to the front, through great obstacles and enormous risks — such brave men as James H. Hare and others — deserve the highest recognition for the important and lasting records they are making for the world at the risk of their own lives.

Commercial photography, with its innumerable avenues for profit, is rapidly coming more in vogue. The

motion-picture industry is increasing by leaps and bounds and is still in its infancy. Through recent appliances, the amateur as well as professional can successfully use a cinematograph. Various color-processes are being successfully worked out. A new process is now announced which, it is claimed, gives remarkably perfect results, and is simple enough for practical commercial purposes, although not suited for amateur work. This process is stated to be a modification of the Ives three-color process, except that only two colors are used—red and green. The process has been perfected by Dr. C. E. Kenneth Mees, connected with the research laboratories of the Eastman Kodak Co., and gives remarkably faithful reproductions of colors, features, and fabrics in portrait work.

Nor can we overlook the new Autographic Kodak, one of the greatest photographic inventions of the last decade. With this ingenious appliance, used with an Autographic Film Cartridge, one is enabled to write on the film, at the time the exposure is made, any notation or record data that may be desired. You merely write the title—it does the rest.

Never before in the history of photography have the possibilities of our art-science been brought so near to the hands of all who would grasp them as they are today. Enterprise and unflagging perseverance will win, as in years past.

The period through which we are now living, in its display of scientific and artistic accomplishment, is the most broadly significant in the record of photography. And it is the ambition of the JOURNAL to be as nearly as possible representative of the times.

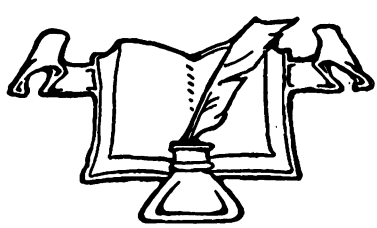
There is no surer road to success than knowledge—the reading of a good authoritative journal, the persistent following of the advances which take place in photography as it progresses, the careful and intelligent study of what passes in the active life of the craft as mirrored in its pages month by month. To be informed is the best assurance of growth and progress.

For over fifty years this JOURNAL has been of real practical help to thousands of readers. And now in its new and enlarged form, and thoroughly abreast of the times, will endeavor to make this the most important year of all.

On this threshold of 1915 let us dwell only in the "cheerful yesterdays and confident tomorrows," and thus insure a Happy and Prosperous New Year.

TO OUR SUBSCRIBERS

THE subscription price of this magazine has been three dollars. With a desire to give greater value to our readers, we are reducing the price one-half. Beginning with this issue the subscription price will be one dollar and fifty cents. Any subscriber having paid the former rate for 1915, will be given full credit for the additional period, and subscription will be extended.



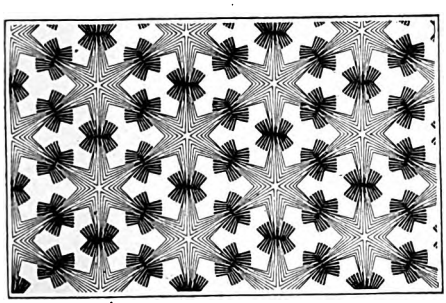
ABSTRACTS AND TRANSLATIONS
BY E. J. WALL, F.R.P.S.

Oxygen Magnetic

If air is cooled down to − 211° C., the nitrogen will become a solid but oxygen is still liquid. G. Claude has found that it is possible to remove the oxygen occluded in the pores of the solid nitrogen by applying a strong magnet, as liquid oxygen is very magnetic.—*Frankfurt Umschau*, 1914, p. 636.

The Photokaleidograph

Dr. Pulfrich, of Zeiss's, has invented a new kaleidograph which gives perfect images of the pretty and instructive figures as seen in the ordinary kaleidoscope. The three mirrors of the kaleidoscope are replaced by a prismatic glass rod, the surfaces of which are silvered and which is also surrounded by a protecting black glass.



The ends of the rod are optically polished. On the top of the rod is placed a small photograph of the object or design with a drop of cedar oil to form a homogenous immersion system, while the other end of the rod carries the objective. The latter throws the image of the object on to a dry plate, but in order to see the image a mirror is inserted between the objective and plate so that the image is thrown to one side on to a ground glass; in fact, it becomes then a reflex camera. As soon as the design is as it ought to be, the mirror is thrown out of the path of the rays and the image falls on the plate. As light source the mercury vapor lamp is used, with a color filter that limits the light to the green ray. The light is placed at right angles to the tube but is reflected down it by means of a mirror.—*Phot. Ind.*, 1914, p. 993.

Some very beautiful designs have been published made by this new instrument, one of which is reproduced herewith. Some years back, Bakett, in London, used a modified kaleidoscope to reproduce designs, but the instrument was rather rough and unhandy. The applications of the new instrument to the manufacture of designs for wall papers and linoleums and so on is obvious.

Selenium Toning

Namias suggests the following toning bath for purple-brown tones on development and bromide papers:

Sodium sulphide cryst . . .	30 gm.	210 gr.
Selenium powder	3 gm.	70 gr.
Water . . .	1000 c.c.	16 fl. oz.

Rub up the salts in a mortar and add the water slowly and then filter. The prints must first be bleached in the usual ferricyanide and bromide bleacher, and after washing immersed in the above solution. They assume a pleasing purple-brown tone. Silver sulphide is formed, with probably a superficial deposit of metallic selenium.—*Il Progress Foto*, 1914, p. 195.

Exactly where the novelty of this comes in is not quite clear. Valenta, some few years ago, recommended the same thing, and a similar solution, patented, has been on the market for some time.

A Tip for Color Workers

At a recent meeting of the R. P. S., E. H. Gamble described a method he has devised for obtaining better rendering of the colors, particularly the greens, in half-tone work. The colored original is pinned to the copy board in the usual way, and a negative taken through the red filter is made of it in a camera which is directed obliquely toward the original, so that it is out of sight of the reproduction camera placed in its ordinary position. The negative thus obtained is replaced in the camera, which is then converted into a projector by the addition of a condenser and an arc lamp, and the green negative image projected on to the original, which is then copied in the usual way.—*B. J.*, 1914, p. 861.

Exactly what is the particular benefit of this process is not quite clear from the above brief report. It is stated that Mr. Gamble claims that it enhances the brilliancy of the greens, but this it can only do by increased illumination or by cutting out the other colors or their visual and photographic effect. I have an ill-defined recollection of a somewhat similar plan being suggested many years back by Professor R. W. Woods, of Johns Hopkins, but I have been unable to confirm that; still I am loth to disbelieve my memory, which is somewhat tenacious of possibly worthless ideas.

The Distar Lens

Zeiss has introduced a supplementary lens or magnifier, to use a familiar term, which is specially designed for the Tessar, so that it converts this lens into a longer focus objective without extra bellows extension. The advantages claimed for this new addition is that it is freer

from distortion than the half or single combination of the usual convertible or three foci anastigmat. Further, by the use of several of these distar lenses any focus can be obtained. It is more convenient in use and allows large images to be obtained with relatively short bellows extension. —*Photo-Woche.*, 1914, p. 8, Heft 52.

Apparently this distar is a negative meniscus placed in front of the Tessar, and would appear at first sight to be somewhat on the same principle as the additional negative lens in ordinary use, thus altering the position of the principal point and the nodal point of emergence.

Home-Made Pyro

Senior calls attention to Thorpe's method of making pyro, and this may amuse if it is not useful to anyone. Gallic acid is very soluble in glycerin, and if such a solution is cautiously heated there is no difficulty in obtaining about 75 per cent. of the theoretical yield. A wide test-tube should be used and 150 grains of dry gallic acid placed therein and 1 fluid-ounce of glycerin added; the tube is then closed by means of a loosely fitting cork, through which a thermometer passes with its bulb immersed in the liquid. The contents of the tube are then heated in a sand bath to 185° or 200° C. Carbonic acid gas will be given off, and vent for this must be provided by cutting a slit in the side of the cork. The heat is continued for half an hour, or till the evolution of gas ceases, and then the contents of the tube are poured into 33 ounces of distilled water, and the result will be a solution of about three grains of pyro per ounce.—*Phot.*, 1914, p. 338.

O D

About fifty years ago Reichenbach (so far as I am aware no connection with him of celluloid fame) advanced the statement that men and most animals were surrounded by a peculiar appearance of light when they were excited by sounds, friction or blows, and many people were found to believe this. The subject was investigated by many well-known scientists, and among others by H. W. Vogel, who tried to obtain photographs of this peculiar phenomenon without satisfactory results. In fact, Vogel came to the conclusion that the appearances were due to quite other causes. Quite recently Dr. Benedikt has been writing on O D and asked Eder to attempt to obtain some negatives. Eder consented and briefly sums up his experiences by saying "an objective proof free from doubt has not yet been obtained by photography."—*Phot. Korr.*, 1914, p. 397.

It may be of interest to add that in 1892 I had the opportunity of carrying out a series of attempts to obtain spirit photographs with the aid of one of the most famous mediums in England at that time, and incidentally the question of O D came up, and I was then introduced to a man who said he could always produce this peculiar emanation at will. I spent much time and more plates trying to obtain results than I now care to think of. In neither case could I obtain anything like an image. I was then told that I was not *en rapport*, and prevented the spirits and O D from acting on the plate. The curious part of the whole performance was that the mediums could see what nobody else could and that the plate could not see. My experiments were dropped merely because I got tired of paying the fees of the mediums and getting no results. I did not know the word "sucker" in those days.

Writing upon Negatives

J. Dunning states that he has found the following varnishes useful for titling negatives:

No. 1		
Gum dammar .	100 gm.	1543 gr.
Benzole . . .	1000 c.c.	33.8 oz.
No. 2		
Gum sandarac .	97 gm.	1498 gr.
Benzole . . .	420 c.c.	14 oz.
Acetone . . .	420 c.c.	14 oz.
Alcohol . . .	180 c.c.	6 oz.

These may be applied to the negative cold and will take ink better than pencil.—*B. J.*, 1914, p. 814.

Silver Nitride Emulsions

J. Bekk has examined the action of silver nitride or hydrozoate, AgN_3, in emulsions. When used for camera work it is too slow and too readily reduced by a developer to be of any value, for it was found to be about 200 times less sensitive than unripened silver bromide, that is a slow lantern emulsion. For printing-out papers, however, it appears to be far more sensitive, but even then it is twice as slow as an ordinary collodio-chloride paper, though this could be lessened by variations of the method of making the emulsion. For a basis of the latter kind of emulsion the following formula was used:

A	
Silver nitrate	3.2 gm.
Citric acid	0.8 gm.
Hot water	16.0 c.c.
B	
Gelatin	10.0 gm.
Hot water	70.0 c.c.
Sodium nitride	0.35 gm.
C	
Tartaric acid	0.3 gm.
Sodium bicarbonate . .	0.15 gm.
Alum	0.2 gm.
Water	14.0 c.c.

B and C were mixed at a temperature of 102° F., and A added at the same temperature in a dark room with vigorous stirring. Prints were made on this emulsion coated on baryta paper, and before toning they had a brownish-yellow color, which was changed by gold toning into a violet or black. When emulsified in collodion the results were very unsatisfactory. the sensitiveness was low and the prints flat. Similar results were obtained when using the salt for salted paper. The use of this salt is protected by a German patent.—*Zeit. f. wissent. Phot.*, 1914, p. 105.

NOTES AND NEWS

Eastman Two-color Process

Rochester, N. Y., Nov. 20.—An exhibition of color portraits by the new Eastman two-color process has been opened at the Rochester Memorial Art Gallery, and an announcement of the perfecting of this new process was made last week by George Eastman. This is the first public exhibition of the new process.

The new color process is said to be the result of years of experiment and research at Kodak Park research laboratory. It is stated that the most delicate nuances of color are reproduced with absolute fidelity.

The great advantage of the new process over former attempts at color photography is not only in the perfection of the work, but also that the art may now be practiced by almost any photographer of ordinary professional experience. The successful photographer in black-and-white now has at his command the means by which may be produced the most delicate, brilliant, and life-like flesh tones.

Dr. Kenneth Mees, of the Eastman Kodak Company laboratories, recently delivered an address at the Memorial Art Gallery, Rochester, on the subject of "Color Photography," in which he said:

"The first real step in color photography was taken by Clark Maxwell in his lecture at the Royal Institution in 1861, when by means of three lanterns he combined on the screen three pictures projected by means of light of three different colors and obtained an approximation to the colors of the original. This method of color photography has since been adopted as one of the very best ones of getting color photographs. A modification if it is that used in the Lumière autochrome process, where, instead of the three lanterns, the whole surface of the plate is covered with microscopic color filters—red, green, and blue—which are made by dyeing grains of starch and then scattering the mixture of the dyed grains on to the plate covered with a tacky varnish, and squashing them down so that they touch each other, after which the sensitive emulsion is coated on the starch grains and the picture is taken through the little filters thus made.

"The objections to this process, however, are the dullness of the resulting photograph and the difficulty of working it, and this latter objection applies to what is known as the 'subtractive' process of three-color photography, in which three pictures taken through three negatives are printed on three gelatin films, which are dyed blue-green, magenta, and yellow, and are then registered on top of one another. Some good slides were shown made by this process, but it was stated that it will always be a difficult one to work.

"The new Eastman two-color process represents a real simplification of this three-color subtractive process, two colors being used instead of three and the two negatives being directly transformed into the partial picture, the red negative being turned into a green positive and the green negative into a green positive, and the two superimposed face to face to make the completed picture. The working out of this process involved a very important and quite new step, the direct transformation of a negative image in black silver into a positive in which the silver of the negative was represented by clear gelatin, and the places that were lightest in the negative by the full strength of a colored dye. It was the working out of this specific process of transforming a silver negative into a dye positive which made the new two-color process possible."

Gustav Cramer Memorial Fund

To honor and perpetuate the memory of a man who stood out before all others during his life as the friend of all men, whose charities were manifold and whose influence in our profession of photography was a big factor in its wonderful progress, it was suggested at the Ohio-Michigan convention of 1914 that a committee be appointed to establish a memorial fund to be used in some manner that would seem peculiarly appropriate to the character of this man, Gustav Cramer.

Mr. Pirie MacDonald, being interested in the matter, called a meeting of the gentlemen mentioned for the committee for November 1, at the Phillips Studio in Philadelphia.

Present at this meeting were Messrs. MacDonald, Ryland Phillips, W. H. Towles, G. W. Harris, Dudley Hoyt, Frank Nobel, Frank Scott Clark, L. B. Jones, and J. C. Abel.

It was decided then to establish this memo-

rial and to proceed to collect funds, the purpose of the funds to be:

The establishment of an endowment of a room in a hospital, preferably in St. Louis, which would be called the Gustav Cramer Memorial.

Various plans for the collection of moneys were discussed and adopted by the committee, which will be made known very shortly through the medium of the photographic publications.

Mr. Ryland Phillips, of Philadelphia, was made the permanent chairman, with Mr. E. B. Core, of New York, permanent treasurer-secretary. Mr. MacDonald was appointed chairman of the Press or Publicity Committee.

The following gentlemen were appointed to the Executive Committee: Messrs. Phillips, Core, MacDonald, Harris, Noble, Clark, Strauss, Stein, Steckel, Walinger, Knaffl, Rinehart, Hammer, and Topliff. The chairman will appoint a larger general committee, whose members will cover the entire country. The affairs of the memorial will be handled for the present by the Executive Committee. The full plans will be made public shortly. Meanwhile those desiring any information can address Mr. Ryland W. Phillips at 1507 Walnut Street, Philadelphia, Pa.

"Be Prepared"

The Why's and Wherefore's Convention of the Professional Photographers' Society of New York will be held in Rochester, February 23, 24, 25, 1915, at Hotel Seneca.

Everything Brand New from Start to Finish.—Something doing every minute. New stunts, new ideas, new (and old) faces. New plans to help you get your share of those elusive dollars during the coming year. An educational convention in the true sense of the word. All the demonstrations, lectures, etc., will be practical.

Warning.—The notices to be sent out about this decidedly different gathering will be few and far between, for the reason that everybody will be so busy preparing to give you "The time of your life," that not a minute can be wasted in giving details of the many good things in store for you from the minute you arrive.

Do it Now.—Get two of your best pictures, size 8 x 10 or larger, framed or unframed, ready to send not later than February 15th, and see that they start on time, otherwise your work will not be represented in the finest collection of pictures ever exhibited at any convention. No judges. No classification. No prizes.

Don't.—Please don't forget the time—the place—and the reason. Jot it down *now* on your cuffs, calendar, hatband, or any convenient place or spot that will remind you each day of this, the best and largest gathering of New York State Photographers in the history of the P. P. S. of N. Y. Sincerely,

J. E. Mock, President.

Composition in Portraiture

By Sidney Allan

The publishers of this well-known and popular book are compelled to announce that it is now entirely out of print, and cannot be supplied until a new edition is ready.

Southern School of Photography
McMinnville, Tenn.

We received the illustrated hand-book of this well-known school, an elaborate and beautiful announcement.

After an experience covering a period of eleven years in the conduct of the Southern School of Photography, the future of this school seems assured, and that it is bound to be a great benefit, not only to those who take up the practice of photography as a profession, but also to the entire fraternity, we feel confident.

To those who might wish further information not contained in this catalogue relative to the Southern School of Photography and the methods used in the rapid advancement of the students, the same will be furnished upon application.

Southern School of Photography,
W. S. Lively, President.

Pictorial Landscape Photography

By Paul Lewis Anderson

Many of our readers are familiar with Mr. Anderson's writings—always suggestive and helpful. This volume from the press of *The Photo-Era*, is worthily printed and forms an interesting text-book on pictorial landscape photography. The author speaks as one having authority and treats on the "subjective side," "subjective technique," and "technical methods." The illustrations are well chosen and add to the value of the text. Price, $1.50, cloth. Supplied at this office.

Exhibition of Pictorial Photographs

An exhibition illustrating the progress of the art of photography in America, will be held in the Rosenbach Galleries, Philadelphia, Pa., from January 18 to 30, 1915.

The exhibition will be under the auspices of the Photographic Society of Philadelphia. This is the oldest society devoted to photography in America, and in organizing and supporting for many years the Philadelphia Salon played a prominent part in the early development of the art of photography in this country.

As the exhibition will have the support of the most progressive artist-photographers, every endeavor will be made in the maintenance of a high standard in prints.

American Annual of Photography

A copy of the 1915 edition of this publication has just reached us, and as usual the illustrations are excellent, having been selected from the best photographic work of the year. There are many articles on up-to-date subjects, such as Small Hand Cameras, Bromoil, Motion Picture Finishing, Home Portraiture, etc. Copies can be supplied through this office for $1.50 each.

THE SPECTROSCOPY OF THE EXTREME ULTRA-VIOLET, BY THEODORE LYMAN

London and New York: Longmans, Green & Co. Price, $1.50.

THIS work forms one of the excellent series of monographs on "Physics" in the course of publication, under the editorship of Sir J. J. Thompson and Dr. Horton. Professor Lyman's reputation in this particular department of spectroscopy is such as to lead one to surmise that we should have an authoritative work, and with justice. In his preface he is tempted to offer an apology for a work on such a limited subject, for he deals with that portion of the ultra-violet discovered by Schumann, extending beyond wave-length 2000; but no apology is needed, for the work is a monograph in the strictest sense of the word and therefore all the more valuable. If one may be permitted to find fault, it would be with reference to the author's proneness to refer to text-books rather than to the original communications. This may be ligitimate, but it does not give one a clue to the original communication, which is often more valuable.

The book opens with an historical introduction that emphasizes the value of photography, although the author does not specifically point this out, but he makes up for this in the later sections of the book.

Practically, Professor Lyman divides the subject into two sections: Part I, dealing with the photometry of the ultr-violet and the absorption of gases and solids, which is an extremely valuable collection of data. In fact, I can recall no book that puts into such concise form the absorption data for this region. Part II deals with the apparatus and methods of investigation, emission spectra, and photo-electric and photo-abiotic phenomena. This section is based on the author's work at Harvard and is, therefore, all the more practical and valuable. Numerous tables of wave-lengths, a bibliography, and a list of Schumann's writings on the subject are included. There is in this section the only typographical error that I have found, and that is the use of "sulphate" for sulphite of soda. The style is pleasing and the subject made interesting even for those not specifically engaged with the subject.

E. J. W.

IT is now planned that the Third Annual Convention of the Photographic Dealers' Association of America shall be held in the New Grand Central Palace, New York, from March 27 to April 3, 1915, and that in connection with it there will be an International Exposition of Photographic Arts and Industries open to the public. Full information will be given later.

AN OPPORTUNITY

GENTLEMEN: Our new No. 19 Bargain List is now ready and in this list we are offering our customers, entirely free, a year's subscription to their favorite photographic magazine. There are no strings attached to our offer and in doing this we have two objects in view:

We believe that a man getting a magazine through us each month will always remember us for twelve months in the year. Second, it will increase the circulation of the different magazines, thereby doing us more good in our advertizing and also helping the entire fraternity.

I believe our scheme is entirely new—and we make no extra charge on the instrument that the customer purchases. We are going to be absolutely fair, as we are in all our business transactions, and we are not going to suggest any particular magazine—that will be left entirely to the customer, but if you have any way in which you can get the customers to select your magazine, it is all the same to us to whom we pay.

NEW YORK CAMERA EXCHANGE,
108 Fulton Street, New York.

DEVELOPMENT

A WRITER in *Camera Craft* says: "I have had experience with many developers, but my favorite is pyro, used in a tank. It gives good, crisp negatives, the kind that give the best results on developing paper. Of course, one hears a great deal about the stains that pyro gives, but this is mainly a matter of using a tray. Substituting the tank and, while the negatives may not be as pleasing in appearance, the results, the prints, will be highly satisfactory."

LARGE ENLARGEMENTS

Now that anastigmatic lenses are so commonly used for enlarging, the defect of biting definition is frequently seen, particularly in very large portraits. Whatever may be thought of the fuzzy effects so often seen in photographic exhibitions a few years ago, and not entirely absent nowadays, there can be no doubt that diffusion of definition is preferable to absolute crispness when we get to such large sizes as 20 x 16 and over. Particularly in this sharpness objectionable when, as sometimes happens with a slightly underexposed plate, there is a slightly lighter edge on all the light tones abutting on heavy shadows. It is difficult to avoid this sharpness because it is not an easy matter to decide in the enlarging room from the image on the easel just how much the image may be thrown out of focus. Nor is a small trial strip much help, for the effect of such cannot be gauged by holding it at the distance at which the completed picture should be viewed. Experience must, to a great extent, be relied upon, and so some method should be employed which allows of a certain effect being accurately repeated. The racking in or out of the projection lens is one such method, provided the same stop is always used and the racking is proportional to the greater conjugate focus. Another method is to hold in front of the lens a sheet of thin, clean patent plate-glass, and gently to swivel this so that the rays pass through it not quite at right angles to its surface. With all such methods some little experimenting is needed to obtain the most pleasing results, but the end usually justifies this experiment—*British Journal of Photography.*

PRACTICAL POINTS

A Printing Frame for the Busy Photographer

The following describes a printing apparatus adapted to the need of the professional photographer or amateur who does a large amount of printing in a locality not supplied with gas or electricity. It is intended to be used for daylight exposures and is quick acting. The frame is described first; then the method of locating and installing.

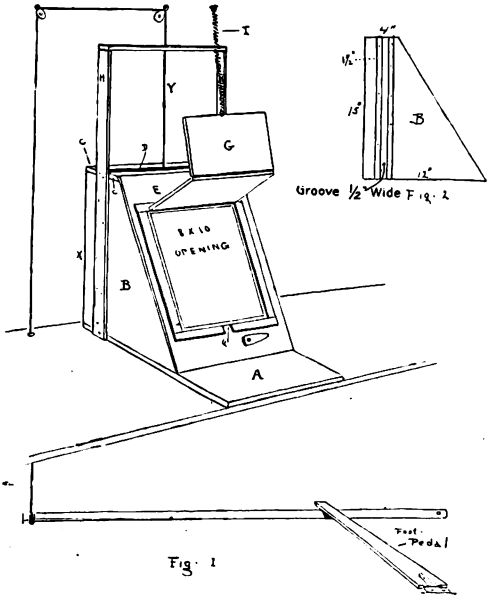


Fig. 1

Fig. 2

First procure a piece of ¾ inch material, 18 inches long and 12 inches wide, for the baseboard *A*. To this nail two pieces, *B*, the shape and dimensions of Fig. 2; the back edges *X* coming flush with the back end of the base, the slanting edges being to the front. This forms three sides of a box-like structure across the 4 inches in top of which are nailed two pieces, *C*, 1½ inches wide, arranged to leave an opening or slot, *D*, ½ inch wide. On the inside of each side-piece, *B*, fasten with brads two small strips as in Fig. 2, forming a groove ½ inch wide to coincide with slot *D*. The top-piece *C* is beveled to fit the front panel *E*, which is made with an opening in the center 7¾ inches wide by 9¾ inches high. Around this opening nail strips far enough back from the edges to receive an 8x10 glass or negative. The bottom strip has an opening, *F*, 1 inch wide left in it to facilitate lifting out the glass. Now procure the front of an ordinary 8x10 printing frame, *G*, and hinge it at the top of the opening in front panel. At the bottom of the opening secure a button to hold *G* firmly in place when printing. Now directly opposite the ends of the slot *D* nail a scaffolding, *H*, to the sides of frame as shown in the sketch. The top of the scaffolding is 12 inches above the slot *D*. Make a frame of ⅜ inch material 14 inches high, and of a width to slide easily inside the grooves inside the sides *B*, and cover this frame with orange paper. Where it rests on the baseboard tack a piece of felt to deaden its fall.

As to the location; if possible select a window with a southerly exposure and board up half of the lower sash, leaving an opening just large enough to fit snugly around tbe back of the frame (see drawing). The other part of the sash should be fitted with a ruby glass or covered with heavy orange paper. Fit the top part of the window with an opaque shutter, hinged at the top to allow shutting out the light or not as may be necessary. Build a shelf or bench on a level with the window-sill to support the frame, and when in place fasten a flexible spiral spring from the hinged cover *G* to some convenient point on the window-frame. This spring, *I*, is to hold *G* up and out of the way when changing negatives or paper. From a screw-eye on the top of the sliding frame in the grooves run a cord, *Y*, up over pulleys and down to a foot pedal as illustrated.

To operate, the negative and paper are placed in the frame and the cover brought down to bear over them and buttoned as ordinarily, the the sliding screen is raised by pressing the pedal, the required exposure made, and ended by releasing the foot. The operator, seated at the bench, can thus with little effort turn out a remarkable number of prints. One of these printing frames has been in actual use for a number of years by a professional photographer and gives the best of results, being rapid and sure.—*Lawrence B. Robbins.*

Soft Vignettes on Bromide Paper

Use a serrated vignetting card, which is easily made by cutting out of corrugated board with a sharp knife, holding the knife at an angle of about 45 degrees. This automatically serrates the card owing to the corrugations, and with no additional trouble.

Trimming Prints

As a cutting board on which to lay prints when trimming, a piece of ordinary cork carpet is an excellent thing. It lasts a long time before the surface becomes seriously cut up, and has no effect on the knife when trimming.

To Remove Silver Stains from Negatives

To remove the brown silver stains due to damp contact to silver paper with a negative the following is recommended: Place the negative in a dish of old hypo, cover it up. If the stain is an old one it may take a week; if recent, one to four days; but the cure is certain. Examine day by day; when perfectly clear, wash well, and the stain has gone for ever. The hypo will not soften or reduce the negative.

To Cleanse Paper Prints

Bromide of silver, platinum, or pigment prints on rough paper, that have become soiled, may be cleansed in the following manner: Make a thin paste of common starch in cold water and apply it with a soft brush to the face of the soiled picture, which is first spread evenly on a clean glass plate. After allowing it to remain for about ten minutes the starch is removed by washing with running water. For this purpose a short piece of rubber tubing attached to the faucet, closing the free end with the finger, is excellent. If the dirt is not all removed the first time the operation may be repeated.

The Best Work

A man or woman, in public or private life, who ever works only for the sake of reward that comes for the work will in the long run do poor work always. I do not care where the work is, the man or woman who does work worth doing is the man or woman who lives, breathes, and sleeps that work; with whom it is ever present in his or her soul; whose ambition it is to do it well and feel rewarded by the thought of having done it well. That man, that woman, puts the whole country under an obligation.—*John Ruskin.*

A New Sepia Toner

The following formula will give fine sepia tones by a single solution process. Immerse the print for twenty to thirty minutes in a bath compounded of:

Arsenic acid 10 per cent. sol. .	1 oz.
Citric acid	1 oz.
Potassium bichromate . . .	1 oz.
Water	12 oz.

Air-bubbles in Lenses

Small air-bubbles in a photographic lens are in reality a mark of quality, just as slight flaws in some precious stones signify genuineness, for optical glass which is sufficiently clear and homogeneous cannot be produced without them. In the manufacture of the famous Jena glass the various elements used must be heated for a given length of time and to a certain degree, the process being stopped at just the right moment whether all the air has been driven out or not. There is no alternative.

The manufacturers discard all but those portions best suited to lens-making and the lens-maker in turn examines all glass both in the rough state and before the lenses are sent out as a finished product. All sections are rigidly made and actual tests prove that small bubbles in lenses, whether single or grouped, do not interfere in any way with the perfect work of the lens. The actual loss of light is inappreciable and the presence of these bubbles, even if near the surface, has no effect whatever on the optical quality of the image.

A Simple Reducer of Excellent Quality

Whenever a negative is to be reduced, especially only to a small extent, the photographer will weigh the matter over well before attempting the operation. The red prussiate of potash and hyposulphite of soda reducer of Farmer is nearly always adopted; sometimes ammonium persulphate is used. For a slight and uniformly even reducer the following preparation, which was worked out by the writer, answers the purpose admirably. The color of the deposited indigo becomes changed to a brown, but this forms no detriment. The testing of the solution is made several times during one month. The action is slow but uniform, the shadows are not destroyed as is the case with some reducers. The following are the proportions of the salts used that were found to be best united:

Water	8 fl. oz.
Perchloride of iron (crystal) .	2 dr.
Oxalic acid	4 dr.

As soon as the perchloride and the oxalic acid are dissolved, which may be hastened by shaking the bottle well, the mixture will be ready to use. All that will be necessary to complete the operation will be to wash the negative well for fifteen minutes, then dry, when it will be ready for printing.—*Alfred J. Jarman.*

Replies to Queries

K. Franklin: The flashlight powder you mention in your letter is a very dangerous one, owing to its containing sulphide of antimony. The following composition, for stone burning, will give a powerful actinic light suitable for underground illumination and at the same time is quite safe:

Powdered shellac	2 oz.
Powdered magnesium . . .	2 oz.
Nitrate of baryta	½ oz.
Potassium chlorate	1 oz.

Mix with a bone knife; place the mixture in a tin or zinc box, ignite with a taper or match, by placing three or four matches in the mixture as a wick.

Watson Smith: The varnish you inquire about for ferrotypes is made as follows and used cold: Benzole made from coal-tar, 4 fluid-ounces; gum dammar, 100 grains. As soon as the gum has dissolved, filter the liquid through absorbent cotton. Cover the funnel with a glass plate during filtration, and be careful that no flame is brought near it, as it is very inflammable.

B. Philips: Your inquiry, as to how you can test the presence of hypo in the wash-water of prints, is answered by the following reply: Take 8 grains of potassium permanganate and

7 grains of caustic soda and dissolve them in 8 fluidounces of distilled water; add 3 drops of this mixture to 4 ounces of distilled water; then allow the water from a fixed and washed print to drip into this. If a trace of hypo is present the liquid will turn to a pale greenish-brown; if no hypo is present the faint pink color of the liquid will not change.

Light Sensitiveness of Mercuric Oxalate

In 1879 Eder suggested the use of a mixture of ammonium oxalate and mercuric chloride as an actinometer, and this has been in general use ever since. In 1909 Winther found that the addition of very small quantities of pure ferric chloride considerably increased the sensitiveness of the light reaction. Eder has again examined the action of light with the pure mercury salts, and finds that on pure mercuric oxalate 99.7 per cent. of the action can be ascribed to the action of the ultra-violet rays. The addition of 0.0025 per cent. of pure ferric chloride increases the sensitiveness about 120 times in diffused light, but in strong direct sunlight about 85 to 100 times more than in diffused light. Eder finds that the addition of ferric chloride increases the sensitiveness of the mercuric oxalate to the visible spectrum by about forty times. The conclusion to be drawn from this is that for estimating the action of the ultra-violet alone the pure mercuric oxalate is preferable.—*Zeit f. wissent. Phot.*, 1914, p. 172.

To Carry Wet Negatives

If wet negatives are to be taken for any distance, or sent through the post, they can be protected from all damage by being packed in pairs (or, if singly, with a plain glass), face to face, the films separated by means of the little slips of card used by the plate makers. The inner wrapper should be of wet paper to prevent drying from beginning, as this might lead to drying marks. As soon as possible, they should be unpacked and dried in the usual way. It would be a wise precaution to use a bath of formalin one part, water nine parts, the last thing before packing them, as this would minimize the chance of decomposition of the gelatine commencing.

Hot Solutions

Much of the difficulty of mixing hot solutions may be overcome by the use of old jam-jars. They will stand almost any heat short of boiling point, and are easily kept clean. The large glass jars answer best. I have some, with the measures marked in different colors for each solution, which have lasted me for years.

Printing from a Thin Negative

From a negative too hopelessly thin to print in platinum, or even to produce a P.O.P. print which can be toned, I have made many faultlessly-printing negatives by using an untoned glossy P.O.P. half printed from the thin negative. This delicate, evanescent print can be photographed, using a slow commercial plate, and the finest gradation of tone obtained in a strong-printing negative. A further advantage of this method is the possibility of enlargement at the same time.

It is obvious that the untoned print must be kept from the light, except during exposure of the slow plate, focussing being done from a piece of newspaper, cut the exact size of the original, placed under the glass of a printing frame.

Strong Prints from Flat Negatives

The prints are fully exposed and over-developed, fixed, and washed.

They are then placed in the following iodine bath until whites are strongly blue, and then fixed for five minutes.

IODINE BATH

Potassium iodide	30 gr.
Iodine	3 gr.
Water	10 oz.

If not sufficiently lightened, the print may be washed, and the process with bleaching bath and hypo repeated.

A Powerful Developer

A correspondent wants to know what is the most powerful developer of which we know, and asks that a formula be given. An authority in England, T. Thorne Baker, gave the following some years ago as being the most rapid, and one that would work wonders with under-exposed plates:

Metol	¼ oz.
Sodium carbonate	1¼ oz.
Sodium sulphite	1½ oz.
Water	20 oz.

This is to be used full strength, and without the addition of bromide.

Blue-print Paper

For the amateur who wants to make his own blue-print paper or cloth the following formula is recommended:

A

Red prussiate of potash	100 gr.
Water	1 oz.

B

Citrate of iron and ammonia	125 gr.
Water	1 oz.

Dissolve each in a separate bottle, using cold water, and for use take equal parts. Coat unruled paper with a small sponge.

Brilliant Prints

Developed prints, bromides and others, when wet, have great brilliancy and charm, but when dry are often dull and lifeless. To restore the brilliancy, apply to the dry print, with a brush, this varnish:

Gum sandarac	1 oz.
Oil of lavender, true	½ oz.
Alcohol	8 oz.

Such treatment is, of course, not always desirable, but certain kinds of subjects appear more pleasing when so treated.

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W. H. PORTERFIELD AND HIS WORK

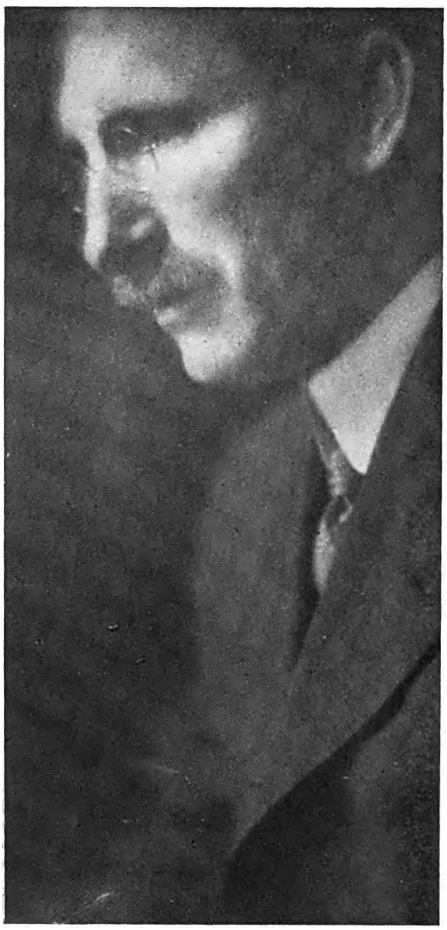
AN APPRECIATION

By SIGISMUND BLUMANN

ONE may expect the very worst sort of "an appreciation" of a great man's work from either his best friend or his worst enemy, for the former is likely to slop over in praises and the latter to envenom the subject with his own feelings; both procedures doing the matter in hand injustice. So, too, the best critical article may be expected from a writer who, being neither blinded by affection or hate, having a knowledge of the art or science which constitutes the output of the man of whom he writes and a command of the language, sets out determined to tell truths courageously and do justice.

This prologue puts me out of the picture on every count. I am not an intimate friend and certainly not an enemy of Mr. Porterfield, but then neither have I a wonderful knowledge of photography or English. However, modesty having been paid her tribute, if the reader will accept an assurance of my absolute and fixed purpose to be truthful and just, I shall tell what I know and what I think of Mr. W. H. Porterfield and of his work in photography.

First, then, you shall be told that he is radical to the uttermost. Not only does he believe that a negative may be worked upon to any extent, that the print may be doctored still further, that an enlargement may be brushed up, crayoned, and otherwise manipu-



W H. PORTERFIELD

lated, and another negative made from the enlarged print, but be believes one or all of the methods of improving are essential to the obtention of the highest art in pictorial photography. To the writer this is astigmatic. It is dangerously like denying a place for photography in the fine arts, since the only way of getting it so classified is to prop it and bolster it and jockey it with the tools of other branches of art. It is my belief that a picture is a work of art no matter how much nor how little it has been reworked: Even if it has been left as the lens saw it. Some great work has been done by men who composed on the ground-glass and who got their modelling, lighting, atmosphere, planes, etc., with aperture, exposure, and development. Yet, be it said, Porterfield, resorting to any and every method of gaining a desired result, does gain it. It does not prove his contention, but it proves him a master. Sometimes it has seemed to me all of his greatness was needed to render acceptable the amount of handwork he puts into his work. The greatness is there, always.

An amusing story is that of an argument sustained at long range between Mr. Porterfield and myself some months back. One of us happened to wish the prints of a famous European marine photographer might be enlarged. The statement was made that a print that was not improved by enlarging was not worth making. The other held that a miniature in photography, no less than in painting, might be a great work of art, and that a picture that needed enlarging to be worth something was not worth anything much to begin with. You see, one of us worked in large sizes and the other did no work worth mentioning. The one with truth on his side had the best of the argument and we are now in the state of readiness to debate which side had truth as an ally.

The biography of a living artist begins with his first work; of a photographer with the first camera he owned. Salon medallists pass up through all the stages of single meniscus, rapid rectilinear, anastigmat, diffused focus, and back again to R. R. and wide-apertures, but the very first camera is historic, potent, immortal. It is the first child to the mother of a large family, the first effort of flying to the birdling, the first empyrean flight in the new aëroplane. That six dollar view-box which we worked without milled-head ratchets, and without other shutter than our own hand, and a velvet-lined cap for the lens—which by the way had that romantic disk of Waterhouse stops—the leaky plate-holder trap over which we so carefully kept the all-enveloping focussing cloth, also of velvet, the tripod so generous in timber, oh! all this and that which means nothing since the Reverend Goodwin and the worthy Eastman

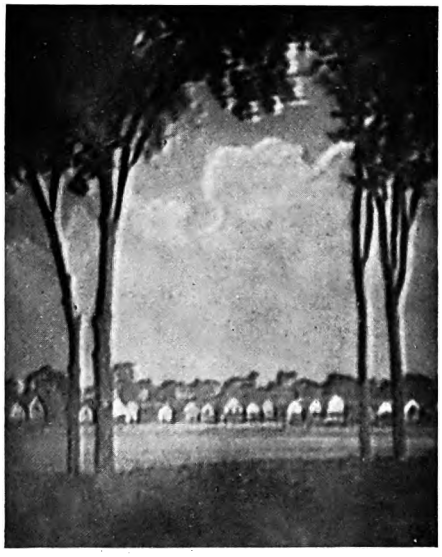
"THE PLAIN OF CHECK-TO-WA-GA" (6)

got busy. The instrument, the materials, the use of them, the pleasures, the aggravations, are all so merged and blended in a sort of mental moonlight that it is to be gently condoned in the writer the mixing of his figures of speech. You who remember the days of wet plates, the elder Wilson, and Dundas Todd, can feel with me.

We return for this short time to the ancient days when men focussed sharp, and, lest some detail be lost, printed on glossy paper and then squeegeed on glass or ferrotype plates to get an enameled surface that should bring out every line needle-sharp; when every available way of getting and retaining their sharpness was exhausted, the opticians worked out new lenses that got still greater detail and more sharpness and sold their glasses at fabulous prices. That shows what men thought of all this fine focussing. They paid fabulous prices not for speed, mind you, but for details. The speed proposition came later. It came with the need for it. In the days of Waterhouse stops, the lightning express thundered through Albany as fast as thirty miles an hour, and on sunny days one could get that at 16. Then, too, enlarging was off color those times. It was in the province of the solar printer to make enlargements for a most questionable trade, but the pictorialist got in every line and leaf and branch and spot, and got them fine. To lose any of this minutiæ were to have sacrificed that for which fine lenses were made and careful focussing done. Get this mood. Inhale it deep.

Now wake. This big noise is the extremist at his worst. The Fuzzy-wuzzy has evolved and in a day has grown to enormous proportions. It is rampant. No lens can give effects broad enough. The pinhole insists on showing recognizable features in the picture, so it is discarded for a hole big enough to shy an apple through if you are a good shot. Every degree of evolution is a cataclysm. Sometimes, as in the Geological, these cataclysms are so protracted that to the short-lived human they pass unnoticed. But in human effort such an activity

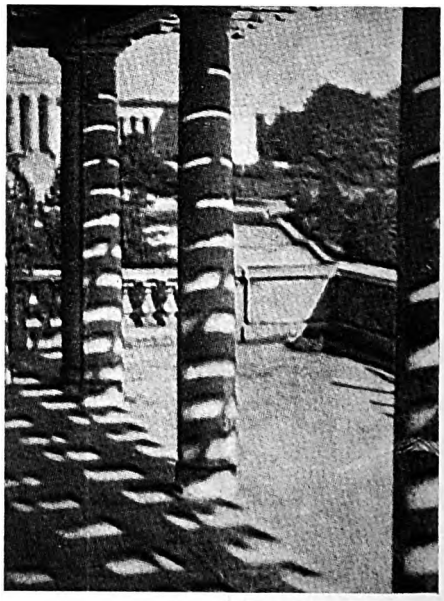
is tremendous. Real pictorial photography was coming with travail. Men were beginning to think the camera and all the marvels of sensitive mediums might be made to convey thoughts and emotions as subtly and effectively as could chisel, pencil, or brush. Temperament surged to the front and in a sudden access of power went mad for



AN OLD-FASHIONED LANDSCAPE (5)

a while. The old school laughed, scoffed, condemned, abused, and died. It was a sad day for glossy albumen when the new-school pictorialist found he could sensitize Whatman's roughest tooth paper and enlarge thereon an already fuzzy 5 by 7 to an heroic 22 by 28 with whiskers on every outline and the high-lights running into the shadows like one watercolor brushed on before the other had set. You remember those times, too, dear reader. As many more of you than can recall Dundas Todd in his youth. And we are getting close to our subject: Porterfield and the Buffalo pictorialists are in sight.

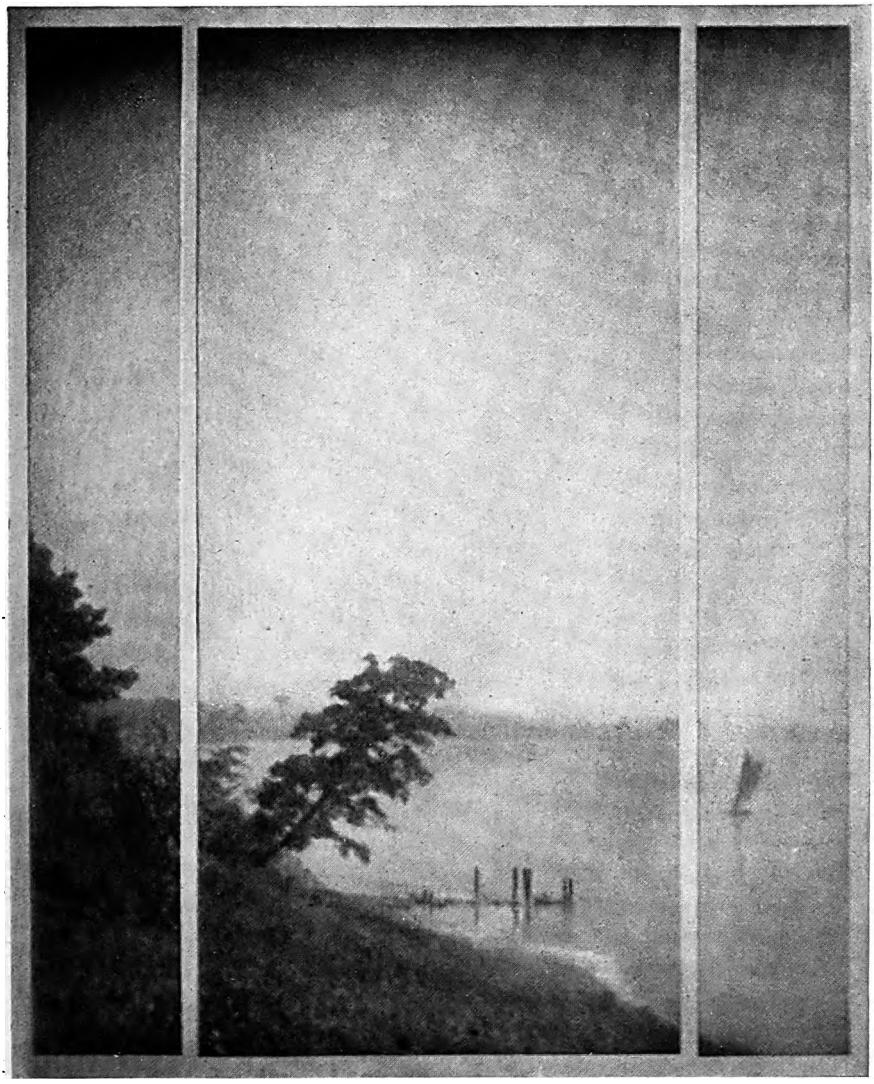
From the heterogeneous mass of fuzz, with an intention lost somewhere in the mess, something was bound to come: Something good, for the intention was good. An effort grew to make smudges and masses of black and white mean something, not merely suggest. Slowly the pendulum swung back toward detail, and it is now being held with the force of a vast contingent at the point where it belongs, or near it. Photography has evolved into a fine art. And to those who brought it there and whose efforts keep it there, we owe tribute. If I refuse to accept their extremes as essentials, let them be assured my appreciation for what they have accomplished and are accomplishing is not the less adequate. I have in print paid my little modicum of a great homage due to William Norrie, Mrs. Nancy Ford Cones, and others. Here and now, I hand Mr. Porterfield both the palm of peace and a laurel. I might flatter him more and do him less justice. His merits need no enlarging and his defects are probably best known to himself.



"A STUDY IN POST" (4)

Having bounced over photographic history, hitting the high spots and arrived at today, let us know something of the man whose name is the subject of this ramble. We shall begin with his first camera.

It was a Korona, 4 x 5, and cost $11. This is definite and was twenty-six years ago. And by a coincidence Mr.



LANDSCAPE BY W. H. PORTERFIELD
LONDON SALON, 1914

Porterfield was just twenty-six years of age when he decided, after long consideration, to buy himself a photographic outfit. Just what use was made of this outfit I have not learned to my entire satisfaction. With the modesty of able men, friend Porterfield resorts to phrases that please but do not satisfy when asked for particulars. We are assured that he wasted but few plates on "children, dogs, etc.," and that he had earnest ambitions from the start. Now, I doubt these assertions. As a judge of character I should say he began with great hopes but most indefinite ambitions. At that time pictorial photography, as we know it, had not been conceived, and accepting his present inflexible standards of his art, it must follow that the pictures he made, whether of children, dogs, landscapes, or whatever, were plates wasted,

"THE HIGHWAY OF THE SEA" (1)

except inasmuch as they conduced to knowledge, technique, and facility. I should like to see a few Porterfield prints of fifteen years ago.

Following the Korona came a Graflex; a step probably meant toward the practical and remunerative; it led to greater things, however: The visible image, seen right side up and under conditions that permitted of comfortable study, must have begotten the spirit of inspiration. This is a tenable assumption, since a soft-focus lens made for him by the Spencer firm was put on and this equipment is still in use. The temptation to rest here and amplify on the lens that makes the masterpieces is keen; but as the writer is firm in a belief that men, not lenses, make great photographs, and as, furthermore, this is not an article on apparatus, we shall briefly tell that Mr. Porterfield having had something to do with the planning, suggesting, or perhaps in honor of his using this lens continually, the glasses have been named Portland lenses (Porterfield, minus the field, added to Landscape, minus the scape). It must be a good lens to have served its user so well. But it must have been a master to make it do such work. Let this point sink in well. Without a soft-focus appurtenance Porterfield should have made pictures that win prizes. Paderewski owes more to his brains and temperament, be assured, than he does to the Steinways. By which I mean to convey, now and whenever and wherever space is granted me to do so, that you should save your money from numerous lenses and cultivate your faculties. Put on probation with a spectacle lens and a cigar-box the able pictorialist will make pictures.

After reading an able dissertation of Mr. Porterfield's art in *Academy Notes* (April, 1910), I was prejudiced by an academic flavor of defence and a boastful insistence of the author on the seventy prizes. The number of medals, etc., has, I am informed, accumulated to eighty at this writing and shall probably go on gaining into the hundreds. Empty

"A SUGGESTION OF BARBIZON" (2)

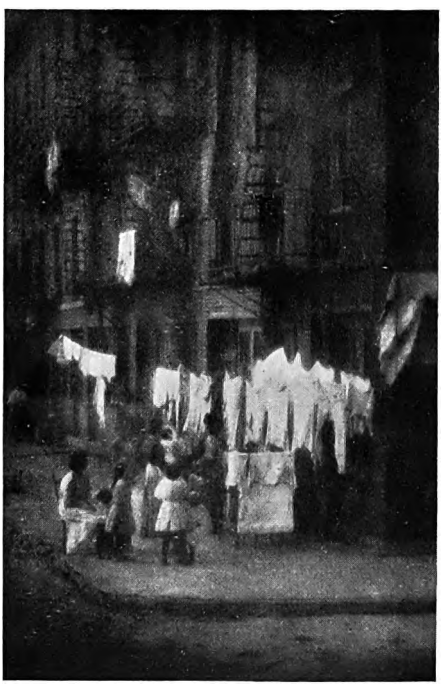
glory for really great work; for Porterfield has vitalized each advance in photography with a personality and genius that, if not always acceptable to his critics, is still a tribute to his greatness. So long as he gives us one, two, or three prints a year that shall serve as advance guards in pictorial progress his radicalism shall need no defence and the medals, whether gold or diamond-studded, shall gain lustre from his possession, not confer an honor upon him.

The first Porterfield print to attract national attention was one called "The Highway of the Sea" (1). It is still a popular favorite.

A direct question as to which of his own prints pleased himself best brought polite evasion. He retired behind the familiar and pathetic, "Can no more choose than a mother from among her children." No, no, Friend Porterfield, I will not be satisfied with that. There have been some pictures which were special joys in the planning, or especially pleasant surprises in the eventuation. Raphael often felt such astonishment when his own completed work stood before him. Be this as it may, and let the secret of his preference remain his alone, the public *has* preferences. Committees on awards *have* preferences. And be it known that the average of many fine intelligences sometimes aggregate one very poor judgment. I have sometimes thought that the wisdom of numerous Solomons might constitute the sense of one common ass. Our Salons have died, are decrepit and dying of poor judgment and too keen a deference for awards. Some such committee influence induced or permitted the Porterfield who gave us "A Suggestion of Barbizon" (2), "Homeward," "Monday—Dante Place" (3), and other classics, to expose his mortal side in such things as "A Study in Post-impressionism" (4), and the "Old-fashioned Landscape" (5). It may displease my friend, this gratuitous censure, but I were less his friend did I not discourage his digression into dangerous byways like this. I would deliver to him the Critique Calomel for the biliousness of mind to

which too much praise and too little judgment on the part of his nearer and sycophantic friends subject him.

"Monday—Dante Place" is truly great. It is great in the message it conveys. It is great in sentiment. It is current with the present. Galsworthy, Brieux, Shaw and the greatest in present-day literature are exponents of the things that are, and as they are. Moreover, this picture goes not one hair's breadth beyond the boundaries of photography and by that very quality proves photography a high art and Porterfield an artist.



"MONDAY—DANTE PLACE" (3)

How I do wander! Well, perhaps a man's work is greater than the man, and therefore more consideration to it than to him is justifiable. But the human interest must be maintained or the reader turns away and the editor puts a blue mark against the author's record. Human interest then. Here goes.

Porterfield is forty-two years old and does not care to have it published. He told me so and hurt me. Is forty-two such a *passé* age? I happen to be forty-two. And Porterfield carries his camera with him wherever he goes. He looks for beauty everywhere and we are prepared to concede he finds it. It takes a poetic eye to see and glorify the entrance to a department store in terms of art. Porterfield has done so. Turning from a picture before me entitled "The Plain of Check-to-wa-ga" (6), with its atmosphere of moonlight to give value and credence to its moon, I read in a letter recently received that his dark-room is a small back chamber where, on a table, are "some bottles and trays." It emphasizes so that the greatness dwells not in externals but in the individual. This artist himself asserts that there are too many among the pictorialists who worship their equipment too much. He confesses to a comparatively elementary knowledge of the science of photography and in his own language says, "A working knowledge of the camera, its parts, and of chemistry is all that is needed." To the manufacturers I commend the following from the Porterfield store of epigrams: "Let the Eastman Company worry about the plates and papers and lenses and such things; our concern is or should be with pictures." And again: "By our pictures we are known and not by the amount of money we have invested."

There is much material at my elbow anent the methods, the developers, etc., data, and what not which may interest the reader; but in this, as in articles that have preceded it of a similar character, I have and in future articles shall strive to convey as best I can the spirit of the worker, not his statistics. Metol-hydroquinon is the same in any dark-room, and dear reader were you to borrow Porterfield's entire outfit, from camera to final fixing bath, and move in his very footsteps, you should be no nearer to his attainments. Study the pictures, study the classics, go forth in your own environments and translate the beauty of things about you in your own way to photographic means of expression. In the degree in which you have the divine spark within you, you shall attain. Like all notable men in the arts and sciences Porterfield as a Pictorialist is not an individual but a lesson, not a personality but an epoch. Let that suffice and may we make much of it.

ANIMATED ILLUSTRATIONS FOR PERIODICALS

BY A SCREEN-PLATE PROCESS[1]

IF you were to open an illustrated weekly or your favorite magazine of current events some day, and before your very eyes should see a platoon of marines storming a Mexican parapet in an animated picture of the event, it is likely that you would accept the illusion as punishment for your imprudence of the night before. In the not very distant future you are going to see this very thing and you are going to pinch yourself into a realization of the fact that it is neither a nightmare nor an illusion. Fanciful as the idea may appear, it is surrounded with far less of the improbable than was contained in the public mind at the first mention of the possibilities of the telephone, the kinetoscope or wireless telegraphy. The portrayal of current event by means of the animated illustration is assured without adding bulk or the annoyance of a mechanical contrivance to the periodical of tomorrow. The illustrations will simply move—that's all—without effort on the part of the reader or the assistance of apparatus.

Alexander S. Spiegel, of Chicago, recently has accomplished results by photography that guarantee the fulfilment of the prediction in every detail. The invention has passed the experimental stage, the manufacturing plant is in operation, the camera that produces these wonderful results is in the hands of the photographer, and today, if you choose, it is possible to have a portrait of your countenance showing the animated passage of a broad grin to a deep frown.

The feasibility of applying this idea to the production of animated illustrations for the popular magazines already has been considered.

The simplicity of the idea is one of its most valuable features. The motion photograph is a composite picture (Fig. 1) produced by successive exposures on the same plate. Therefore, a half-tone reproduction of the photographic print would be of the same nature, requiring but one impression to secure an animated illustration of any scene of action, no matter how complicated.

The methods employed in producing these results can be best illustrated by referring to the various mechanism of the motion camera shown in Figs. 2 and 3.

FIG 1

Fig. 2 is a back view of the camera with its cover turned back to show the method of adjusting the sensitized plate, which may be any one of the standard dry plates used in ordinary commercial photography. In Fig. 3 we have a similar view showing the sensitized plate covered with a transparent glass screen consisting of a series of parallel opaque lines each separated from the other by a clear space of about one two-hundredth of an inch in width. It is obvious that in making a single

[1] By courtesy of *The Inland Printer*.

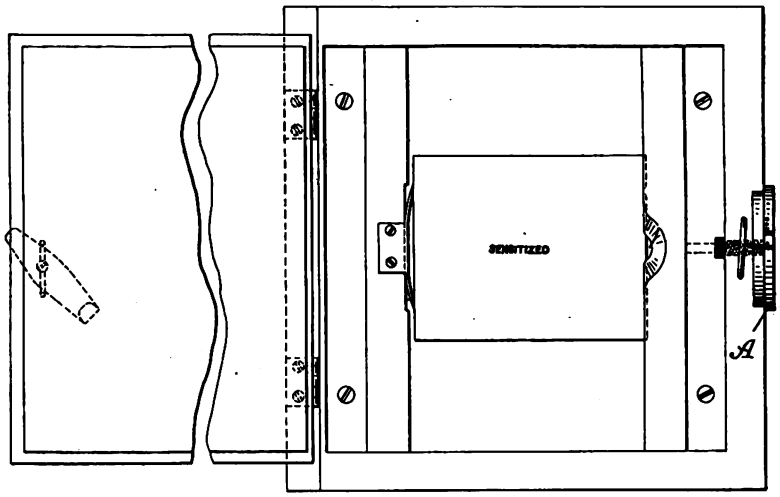


FIG. 2

exposure, only the exposed portions of the plate between the opaque lines will be affected by the light. Let us say that the opaque lines are three times as wide as the open spaces between them. In such case, the first exposure would affect only one-fourth of the area of the sensitized plate. A screw, micrometrically accurate in its adjustment (*A* in Figs. 2 and 3), is used to regulate the movement of the screen forward one two-hundredth part of an inch so as to bring the opaque lines to cover all portions of the plate previously exposed. This operation is repeated successive times to cover the full action of the picture. By this method from two to four exposures can be made on the same plate, limited only by the relation of the width of the open spaces to the width of the opaque lines. A print from a plate exposed in this manner resembles Fig. 1, which is a composite of a man in the act of tipping his hat. If this composite were separated to show each individual exposure, the result would be as illustrated in Figs. 4, 5, and 6, the successive stages of the action. The photograph is made animate and operative by registering over its surface a transparent screen, also containing opaque lines, which must be an exact counterpart of the glass mask used during exposure of the sensitized plate. The screens for the finished photographs are of a very thin, transparent celluloid, attached in such a manner that the slightest movement of a protruding portion exposes selective areas of the composite in consecutive order, in this way revealing the action of the photographed subject. This is more clearly

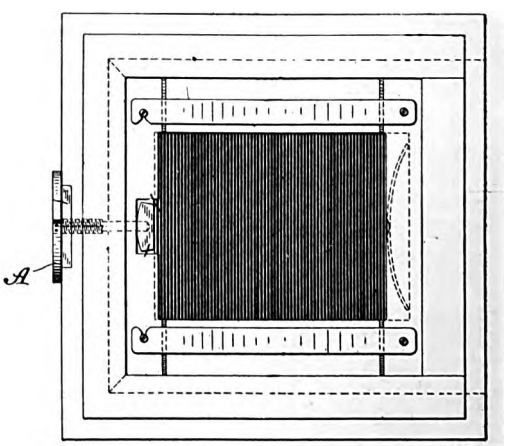


FIG. 3

illustrated in Fig. 7, which shows a young couple kissing in a boat, produced by a composite of but two exposures.

In considering the application of this process to the production of animated illustrations for periodicals, it has been proposed to print a half-tone reproduction of the composite photograph in the

FIG. 4

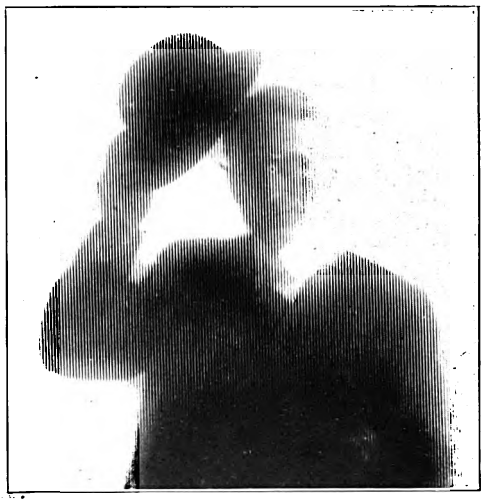


FIG. 5

same manner as though an ordinary one-color process engraving were being used. Animation of the subject would be secured by supplying a printed screen of very thin and transparent paper. This sheet would be attached during binding, similar to the manner in which tissue interleaving for the protection of choice engravings is inserted. The mask would necessarily have to be registered over the print by hand. By gluing this screen in the binding margin, and in the trimmed margin of the book as well, and by allowing the screen lines to cover the print rather loosely while lying flat, it is obvious that the tension brought to bear on the screen in opening the book, or bending its pages, would cause the transparent shield to move to and fro over the print, thus exposing the successive movements of the subject with each two-hundredth of an inch in the displacement of the superimposed sheets. In other words, the mere handling of the magazine in opening, or turning of the pages, would put life into every print prepared in the manner described. The process is covered by letters patent No. 1,066,766, issued to Alexander S. Spiegel, July 8, 1913.

FIG 6

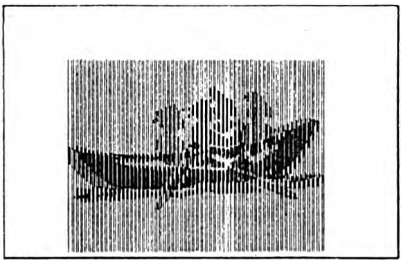


FIG. 7

In April, 1914, The H. S. Crocker Company, of San Francisco, one of the largest printing houses on the Pacific Coast, purchased the California rights for the production of moving-photographs by this process. It has been stated that this house is deeply

interested in the possibility of applying the invention to the production of animated illustrations and, if experiments along these lines should prove entirely practical, we may look for a publication of this character in San Francisco during the Panama-Pacific Exposition.

As a forerunner of developments along these lines it may be of interest to note that a toy moving-picture book, in which a printed screen is applied to produce action, is now on the market. However, the pictures in this book are printed from plates with ruled lines, produced entirely by mechanical means. The use of half-tone reproductions of photographs from life has not been attempted in any of the toy books that have come to the writer's notice.

ARTISTIC LIGHTING

By FELIX RAYMER

HOW many times I have been asked the question, "Can you not tell me some way in which I can work *my light?*" This is, of course, a personal question, and at first thought would appear to be one that it would be almost impossible to answer. When one has time to think over the matter and make some few calculations he will find that if he understands the principles of lighting he will be able to formulate some plan whereby even the most ignorant will be able to do something better in the way of portrait work. It is not so much the manner of working as the results we obtain; and let us fully understand that it is the results we are after, and not the way in which they are secured. I have been attending the State Conventions as well as the National Conventions for more years than I care to mention, and many times I am tempted to laugh in the face of some demonstrator or lecturer when he undertakes to tell an enlightened audience that his *way* is the way, and that all others are frauds or make-believes. What we are after is the principle of the thing, and then all that will be necessary will be to read until we know what that principle is. We shall then be able to better our condition and make artistic work, provided we study the detail and technique of the question.

The main problem with the average workman in the average studio is, "How am I to make the most of the light that I have on my hands, and how am I to make the best work under it?" This is the topic and the most important one that I have had under consideration for the past year or more; and all the time I have been trying to find out if there was any way in which such a question could be determined. After having tried about one hundred lights as opportunity has offered at the different conventions during the past five years, I have arrived at one conclusion, and that is that *light is light, and that all that is necessary will be for the workman to learn what he wants, and it will be an easy matter for him to attain his desires.*

In other words, there is a way by which any light (it matters not what the size or the pitch) may be worked and as good results obtained as by any other source. In proof of this assertion it is only necessary to mention the many workers of national reputation who are working skylights of entirely different construction from any others in the country, notably Mr. Ed. Rösch, of St. Louis, who has nothing but a straight, slant light, extending upward from its starting point to the highest point without a break of any kind. We might, without stopping to think the matter out and without knowing what we say, perhaps have the idea that such a light would be nothing more than a side light. This is entirely wrong, as we

can make it either side or top light by the manner in which we pose the subject under it; and in proof of this we will mention that we have not seen for years any more artistic work than is done by Mr. Rösch under his perpendicular light.

On the other hand, we find other operators claiming that we must have a light that sets into the room in order to secure a fall of light from a certain angle. These claimants are those who are *mastered by their light and have not mastered the light.* To which class do you belong?

In connection with this article I submit a diagram of the floor of the operating room as it will be found under any light, it matters not what the size of the light may be. This diagram can,

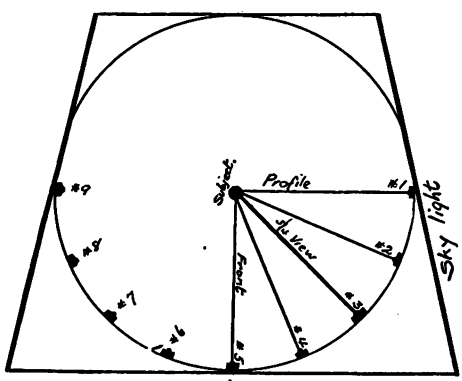


Diagram showing floor space.

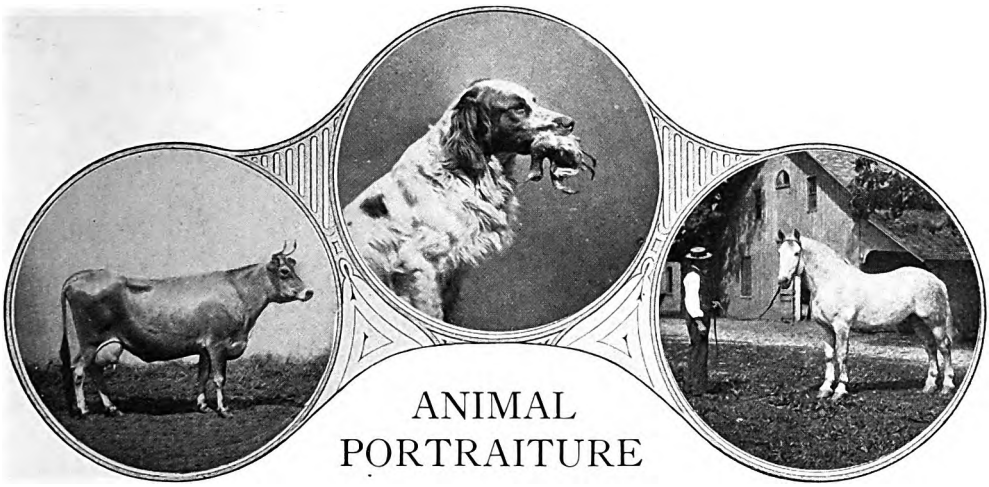
by a little modification, be carried out under any light, whether it be a single slant or a double slant light. All that will be necessary, if working the single slant light, will be to make allowance for a certain amount of top light and a certain amount of side light, and this can only be done by having the light divided in our mind's eye in such a way that in working it we will know that there is a certain part of it that will produce certain effects, and the other part will produce an entirely different effect. This we know to be so from the fact that the top light will not give the same effect that the side light will give, although this may in some measure be remedied by the manner in which we work the source of light. If we know how to produce the lighting in accordance with some principle, we can, without any trouble, produce this principle under either a single slant, double slant, side, or a top light, and get a truly artistic result. Feeling as I do in this matter, I cannot find it in my mind to take up the time of the readers and the space of the JOURNAL to go into the matter of different lights producing certain results, as I firmly believe any man who truly understands his business will be able to produce good work under any light; and when I hear an operator saying that he cannot do his best work under any particular light, as he is not acquainted with it, I at once come to the conclusion that he does not amount to very much as an artistic workman.

It will be noticed by referring to the diagram that the darkest line in the drawing is marked three-quarter view. I mean by this, that, if the camera is placed at this point and the subject at the point indicated, a three-quarter view of the face can be obtained with better results than at any other place in the room. We will suppose that the subject has been posed at a distance say of nine feet from the side light; this will mean that the camera should be placed at a point that will be just half that distance from the light. In other words, if the subject has been placed at nine feet from the light, the camera should be four-and-a-half feet from it. Now, if the face of the subject is turned slowly toward the camera until the ear on the shadow side of the face is almost in view, this will be what we operators consider a three-quarter view of the face. After this pose of the face has been secured, with the proper lighting on it, there the trouble of lighting should cease, as it all hinges on getting the first lighting effect right. I am well aware that there are those who contend that each effect of light must be made for itself. This has not been the experience of the very best operators in the country. When the lighting is once made there is not a point of view to be obtained but will show a perfect lighting. For example, if we have a perfect lighting at line number three, and will move the camera to the right until we reach the

point indicated by line number two, we will still have the same lighting as in the former position of the camera, but the point of view will be different, and this is what we understood as choosing the best VIEW of our model's face. The lighting effect will be the same in any case. But the point of view will no doubt be a different matter, as that will be controlled entirely by the distance of the camera from the side light.

In the position of the camera for the three-quarter view we can see all of the face with the exception of the ear on the side of the face away from the camera, but in the position occupied by the camera at the point indicated by the line number two we can only see a very small portion of the face on the far side of the head. But the lighting has not been changed in the least. The same points of light known as high lights hold good in this view as in the former position. Now we will move the camera to the point indicated by the line numbered one, and this will be seen to give a full profile of the face. At this point there is but little shadow on the face as seen from the camera, but, nevertheless, the lighting will be the same, as the head has not been turned or in any way changed from the first position given. The change is made by moving the camera farther to the right until the different view of the face is secured. We will now move the camera to the extreme left of the floor line number five, or until we have it at exactly the same distance from the light as is the subject. When this is done it will be seen that the view of the face is entirely different, being a front view, but the effect of the lighting is the same, inasmuch as we have in nowise changed the opening of the light nor the subject. The only change in any of the foregoing cases was where we moved the camera either to the right or to the left; and it will be seen at once that it was an absolute impossibility to change the effect of the lighting. This brings us up to the point where we are ready to claim that if we but get the lighting right in the first place we will at all times after that have a perfect result, if we do not in any way change the source of our light nor move the subject. I have in the past few years heard many operators say that every face should be lighted not only for itself, but that the correct lighting should be chosen for each individual subject if the most artistic results are to be obtained. I do not believe that this is so. If one will take the trouble to look into every face he sees he will know at once that it would be an absolute impossibility to light every face in exactly the same manner. *I have never seen any two faces that would catch the light in the same way.* There are certain prominences in the face of one that will not be found in the face of another; and this will make one face look different under the light from the other face. But it was not due to any manipulation of the operator, for had he desired making one face appear as the other, he could not have done so. Therefore, I say, get the *principle* of the lighting, and it will suit any face. After having done this it will be found an easy thing to plan your work under any light. It can be done in such a systematic way that one can tell almost in inches where certain results can be secured.

By referring to the diagram it will be noticed that I have positions for the camera marked out on the left of the centre line. This I expect to take up in some future article, as these positions of the camera will give a different effect of lighting and different views of the face, but will in nowise necessitate the moving or changing of the subject from the position which was at first chosen. Operators many times make unnecessary work for themselves by changing the subject from one part of the room to another when all that is necessary is to get the lighting right in the beginning, and then change the camera and *not the subject.* If the light is right in one position it *must be right in any position.*



ANIMAL PORTRAITURE

By B. ONSLOW

SUCCESSFUL animal studies are more dependent upon the camera and lens than probably any other branch of photography. As a rule, the production of a picture depends upon the man behind the camera much more than upon the camera itself. Indeed, I have read that, with very few exceptions, most of the pictures seen at the big exhibitions *might* have been taken with an apparatus costing not more than five dollars.

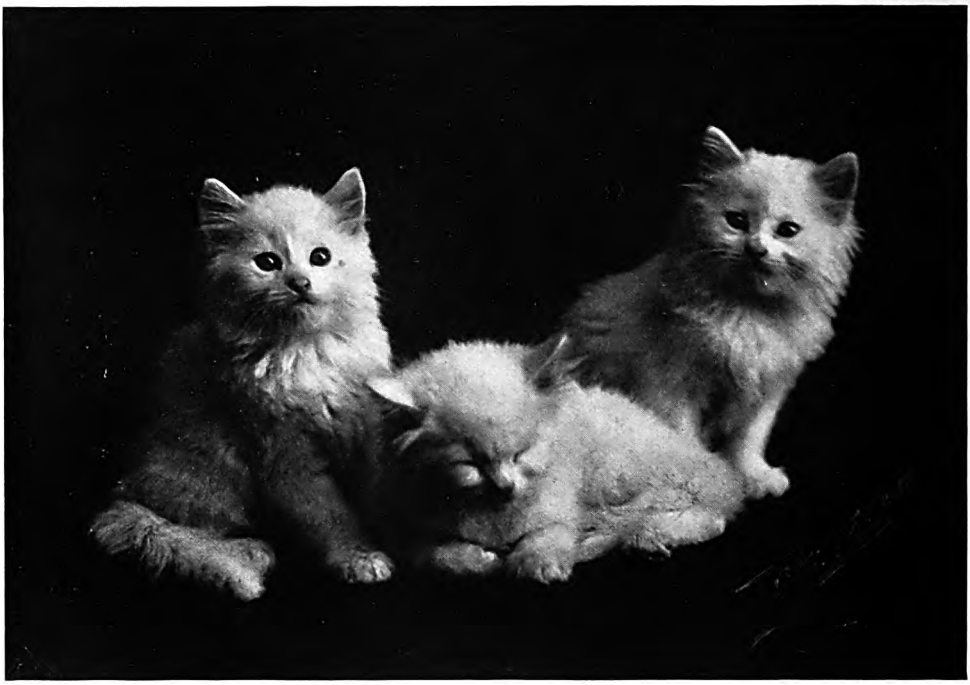
For successful animal photography, however, a reflex or twin-lens camera and anastigmat lens or lenses working at F/6.8 are almost a necessity. Working with a big-aperture lens necessitates accurate focussing, with a very limited plane of focus. With an ordinary stand camera the animals are sure to move during the seconds that are required for replacing the ground glass by a dark slide, and with the limited plane of focus I have just referred to; indeed, a fraction of an inch makes all the difference between a sharp picture and one hopelessly blurred. A reflex or twin-lens gets over this difficulty, and with a camera of this description I can get excellent results, even during the winter months. The only disadvantages to such an apparatus are its costliness and its weight, but these are quickly outweighed by the fact that you will, with one, find it possible to get a really good study of some animal which has probably outwitted all the efforts of a first-rate professional with stand camera and studio.

Few professional photographers working in studios are really successful with portraits of dogs or other animals, and so it often falls to the lot of an enterprising amateur to be able to take and sell the portraits of his friends' pets.

Animal portraiture can be divided into two classes: (*a*) portraits of pets; (*b*) technical studies of show animals.

When photographing the first class the aim should be to reproduce some particular characteristic of the pet in question, in order to please the fond master or mistress. The head on one side, or one ear up and the other down, or the "begging" attitude are all examples of this.

To obtain these, some uncouth noise on the part of the operator is generally necessary. In photographing these pet animals, their own master or mistress is usually quite the worst person to attempt to pose them, and half the battle in obtaining a successful picture is in having an assistant who knows as much or a little more about the required result than you do. For instance, the uninitiated always hold the biscuit or sugar far too high, with the result that the head is taken at a very ugly angle, and



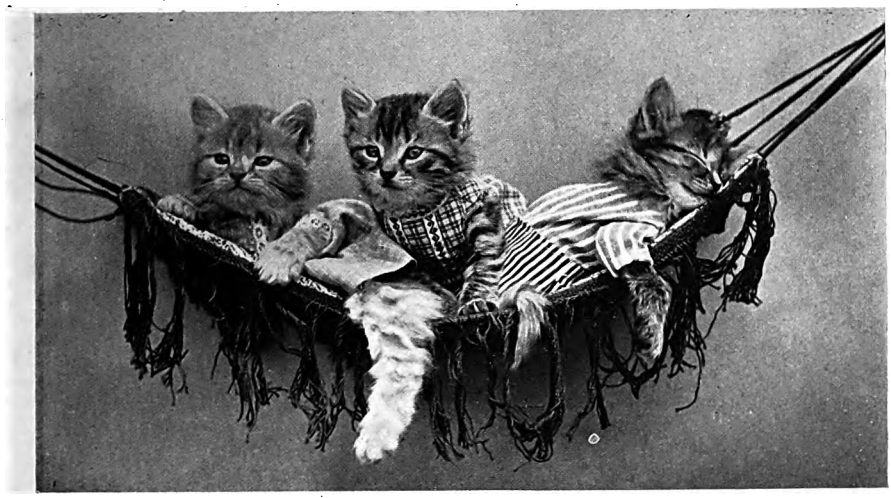
BY T. W. RICE

very little showing besides the underjaw. When placing a dog or cat on the table for a full-length portrait, be careful to get the hind quarters on the same plane of focus as the head, or hideous foreshortenings will result. A much better proportion can generally be obtained if the subject is at a little distance from the camera, and then if too small enlarged. This is especially so in the case of large animals, and also groups. In the latter case it is most important to make sure all the animals are exactly in line; if not, one or more is sure to be out of focus, as high-speed work must be done in these cases, and, therefore, stopping down the lens to increase depth of focus is out of the question.

To get a pleasing group of animals in a line, it is also important that the subjects be close together, as a light space showing between each is not pictorial. You will also require to select the right sort of light, and nothing can beat a day with no direct sun but with a fairly strong diffused light. When there is strong sunlight it is of no use to attempt photographing in the sun as very hard results are thus obtained; indeed, it is impossible to get any detail in a white dog, for instance, and on such a day the shade is generally caused by heavy shadows, which would necessitate a longer exposure were your subject placed in the shade. With a good diffused light there will be no hard shadows on the background or animal itself; but it will be possible to get good gradations. I also prefer front lighting to side for portraits, and there must not be a strong top light, or you will get the effect of a halo round the head.

Do not hold the camera too low when photographing subjects which are placed on a table. The latter is often inches too high, and unless a lower can be obtained, or the operator procure a foot-stool or two, the result will be that the animal's legs will be stretched to most unnatural proportions. The camera should be exactly level with the sitter's eyes.

Another difficulty arising in photographing dogs, especially in the summer, is the panting, caused, no doubt, by the ordeal of having to look pleasant.



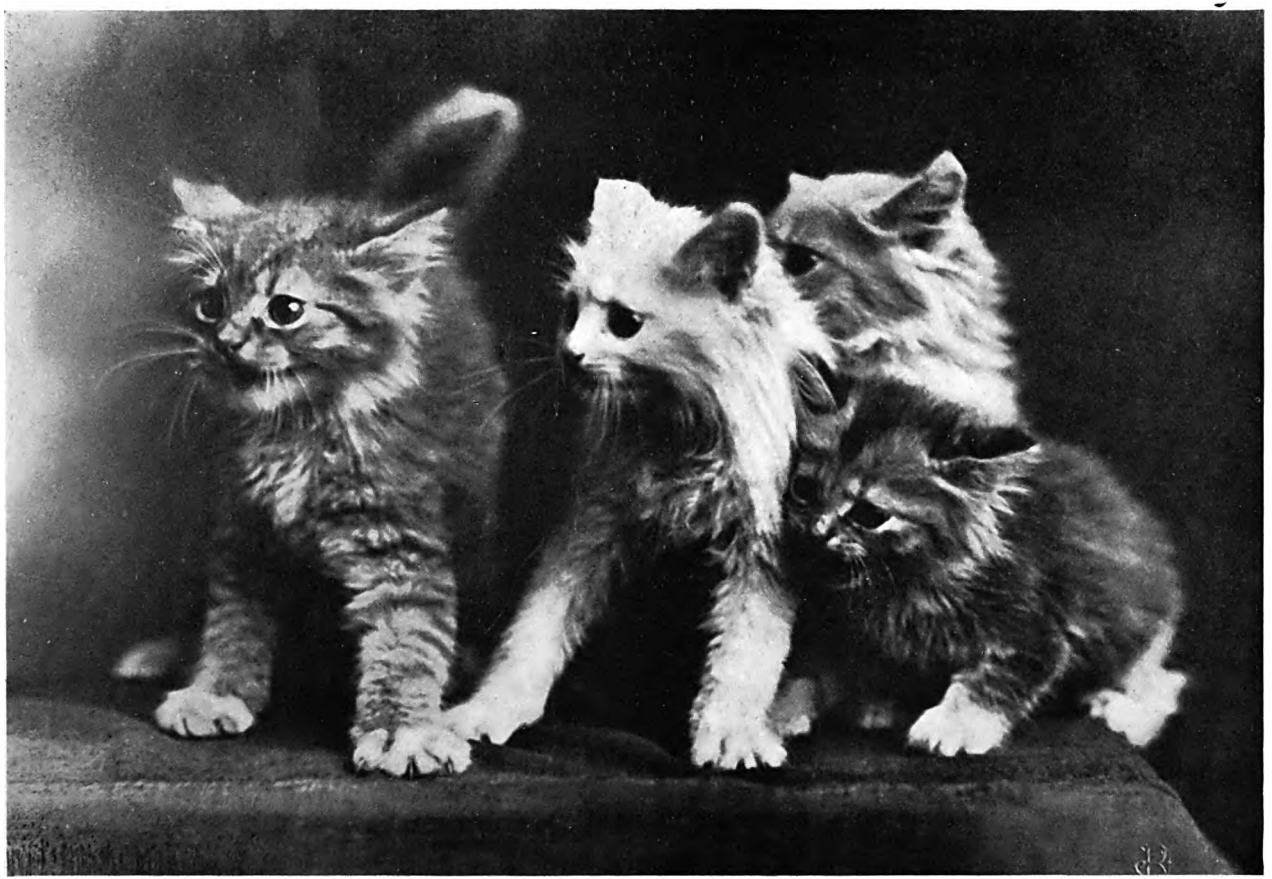
BY H. W. FREES, ROYERSFORD, PA. (C)

Giving water is of little use, and if your subject once begins to pant, it is better to postpone the sitting till another time. Sporting dogs are, perhaps, the worst in this respect.

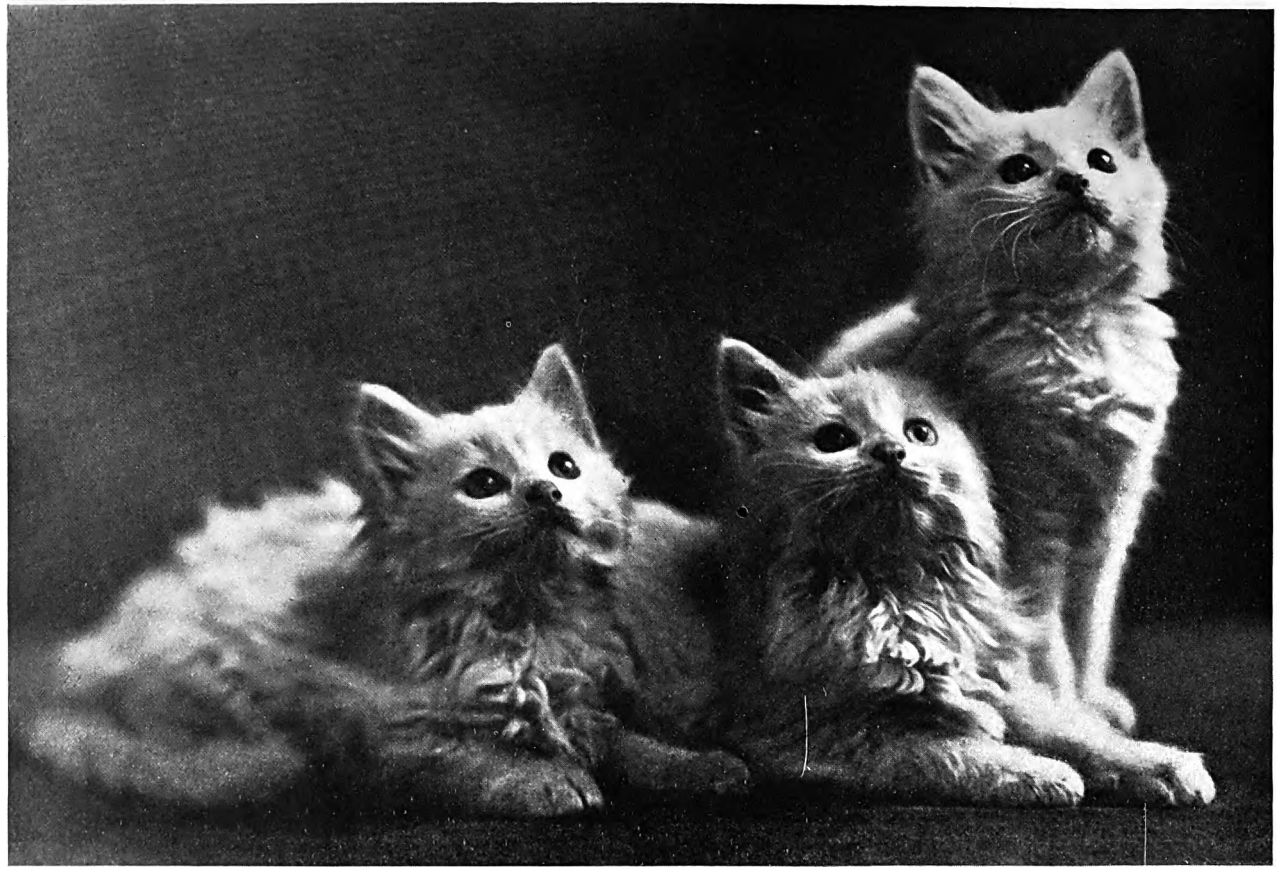
I always use orthochromatic plates, so as to get a true rendering of the yellow, which plays a large part in an animal's toilette as a rule; and the plates should be always backed for white or parti-colored subjects, especially if one is forced to work on a sunny day.

When using ultra-fast plates, always make up your developer in accordance with the maker's formula, and use it at full strength, as this class of plate will not, as a rule, stand prolonged development in weak solutions. For black and white subjects expose fully for the darkest part, and then develop until the high-lights and half-tones have appeared, then, without a moment's hesitation, plunge the negative into the fixing bath. To obtain density, afterward intensify. In this way you will never get a clogged high light, and will also find plenty of detail in the shadows. Of course, the exposure must have been on the full side, or this rule will not apply. Having obtained a good negative, suit the color of your print to your subject. Black and

BY H. W. FREES, ROYERSFORD, PA. (E)



BY BELLE JOHNSON
MONROE CITY, MO.



By BELLE JOHNSON
MONROE CITY, MO.

white subjects should be printed in gray, and brown ones in brown. Fancy colors, such as can be obtained in carbon or ozobrome, are not at all suitable.

Always use a plain background, which should not be too light, especially if working in a strong light. If a dark background is required, avoid all shades of blue or gray and use brown or red. For the table cover, if one is necessary, I prefer blue—never white. Kittens and cats are generally pleasing in what I may call "Christmas card" attitudes. An old hat, with Pussy's head appearing over the brim, or a basketful of kittens are frequently attractive.

BY BELLE JOHNSON, MONROE CITY, MO

Now a few hints on the other branch of animal portraiture, *i. e.*, portraits of show animals. These are much more difficult to reproduce satisfactorily, and are often quite different in character from those of a purely fancy nature.

There are "points" to be considered—a good "point" to be made much of, or a bad one to be hidden. The photographer is probably ignorant of all such but must try and understand what the proud owner tells him, and submit no proofs, however pictorial, if they fail in the object for which the portrait is wanted. For instance, the ears of a well-bred spaniel must never be taken "pricked," but always lying as flat to the head as possible. No portrait of a bulldog would please an exhibitor which did not show off the well-sprung ribs and fine chest peculiar to this breed. In photographing such breeds as toy spaniels, Pekinese, or pugs, always hold the camera below the level of the dog's nose, as this will tend to shorten the appearance of the nose, which is one of the most important points in these very fashionable breeds. The larger class of dogs, such as great Danes, wolfhounds. or any of the terrier tribe, generally look best when tied with a fairly long leash to a post or tree. If the master then goes a short distance away, the dog will assume the somewhat "straining attitude" which is characteristic of most sporting dogs. The owner will not object to the inclusion of the leash into the picture at all, though, of course, if necessary, it must be taken out. I have found that a high-light on the nose is rarely permissible, the owner (generally a lady) being so alarmed lest an enemy should accuse her champion of having a "colored nose," when the correct color is jet black. This is, of course, impossible to avoid on the negative, as the organ referred to is usually in a state of icy juiciness, and particularly susceptible to high light, but print on a matt-surface bromide, and rub a little powdered black lead from a pencil on the offending spot, and you will have no rebuke.

Nearly all exhibition animals will stand quietly on a bench or table and "show" themselves off, and when this is so, nothing looks better than a perfectly plain background. Some subjects, however, are only "caught" after a weary chase round and round the garden; but patience always wins, and with the aforementioned reflex, if you only wait until you get the dog in a position so that the grass or path forms an unbroken natural background, the result will be equally pleasing. This effect can be got if the camera be held slightly above the level of the subject, and tilted down slightly, though not enough to cause distortion.

Cats, owing to their greater timidity, are far more difficult to photograph than dogs. Kittens, if placed on a table, will generally group themselves prettily, and the photographer must wait his chance. The purely pictorial branch of this subject is, perhaps, the most difficult of all. In it the animals would form the principal subject with an accompanying landscape. The subjects are rather hard to find, and, when found, harder still to reproduce satisfactorily. Perhaps the most pictorial of all, when properly treated, is such a subject as a flock of sheep coming along a dusty road, or wending their way homeward down the mountain side, with the rising mist behind them, and the departing light just glinting on their backs.

Anything like a pictorial study of sheep in a flat part of the world is very hard to get. The hurdles, the numbers huddled together, all tend to increase the improbability of a picture. One wants the mountainous districts, the atmosphere, the scattered groups of sheep, and the picturesque shepherds. Ploughing is another favorite scene, the principal subject of which is always animal life. Many ploughing scenes are failures because the photographer stands too near the horses, and the camera is not held high enough, or the legs of the horse appear muddled. When attempting such subjects as these, wait for the day when the atmosphere, *i. e.*, mist, is casting a gauze-like garment over everything except the principal subject, which stands out boldly. Wait, too, for the right sort of light. It is of no use exposing plates and hoping for a pictorial effect when the pictorial effect you desire is not seen in nature on that particular day. Some effects of atmosphere, light and shade, etc., are only got on a very few days, perhaps, in the whole year, and only then at certain hours.

There is also a very large miscellaneous range of subjects, all classified under animal photography. Horse races, horses jumping, all appeal to the photographer at one time or another. Even with a focal-plane shutter working at 1-1000th sec., it is very difficult, without a little practice, to get the right second, or, rather, fraction of a section, of a horse's jump. The right moment is when the animal has reached the extreme height of his jump, and remains, as it were, poised in the air for a decimal part of a second, before descending to the ground again. Try, if possible, to get the horse silhouetted on the sky, but this is not always possible, as trees surround many show rings. A country visit, especially if spent at a farm-house, will bring endless opportunities for animal work. Turkeys, geese, ducks, cows, and even pigs will form pictorial or comical photographs, and will probably pay the expenses of the holiday by being very salable as picture postcards or to certain journals.—*The Amateur Photographer.*

By MARGARET S. SUTTON
NEW ROCHELLE, N. Y.

By MARGARET S. SUTTON
NEW ROCHELLE N. Y.

BY GUIDO REY
ITALY

By GUIDO REY
ITALY

SAFE STORAGE OF CELLULOID NEGATIVES

By A. J. JARMAN

THE time appears to be fast approaching when celluloid may take the place of glass plates for ordinary negative work. It may be worth while to consider the necessity of safe storage of such negatives.

Already large numbers of negatives are being made upon transparent celluloid in the form of plates, in addition to the roll films, and as these glass plate substitutes will be stored in the photographer's establishment as glass negatives have been stored hitherto, some attention must be given to their safe-keeping, because celluloid is a very different material from glass, especially in its composition.

The fact must not be overlooked that celluloid, in any form, if packed tightly in a case or box may not be considered safe. This is not the fault of the manufacturer; it is inherent in the celluloid because of its composition. Now if this material is packed between sheets of paper that have been made non-ignitable, and so packed that every piece of celluloid lies loosely in a room where there is plenty of ventilation, there need be no fear of danger, because the ignitable vapor that may be given off when this material is tightly packed becomes eliminated instead of being confined, and negatives upon celluloid may be safely packed back to back, with a piece of paper treated with a fireproof mixture placed between, the negatives being placed face to face, and instead of being jammed tight in a cardboard box, allow them to lie loosely. No injury can come to film negatives packed in this way.

Again, as a precautionary measure, when searching for a negative, or assorting and packing or repacking them, the operation should be conducted by daylight. Artificial light, especially a flame, should not be tolerated. By a few simple precautions, negative films may be stored with safety.

If the non-ignitable film should become a fact, then there would be no fear of danger in the matter of storage. It is true that mica is non-ignitable, but mica suffers from the defect of splitting into such thin strips which precludes its use.

Only a short time ago the writer made a number of tests upon some moving-picture films, to secure non-ignitable films, by passing them through a mixture of gelatin and silicate of soda. Although when dry it did not fulfil the hope desired, it did to a great extent lessen the ignitable property of the film; so much so that holes could be burned clean through the film by means of a two-and-a-half inch biconvex lens, in exceptionally strong sunlight, but no ignition took place beyond the concentrated spot of sunlight. Every effort was made to ignite the film by this means, even to running the intense heat along the film, still no ignition could be set up, while, by the same means, several small tufts of gun-cotton became ignited instantly.

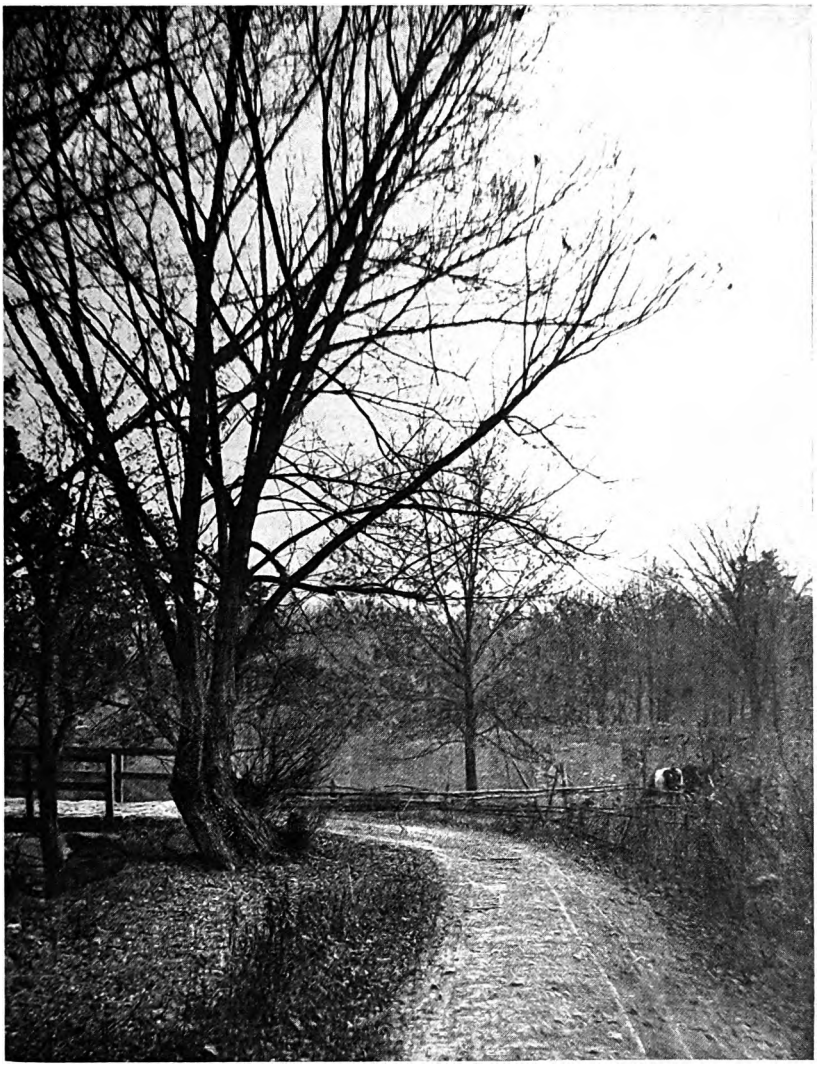
The preparation of paper so that it may become non-ignitable and used as a go-between for film negative packing can be accomplished by making up the following solution, and soaking paper in it, then drying the paper thoroughly before using it for packing purposes.

FIREPROOFING FORMULA FOR PAPER AND FABRIC

Water	80 ounces.
Boric acid	1 "
Phosphate of ammonium .	8 "

The water should be made warm, so as to give perfect solutions of the salts. It must then be filtered, the sheets of paper placed in it and allowed to soak for several minutes, then removed, drained from one corner and dried thoroughly, when it may be used for packing.

In cases where the celluloid film has



"THE TURN OF THE ROAD"
BY THOMAS COKE WATKINS
NEW YORK

BY MARGARET S. SUTTON, NEW ROCHELLE, N. Y

been coated upon the back with gelatin, this will aid in preserving the film from ignition, which has already been proved by a number of trials, there being less liability of ignition in case of accidentally coming into contact with a struck match than if the film was not covered with gelatin.

If the paper used in this case is somewhat porous, a small quantity of gelatin may be added, which is best done when the boric acid is dissolved. To prepare this mixture quickly the boric acid may be dissolved in boiling water, owing to its being somewhat insoluble in cold water. The phosphate of ammonium being very soluble in cold water, when the boric acid is dissolved the solution must be cooled considerably before adding to the phosphate, because, if added in a boiling condition, decomposition may be set up and ammonia be given off from the phosphate.

This fireproofing preparation may be used also for rendering fabrics of all kinds non-inflammable, that is to say, although the fabric may be charred by the heat of an intense flame, it will not ignite. Curtains of the lace variety, that are often used in photographic estab-

BY VICTOR GEORG, CHICAGO, ILL

lishments, if treated with the above preparation will become non-inflammable, so that if a gas-jet or a flame of any description is brought into contact with a curtain after this treatment it will not inflame, the charring effect being confined to the point of contact. Canvas bags used for flashlight work may also be treated, making them flameproof. The paper that is suited for the purpose is the ordinary manila wrapping paper. It will be found that no crystallization will take place with this paper if the strength of solution is adhered to. Surface crystallization will only take place if a hard, non-porous paper is used, such as parchmentized paper. Even in this case crystallization can be prevented by adding a small quantity of gelatin to the mixture when the salts are dissolved in the first place. Five grains of gelatin to one ounce of water is enough to prevent crystallization and hold the salts within the pores of the paper.

PRACTICAL TALKS ON STUDIO WORK

II. STUDIO-ROOM AND THE MAN BEHIND THE GUN

By RYLAND W. PHILLIPS

WE all like to call the room in which we make our negatives "the studio." We are justified in doing so, and how much better this name is than "operating room," as it used to be called. In the light of modern business and modern names, what an awful word that was, and what horrible things it suggested!

Most of us are now striving for artistic productions through the medium of lens, plate, paper, and brains. Our business critics say we are too artistic to make successful business men, so we can take their word and call the room where we do our hard work "the studio."

The dressing rooms play an important part in the psychology of our picture making, and we should be sure they are in harmony with the rest of our furnishings. A dressing room is generally small, and the cost of furnishing comparatively little. Inexpensive curtains, chairs, covers, and dressing tables can be made often in our work shops, and with the assistance of our wives and daughters if need be.

If a woman takes her child into a neat and clean dressing room, with all the necessary accommodations, she will be apt to feel pleased with the beginning of the work in hand. So it is important that this detail be carefully considered. I have seen dressing rooms with the worst kind of furnishings and no accommodations for prinking up and in studios that were otherwise well equipped. It is a bad thing for a woman to be compelled to call or ask the maid for such ordinary things as a hand mirror, brush, or curling iron, and haven't we all had the experience at one time or another, of a man asking if there is such a thing as a whisk broom about the premises? We felt chagrined at the time, but did we go carefully over the ground and see that everything needed was at hand, so it wouldn't happen again, or did we put it off and forget?

The dressing rooms are naturally close to the "studio," and now we will suppose our sitter enters this room. Psychology again plays a part.

We have been working up to this point and have, we hope, made a good impression. The sitter enters. (I use this word sitter for the want of a better.) He or she looks about with a more or less critical eye, and from the impression made by the inspection,

depends the ease or difficulty of your task. If the general surroundings are harmonious, and the place looks clean, there is a certain let-down process in the mind of the sitter that produces more or less a feeling of relaxation. Expressed in words, it would be, "Why this doesn't look so bad." That's just what is needed. It's the first step to conversation, and conversation between the sitter and the photographer is a very important point.

I often feel that if I can shake hands with a man I will be able to form some opinion as to what kind of a man he is, and if the surroundings are agreeable, and the right impression is made, plus the fact that I know his name, I can often step forward and extend my hand in greeting, at the same time pronouncing his name, which latter is a compliment in itself. It often leads to friendly talk.

Photography has progressed past the era of producing maps of faces, and we are arrived at a time when the people expect us to make portraits of living, thinking, human beings. We cannot do this unless we get more or less in touch with the sitter's mind, and we cannot get in touch unless there is conversation. How often have you been stumped because you could not arouse an anwser to any of your remarks? To you the sitter had a certain type of face, certain carriage and certain style of clothes, but you knew nothing about how he or she appeared to friends and family. You knew perfectly well that unless you could arouse some interest in this person you would do no better than the tintyper or the postcard man.

Just here is where the value of education comes in to assist the photographer. I do not mean that a college education is needed. The ability to draw a man out of himself is the thing a photographer wants when making sittings; that knowledge which enables your to get humans off their guard long enough to snap the shutter. If a man, woman, or child knows the moment you are going to expose, you will only register the expression they think they want at the moment, and it is bound to be a forced one. But if you can secure their attention and divert the mind for a moment, so that they have no idea you are making an exposure, you will come nearer to registering on the plate the real person.

If you can be big enough, and well informed enough, to talk interestingly on a number of topics of the day, you can so hold your sitter in conversation that any number of different exposures can be made absolutely without the sitter's knowledge. So I say, find first some common ground for conversation, then go ahead. To some this may seem absurd talk, but to others who know, it is a potential fact.

BY RYLAND W. PHILLIPS

Why do we get such lovely pictures of children at play? Simply because we take them unawares. Yes, the process with children is easy, but with adults it is just as possible if you make yourselves masters of the situation, and masters you should be or you are not filling the bill.

I know a photographer who wagered with three business acquaintances that he could take them to his studio and photograph each in the presence of the other two without the knowledge of any of them. The thing was done, there were eleven proofs sent, and the trio bought the dinner, incidentally pictures beside.

The process, as near as I can describe it, was this: Each man sat in turn in a chair suitable for his size and build placed in a good light. My friend engaged the two not sitting in give and take banter, while he focussed and snapped the plate on. The moment he made the exposure he shot a remark at the sitter. The sitter could not talk while he talked, and, as he went right on with the conversation, none of the three noticed that a plate had been exposed. This story may not be new, but it illustrates my point. The wonder is not that the photographer won his bet, but the fact of winning and the manner in which he accomplished it show that he was man enough to handle three minds at once, with all of them pitted against him.

This man does not make maps of human physiognomy. He produces portraits of real people. He is not only equal to handling humans, but is an applyer of psychology as well. He was wise in having the three men in the studio at once, as it enabled him to create a mental divergence from the main object by using the two non-sitting men as foils to throw the sitter's mind off the main object.

Be masters of the situation, and if the situation is not one to suit your purpose be master enough to make one that fits the condition.

Making situations in the studio requires a versatile power on the part of the photographer, only obtained by long study of people and things. It very frequently happens that you find you have entirely misjudged the kind of person you are photographing and this may occur after you have made all the exposures you intended to. It is then that you have the real opportunity, and if you let it pass and dismiss your sitter the chances are, two to one, you lose it forever, because your competitors will see and catch just what you saw but did not catch.

Not long ago I made a sitting of a business man from a distant city. I knew he was a bank president and an extensive manufacturer. We talked a great deal of the business situation and the outlook for the coming year. I was sure he was interested by the way he talked. My exposures were all made with the use of a good portrait lens, with clear, sharp images. As we passed out of the studio, a collection of "studies" which I had been showing to an artist caught his eye, and he started an art talk with such enthusiasm that I recognized a side to him which I knew was not registered on the plates just made. We took the "studies" back into the studio, and while discussing them I exposed several more plates (with a soft lens), three of which were afterward O K'd by the family and one of the others was used for business cuts.

This little episode was a happen, to be sure, but making the second set of plates was the grasping of an opportunity when the situation was right. If we had not made the second set of plates, one or two of the first might have been ordered from and I would have been classified in my customer's mind as a fairly good average photographer; but having taken the second set, I landed as *the* photographer for him and his family.

You will often see a youngster do some natural little thing after you have finished the sitting. Do not let the opportunity slip to register such an action if you can. It may be the happy accident which, if caught, will write you big in the mother's estimation.

When it comes to making the situation it is hard to suggest concrete ideas, because only your intuitive knowledge can really help you. When you feel that you are not getting in touch with the sitter and things seem to be out of harmony, there is mostly a way, if you are big enough and keen enough to find it.

A photographer once told me of a scheme that he had used very successfully and how he happened on it by the merest accident. He was trying to photograph a woman of uncertain years, and had been working very hard to draw her into animated conversation so he might come to some conclusion as to what manner of person she was. After many attempts and no success,

in desperation, he finally handed her a new volume written by a then prominent *liberal*-thinking author. Much to his surprise, she started in to argue vehemently against said writer and showed in a moment that she was a very straight-laced, orthodox sort of person. My friend said he was taken completely off his guard, but had the presence of mind to take from the shelf another volume by an accepted *orthodox* minister, and present it to her with an appropriate explanation. He told me that he had no trouble in making good portraits of this lady, which proved very satisfactory. Never since has he been without those two books. They served to create a situation without which his work would have been a failure or at least mediocre. The kernel in the nut was his quickness to turn the accident to good account.

When the sitter has reached that frame of mind which you recognize as the one you wish to register on your plate, you must have the mechanics of your work so well under control that the exposures can be made almost automatically.

It may seem strange to some, when I state that most good photographers divide their minds into two parts when working with the sitter. One part intellectual and the other part mechanical. The intellectual part is the one which the sitter is conscious of, and the mechanical part is the one which works all the time without the sitter's knowledge. This mechanical part of the mind embraces the photographer's knowledge of the camera, the plate, the lighting, and the pose. The intellectual part embraces the knowledge of men and things, and gives to the photographer the power to hold the attention of the sitter in interesting conversation while the mechanical work is being done. In other words, the arrangement of light, the pose, and the exposure can be accomplished while the sitter is interested in conversation, so that he or she does not really notice any of the preparations.

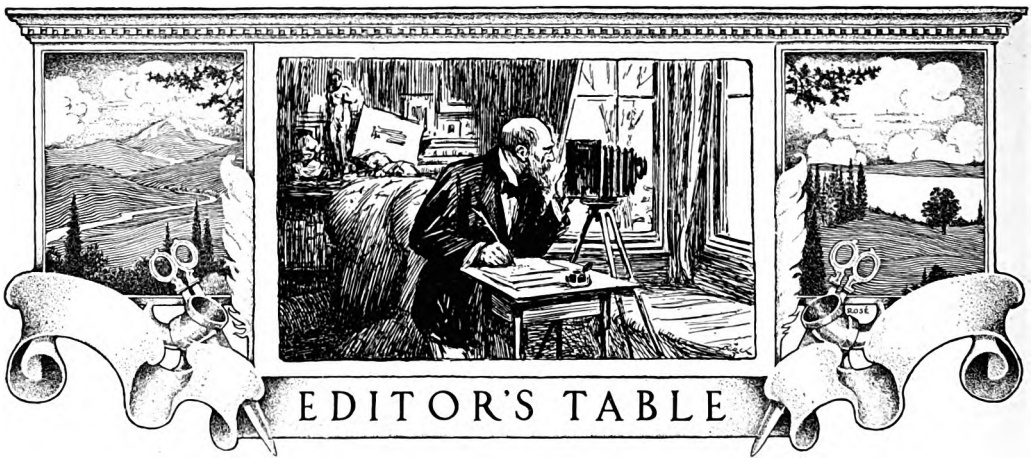
The matter of length of exposure should be automatic. The conditions of light, the complexion of sitter, the dress and general surroundings are all so well known to the well-schooled man that he no more asks himself the number of seconds required than he would ask the number of feet in jumping across a wide gutter in the street, and he can judge the length of exposure correctly while talking to his sitter just as easily as he can judge the jump.

No sitter should now be allowed to anticipate the moment the shutter is opened. If he does, you get an impression of what he thinks he wants to look like, which in nine cases out of ten is not the thing he will want at all when he sees the proof.

Preconceived notions of expression and position on the part of the sitter are the cause of more discarded plates than most any other one thing, and the photographer must use his brains and vocabulary to get him off his guard. The old method of telling a person to hold still has passed out of use, I hope forever.

DIAGRAM LANTERN SLIDES

WHEN a diagram lantern slide is required, it may be drawn in white ink upon a piece of black paper. The paper used for packing plates or bromide papers answers very well in some cases, although some is not sufficiently sized to take the ink nicely. This is then photographed on a lantern plate, or on an ordinary plate, which may be subsequently cut down, and the negative so obtained is used as the slide. If necessary, it may be cleared with a little ferricyanide and hypo reducer; but, as a rule, it is easy enough to get it bright without this.—*Photography.*



A Notable Print Competition

WITH a view of fostering and stimulating the art side of photography this JOURNAL is offering liberal cash prizes for portrait or pictorial photographs, according to merit, pictorial qualities being preferred to technique. There will also be awarded engraved certificates signed by the three judges—each eminent in his qualifications and field. Mr. Henry R. Poore has not only a wide reputation as a painter and author, but is well known to the photographic fraternity by his two authoritative works, "The Conception of Art" and "Pictorial Composition."

Mr. Charles H. Caffin is equally qualified and known as art critic and author. His treatise, "Photography as an Art," has had wide recognition, and he is the author of many books pertaining to art, prominent among which are "How to Study Pictures" and "American Masters of Painting." Mr. Caffin also has a distinctive department in the *New York American*, in the Monday issue, in which be ably treats on "New and Important Things in Art."

The conditions governing this competition has already been announced and requirements are published elsewhere in this issue.

Our readers are invited to participate in this first notable print competition. Others of a similar character will follow in due season. If you understand composition and the art of picture making, here is your chance.

Photography as a Business

PHOTOGRAPHY as a business did not show many signs of prosperity during 1914. We have passed through a season of close-fistedness in all matters of luxury, and with the rest photographers have had to be content with less than before. But complaints have not been as frequent as might have been expected.

If there is one fact more evident than another to the observant photographer of today, it is that the public, upon whom the photographer depends, is of two minds regarding portrait work: Either it wants portraiture at a low price, regardless of quality, or it seeks quality, in a measure regardless of the price asked for it. The lot of the mediocre workman, hopeless in almost any profession, becomes daily more and more desperate in photography. To our shame be it confessed, there are among us more mediocre photographers than either good or absolutely bad photographers. The business career of such a photographer is a pitiful struggle. At least one-third of our photographers would be in more prosperous circumstances today had they improved their possibilities as employees instead of rushing heedlessly into business for themselves, and so creating such keenness of competition that, with their restricted capabilities, there was left to them scarcely the slightest prospect of success. Discouraging though this may seem, it cannot be too strongly

impressed upon the young photographer who is fondly contemplating the near prospect of getting into business for himself, that for many years to come there are better and brighter chances for him as a thoroughly skilled employee than he could hope to reach in a gallery of his own.

When professional photographers recognize the fact that success in trade must be reached through difficulties, and that the more difficult it is to reach success, the greater pull it gives them over the amateur, they will have more chance of prosperity. The introduction of easy processes has made photography anybody's business, and yet photographers continue to waste their time and talents in trying to produce minute improvements in a process that is already too perfect and too easily worked by anyone to leave them a living in it.

We have preached for years that the process as it stands is quite sufficient for business, or, indeed, artistic requirements.

In fact, in technical photography the workman is as good as his master. *The future way to success will lie in the excellence of artistic results, not in the multiplication of processes.*

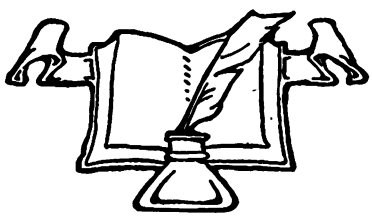
A Great Exhibition

THE biggest photographic event of 1915 for dealers and users of photographic materials will be the International Exposition of Photographic Arts and Industries to be held at New York Central Palace, New York City, March 27 to April 3, 1915, under the auspices of Photographic Dealers' Association of America. This will be in connection with the Third Annual Convention of Photographic Dealers' Association of America. All the latest improved photographic appliances and materials will be exhibited and demonstrated, and every dealer and person interested in photography should arrange to attend this highly specialized exhibition.

Further particulars will be duly answered.

To Our Subscribers

THE subscription price of this magazine has been three dollars. With a desire to give greater value to our readers, we are reducing the price one-half. Beginning with the January issue the subscription price will be one dollar and fifty cents. Any subscriber having paid the former rate for 1915, will be given full credit for the additional period, and subscription will be extended.



ABSTRACTS AND TRANSLATIONS

BY E. J. WALL, F.R.P.S.

The Fixing Bath

Hans Schmidt has carried out some experiments with the strength of the fixing bath and finds that a 1 to 2 is the best to use. A 1 to 1 bath took ten minutes to fix and the plate showed marked gray fog; a 1 to 4 bath took six minutes to fix and a bright brown fog was obtained; a 1 to 8 bath fixed in ten minutes and gave a deep brown fog, while a 2 to 1 solution refused to fix and the plate became a deep yellowish brown. The same results were obtained with an acid bath, and Schmidt states that the best is one containing 5 per cent. of sodium bisulphite solution.—*Phot. Ind.*, 1914, p. 1143.

This confirms in part the results of Debenham, and the later ones, of Welborne Piper. As Schmidt made all his experiments with unexposed and undeveloped plates, it is an interesting question as whence the marked gray fog arose. Illustrations of small plates are reproduced and the differences are very marked.

Silver Subfluoride

The existence of this salt, which was first prepared by Guntz by heating the fluoride, has frequently been called in question. Now Woehler has prepared it by a different method, and careful analyses prove that it is pure subfluoride. The proof of the actual existence of this salt is of great theoretical interest, in face of the fact that it is always quoted as strong support of the subhalide theory of the latent image.—*Zeit. f. Analyt. Chem.*, 1914, p. 375.

Photographs of Particles

In a paper read before the Royal Society, in 1909, Mr. S. Kinoshita showed that an alpha particle projected through a photographic film is capable, throughout the whole of its range, of making any grain of silver chloride it strikes developable. Since then, in company with Mr. H. Ikeuti, he has been using this method of tracing the paths of the alpha particles, and some of his results are reproduced in the September number of the *Proceedings of the Tokyo Mathematico-Physical Society*. The particles were obtained from the end of a needle which had been rubbed on a metal surface previously exposed to radium emanation. The end was brought close up to or in contact with the photographic plate. After development, the plate shows under the microscope a series of developed grains lying in straight lines radiating from and forming a halo round the region of contact, extending 0.054 millimeter beyond the outside rim of the contact patch. These grains are distributed through the thickness of the photographic film, and are due apparently to the alpha particles from radium C. Another series of developed grains close to the surface of the film appears to be due to alpha particles projected tangentially to the surface from active material slightly above it. A few grains still further afield the authors ascribe to beta particles. *B. J.*, 1914, p. 103.

A Rapid Fixing Bath

E. A. Melville gives an interesting formula for rapid fixing of plates, films, and papers in the *British Journal of Photography*. Dissolve in warm, not hot, water the following:

Hypo	4 oz.
Sal ammoniac	1 oz.
Potassium metabisulphite	¼ oz.
Water to	20 oz.

The bath may be used as soon as cool enough. For bromide and gaslight papers double the quantity of water. Fixing will be complete in ten minutes.

Making Line Drawings from Photographs

Line drawings for newspapers or other printing purposes that require paper of an antique finish are usually made by drawing on the photograph and when the drawing is finished bleaching away the photographic image.

The drawing, *Process Monthly* tells us, is made with waterproof india ink. The artist draws only such parts of the photograph as he may desire to include, and adds and alters as he may see fit.

Waterproof qualities may be given india ink by a solvent composed of

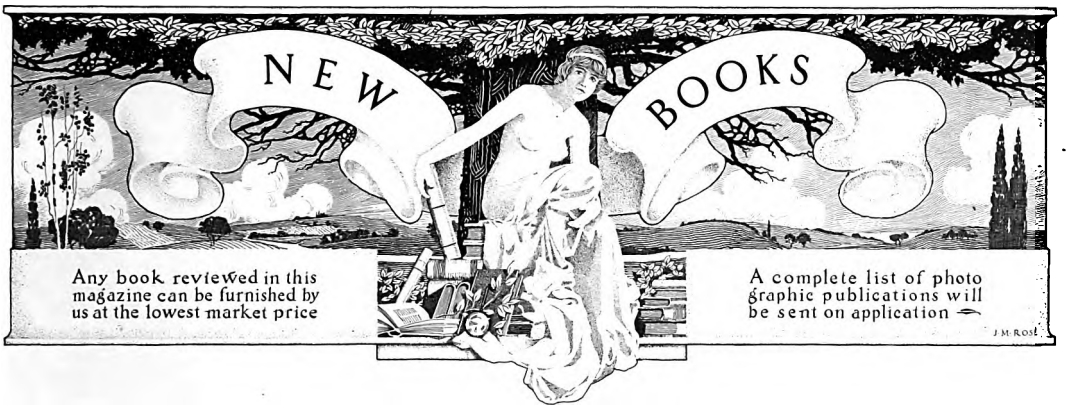
Hot water	20 oz.
Borax	1 oz.
Shellac	5 oz.

Dissolve the borax first, and then add the shellac, boiling the mixture until the shellac is all dissolved. Then cool and pass it through filtering paper. This solution is then used as a solvent for rubbing up ordinary india ink.

Bleaching is accomplished by the use of this preparation:

Thiocarbamide	120 gr.
Nitric acid	2 dr.
Water	10 oz.

The photographic image is removed by dampening the print, laying it upon the bottom of a clean porcelain tray or a sheet of glass, and then pouring over its surface a sufficiency of the bleaching solution.



How to Make the Studio Pay

By Frank Farrington

The publishers have sent me a copy of the above, possibly because they thought that I was the last man that it would be useful to, as I do not run a studio for profit. For this very reason, however, on the basis of the old adage that lookers-on see most of the game, possibly I can the more efficiently criticize it.

The first thing that struck me was the peculiar crispness of the author's style. He wastes no words but states *facts* in the fewest pungent words that he can find. Every sentence in the book is worth the most careful study, and the application of the advice in practice must tend to improve any business. Every photographer should buy one, and make his assistants do the same, and practise what Mr. Farrington preaches. E. J. W.

A Handsome Presentation Volume for Photographers and Lovers of Pictures

The publication of *Photograms of the Year* is an event looked forward to by all interested in pictorial photography throughout the world. The present is the twentieth consecutive year in which the Annual has been issued, and in its new and greatly enlarged form it is a very handsome book indeed.

Upward of a hundred full-page reproductions of the finest examples of pictorial art with the camera appear between its covers. These are presented by the highest form of printing and in all cases do full justice to the originals. The pictures are in most instances well worth framing, and will prove of the greatest interest, illustrating as they do the progress of pictorial photography and the work that is being done with the camera in all parts of the world.

British contributions, of course, predominate, but America, Canada, France, Australia, Japan, Spain, Russia, Scandinavia, Belgium, Holland, Italy, and other countries are represented. As regards the literary contributions, the editor, Mr. F. J. Mortimer, F.R.P.S. (editor of the *Amateur Photographer*), deals with the year's work, and has some comments to make on the future development of pictorial photography; a critical causerie on pictures reproduced is contributed by Mr. F. C. Tilney, and a thoughtful article on "Expression in Photography" comes from the pen of Mr. Antony Guest; pictorial photography in Canada, Australia, the United States, Scandinavia, and Spain is dealt with in separate articles by well-known writers in their respective countries. The entire volume is thus one of live interest for all concerned in the possibilities and progress of picture-making by the aid of the camera.

Photograms of the Year is the only review of the world's pictorial photographic work, and produced as it has been this year under extraordinary difficulties, it becomes even more interesting than on previous occasions.

Price: Stiff paper covers, $1.25; cloth board, $1.75.

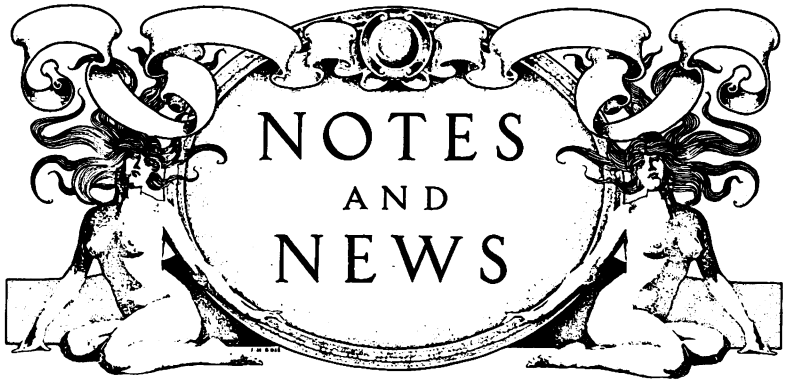
For Photographers

At a dinner given by representatives of the graphic arts in Kansas City an epigrammatic speech full of advice was given by John W. Hailman. He prefaced his remarks with this paraphrase:

"Once I was young, but now I am old; yet have I never seen the price-cutter succeed nor establish a permanent business."

And in conclusion he summed up thus:

"There are six things you ought to do:
"Properly equip your plants.
"Pay good wages to good workmen.
"TURN OUT GOOD WORK.
"Study your hour cost carefully.
"Make a close study of all your estimates.
"Quote a price and stick to it."



Big Photographic Show to be Held at Grand Central Palace, New York

The first international exposition of photographic arts and industries will be held at the Grand Central Palace, March 27 to April 3, in conjunction with the annual convention of the Photographic Dealers' Association of America. This will bring together dealers and manufacturers of photographic apparatus and materials. It is expected that it will surpass the photographic exposition held annually in London. The London show has been postponed until 1916, owing to the war, and many European concerns have arranged to exhibit here.

Organization of the American Society of Pictorial Photographers, to include all the photographic clubs in the United States, will be one of the events of the week.

Professional Photographers' Society of Pennsylvania

Twelve or fifteen years ago the convention spirit was prospering and continued to flourish for a few years; then came a steady decline, as the history of many State societies will bear evidence.

The year 1914 will be remembered as the turning point in renewed activity and interest. This was especially noticed at the Pennsylvania Society's convention held last March in Scranton, Pa. It was honestly conceded to have been the best convention that the society had ever held up to that time.

Conventions are a necessity to progressive photographers, and the photographer who never goes to a convention is very likely to stand still in his photographic work and to stop learning what is new in photography.

The Professional Photographers' Society of Pennsylvania have taken the initiative in many of the progressive photographic movements, and are now preparing a program for their next convention, which will be held in Pittsburgh, Pa., on March 16, 17 and 18, 1915. Many of the successful plans of last year will be continued with improvements, and new features will be introduced that will add more interest. The men in charge of the convention are determined to win out so as to make it more than worth while to become a member and attend the convention.

The officers fully realize that a convention must give a man full value in return for his time and money spent in attendance.

The society is in favor of the amalgamation proposition.

Make your plans now to attend the convention next March.—E. W. Brown, Secretary of P. P. S. of Pa.

It has been decided that the International Congress of Photography, which was to have met in London this year, is to be postponed until the officials think it advisable to call it. This decision being due, of course, to the war.

Polychrome Screen Plates

A. and L. Lumière have recently invented polychrome screen plates for use in color photography. One of the difficulties in preparing polychrome screen plates is due to the screen presenting a certain amount of color, which affects the general tone of the finished photograph. It has not been found possible to correct this by staining the gelatin emulsion, but satisfactory results have been obtained by the use of a layer of varnish of a color complementary to that of the fault in the screen. The varnish may be introduced between the screen and the emulsion or it may be applied to the glass.

Officers and Chairmen of the Women's Federation of the P. A. of A. for 1915

President—Maybelle D. Goodlander, 409 East Main Street, Muncie, Ind.

First Vice-President—Clara Louise Hagins, 8 North State Stree, Chicago, Ill.

Second Vice-President—Sara F. T. Price, 7430 Sprague Street, Mt. Airy, Pa.

Secretary-Treasurer—Bayard Wootten, 94 Middle Street, New Bern, N. C.

Press Representative—Leslie Curtis, "Hazelwood," Munice, Ind.

CHAIRMEN OF SECTIONS

Section 1—Hallie Elizabeth Wilson, Berlin, N. H.

Section 2—Ella G. Ball, 119 College Avenue, Lancaster, Pa.
Section 3—Harriet Edna Oonk, 1012 East McMullen Street, Cincinnati, Ohio.
Section 4—Elizabeth Schliepman, 369 Boyle Avenue, St. Louis, Mo.
Section 5—Helen Francis, 612 Kansas Avenue Topeka, Kans.
Section 6—Gertrude E. Mann, 145 Auditorium Building, Minneapolis, Minn.
Section 7—Margaret Craig, 817 West 23d Street, St James Hotel, Los Angeles, Cal.

PHOTOGRAPHY IN GREAT BRITAIN

A Review of the Month from Our Own Correspondent

London, Jan. 10, 1915.

The changing phases and fortunes of war make definite analysis of any British industry an extremely difficult task, particularly when such industry or trade depends to any extent upon foreign, either imports or exports, as for instance photography. Yet there is no reason to anticipate a great falling off of exported photographic goods from this country. A representative of a leading London wholesale establishment informed me a few days ago that while imports—through the German-Austrian markets being closed—had been reduced considerably, the exporting department of his firm had perceptibly increased business. The outlook is considerably brighter than a month ago although the small dealers and the professional workers in a modest way of business have been sorely tried.

ABANDONED CONGRESS

The annual exhibition of photographic arts and crafts generally held in London each May will this year be abandoned. The officials after mature consideration have come to this decision, and consequently the annual congress of the Professional Photographers' Association will also not be held. Up to the time of writing no announcements have been made respecting either the Photographic Convention or the Royal Photographic Society and London Salon of Photography's exhibitions, so it must be presumed that these events will be maintained as heretofore.

A PHOTOGRAPHIC WAR RECORD

There is considerable talk in amateur photographic circles of compiling from all available sources photographs relating to the present war, with the ultimate idea of forming a permanent pictorial record of the campaign. It will be evident for several reasons that such a collection could not be attempted before the end of the war, and only then by some central and well-organized body. The Royal Photographic Society has been mentioned in this latter respect and a few members I have seen appear favorably disposed toward the idea. The value of an authentic photographic record of the war to hand down to future generations cannot be too highly estimated, providing, of course, that care is taken in the selection of photographers for the collection and that the genuineness of each is thoroughly attested. Of this there should not be much difficulty, for, in addition to the newspaper representatives, thousands of officers and even privates have not forgotten their vest-pocket cameras. If at the close of hostilities they were appealed to for their negatives by an organization of the status of the "R. P. S." there would be no dearth of material with which to start the collection.

A PORTRAIT REGISTER

A matter that is constantly cropping up among professional men is the advisability of forming a comprehensive system of registering portraits. An instance in support of the argument recently came in the law courts. It was desired to call a certain witness, but no evidence of his address could be found. Indeed, the only clue to his identity was a photograph in the possession of the defending party. If the print, it was an ordinary postcard, had borne the address or name of the photographer the matter would have been easier, but it did not. The establishment of a general system of recording portraits would be an enormous task, but it is one worth discussion. An easier alternative might be for the photographer to have his name printed on each, and to depend upon his own particular method of tracing the identity of the sitter.

UNDERWOOD AND UNDERWOOD

The above well-known firm of New York photographers and press-illustrators, incorporated in New Jersey, have just formed their London business into a private limited company, under the provisions of the Limited Liability Company's Acts of 1908 and 1913. The correct title of the English business is now Underwood & Underwood (London) Ltd., and the capital is given at 5000 pounds in shares of one pound each. The directors are E. Underwood, B. Underwood, E. R. Underwood, E. R. Ross, and C. B. Branson. The registered office is situated at 104 High Holborn, London, W. C.

A SCOTTISH EXHIBITION

The Scottish Photo-Pictorial Circle held its annual exhibition at Glasgow last week, and a

magnificent collection of exhibits graced the walls of the gallery. J. M. Whitehead, J. C. Annan, Ward Muir, and J. McKissick, along with other Scottish workers of note, each appear in characteristic style, while Mr. Wm. Crooke, the Edinburgh professional protraitist of world-wide repute, has loaned an appropriate collection of military portraits. This exhibitor also discharged the duties of judge. A number of the pictures exhibited this year are announced to be disposed of for the benefit of the British Red Cross Society.

MR. H. C. ZEOFFI

Mr. H. C. Zeoffi, the managing director of Ilford Limited, one of the oldest photographic plate and paper manufacturing concerns in England, died last week. He had been associated with the firm for many years and was exceptionally well-known in commercial photographic circles.

REPRODUCING PICTURES

Writing of the Ilford Company recalls a suggestion made by Mr. Harold Baker who described in their house-organ recently a peculiar procedure for photographing oil-paintings. His process is to first flood the painting with thin celluloid varnish, just as one would a negative, but the surface must not be touched until it is perfectly dry and hard again, as the solvent goes right through the paint and makes it soft. With pictures that are cracked and peeling off the canvas it answers admirably, healing up the cracks and cementing the pigment together again. This treatment is said to make the surface more suitable for photographic purposes and will also answer for water-color drawings. But a word to the experimenter: Try it on useless pictures first.

DYES AND DEVELOPERS

The British Government has finally decided to subsidise the aniline-dye industry in this country, and to the photographic world the decision is one of importance. Every photographer the world over knows the reputation held by the large dye-producing firms at Mannheim in Germany, and he also knows that certain photographic chemicals are by-products of the aniline-dye industry. Sir W. Tilden lectured upon this subject a week ago before the Royal Society of Arts, when he explained how the dye industry and the manufacture of the finer chemical elements are so closely associated. No definite statement has yet been forthcoming as to what direction the Government will assist dye manufacturers, or to what extent, but it is almost certain to be in the form of a monetary grant and probably a relaxation of the regulations for imported alcohol.

WAR PICTURES

The staff-photographers attached to newspapers, the press illustration agencies, and also many individual firms of photographers are now busily engaged in meeting the eager demand of the public for war pictures. In face of the statement that one newspaper alone has thirty-four camera-men in the field, in addition to a small army of correspondents, there still remains the opportunity for someone to send the first pictures of actual fighting.

At the Institute of Water-color Painters in the Metropolis there has been opened under the support of the Belgian Government an interesting exhibition of photographs showing scenes and incidents in the German march through Flanders during the early stages of the war. I hear there is a possibility of this collection being exhibited in New York sometime early in the new year.

CHLORIDE OF LIME

Chloride of lime is an excellent preparation for removing obstructions in the waste pipe of the dark-room sink and work of such a nature, but a friend of mine with an inherent love for experimenting appears to have discovered some new uses for it. A few grains dissolved in the fixing-bath prior to immersing the plates has a beneficial effect, particularly in hot weather, claims my informer. Besides acting as a hardener, like alum, it restrains the action of the hypo after a certain stage.

Another formula in which chloride of lime appears is in the following solution for removing stains from negatives:

Chloride of lime	1 oz.
Carbonate of soda	2 oz.
Water	30 oz.
Nitric acid	2 drops

This solution should be made up and stored for use. It has the advantage of keeping fresh for a fair length of time. For use take one ounce of the above to four ounces of water, or more according to the nature and number of the stains. From one to three minutes' immersion is generally sufficient to remove the most obstinate marking, and after this the plate should be carefully washed.

J. B. SUTCLIFFE.

BY ALICE BOUGHTON
NEW YORK

PRACTICAL POINTS

On Coloring Photographs with Ordinary Oil Paints

Whether a little color applied to a photograph is an improvement or not is largely a matter of opinion, but the fact remains that anyone who runs a photographic establishment is occasionally required to do a little coloring, and sometimes a good addition may be made to an order if a colored enlargement can be shown to the customer.

There are three principal methods of coloring photographs: First, there is painting in oils over a photographic groundwork. Secondly, there is tinting, by using good quality water-colors; and lastly, there is the tinting done with aniline and other dyes. Another method which may be mentioned consists in finishing and tinting by means of French pastels or colored chalks, but this is rarely used commercially, and need not be discussed here. The first two methods —namely, the oil and the water-color—are really the best, but to ensure success in either one must have had a good artistic training, even to the extent of being able to paint the portrait without the photographic groundwork at all, this only serving to give the drawing. This is especially the case in oils, where a very poor photographic image can usually be worked up into a quite passable portrait. For water-colors a good photographic image is required, rather light and delicate, but having the features and gradations well rendered. The third process—namely, tinting with aniline dyes—is much simpler, and can be done to a certain extent by anyone with a taste for such work, but owing to the fugitive nature of the colors it is bad policy to use this method in any respectable business. This means that if one is not an artist one must send out all work which is to be colored to an artist, and this is all very well when there is a good price behind it. But very often a little coloring is wanted, for which a very small extra charge can be made, and many orders are allowed to slip because of the price which must be paid if one would be certain of a satisfactory result. For such work a method is needed which is as simple as using dyes, and yet permanent enough to last as long as the photograph.

A process which meets these requirements is to use artists' ordinary oil colors in tubes, in the same manner as would be done with dyes, but instead of putting them on with a brush use a piece of fine white cloth stretched over the forefinger, and for very fine work a piece drawn tightly over a washleather or paper stump, or even a piece of soft wood. Very good results can be obtained by this method which, although not new, is comparatively little known. The results obtained necessarily vary according to the ability and taste of the worker, but it is so simple that even the least experienced can obtain a quite passable result. The most suitable papers for coloring in this way are those with a semimatt surface, though a matt surface can be used if there is a good coating of gelatine to work on. Rough surface papers, however, do not give good results, as the color is apt to gather in uneven patches and so cause a dirty looking result. Strong brilliant prints are best, not hard, but clean and bright, with well-marked gradations, as the photographic image has to show through the coloring and supply the light and shade. Glossy papers can be used, but the color does not adhere so well as on a good hard-surface matt paper, and is more easily rubbed off while wet.—*British Journal of Photography.*

Scratched Films

If contact printing, lay a sheet of fine ground glass or tissue paper over the face of the printing frame, so that it is, say, ½ to 1 in. away from the film. This will diffuse the light, and most probably quite prevent the scratch showing in the print. Again, the use of a slightly matt-surface printing paper is a considerable help in this connection. If enlarging, the interposition of a sheet of finely ground glass anywhere between the light source and negative—provided it is not too close to the latter—will act as a diffusing screen. Of course, you will perceive that a diffusing (light scattering) screen in either contact or enlarging will necessitate an increase of exposure. If you dissolve some small cuttings of celluloid—*e. g.* an old film from which the gelatine coating has been removed by hot water, etc.—in enough acetate, you could with patience and a finely-pointed camel-hair brush apply this to the scratches and so obliterate them.

Platinum Residues

Old platinum papers and cuttings can be sent to the refinery as they are, for the purpose of extracting the platinum, but if being sent a long distance, it is preferable to burn the waste and forward the ashes. Care should be taken to prevent loss by dusting during burning.

For the treatment of old developers and acid clearing baths, the best method is to precipitate the platinum by means of strips of scrap zinc. The old developers and clearing baths can be placed together in an earthenware pan or tub, the strips of metal placed in the liquor in an upright position, and the liquor kept just acid with hydrochloric acid.

The platinum will be precipitated, and the clear top liquor, when settled quite clear, may

be siphoned away, preferably through a double piece of linen or calico, or, better still, through filter paper.

Do not keep the liquor too acid, or you will waste zinc.

Paper Negatives

It is hardly to be expected to find any paper that is absolutely free from grain; but papers vary considerably in this respect. By translucing the paper when the negative is otherwise finished the grain can be reduced to a minimum. The following translucing media may be mentioned: (1) Vaseline, (2) paraffin wax in paraffin, (3) castor oil and alcohol, (4) white wax in benzol, (5) Canada balsam in turpentine, (6) salad oil. Of these, perhaps the first-named is as good as any. The vaseline is freely smeared all over the dry paper side, and then the negative is held in front of a fire warm enough to make the vaseline run. The heat drives air out of the paper fibres and gives a frothy appearance to the vaseline. As the paper cools, the vaseline is sucked into the pores of the paper. When the paper is cold all superfluous (non-absorbed) vaseline is cleaned off with soft rag. If the unmounted bromide prints are first well fixed in clean, fresh hypo, and then well washed, we see no reason why they should not preserve their pristine freshness. It would be advisable to keep the prints under pressure in a dry place and away from fire or burnt gas fumes. The gas fumes might in time induce a metallic-color sheeny appearance.

Gelatin Supports for Negatives

To make a support for collodion negatives that will strip off in a film similar to thin celluloid is the question asked of *Process Work*, and here is the reply, changed slightly, from one who has found the following method to work most satisfactorily in practice:

First see that the glass to be used is well cleaned with acid, then polish and rub well with French chalk. Take narrow strips of proof paper about one-half inch wide and stick all around the edges of the glass, then prepare the following solution: Nelson's shredded gelatin, 1 ounce; water, 6 ounces. Boil until the gelatin is dissolved, and then add 1 dram of chrome alum and 10 drops of ammonia. Mix well and filter while warm. Level the glass plate, and for an 8 by 10 inch plate pour about 2 ounces of the gelatin on the centre of the glass and spread with a glass rod. The strips of paper around the edges will prevent the gelatin from overflowing. When the gelatin is quite set, the plates are placed to dry in an oven where the temperature should not rise above 120° F. The drying will take from three and one-half to four hours. The gelatin will lay quite flat and smooth when dry. Strip and turn the collodion negative, and after laying it in a bath of alcohol to remove all the water possible, squeegee it to the gelatin film. Cut around the inside of the paper strips with a sharp knife, when it will be found that the gelatin will peel off from the glass like a film of celluloid. Place between dry blotters with a weight on them to dry flat. It may be added that if no albumen or other substratum is used on the glass the collodion negative can be made first and the coating of gelatin used over the collodion film when the latter is dry.

A Convenient Washing-pan

To make a very inexpensive pan for washing prints, procure a milk-pan about sixteen inches in diameter and five inches deep. Around the brim and about three-fourths of an inch from the top, drill three-eighths-inch holes at intervals of about two inches. These will let out the water, but prevent the prints from going over the top as would be the case if the holes were not there. If one large hole is drilled, the suction of the water passing out will cause the prints to collect in one spot. By directing the current of water against the side of the pan, the prints will revolve and in this way wash thoroughly. Such a device costs but little.

Chrome Alum Fixing Bath

The following fixing bath will give excellent results:

A	
Water	48 fl. oz.
Hyposulphite of soda	1 lb.
Dry sulphite of soda	1 oz.

B	
Water	16 fl. oz.
Chrome alum	1 oz.
Sulphuric acid	1 dr.

Dissolve the hypo completely, also the chrome alum, then add B to A slowly, when it will be ready for negative fixing.

Squeegeed Prints

I, at times, find a bunch of prints very difficult to squeegee into absolute contact with the ferrotype plates, the result being a print with an unsatisfactory half-way gloss. To remedy this, I find if the print is first brushed over with a tepid concentrated solution of gelatin, and then immediately well squeegeed on to a clean, recently waxed plate, when dry the print will peel off with a smooth, high gloss.—M.R.R., in *Camera Craft*.

An Excellent Developer

A mixture of metol and pyro makes a developer which some worders prefer to all others. They will find the following is a good one:

A	
Water	20 oz.
Metol	25 gr.
Potassium metabisulphite	65 gr.
Pyro	25 gr.
Potassium bromide	3 gr.

B	
Water	20 oz.
Sodium carbonate, dry	1 oz.

Mix equal parts and add an equal quantity of water, or whatever quantity of water will give the required result.

Stripping Films from Glass Negatives

I DID not like to recommend (writes Dr. D'Arcy Power in *Camera Work*) any particular method of stripping films from the glass support, for the reason that much depends upon the particular brand of plates and the way in which they have been treated in developing, fixing, and washing. However, I ran across a worker the other day who showed me a lot of negatives that had originally been in the form of glass plate ones, but are now thin films capable of being stored in a fractional amount of the space formerly occupied. He said they had been stripped, and stripped successfully, by first immersing in a solution made up as follows:

Potassium carbonate solution, 50 per cent.	2 oz.
Glycerin	1 oz.
Formaline (40 per cent. formaldehyde)	1 oz.
Water	50 oz.

After soaking in the above for at least a half-hour, the plate is drained, wiped free from surface moisture and then slowly dried until perfectly free from any indication of moisture. The next thing is to float with a solution of gelatin in order to give the film the necessary body when stripped. This coating dry, a cut is made through the film about one-eighth of an inch from the edge all round, after which it may be peeled off very easily.

Removing Films from Plates

WHERE a number of plates are to be cleared from the emulsion film a very handy method is to soak them for a few minutes in a strong solution of chrome alum. After this treatment the film will peel off as a whole skin, leaving the glass perfectly clean. For cleaning off the films from spoilt lantern-plates, in order to use them as cover glasses, it is a neater and quicker process than soaking in acid or hot water and scrubbing the emulsion off with a brush.—*British Journal of Photography.*

Sensitizing Canvas for Enlarging

To sensitize canvas with a coating sufficiently rapid for making enlargements by daylight or with an arc lamp the following directions, if carefully followed, give a very good result. If the canvas has already been prepared for artist's use the first thing is to clean it with a mixture of one part strong ammonia and four parts methylated spirit. Rub this over with a clean rag until the canvas is free from appearance of greasiness. Then let it dry thoroughly and prepare the first solution as follows:

Potass iodide	80 gr.
Ammonium bromide	35 gr.
Ammonium chloride	10 gr.
Gelatin	60 gr.
Albumen, dry	440 gr.
Water	10 oz.

The first three are dissolved in the cold water, then the gelatin added and the solution gently warmed and allowed to stand in a warm place until the gelatin has quite dissolved. Then the albumen is stirred in. The solution must be only tepid when this is done, for, if too warm, the albumen is precipitated. The mixture is applied to the canvas with a sponge. The canvas so prepared may be kept for any reasonable time. To sensitize it a solution of silver nitrate, 35 grams; glacial acetic acid, 40 minims; water, 1 ounce, is poured in a small pool at the centre of the canvas and evenly spread with cotton wool. The canvas is exposed wet, the exposure being about a minute in a daylight enlarger set to about six times enlargement and using a wide aperture lens. The developer is made by dissolving 60 grains of gallic acid and 10 grains of lead acetate in 10 ounces of water. It is applied to the canvas with the same piece of wool used for the sensitizer, the silver solution left in the wool being sufficient to provide the necessary vigor in the image. Finally, the canvas is rinsed and fixed in an ordinary hypo bath.—*British Journal of Photography.*

Pure White Backgrounds

IN white background work a difficulty—common to most operators—is experienced in getting the background sufficiently opaque in the negative. This is readily understood when one considers that in most studios it is almost impossible to light the background and sitter *independently*, the consequence being that the subject receives the proper lighting and the poor background has to go. However white or blue-white it may be catalogued, its photographic value—under these conditions—is really gray. The printer's duty is to make up for these deficiencies. The methods for doing so are legion, but the writer has found none of them to equal the following dodge: Paint the film side of the negative with "Bertha Firelight Stain" or red ink on all the parts where it is desired to print white. The film takes the stain very evenly, particularly if it is slightly moistoned with the tongue beforehand. Quite tiny details can be painted around without harming the outline in the least, and while the result will print as white as a negative blocked out with opaque, there are no actually sharp edges common to this method. The dye sinks into the gelatin and very slightly softens at the edges. In working near the face portion it is advisable to use the color very weak, and not quite touch the outline of the face. A trial or two will convince one of the advantages of this method over the airbrushing, matt varnishing, or black powder ways generally used, and farther it is cheap and simple.—A. L. C., in *British Journal of Photography.*

A Unique Electric Blue-print Machine

THE accompanying illustration, Fig. 1, and drawing, Fig. 2, show the construction and method of operation of a novel electric blue-print machine designed at Saginaw, Mich. It is intended for the continuous printing of blue prints made from tracings varying in width from 2 to 48 inches and of unlimited lengths. It has gravity

feed on an incline feeding table, as shown by the drawing and absolute uniformity of tone made possible by the use of the mercury vapor lamp.

There is a most economical current consumption, as the machine at no time uses more than 5 amperes at 110 volts. This includes the current for the lamp and the motor. The light-tight storage compartments for the blue-printing paper before and after being printed make possible the use of this machine in a room with ordinary daylight exposure.

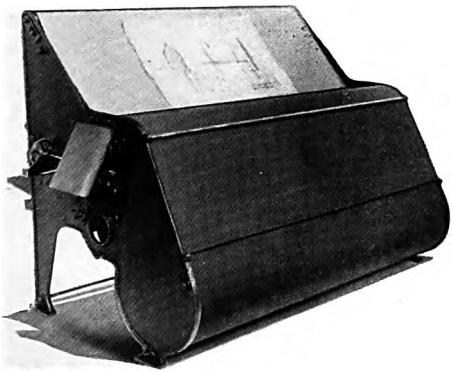


FIG. 1

It is pointed out that the convenience to operator is made possible by all controlling mechanism being placed at the operator's position. The small floor space required is 2 ft. 6 in. x 5 ft. The machine has absolutely noiseless variable cushion friction drive, all contained in one housing which is readily removable from the side frame of the machine. The light passes directly from the lamp through the tracing cloth on to the paper without intervening glass to obstruct its printing qualities.

There are no glass cylinders to break or keep clean. The light needs absolutely no attention regarding adjustment, needs no ventilating fan for cooling purposes and is thoroughly practical. It may be stated that by the action of the specially wound spiral cylinder, tracings and blue-print paper are automatically spread and smoothed out in all directions, making it impossible for the machine to deliver blue-prints having the slightest mark or indication of increased or folded tracings.

It is of interest to note that the machine illustrated will print continuous rolls or separately cut sheets, the paper traveling with the feeding belt on an incline with the tracing, is carried to the feed roller and around the printing cylinder, in which is mounted the lighting element. The blue-print paper is then delivered to the light-tight storage compartment and the tracing back to the operator.

Any desired length of blue-print can be made, in widths varying from 2 inches up to and including 48 inches. The machine is absolutely automatic, the only work required of the operator is the placing of the tracing and the blue-print paper on the continuous traveling belt. The machine does the rest in a surprisingly perfect manner.

It will be seen that in the front and just below the feeding table there is located a magazine, which is light-tight and provides ample storage room for three or four rolls of blue-printing paper. In continuous printing, the paper passes from this storage compartment over the feeding table, which is at an angle of 45 degrees, thence down to the feeding rolls, the blue-print paper and tracing then travel around the printing cylinder, the tracing being delivered to the operator if he so desires or it can go with the blue-print paper into the storage compartment in the rear of the machine. The printing of separate prints is just as readily accomplished as the ordinary continuous printing. There is no reason for an operator working in a darkened room, because the light-tight compartments do away with this necessity.

It is pointed out that the contact between the tracing and the paper is secured by means of a single, wide, continuous belt, passing around the feed rolls and the metallic cylinder and covering over 92 per cent. of its circumference. The tension of this belt is regulated automatically and the light is projected directly in a radial line through the tracing without having to pass through an intervening glass, nor is it deflected by reflectors of any sort. The spirally disposed wires of this cylinder offer much less actual obstruction to the light than any glass cylinder would and the light is closer to the blue-printing paper in this machine than in any other; in fact, the distance from the light to the paper is only 2 inches around its entire circumference.

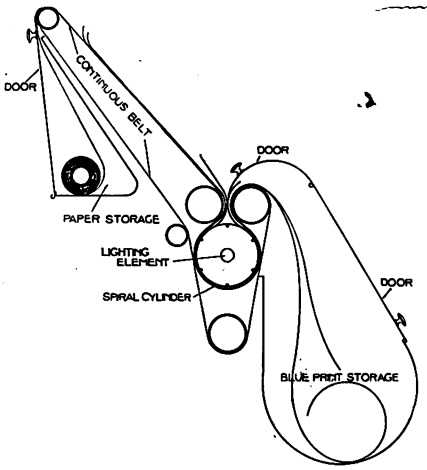


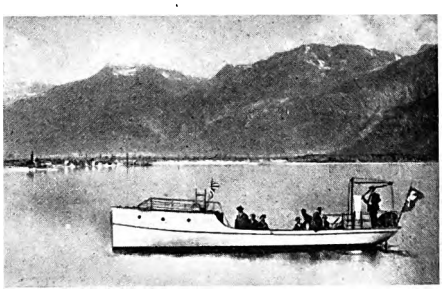
FIG. 2

It may be stated that the motor, which is of ample horsepower for the work required to operate continuously at maximum duty without undue heating, is connected to a variable friction feed, allowing a wide range of adjustment.

It is of interest to note that the printing cylinder which surrounds the lighting element is composed of longitudinal and spirally disposed wires, woven right handed at one side of

the centre of the machine and left handed at the other side. This gives a very desirable ironing or spreading effect to each side of the tracing and an absolutely perfect contact between the tracing and the paper. The light is obtained from a mercury vapor lamp rich in chemical light, practically all of the energy being given out in actinic rays. The mercury vapor lamp is no more trouble to maintain than an ordinary incandescent lamp; there are no carbons to renew as in the ordinary arc lamp: it operates at a very low temperature and requires absolutely no attention from the operator at any time.—*Frank C. Perkins.*

A Swiss Gasoline Motor Boat for Photographic Research



The accompanying illustration shows the gasoline motor boat on Lake Geneva, utilized by the Institut de Zoölogie et Station de Zoölogie Lacustre de L'Universite de Geneve, for research and photography of animal and vegetable life at the bottom of the lake, at various depths up to 309 meters, the maximum depth of this beautiful Lake in Switzerland.

This gasoline boat was named after the famous Zoölogiste, Edward Claparede, who died in 1871. The research work is done under the direction of Emile King, Professor of Zoölogy at the University of Geneva, who is seen in the photograph, in charge of this unique research boat. It will be seen that nets and hoisting apparatus are provided for collecting the animal and vegetable life to be investigated.—*F. C. Perkins.*

Replies to Queries

Henry Wakefield: How can I prepare a blue-print paper that is more sensitive than the ordinary kind? I have been informed that this can be done, and should very much like to have it done, so have written to Wilson's for the necessary information.

You may prepare a rapid blue-print paper with the following formula, which when mixed must be brushed upon the paper evenly, and dried at 140° F.

A

Ammonio-citrate of iron (green scales)	330 gr.
Distilled water	3 fl. oz.

B

Ferricyanide of potassium	120 gr.
Distilled water	3 fl. oz.

Dissolve each separately, mix when ready to coat the paper.

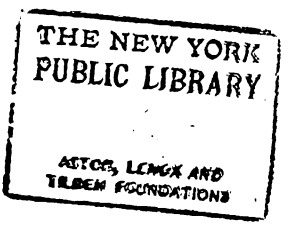
The brown variety of citrate of iron and ammonia does not yield so sensitive a coating. If the brown variety must be used, then the proportion will be 240 grains, in place of 330 as given in the formula.

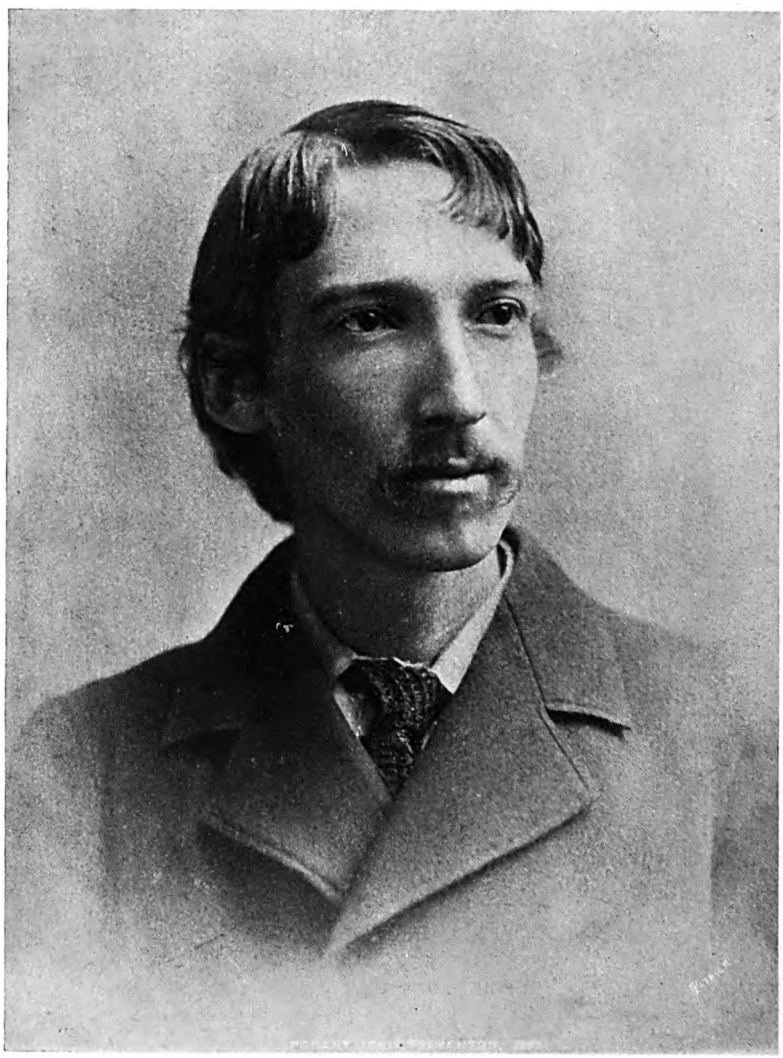
Thomas Jones: You ask us why sea water cannot be used for making up photographic developers and other solutions.

The reason salt water cannot be used is because it contains so many impurities, as you will see by the following analysis by Sir John Murray.

Composition of sea water:

Sodium chloride	27.213
Magnesium chloride	3.807
Magnesium sulphate	1.658
Calcium sulphate	1.260
Potassium sulphate	0.863
Calcium carbonate	0.123
Magnesium bromide	0.076
Total solids	35.000





ROBERT LOUIS STEVENSON (1880)
By J. PATRICK (C)

The PHOTOGRAPHIC JOURNAL of AMERICA

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FRANK SCOTT CLARK—THE MAN AND HIS WORK

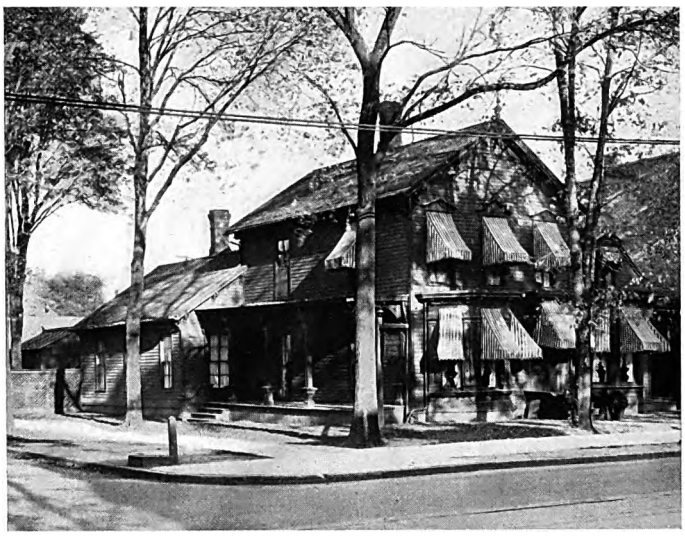
By SADAKICHI HARTMANN

(SIDNEY ALLAN)

ONE winter evening, following a dismal day of yellow fog and blizzardy winds, when I sat disconsolate and weary, not knowing what to do with myself, in my room in a Chicago hotel, Dundas Todd paid me a visit. At that time he had not yet gone into bee culture, but was still writing his able educational articles for *The Beacon*. So we talked on general photographic matters, until he made the apparently very casual remark that some of the top-notchers of the profession were holding an unceremonious confab at the Lexington, criticising each other's prints, discussing the situation, and having a good time all around. Well, I suggested, we will join them. "I do not exactly know," murmured Todd, "whether"—Then he got up and disappeared for a while. There was a decided air of mystery about the affair. When he came back he said: "Yes, they would like to meet you."

So we started, and were ushered into a hotel parlor with prints on a round table in the middle and plenty of liquid food on the mantelpiece and dressers, while a dozen men or more were distributed in groups about the room.

There were present at this memorable occasion big jolly J. C. and Godlove, his loyal adjutant; Krafft from Knoxville; genial Rinehart from Omaha;



THE STUDIO, DETROIT, MICH

sturdy Stein from Milwaukee; of course, also, the Commodore with one of his sons, and, if I remember rightly, Edmonson from Cleveland, and Frank Scott Clark from Detroit.

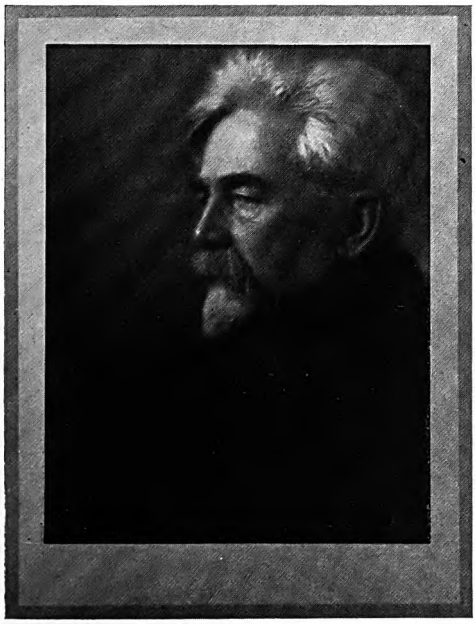
Surely, a striking bunch of personalities that one could not easily forget, and among them Frank Scott Clark held peculiarly his own. There was an esthetic flavor about his face and figure, and a mild magnetism that must have done him many a good turn under the skylight. He seemed to be the artist of the crowd.

This was in 1902, or thereabouts. Clark was already well known in the profession. He had started as early as 1880, when he worked for W. T. Richardson, an English practitioner in New York City. Then he drifted to J. M. Brainard's studio in Rome, N. Y. In 1892 he came to Detroit, and the result was the opening of the well-known studio of Huntington & Clark. In 1902 the partnership was dissolved, and Clark started for himself in that quaint little frame building on Woodward Avenue, so unlike other establishments, impressing one by its home-like atmosphere, where photography is practised not so much as a business as an art. Clark went his own way, and easily took his place in the front rank, in which he had so long deserved to be.

For twenty-two years he has remained loyal to Detroit, and no portrait photographer has depicted Detroit society so completely or in a manner so varied. None has represented more truly or more delicately the characteristic traits of its inhabitants, the expression of their faces, their gestures, and the love for contrast that strikes the visitor as being one of the characteristics of woman's dress in the State of Michigan. All his pictures are marked with the characteristic imprint of an artist's talent—full of grace and poetry and sweetness.

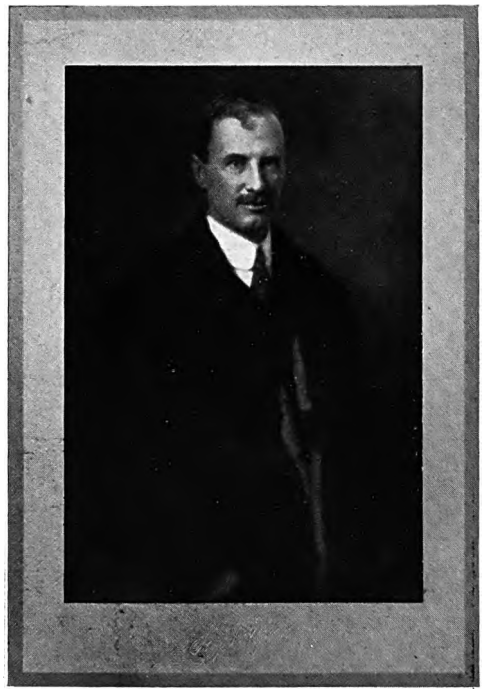
From the countless portraits of men, women, and children, all marked by an external resemblance, and realizing in a characteristic manner the essentials of the person depicted, the writer of these lines has selected a dozen or more for illustrative purposes. It did not take him long, as nearly all prints showed a certain standard of perfection. The *average* quality of Clark's work is truly astonishing in its evenness of workmanship, its artistic taste, and beauty of quiet, well-harmonized tonalities.

His little studio building is admirably adapted to its purpose. There are several rooms on the ground floor, all well proportioned and pleasantly lighted and arranged so as to set off to good advantage the simple, old-fashioned furniture and the few pictures exhibited in them.



By FRANK SCOTT CLARK
DETROIT, MICH.

There are but few of Clark's prints in evidence, even the large portfolios lie in an inconspicuous corner in the studio. Clark does not make a habit of showing his former work to new customers. If they insist on seeing examples he is willing enough to display them, but he rather avoids it, as he does not want his patrons



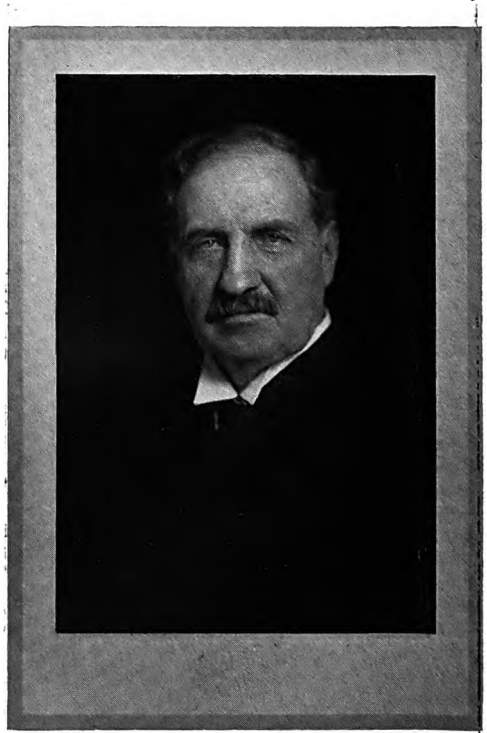
BY FRANK SCOTT CLARK

to get, at the spur of the moment, a preconceived notion of what they want. He is inclined to think that it limits the freedom of the operator. He prefers to be at perfect ease with his sitters and obey the dictates of his own inspiration and experience. No doubt, his power of interpretation is increased thereby. He can bring out the "good qualities" more convincingly and exercise his powerful and expressive technique without any counter influence.

If we had to pick out the quality that puts Frank Scott Clark in the front rank of our portraitists, I should say it is his mastery over what I may, for want of a better term, call spontaneous preciseness, a compromise between freedom of effect and the exigencies of most scrupulous composition.

Let us take up at random a few of his prints.

The young lady in a black toque is an exquisite rendering of a vivacious subject, very subtle despite its contrasts and most attractive in its freshness and luminosity of tones. Equally worthy of consideration is the white-haired gentleman with the cigarette (Jules Rolshoren), a record of top and side light treated with splendid confidence, while one of the most commanding pictures, in its power of direct statement, is the bust portrait of Fournier, the landscape painter, a transcription of character seen with true individuality



BY FRANK SCOTT CLARK

and set down with sincere conviction. A very different type of interpretation is illustrated in the bride and mother and child picture, exquisite studies of detail, rendered with extraordinary daintiness and delicacy of sentiment. The brother and sister portrait also claims particular mention as a print which has both sound-

ness of technical treatment and definite grace in grouping. Its lightnest of tone is pleasant, and its reticence of representation hints at a reserve of strength which easily masters all the intricate moods and expressions of the human countenance.

BY FRANK SCOTT CLARK

There are many other charming achievements on these pages, delightfully imagined and perfectly realized, but we must leave their appreciation to the good taste of the reader, as the scope of this article does not permit of the critical exploitation of any print in particular.

Clark is an exponent of straightforward studio photography. He even calls himself a theoretical exponent of home portraiture. This at first hearing sounds like a paradox, as Clark (as he himself admits it) owes some of his finest achievements to the prevalent methods of home portraiture. But it is easily enough explained. Every portraitist who takes his profession seriously must at times feel the inadequacies of this method, as expressed in snapshotty poses and haphazard lighting. Too much depends on accident. It it impossible to control all the vagaries of new environment and uncontrollable atmospheric conditions, while in efficient studio work everything is guided by arrangements and requisites with which the operator is thoroughly familiar. He can use more forethought and calculation, and in that way do more justice to the personality of the sitter and the laws of composition.

For this reason studio work affords more interesting and sincere opportunities than any of the other methods of delineation. And it is only when an experienced camera worker like Clark can combine the persuasive spontaneity

BY FRANK SCOTT CLARK

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Frank Scott Clark is one of the most consummate stylists in portraiture whom the American school has ever possessed.

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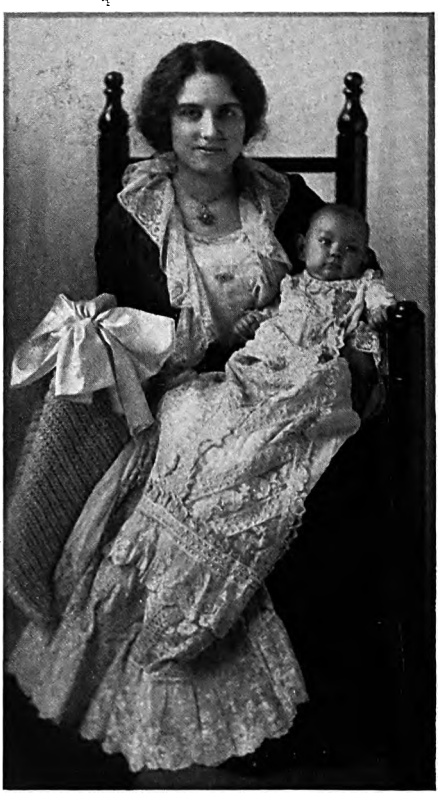

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His portraits have a supreme interest as examples of dignified design from which all the other trivialities have been eliminated and in which the great salient facts are stated with perfect appreciation of their value. His sense of form, too, is as true as his feeling for tone, so that there is no flaw in the harmony of his work, and there is no direction in which he fails to make his artistic intentions perfectly intelligible.

No doubt, Clark owes much to his love of art. He has always been somewhat of a painter, and not later than a month ago, as we sat on the sunlit lawn that surrounds his little corner cottage, he expressed the desire to abandon photography and to take up painting, largely for pleasure's sake but seriously.

I looked at him, doubtful at the moment whether he really meant it. And as I gazed at his calm, strong and gentle face, on which the struggles of a long career have left no trace, but on which it is easy to make out, behind the gentleness, a resolute will that nothing can discourage, I realized that Clark would be successful in whatever he would earnestly undertake, while his strong, healthy frame would help him to be equal to many more years of work. The quiet enthusiasm, the persistent seeking after truth, the absence of affectation which distinguished the whole of his production, have made Frank Scott Clark an artist in the fullest meaning of the word. His work will always express a noble singleness of aim and the observations and beliefs of a man who went his own way.

PRODUCING PICTURES BY THE CALORIFIC RAYS

By GEORGE SMEE

WE are so accustomed to regard light, visible light, as being the one form of energy that is capable of making an impression upon various chemical substances and surfaces, that we are apt to overlook energy in other forms, especially in the form of heat.

Now heat, like electricity or light, is capable of producing effects identical in many respects with light. In fact, it is well known that heat not only aids chemical action, but it possesses the power of bringing about dissociation, and it is this form of energy that brings about the impressions upon various surfaces, both metal and non-metal, while metals in turn are capable of producing impressions upon surfaces that are sensitive to light, even in complete darkness, which action is aided by the calorific rays.

One of the most simple of all methods of producing and reproducing the outline and general contour of almost any body may be carried out in the following manner: Take a clear glass plate, such as a cleaned-off 4 x 5 negative, or perhaps several of them; place upon one of these plates a dime, a nickel, a cent, and a button with two or four holes in it; lay the button flat side down upon the plate so that there is no space left between the button and the glass plate; place the coins in a line or around the button; then hold the plate quite level, and breathe upon the articles and plate with a good warm breath, three times in succession; lay the glass plate down so that the objects are not disturbed, and permit them to remain until the whole has cooled down. Then with a sudden jerk throw off the objects so that they do not *slide* off the plate. Now breathe upon the place where the objects had been resting. Immediately a perfect shape of all the coins and the button with the holes will be produced upon the plate. As soon as the moisture has evaporated the shapes of these objects

BY GUIDO REY, ITALY

may be again reproduced by breathing upon the plate. This may be repeated for about two days before the impressions lose their reproducing power.

Take one of the plates and rub the surface all over with a clean pocket-handkerchief; in fact, polish the surface completely; then breathe again upon the plate, when it will be found that the forms of the objects will appear again.

Another plate may be taken, and similar objects placed thereon, and dry heat may be applied above these objects by using a thick plate of copper heated nearly to redness. After thirty seconds' exposure to this heated plate, the whole must be allowed to become cold, when upon breathing upon the plate, every object will be seen to have left an impression.

If a piece of brightly polished copper, or a piece of silvered copper plate highly polished, is taken, and several coins placed thereon, such as a dime, a cent, and a nickel, and the plate strongly heated from beneath by means of a Bunsen burner, then removed and cooled off, it will be found that each coin has left a permanent impression upon the metal surface. The head of liberty or the reverse can be produced as perfect as if it had been photographed, while no other kind of energy has been employed but heat.

That there is not only energy that acts similar to light that is emitted directly from heat, but that mechanical energy is also produced, may be seen in almost every optician's window in the form of a Crooke's radiometer. This extraordinary little instrument actually revolves by the radiant force of heat impinging upon the blackened surfaces of small, thin platinum bodies supported in a vacuum. Thus we have illustrated clearly that not only is heat presented as a radiant force, but it is demonstrable in this instance as mechanical force. Heat and moisture are of the greatest importance in the production of an image by means of light. Heat aids chemical action; thus becoming an important factor in producing the photographic image.

ARCHITECTURAL PHOTOGRAPHY

By WILLIAM S. DAVIS

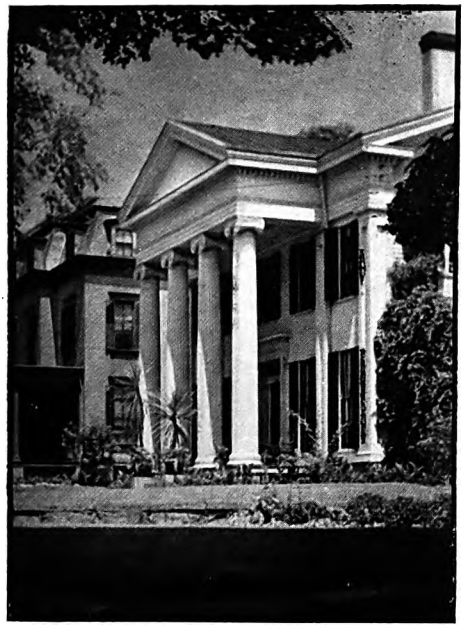
MUCH has been written upon this subject, but as a rule only the technical side of the work has been dealt with, and, important as this is, the artistic side should not be overlooked. Even though the professional is often called upon to do a purely commercial piece of work, opportunities also occur when a free hand is allowed for the exercise of personal taste and skill in the production of a pictorial result, which may be accomplished without lessening the value of the photograph as an architectural record. This often applies to private orders from owners of attractive residences, to say nothing of work intended for reproduction in various forms, as in high-class magazines and books dealing with these subjects and others of a kindred nature.

Unfortunately many people seem to think material near at hand is not worthy of serious consideration for its artistic value, but suffice it to say the intrinsic merit of a subject does not in itself insure a successful picture, but rather the manner in which it is employed, and those who learn to pick out latent possibilities in familiar scenes will not feel that it is essential to roam about to distant parts in search of subjects, however pleasant it may be to do so sometimes.

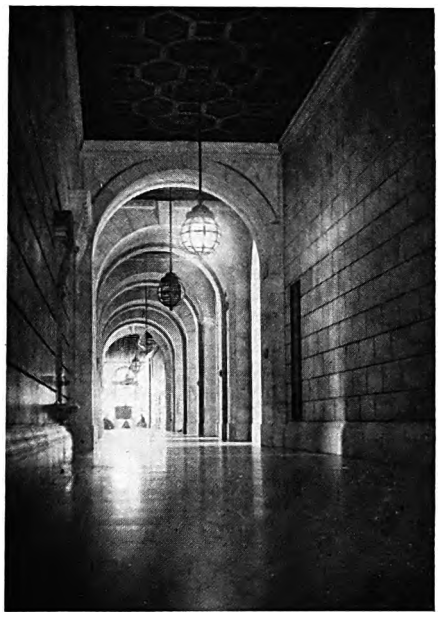
While buildings do not change like landscapes, nevertheless *their effect* upon the observer varies immensely according to the moment and conditions under which they are seen, and one who is working for pictorial beauty must always keep this fact in mind and try to discover the most favorable aspect. Not only does the time of day bring many changes in light and shade, as every one knows, but those caused by the state of the atmosphere and season of the year are of much importance, for they not only alter the gradation of tones but frequently introduce picturesque effects as well. Fog or mist, for example, screens the distance, and allows a foreground detail to be emphasized, or a shower may produce reflections which will break up the flatness of a dull foreground. When trees come into a view the time of year naturally makes a great difference, some subjects being seen to the best advantage when the branches are bare, while in other cases both foliage and the shadows so formed may prove just what is needed.

The direction from which sunshine falls upon a subject is constantly altering the general effect with every passing moment, and so it happens that the best chance for making an exposure sometimes lasts but a few minutes during an entire day, and as much depends upon the individual character of the architecture and its location it is hardly safe to offer definite hints about the best time for working. However, when it is desired to show the maximum amount of detail and roundness in sculpture or other ornamentation, the light should fall upon it from such a direction that the shadow side of the details comes toward the observer. This usually means having the sun well to one side, and, when taking the front of a building in perspective, working somewhat against the light. Where it is desirable to give special prominence to projecting horizontal lines of cornices and lintels the nearly vertical rays of a noonday sun may give just the right shadow effect. It is not a bad idea when taking a preliminary survey to make a note of the compass bearings of whatever subjects one has in view, as it is then possible with a little thought to so time it that a number can be taken in succession, and each under the best lighting.

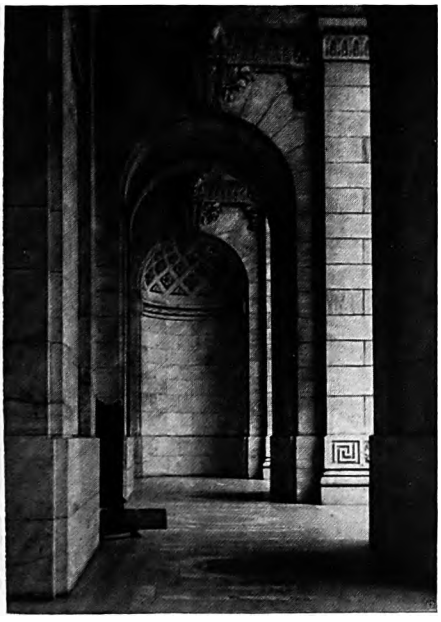
If parts like a portico or veranda cast too deep shadows in bright light, choose



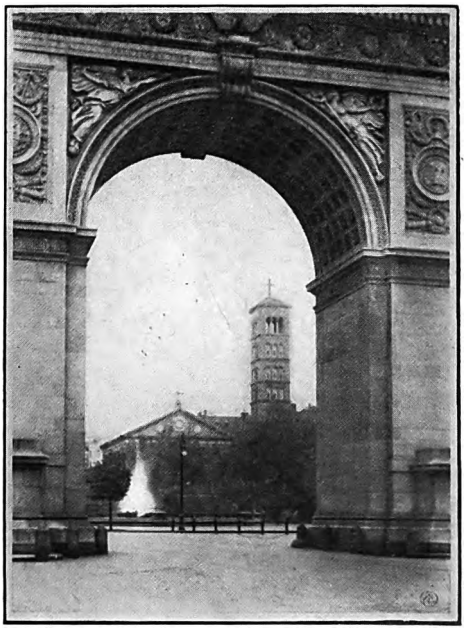
A COLONIAL TYPE



REFLECTIONS



UNDER THE PORTICO



THE WASHINGTON ARCH, N. Y

By WM. S. DAVIS
ORIENT, N. Y.

a hazy or cloudy day, when the light is well diffused.

Where minute details are a secondary consideration, and one wishes rather to secure a broad impression of buildings and their surroundings by using the various portions of the scene in masses to make an effective tonal and atmospheric study, it is often necessary to disregard conventional rules and work when the light is more upon, or back of, the subject, according to the particular effect desired. Most delicate renderings of white or light-toned buildings are obtainable when taken in full light against a blue sky; but, of course, the difference in tone and color values must be carefully preserved by using a suitable plate and ray filter.

THE WOOLWORTH TOWER, N. Y.
BY WM. S DAVIS

Clouds are a valuable aid in open compositions of some kinds, especially so when working against the light, as buildings in shadow tend to form rather flat masses of tone which are relieved of monotony if variety is introduced in the sky. If not on hand when needed it is not a difficult matter to "print in" a suggestion of clouds later.

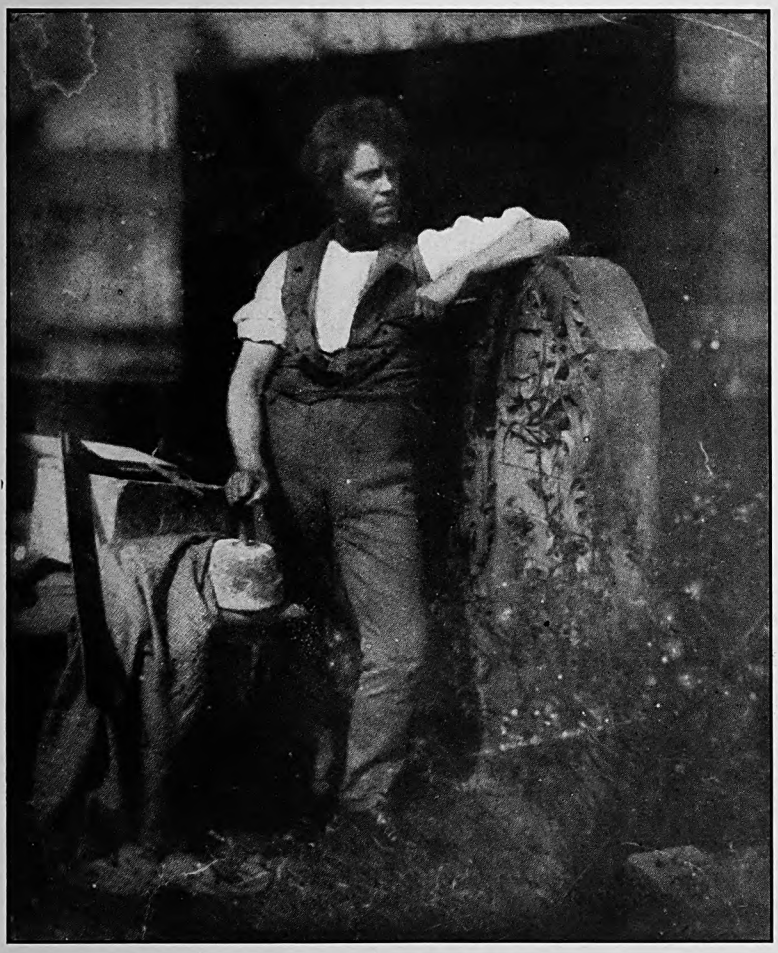
Regarding interiors: From the artistic standpoint the important things to guard against are violent perspective, harsh lighting, the intrusion of objects too near the lens, and a general feeling of overcrowding and scattered interest. Some of these are most liable to occur in domestic interiors. where rooms are comparatively small and a wide-angle lens is employed.

In all cases it is best to concentrate interest upon some attractive portion, or take several views, rather than endeavor to include everything possible upon one plate.

Having settled upon the angle of view to be included, the composition should be studied upon the focussing screen (where the camera must be backed up against a wall the image may be seen easily by looking down on a mirror held at an angle back of the ground-glass) and distracting furniture and bric-a-brac removed from the field of vision, or changed to better positions, until harmony is secured. Of course, I do not mean to go so far that the result will look bare or formal, although it is surprising how much may be removed from the average room without the individual items being missed in a picture.

Strong reflected lights from highly polished objects and glazed pictures require attention, for if noticed in time they may usually be subdued by screening the light which falls upon them, or altering their position.

If a room is lighted by windows on two or more sides it is easy to control the effect, the main object being to diffuse the light evenly enough to obtain in the darkest corners without losing gradation in the higher lights. When one portion shows much stronger illumination than the rest, or the general light and shade effect is too sharp, something must be done to soften it, either by covering the window from which the greatest light comes with muslin or "cheese-cloth," or intercepting the light by means of a portable screen placed to one side of the camera. In extreme cases dark shadows can be



By DAVID O. HILL, R.S.A. (SCOT.)

softened by burning magnesium ribbon while the daylight exposure is going on. If this is done, however, the ribbon should be kept moving several feet from side to side to prevent false shadows showing in the finished picture.

When a window is included in the view the possibility of halation is a matter for thought. If the general illumination is good, and there are no dark walls or draperies of poor actinic color, the use of "non-halation" plates together with the fact that a comparatively short exposure is possible, will usually overcome the difficulty. Where the interior is dark, and the lens must face a strong light from the window included, such simple treatment is not always successful, and other means have to be adopted. Some advise covering the window with dark opaque material and making the exposure by diffused light, either from other windows or by use of magnesium, then removing this covering and giving another short exposure for the window and whatever scenery may be visible outside. This overcomes the technical difficulties and when the source of light used for the principal exposure is well diffused the effect is quite natural. Another way, however, is to cover the window on the outside with white muslin, or if this cannot be done readily, attach one or more pieces of tracing-paper, cut to fit accurately, upon the inside of each window pane. In this

way the light is much subdued in strength, and so is not liable to spread out enough to cause halation.

Coming now to the choice of apparatus, no doubt a camera of the reversible-back view type is most convenient, with, of choice, both front and back focus adjustments, a good rise of front, and either swing-back or bed. In one way a swing-bed is better than the usual swing-back, as with the former one can get the back vertical to start with and then move the bed to the necessary angle without having to readjust the back each time a change is made. Many of the better grade folding hand cameras intended for use of plates possess all the really essential movements, and with proper care will permit of just as good results being obtained.

For all-around purposes several lenses of different focus are desirable. In every instance though it is advisable, both indoors and out, to use the longest focal length which will include what is wanted from the standpoint available, as by so doing more natural and pleasing perspective will be secured. Probably the two most useful lengths are, one equal in focus to the base-line of the picture, and the other once-and-a-half this. There are times when a lens of considerably longer focus than either of these is useful, say in taking some tower or tall building from a distance. The commercial photographer would no doubt have to include a wide-angle lens in the outfit, since in some instances it must be that or nothing, but the amateur can usually manage very well by reducing the focus of an ordinary lens with a supplementary attachment.

I am inclined to think when working against strong light that less trouble from halation or flare is met with if a cemented rather than an air-space type of lens is used, but, aside from this possibility, good work can be done with any standard R. R. or anastigmat, and when a long-focus lens is needed a single achromatic, or one combination of a doublet, is (aside from speed) practically equal to either for distant objects, since the angle included is so narrow that curvature of marginal lines cannot be detected.

Color-sensitive plates are advised, since color is always found to some extent in all subjects, and markedly so in many interiors.

In outdoor work a ray-filter will improve the result in many cases.

Exposures should be long enough to render shadow detail without forcing development, and as these vary so widely the best guide is a good exposure-meter, such as the Watkins or Wynne, in which the strength of the light is measured.

In conclusion I give below some technical data regarding the accompanying illustrations:

"A Colonial Type" was made at 11.30 A.M., in clear sunshine on a July day, with an exposure of 1 sec., stop F. 8, and 3x Ray-filter on the lens.

"The Washington Arch, New York." Cloudy August morning, 7.30 o'clock, looking about south-west. $\frac{1}{5}$ sec., stop F. 16.

"The Woolworth Tower." Taken from steamer on East River upon a cloudy August afternoon. Hand-camera snap-shot of $\frac{1}{100}$ sec., stop F. 8. The print used for illustration was enlarged from a small portion of the negative, and as shown the result is equivalent to using a lens with a focal length three and a half times the longest way of the picture.

"Reflections—N. Y. Public Library." Diffused light in soft-toned marble corridor. Exposure 4 minutes, stop F. 8, anastigmat lens of 6-inch focus upon $3\frac{1}{4} \times 4\frac{1}{4}$ camera.

"Under the Portico—N. Y. Public Library." Good diffused light on August day near noon. 1 second, with stop set at F. 16 mark, but equal to about F. 12 value, owing to the use of a supplementary lens over the regular one.

All these pictures were made upon fast plates of color-sensitive quality.

SPEEDING UP THE OIL PROCESS

PHOTOGRAPHY is easily the most rapid of all the graphic arts, in the sense that the least interval of time elapses between taking a subject in hand and arriving at the finished result. Some of the modern pictorial processes, however, have involved an extension of this interval, although, even so, the time spent upon a pictorial photograph, including the production of the original negative, remains less considerable than in any other form of pictorial craft. The quickness with which results are obtained has bred a sublime impatience in the photographic kindred, with the consequence that we are always hearing of methods, some of them bad and others worse, of expediting the process and eliminating the dreary wait between successive stages. How many eager devotees of the oil process have mourned over the hours which must elapse before the sensitized paper is dried, and the even longer period before the complete drying of the inked-up print. The ink can scarcely dry in less than twenty-four hours under the most favorable conditions, and this must seem like an eternity to the waiting pictorialist.

We should not go so far as to say, in the words of a French oilist, that this interval of waiting is a grave inconvenience of the oil process; but at the same time it must be recognized that there is some practical value in expediting the drying, if it is possible to do this without injuring the image. However carefully controlled the conditions of drying may be, the print is bound to be more or less affected by deposits of dust and fluff which afterward can only be got rid of with difficulty, and it is worth while to inquire the necessity for the tardiness with which an oil print exhausts itself of moisture. It is due, of course, to the nature of the support employed for the oil image. Drying would take place very quickly if it were possible to apply the pigment directly to the paper, for the greasy matter of the ink would penetrate into the paper's web, while the pigment remained upon the surface. It is the intervention of the gelatin layer which prevents this absorption and greatly prolongs the desiccation.

Various methods of overcoming the inconvenience have been suggested, all of them directed upon ways and means of getting rid of the greasy material, but hitherto they have all been accompanied by technical difficulties or open to some other objection. A simple method, for which invariable success is claimed, is expounded in M. Puyo's "Le Procédé à l'Huile," and again elaborated in a recent number of the *Photo-Revue*, by M. Lemaire, the general secretary of the Photographic Union of the Nord. Briefly, it consists in the elimination of the greasy element in the ink by a suitable dissolvent which has no modifying action upon the pigmentary deposit. The dissolvent is one widely used in the arts for dissolving fats and resins, namely, benzene, which is obtained from coal tar and is colorless.

Unfortunately, the unaccompanied use of benzene would have the drawback of altering the image, and to avoid this the originator or originators of this new procedure had recourse to a special artifice. In some early experiments they inked the print as usual, and then applied a solution of gum arabic and sugar in water, with a small quantity of thymol, a crystalline solid with which workers in oil are already familiar. The use of this preparation as a protective varnish effectually prevented any alteration of the image by the dissolvent, and the varnish itself was subsequently removed by dissolution in water.

It was found, however, that this procedure had certain drawbacks, the principal one being the difficulty of applying the vanish regularly on a print charged with greasy ink. A still simpler procedure has been devised, consisting of the mixture in suitable proportions of benzene and of alcohol. Thus applied the dissolvent is still capable of removing

the greasy material, and at the same time the image is immune from attack.

Certain determinations have had to be made:

1. *What length of time should elapse before the removal of the greasy material is attempted?*

Whatever the solution employed, it is necessary that the support of the print shall be perfectly dry before attempting any such removal. If the paper is still damp, the image will be attacked by the alcohol and benzene mixture. According

BY MARGARET S. SUTTON
NEW ROCHELLE, N. Y.

to F. J. Mortimer and S. L. Coulthurst, in their book on the oil process, the paper and gelatin of an oil print will dry in from one to three hours, according to the hygroscopic condition of the surrounding atmosphere. Once the support of the print is dry, the print may be treated by the dissolvent at any time. No appreciable difference has been found in the result whether the operation has taken place six hours after inking or as many days.

2. *What is the optimum proportion of benzene and of alcohol?*

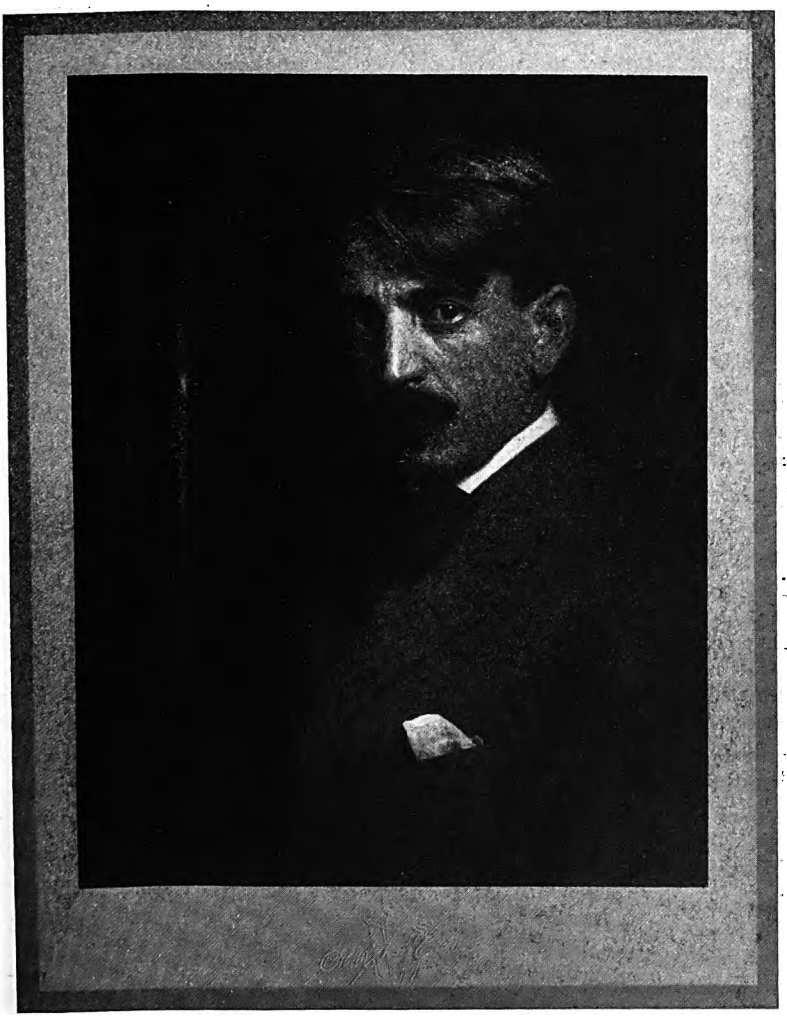
It should be remembered that it is the benzene which attacks the image, more or less, while the alcohol leaves the image unaltered, but, on the other hand, does dissolve the greasy material. Various proportions of the mixture have been tried, and the best results have been obtained by employing two parts of alcohol, 95 degrees, to one part of benzene. This mixture can be depended upon to respect the half-tones, and, indeed, the whole image. The alcohol must needs be 95 degrees in order to have a homogeneous mixture; if of less strength the benzene is separated, the mixture troubled, and the image attacked.

3. *What duration of immersion is necessary for the removal of the greasy material?*

The duration appears to be from half an hour to one hour. Experiments made with a 6-hour and even with a 12-hour immersion have given results not really different from those made in a shorter time.

The operation may be epitomized as follows: After inking up, the support of the print is left to dry perfectly, a condition indispensable to success. A mixture of two parts alcohol, 95 degrees, to one part benzene is prepared, poured into a porcelain dish, into which the print is put, and covered over with a glass so as to avoid too rapid evaporation. This lasts for at least half an hour, and then the print is drained and left to dry. Treated in this manner, prints have been completed within four or five hours after inking. The solution may be made to serve several times, but gradually it becomes yellow with its charge of greasy material. If it contains insoluble particles, dust, etc., it must be filtered in order to avoid their deposition on the print.

It should be added that not all papers are amenable to this procedure. The papers utilized in France have been the No. 125 "Thick" and No. 151 "Gravure (White)" of Illingworth. Other papers of the same source of manufacture, such as No. 100 "Medium Thickness" and No. 118 "Toned Smooth," have been tried and abandoned, owing to the non-drying of the ink.—*Amateur Photographer.*



By FRANK SCOTT CLARK
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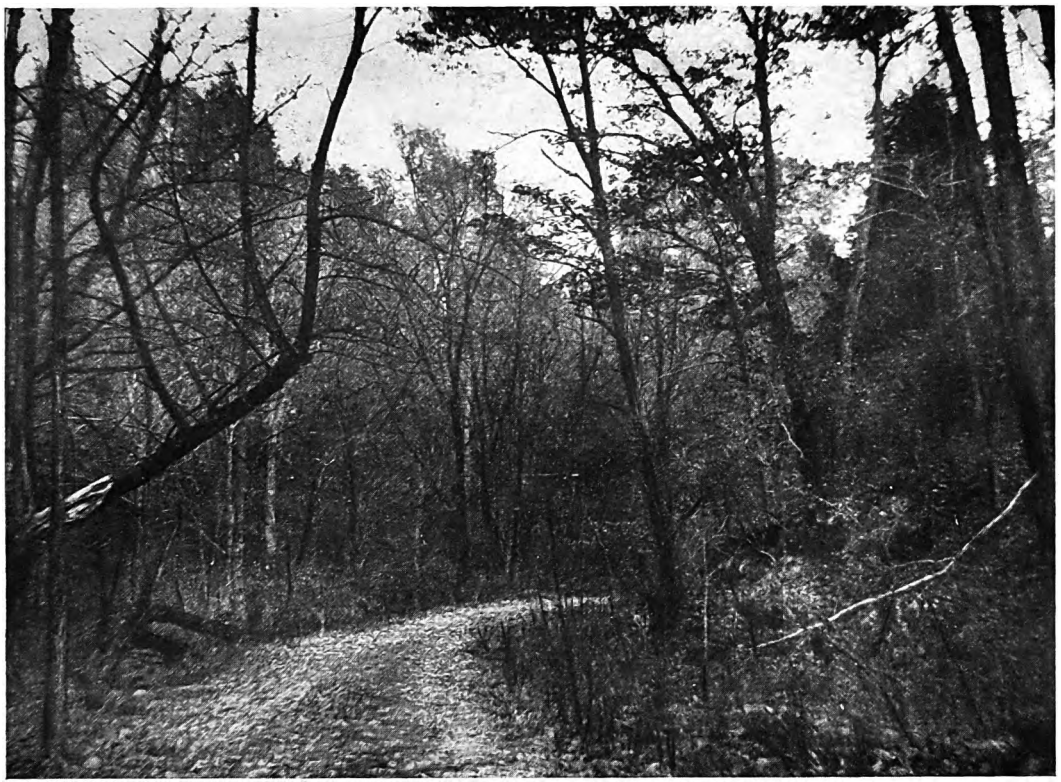
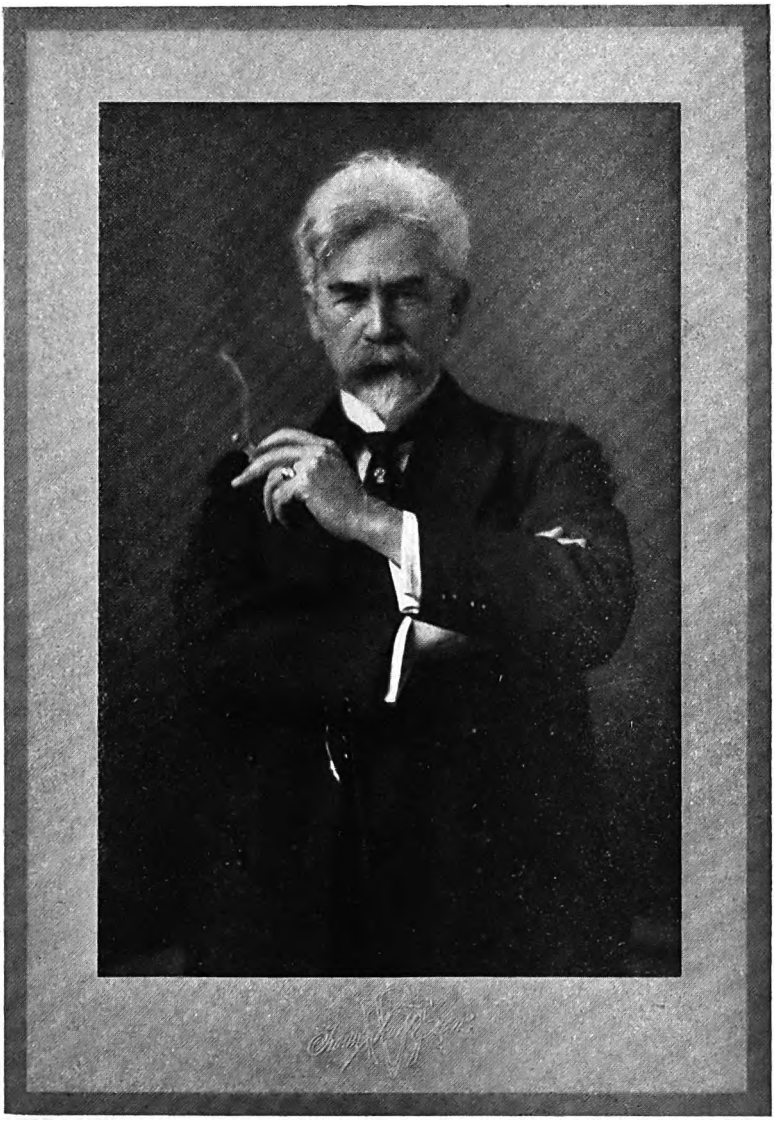


"SOLITUDE"
BY THOMAS COKE WATKINS
NEW YORK



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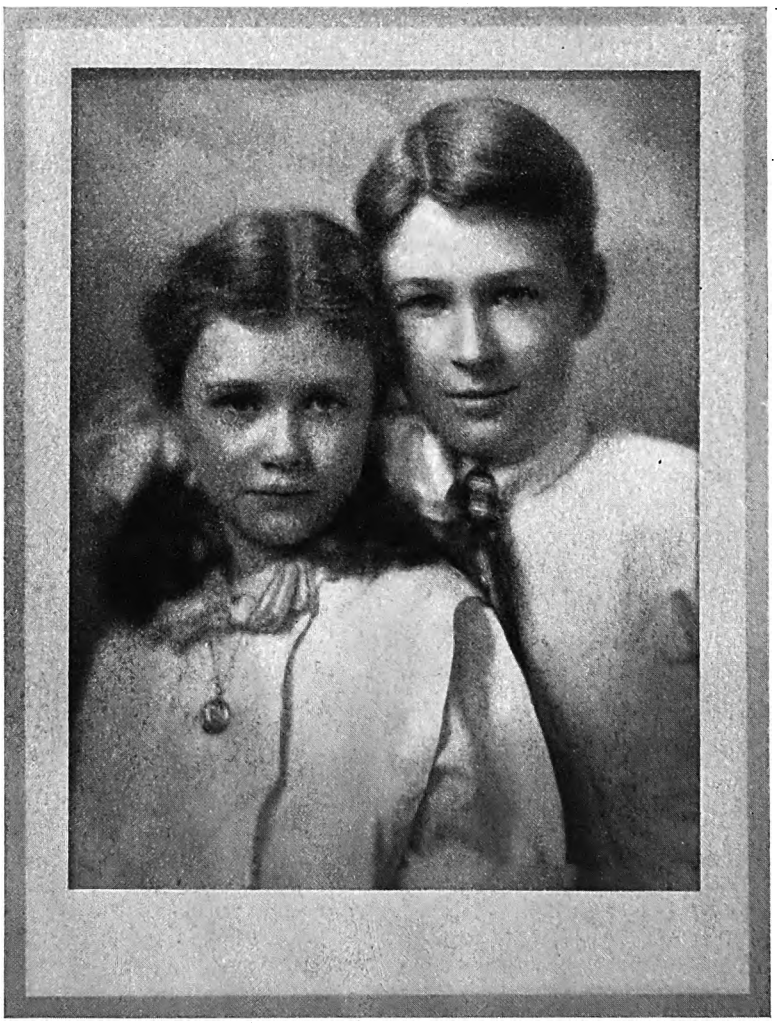

By FRANK SCOTT CLARK
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THE FRAMING AND MOUNTING OF PICTURES

By VANCE ARMSTRONG

THE importance of tasteful mounting and framing is only realized faintly by the majority of our photographers, to judge by the showcase and reception-room displays that come under one's notice. Even our pictorialists often err on this point, and send pictures to exhibitions that appear to great disadvantage because they have not given enough thought to this essential. It is difficult to understand how a photographer who has taken so many pains to get just the right quality of tone in a portrait or landscape can select a mount and frame that effectually destroy the very effect at which he aimed. I wonder how many disappointments could be done away with if the camera enthusiast would only give this matter a little thought before he sends his *chef d'œuvres* to Exhibition or Salon!

As a rule the members of the selecting committee have little time to consider why the print submitted is unworthy. They must judge by the general effect, and if that effect fails to commend itself to them so much the worse for the would-be exhibitor. Even if there happens to be one of the members who understands why the unfortunate print is a failure, time is often lacking to correct the fault. The writer of this article once officiated as one of the judges on a selecting committee of a photographic exhibition, and in looking over the hundreds of prints that were submitted he remembers that not a few of them were discarded an account of this drawback. One was saved in the nick of time by one of the members, who undertook the responsibility of remounting and framing the picture. The photographer had made really an excellent print, a landscape that was most captivating because of its softly shaded gray tones. He had mounted it on a gray paper of grateful color, but had surrounded the print itself by a narrow black edging that relentlessly killed all the nuances in the scene. He had added to his crime the enormity of a polished black frame. The result was, as one will readily see, a triumph of insipidity. The good samaritan of the committee took it away with him, and in a day or two brought it back, and it was certainly hard to realize that it was the same picture. The black edging and frame had both been eliminated, and in their place was gray in a tone that was no darker than the darkest shade in the print. All the delicacy and charm that had been destroyed by its careless presentation was restored, thanks to the magic of its new garb.

This instance is cited only to show how narrowly the carelessly mounted print escapes refusal by the average committee of a photographic exhibition. There may have been several others among the discarded pictures that might have passed if these points had been thoroughly studied by the would-be exhibitor. Naturally the members of the committee had not the time to give this detail the necessary attention, and discarded the framed prints, simply because the general effect was bad.

Every photographer should have on hand a great quantity of different kinds of mounts. If he is working in platinum paper he should keep many shades of paper in the different gray and sepia tones to use for an edging that sometimes enhances so much the beauty of a print. There are several firms in this country that stock a large assortment of artistic papers that are truly excellent for this purpose. The Japanese and the Italian hand-made papers are really beautiful both as to texture and color and they are in sufficient variety to blend with platinum and bromide tones. The vellums and imitation vellums are greatly valued by our leading pictorialists, and

the effect is particularly happy when these papers are used with sepia tones. Charming results often are gained by using a thin piece of vellum for edging against a mount of heavy vellum. Often there is just the slight difference of color between the two weights of paper to give just the right harmonious touch.

Sometimes a very narrow edging of black against a cool gray mount will improve greatly some pictures that have dense shadows. It is difficult to make any general rules for combinations of colors, but the photographer should try all the different possible shades before he allows any picture to leave his studio.

An important point is the texture of the mount. If the photograph is printed on a smooth paper the mount should be always of fine texture; if rough, a mount coarse in texture but not rougher than the picture itself, otherwise the quality of the photograph will suffer.

Wide margins are much in favor with pictorialists, as the late exhibitions show, but the layman is rather prejudiced against them for motives of utility. However, for the reception room, large mounts are rather to be favored, as the average portrait is more impressive when treated in this way.

One prominent American pictorialist, whose studio is in London, makes use of large books for showing his work. These books are about $11\frac{1}{2}$ by $16\frac{1}{2}$ (the prints themselves are 10 x 8), the leaves in one of them being in sepia tones that vary from a light cream tone to a dark brown, the leaves of the other being of pure white and gray in different tones. The photographs are arranged skilfully in each of the books to make each photograph a contrast to the one that preceded it. In this way there is a sort of surprise as each leaf is turned. It may hardly be said that each photograph is carefully mounted, some with one edging about the print and some with several, making a harmonious combination of tones that enhance the good points of the picture to a remarkable degree. The books themselves, it may be said in passing, are bound in a Russian material (made by the peasants) that resembles somewhat our American denim. There are strings at the sides of the books that tie the covers together when the pictures are not being looked at. This way of showing photographs is an excellent one, as the photographer can have his work appear in the order he desires, instead of having the prints pulled out from loose bunches. Mounts with even a small amount of handling deteriorate rapidly and the general effect it lost. If the photographer presents his work in the more formal way, he subtly shows that he values his work and the person who looks over the work is naturally impressed through suggestion. One can often find excellent books for this purpose at the best art stores. The larger books for sketching are in many cases very desirable for use in this way.

In the art shops that deal with painters' materials one may often run across different kinds of papers that often prove to be just what one wanted for the special mounting of a favorite print, when all the samples of paper sent by various photographic firms have been found wanting. One pictorialist of my acquaintance found the very kind of paper he had been looking everywhere for in some wrapping paper that his new suit of clothes was sent home in. It was the exact shade and texture of the tone he had carried in his mind and what he had begun to think did not exist. Every photographer who has an eye to detail—and what beauty lover has not—should keep on the outlook for new textures and colors in paper outside of the samples supplied to him by the photographic firms.

Obviously, framing is just as important in the presentation of a photograph as mounting; but it often happens that the photographer who has successfully mounted his picture spoils the entire effect by an unsuitable frame. Happily the last few years have brought out a very great quantity of artistic frames, from which one may make the most careful selection. The pictorialists are to be thanked for this supply on account of their demands for a wider range of tones and textures to blend more gratefully with their most delicate prints, so that one may find, in the larger cities

BY GUIDO REY, ITALY

at any rate, several firms who carry frames that would satisfy the most exacting. These frames are certainly more expensive than those carried by the average shop, but the effect gained is worth much more than the difference in price.

Where a comparatively large expanse of mount it shown around a print a very narrow frame should be used. As a general rule the framer tries to discourage the photographer in his desire for a narrow frame, contending that the weight of the glass would be too great a strain on the wood. This is true enough, but it has been my experience, as well as that of many others, that the narrow frame it able to hold a remarkably wide piece of glass, especially when the corners of the frame have been specially treated to carry the weight.

Passe-partout often furnishes the effect required by its very narrowness and is indeed most useful for exhibition purposes. The chief drawback is that it soon becomes shabby—but as exhibitions are usually of camparatively short duration this point need not be taken into consideration. In using *passe-partout* one should always select a color the exact shade of the mount, as otherwise the eye will unconsciously follow the line around, and that of course detracts from the interest in the picture. A beautiful effect may be gained by using a black-and-white print in delicate nuances against a white mount with a white binding.

When a mount is not used a wider frame will be required. In this case the utmost care should be used in selecting first a frame of the right texture, as a very bad result will come from a smooth paper against a coarse-grained wood. Usually the heavy-grained oak frames are unsuitable for even the coarsest-grained photographic papers, as the eye is invariably struck by the wood before it looks at the picture. A good rule to follow in the selection of the tone is to match the darkest shade in the print with the frame. This will be successful

in most cases, although sometimes a slightly darker tone will make a little improvement. Especial care should be taken in avoiding a frame that is too dark, as the print is sure to take on a dull appearance by contrast. Avoid colors that are different from that of the photograph, and only use a tone that is to be found in the print itself. Green frames used with sepia tones are an abomination, though such combinations have penetrated into even the best exhibitions.

The width of the frame for the unmounted photograph is a vital matter also. An enlargement looks particularly trifling when surrounded by a narrow frame, and it becomes insignificant in appearance if the frame is too massive. Frames should be quite simple in design, and any ornate embellishment should be avoided. The type of frame that curves in toward the picture it usually preferable to the flat variety, as it gives more depth to the portrait or scene.

The greatest care should be taken in hanging pictures in a reception room. Personally I am for a display of the fewest number that will give the prospective customer an idea of the different styles of the work done in the studio. The photographs on the wall should be grouped harmoniously, not only in relation to the size of the wall space but in relation to each other. First of all, no wires should be seen. The prints should be placed on two nails instead of one, for in the ordinary way the picture very easily gets tilted slightly and a disturbing effect to the whole wall-space ensues. As to arrangement, the most important picture should occupy the centre of the wall and the other pictures should be grouped in relation to it. The largest picture is in the matter of grouping the most important, but in the event that all the pictures shown are of the same size the most brilliant and striking one should be used as the focal point. If possible all the pictures on a wall space should be of the same color, or shade of that color. Sepia and black-and-white photographs effectually kill each other if placed side by side. Wall coverings are a difficult problem, for, as a general rule, if black-and-white prints look well against them, sepia prints will not appear to advantage. Same warm grays that are to be found in the Japanese wood-pulp papers combine rather well with both shades, but it is better to put on the walls only those photographs that are of the same color, and let the others be shown in a portfolio, or again in another room where the wall covering is more sympathetic.

STEVENSON MEMORIAL

BY SIGISMUND BLUMANN

ON THE EXACT SPOT WHERE THIS GILDED ARGOSY SAILS ON A SEA OF BRONZE, ONCE STOOD THE BENCH ON WHICH ROBERT LOUIS STEVENSON LOVED TO SIT HOUR UPON HOUR. IN THE DAYS OF HIS EARLIEST VICISSITUDES IT WAS HERE HE BROODED AND HALF OBSERVANTLY AND HALF INSTINCTIVELY IMBIBED THE MOODS ABOUT HIM. THE LOCATION IS IN NEARLY THE CENTER OF THE PLAZA IN THE PURLIEUS OF SAN FRANCISCO. THE CURRENTS OF LIFE RUN FAST AND CRUEL HERE, AND THE WRECKS ARE NUMEROUS

TRICKS WITH THE CAMERA

A KNOWLEDGE of the various methods by which photographs may be produced is of no small value to the amateur and professional worker. The well-nigh insatiable demand which exists for curious and interesting pictures makes it necessary for the latter to be up-to-date and original in his output; while the former is always desirous of surprising his circle of acquaintances by some new evidence of his skill, says the *Scientific American*. By following the hints contained in this article the reader will be able to produce an almost endless number of strange and deceptive pictures, not a few of which will be provocative of mirth.

Moonlight effects in photography are generally gained by trickery. Of course, it is possible to take photographs by moonlight, the exposure varying from thirty minutes to two hours; the results, however, are rarely satisfactory, owing to the movement of the shadows producing a blurred effect in the finished print. To obtain a moonlight picture of the approved sort—a fine cloud effect with the moon casting a long line of brilliant light upon water—special preparations must be made.

A rather cloudy sunset must be chosen. Then, when the sun drops low on the horizon, and is partially obscured by the cloud bank, one seizes the opportunity to secure a snapshot (the lens being well "stopped down") right into the eye of the light. The plate thus obtained should be slightly under-developed.

If all has gone well, the resulting negative will supply a picture exactly resembling a moonlight effect, and by carefully gumming a small circle of opaque paper upon the film, one is able to print out the "moon" into the bargain. Such negatives are most effective when transferred to green albuminized paper, and the printing should be decidedly deeper than in the case of an ordinary negative.

Photographs in which the snow appears to be falling are usually produced by artificial means. If the subject is to be a portrait, the sitter should be garbed appropriately and placed before a wintry background. When the negative is obtained, it should be dried and well varnished, then place it flat upon a table with the film side uppermost. Take a soft toothbrush charged with rather thick Indian ink and carmine mixed up with water, and draw it over the teeth of a comb, which should be held some little distance from the negative.

If this operation is carefully managed the result will be an irregular spattering of the pigment upon the varnished film, and when this dries a print will be produced which looks just as if the negative had been taken in a snowstorm.

Photographs of the class in which ghosts or visions appear may be "faked" in several ways. The first of these may be described as the duplicate exposure method. Suppose, for example, we wish to photograph a man inside a bottle which will hold no more than a pint of liquid.

To accomplish this apparently impossible feat proceed as follows: First photograph the bottle standing upon a dull black support and with similar background. While forcussing take care to mark out what will be the bottle's boundaries on the plate by fixing little pieces of gummed paper to the ground glass screen of the camera.

Then get your man to stand or sit in a chair upon a black cloth, with a smooth black curtain behind him. Focus upon him so that he falls within the boundaries of the bottle—this being easily managed by means of the gummed paper guides. Finally, expose the plate which has already been used to photograph the bottle; and when this is developed your friend will duly appear inside!

This method will be found in practice to explain many pictures which at first seem very astonishing. To make a "vision fake," arrange a little scene, such as a bare room, with an empty hearth, with your model sitting listlessly in the foreground. Make your first

exposure on this scene, being careful to mark out on the ground-glass screen the space into which the vision must fall. A dark curtain or dark woodwork should occupy this space in the first picture.

Now procure a sheet of dead-black paper, mount it evenly upon stiff card, and with a little Chinese white sketch out an appropriate vision. If you can not do this yourself, get an artist friend to help you; but see that the sketch is placed in the correct spot, *i. e.*, the spot which you have arranged for it to occupy in the finished picture; set it up before the camera, focus, and see that it falls within the required boundary upon the screen. Then again expose the plate which has already done duty, and—if no miscalculations have been made—an interesting "vision" picture will result.

The ghost "fake" may be made in exactly the same way, only in this case an appropriate scene would be a deserted churchyard, with your model posing in an awestruck attitude beside a tomb. In all photographs of this kind the reader should bear in mind that a dead-black background does not appreciably affect the sensitized plate, but a slow plate should be used whenever this is possible, as by this means any slight tendency to "fog" will be obviated.

On the whole, however, ghosts and vision photographs are best and most realistic when made in the following way: Get your model to sit or stand in a particular place for about a second while you are exposing; then cap the lens, and let the model walk away from before the camera. Now expose again for two or three seconds more: and on developing the negative there will appear a faint image of the model with the objects behind seen through his or her body.

If you drape a white sheet over your model's head and shoulders the effect will be all the more ghostlike; while you may make your ghost appear to be addressing a warning to some one sitting at a table or otherwise engaged. While dealing with this subject it may be useful to add that a little sulphate of quinine, say about a quarter of an ounce, dissolved in a pint of water, to which a little sulphuric acid has been added, provides a paint which, while invisible to the eye, affects a photographic plate. Thus, any figure or words may be painted upon a dark background and allowed to dry. The marks will be invisible, yet they will appear quite distinct on a negative and be a source of no small wonder to those who are not in the secret.

Such photographs as seem to show a lady face to face with herself, or playing a game of cards with herself, are very astonishing at first glance. Yet they are very easy to produce. Just inside the camera, as close as possible to the grooves into which the dark slide is placed, should be fitted a thin metal plate, duly blackened to prevent halation. This metal plate should exactly cover one-half of the plate when the latter is exposed.

The model must now be posed well to one side of the picture, so that her body is seen on one half of the focusing screen which it uncovered by the metal plate. After focusing, the plate holder should be inserted and the exposure made in the ordinary way. Then, after removing the dark slide, the metal plate should be moved so that it covers the other half of the plate, and the sitter moves over to the other side of the picture.

A little thought and ingenuity will enable the photographer to pose his model and "stage" his picture effectively. On developing such a negative the same person will be shown in two positions, and if the metal plate has been carefully made and blackened there will be absolutely no trace of a join. By having several metal plates instead of one, and moving them about as required, the model may be made to appear three or four times upon the same negative.

Another way of obtaining this particular kind of freak photograph is to fill a tube in front of the lens. Instead of using a cap, the tube should be closed with a kind of folding-door arrangement, so that one-half of the lens may be uncovered at a time. A still more simple plan is to use a cap which covers only one-half the aperture, and to control the exposure by means of a shutter behind the lens. This method, however, makes it necessary to "stop down" the

(C) BY PHOTOCRAFT CO., NEW JERSEY

lens to at least 1-3, and a long exposure is thus rendered inevitable.

It is well known that the nearer an object is to the camera the larger it appears to be in proportion to other objects in the picture, and by taking advantage of this fact some astonishing pictures may be obtained, particularly if a lens of somewhat short focus be employed. Not long ago the writer saw reproduced in a popular magazine a photograph which was described in all seriousness as depicting a cabbage of gigantic proportions.

Doubtless most people who looked at the picture were deceived, for the cabbage partially obscured a whole family of five or six persons who stood somewhat in the background. Yet in reality the vegetable was of only ordinary proportions, and merely looked large in proportion to the human beings because of its nearness to a lens of short focus. In the same way, if a fisherman has caught a fish six inches long, it may be made to appear gigantic in the photograph. By means of his rod and line the fisherman may hang his fish a good six or eight feet nearer the camera than he himself is, and the lens does the rest.

Very laughable caricature photographs may be made by simply moving the "swing-back" of the camera out of the perpendicular. Your friends may be made to look like reclining giants or dwarfs with big heads. In fact, an almost endless variety of quaint deformities may be devised by varying the elevation of the camera and the angle of the back. Care must be taken, however, to "stop down" the lens as much as possible, in order to bring the whole picture well into focus. This, of course, means that a good light is required, otherwise the exposure must be a long one and your model may move and spoil the picture.

Another method is to discard altogether the ordinary lens of the camera and make use of two metal plates, placed one behind the other in the lens tube, each provided with very narrow slits, about one-fiftieth inch wide and one-half inch long. By training these slits at different angles all sorts of curious effects can be obtained. In this case also a very long exposure is necessary; but this may be avoided by first taking the negative in the ordinary way, then making a transparency from it by contact print-

ing, and finally copying this in the camera by means of the slits.

Many marvellous effects may be gained by the simple process of erecting a scaffolding and focusing the camera so that its lens (which should be of wide angle) occupies a vertical position. Some pieces of wall-paper were spread upon the ground and upon them the gentleman reclined, not uncomfortably, upon his back, with his head touching the seat of the overturned chair. This picture was added to enhance the effect, and the resulting photograph seems to portray a quite impossible gymnastic feat.

PHOTOGRAPHY AS AN ART-EDUCATOR

By TEMPLE SCOTT

THERE may be differences of opinion about the position and the value of photography as an art, but there can be none about its value as an art-educator. It is the one medium in which it is possible for every person to make some attempt at an expression of his sense and feeling for what is beautiful. And if it be not always possible to make that expression perfect, it is certainly possible to use the medium as an aid to see what is beautiful; for seeing means choosing, and to be able to choose is to know. The artist it not so much he who is highly accomplished in the technique of his art, as he who is able to reproduce his own insight into the world about him, by means of his medium, and to do this so that the experience he has had shall, through his reproduction, become a common experience, and a pleasure-giving one. To achieve this is to acquit one's self excellently whether it be in paint, or sound, or word, or the camera.

Photography is the art-medium of democracy. It therefore deserves our warmest encouragement and sincerest coöperation. Any one, with a camera, can now go adventuring for himself in search of the beautiful; and if he succeeds but once, in years, in finding it, and revealing it, the adventure will have proved itself worthy. In this art also, as in any art, it is the man using the medium who reveals himself in the work of his hands. He dare not, if he respect himself, do other than his best. And he may not be vain-glorious of his success, except by still higher achievement. For art, like the soul of man, is never at home resting, but always out and abroad, adventuring.

LIFE is great or small, beautiful or mean, as we make it by our thoughts and by our works.

YOUR work may be difficult today and tomorrow but it will surely come easy if you make an honest effort.

IT is for you, not for your employer, to decide whether you are a failure or a success. Remember it is your business to express yourself as well as you know how, and if one channel fails you, you must find others.

THE happy man is the worker who is determined to succeed and plans everything to that end.

MEASURE yourself by your progress rather than by your ability.

YOUR purpose in life is to express yourself in many ways and as well as you know how.

JANE REECE

By NANCY FORD CONES
LOVELAND, O.

FIXING NEGATIVES

By W. L. F. WASTELL, F.R.P.S.

WHILE for the development of plates there is an enormous variety of formulæ, all with more or less numerous adherents, the method of fixing the negatives is practically the same everywhere and in all cases. A simple solution of hyposulphite of soda holds almost the entire field. The strength of the solution may vary within certain limits, and it may be made more or less acid, but "hypo" is the universal fixer.

Mr. C. Welborne Piper, well known for his valuable research work, especially on the chemical side of photographic processes, is at present carrying out an exhaustive series of experiments on the fixation of plates. It is a question that demands attention; and it is very doubtful whether his considered judgment will approve of either the plain or the acid-hypo fixing solution as the ideal.

Meanwhile it is well that the professional photographer should make sure that he is carrying out the fixing of his plates on reasonably safe lines. There is no doubt that in innumerable cases the more or less rapid deterioration of negatives is to be attributed entirely to ineffective fixing. It may be mentioned here that the term "fixing" is a misleading one. The object of the hypo bath is not to ensure the stability of the reduced silver, but to remove from the film the unused salts which would otherwise undergo changes detrimental to the negative. The complete removal of these salts is not a process that can be checked visually. Unfortunately, it is a common belief among assistants entrusted with the fixing of negatives that the process is complete as soon as the creamy emulsion has disappeared and left the plate visually clear. Needless to say, this is by no means the case.

Let us consider what should happen in the "fixing" of a plate. The first step is the changing of the unused silver into another salt. The completion of this process is indicated by the apparent "clearing" of the plate. But this salt is insoluble in water; hence if the plate is now removed to the washing-tank the salt will remain on the film. The second step is the conversion of this salt, in the presence of an excess of hypo, into another compound which is soluble in water. The third step is the removal of this salt by an effective method of washing.

The first thing to receive attention is the strength of the hypo solution. Here again it is a mistake to suppose that the process can be expedited by increasing the strength. A solution of one in four changes the silver bromide more rapidly than a solution of one in two. On the other hand a solution weaker than one in five may not contain sufficient excess of hypo to accomplish the second transformation.

This latter consideration also suggests the folly of using exhausted baths. A given quantity of solution can only perform a certain amount of work. There is no excuse whatever for overworking a fixing-bath. Assuming a plain 15 per cent. solution of hypo, two pints should be used for only about 140 quarter-plates, or their equivalent. Otherwise there will almost certainly be a subsequent yellowing of the film. Yet it is quite a common thing to find the fixing bath used for an infinitely greater amount of work than this. Worse still, the warning given in the ordinary way by the discoloration and slow action of the bath is masked by the addition of potassium metabisulphite or other agent, which keeps the bath clearer and so conveys a false idea of security. It is becoming more and more a question whether the acidifying of the bath is not a positive disadvantage in more ways than one. A simple bath of the strength just mentioned, and used only for the amount of work given, is probably as

BY GUIDO REY, ITALY

safe and effective as anything at present known.

As regards the time necessary for the completion of the processes that take place in the fixing-bath, it is a safe rule to double the time taken for the visual clearing of the plate. This should be regarded as the minimum. A longer immersion is not detrimental to the silver image, provided the plate is kept covered with solution. Serious damage results if a film saturated with hypo is exposed long to the air. Neither is it advisable to expose the negative to actinic light until fixation is complete; even if no harm ensues at the time, there may be trouble if subsequent intensification is necessary.

If a negative is worth keeping at all, then, it is only common prudence to make sure that it spends the proper time in a hypo solution, which is not only of suitable strength, but which has not been used for more than its legitimate amount of work. This, followed by effective washing, will achieve all that is possible to secure a negative free from risk of subsequent deterioration. The means is surely simple enough for so desirable an end.

By DAVID O. HILL, R.S.A.
FROM THE COLLECTION OF FRANCIS C. INGLIS
EDINBURGH, SCOTLAND

UTILIZING DISUSED FIXING BATHS FOR SILVER PLATING

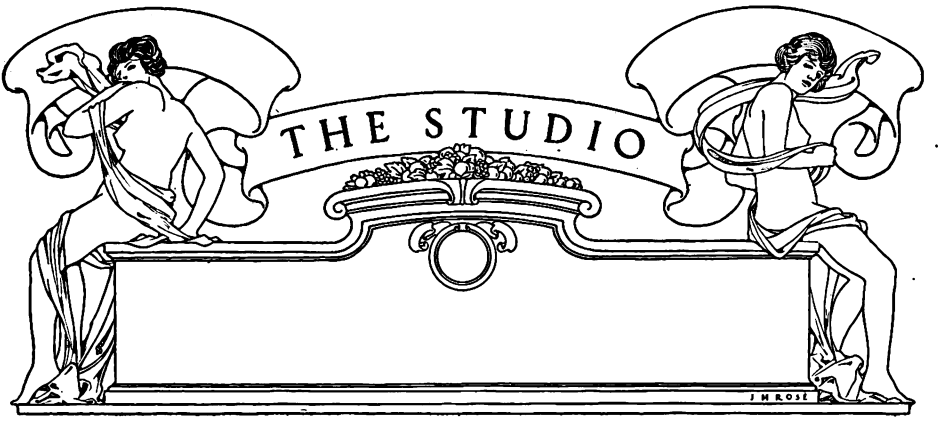
By A. J. JARMAN

IT does not appear to be generally known that the disused fixing solution obtained from both the negative fixing bath and from paper prints may be made to give up its valuable contents other than precipitating the silver as a sulphide to be sent to the refiner.

When a fixing bath ceases to act as a fixing agent it means that the hyposulphite of soda has dissolved so much bromide, chloride, and iodide of silver that it has become saturated with these salts and consequently holds a large quantity of metallic silver in suspension. A solution of hyposulphite of silver if placed in strong sunlight becomes decomposed and the metal becomes precipitated; but if it is kept in its containing vessel in a room like the dark-room, where it is not submitted to a light stronger than a gas jet, the silver will remain in suspension and may be deposited by means of an electric current such as may be generated in our ordinary voltaic cell. The current obtained from the electric-light wires of the house supply will not answer the purpose, because the electromotive force is too great, and although the silver will become deposited, it will be in the form of a gray-brown powder, owing to this high electrical pressure. Hypo solutions that are contaminated with pyrogallic acid do not yield a good deposit of silver; that is to say, the color of the silver more approaches nickel than silver; but the old hypo solutions in which prints and plates, as well as films, have been developed with metol or metol and hydroquinone will deposit silver in a very bright state.

To bring these mixed, disused solutions into use for plating, all that is necessary is to filter the liquid twice, to get rid of all dirt and accumulated matter and secure a clear solution. If only a small number of articles are to be plated a copper plate instead of a sheet of silver may be used for the anode. Procure an ordinary galvanic cell (not a dry cell, these become exhausted too soon); place the liquid into an 8 x 10 hard-rubber fixing box (not zinc); charge the galvanic or voltaic cell with diluted sulphuric acid; insert the elements, and connect a wire to the negative element of the cell, which in most of these cells is a rod or plate of carbon; attach a copper plate to the end of this wire and insert it into the filtered liquid; clean the article or articles to be plated first with a hot solution of washing soda, rinse them; then scour clean with a nail brush and fine pumice powder or brick dust; twist a wire around the object, say, a spoon or fork; wash the article quickly, and place it into the filtered solution opposite the copper plate, to a wire or rod, from the zinc element of the cell. Instantly the silver will become deposited. A piece of brass tube, placed along the top of the fixing box, will enable several small articles to be plated at the same time. In the course of a quarter of an hour or twenty minutes a good deposit of silver will be obtained. All that has to be done now is to untwist the wire, wash the article, and polish it with a good stiff brush and water. This will give a moderate polish, especially if a little whiting is used with the brush at the same time.

A large quantity of plating could not be done with the sheet of copper, the liquid would become exhausted, but enough silver may be deposited to coat a couple of dozen of spoons or forks, and bear in mind that this can be done with a solution that photographers only too often pour down the sink. Very light plating may be done by attaching a piece of zinc to the articles and dipping them into the once fixing bath.



PRACTICAL TALKS ON STUDIO WORK

III. STUDIO-ROOM AND THE MAN BEHIND THE GUN

(CONTINUED)

By RYLAND W. PHILLIPS

IN my former article I confined myself to psychology and the mental side of studio work, so in continuing the subject I will endeavor to give practical working ideas. In making the following comments I am taking it for granted that the reader has digested the previous article, so I am talking largely from its standards.

Let us return to the arrangement of the studio-room. It is so often cluttered up with backgrounds and photographic accessories that when one enters it looks more like the back of a stage between acts than a place where beautiful pictures are made. There are some men who think a semblance of disorder looks as though they were busy, and actually follow a system of disorder, but a far better impression is made on the sitter if the room is neat and clean, and looks as though you were careful about the little details of your business.

In the first place the general arrangement of your backgrounds and accessories should be such that they can easily and quickly be shoved out of sight. If this is done you can straighten things up after every sitting, or at least produce a semblance of order to meet the eye of the next sitter who enters. It will be found easier for the photographer in getting fine results to have a fresh-looking room with each customer. It may be hard to carry out such a plan, and at times almost impossible, but if it can be followed as a part of a system it will bring noticable results.

There are many establishments in which the studio-room is the most untidy one in the whole place, and it does not require expense to make it just the reverse. Some people are very sensitive in regard to dust and dirt, and you cannot afford to create a feeling of repulsion in your sitter. I know of one or two studios that look like well-appointed living rooms, and it is always a pleasure to enter them. One of these was formerly a stable in a back street, and was fixed up by the photographer and his wife. They did most of the work themselves, because there was no money in the treasury, and I assure you it is a charming little studio to drop into for an hour's chat.

Purity of Light.—Long controversies have been held on the question of lights.

Side, top, side and top, hip, north, south, east and west lights have been discussed in and out of the photographic magazines, and each advocate can prove, to his own satisfaction at least, that his particular light is the best. There is no doubt that they are all good in their way, but the thing that counts most is the man and the brain working under them. Every light presents a set of problems to be solved by the photographer, and no two lights will give you the same conditions. Local influences outside, such as tall buildings or a smoky atmosphere, have a great influence on the purity of the light admitted in your studio. Recent improvements in artificial lighting point to a no-skylight studio in the very near future.

We frequently see men trying to use the screens and fixtures for controlling light copied from some worker whose studio has been constructed on entirely different lines, and yet these fixtures may not be needed at all by the man who is copying them.

The balance of light on a face is a very important thing in making good negatives, and it is a fine point of distinction to have your balance so perfect that you get in your negative that which was seen on the ground glass. There are three points to be considered in discussing this subject: the high lights, the shadows, and the relation of both to the background. If your lights are too strong, your shadows will register black, because in timing for the lights you have undertimed the shadows, and you will get a contrast print from your negative. If the lights are soft and the shadows too much filled up, you will have a flat, mushy result. If your light is broad and balanced and you get your ground too close, and it is of a light gray tone, your finished print will be flat, but if you move the same ground back from the sitter, so as to lower the tone, you will make your lighting stand out clearer and have a much better perspective. This is why you can often improve a negative in printing when you shield up the face and allow the background to print in.

Frequently a mistake is made by covering the walls of a studio with a dark paper which absorbs the light and destroys the general illumination. To get best results the studio walls should be covered with a neutral tint of gray or drab which will neither give reflections nor absorb light. This question of a neutral tint for the walls I consider very important, as there are times when a photographer needs all the light he can get, and if his walls are absorbing a certain proportion of it he is losing valuable illumination.

I have seen a yellow reflection thrown on the shadow side, by walls of that color, producing a condition hard to overcome. The shadows should be of the same color as the lights; if not, and the shadows are tinted yellow while the lights are white, it will be necessary to make the shadow side look almost as light as the high-light side in order to register on the plate a balanced lighting. Of course this is due to the yellow tint registering so much slower than the white high-lights. A system of lighting that gives the same tone color from the highest lights to the deepest shadows is the simplest form and relieves the photographer of a lot of calculation.

We have all had the experience of lighting a subject on a half-cloudy day, and being ready to expose just as the sun blazed out strong, changing the whole balance of our lighting. This kind of happening really demonstrated the difference between yellow and white light; the latter throws a direct white ray which registers pointed high-lights and requires care in breaking up to get illumination in the shadows. The former, or yellow light, throws rays which react on each other to such an extent that they will go around into the shadows, but at the sacrifice of the delicate pointed highlights, which register too broad. It would seem from this that one might use both colors for lighting, but a more simple plan is to stick to the white light, using the direct for high-lights and the secondary for general illumination.

Possibly some may not understand my use of the word *secondary* as applied to lighting. All good photographic lightings are the result of a double use of

A STUDIO-ROOM—GIVING A GOOD IMPRESSION ON ENTERING

light—the primary and the secondary. The secondary is a general illumination of the whole studio-room, which if used alone would register a composition on the plate in perfectly flat form with no differentiations of light and shade. The primary light, or pointing light, is that which gives the point, or high-lights, and registers the modelling, and used alone will give a resultant negative with empty shadows. I often start my lighting by using only the secondary light, and when I have produced the right amount of illumination I project the primary light. This is a very sure way of working, and I find it the easiest method in obtaining the right balance. I avoid the use of reflectors unless the conditions are such that it is unavoidable, and when it is necessary I keep them as far away from the sitter as possible. The light from a reflector will tend to flatten the shadow side and take out all modelling.

It may seem strange to some that the head-rest, that instrument which did more to make photography repulsive to self-respecting human beings than anything I know, is still in use by studios, large and small, scattered through our cities and towns. This being so, it is well to say a word concerning its demise in progressive establishments.

In former years the exposure of a wet plate ranged from seven to twenty seconds, and it was necessary to hold the sitter perfectly still; but the advent of the dry plate, and the consequent shortening of time in exposure, paved the way for progressive men to discard the head-rest. It is now known by most men that all that is required to make a sitter "not move," is the ability to hold him interested for two, three, or four seconds, and this is being done by hundreds of good workers.

The length of exposure is largely a matter of the volume of light, and it is scarcely necessary to comment on this part of the work, but I would advise every man to endeavor to use enough light to bring the average exposure down to two or three seconds with his regular work. By using the short exposure, one can easily catch the expression desired, especially with people

whose expressions change rapidly, and it certainly is a great advantage in making groups and pictures of children.

Of course a silent shutter is a necessity. I have not discovered one that is absolutely silent, but there are a number of makes that produce no noise on opening, and, as you have seen in the foregoing article, it is easy to cover up the click at the end of an exposure by a timely word or two, and the less noise the better.

FIG. 1

BROAD LIGHTING WITH NO PRIMING

FIG. 2

SAME LIGHT AS IN FIG. 1, WITH DIRECT LIGHT THROWN IN ON SIDE—NOTICE CHANGED MODELLING

The choice of lens is so much a matter of individual liking that it would be hard to convince a man that he is using anything but the best for his purpose. I know one man that owns more than twenty, any one of which could be used in his studio, and yet I doubt if at any time you could find more than five of these cleaned up and ready for use. It is like the golf game—the best player does not necessarily carry the most clubs in his bag—and you will often find a man doing excellent work with but one lens in his studio. Nevertheless, there are great advantages to be gained by the use of a series of good lenses, and the man who is equipped with five, ranging from nine to twenty inches focus, will be able to accomplish a great variety of work and will be sure that he is using the right lens for any particular-sized plate. A short-focus lens used in making a large-head picture will produce distortion and bad drawing. Always use the longest focus consistent with the size of plate; for instance, a twelve-inch lens used in making a large 8 x 10 head will not give as good drawing as one at sixteen or eighteen inches. Lenses of large aperture will naturally be rapid, but at a sacrifice of focal depth, so the choice depends somewhat on the condition of your light. The large aperture lens is the best to use for children, as it gathers a maximum of light and can be used to better advantage in snapping the kiddies.

Avoid ruts in studio work. It is so easy to get into the habit of using certain spots to place our sitters and the same backgrounds over and over. We know that these places register good lights on a subject and we forget to try other corners of the room on a venture, or we may be using every available place in

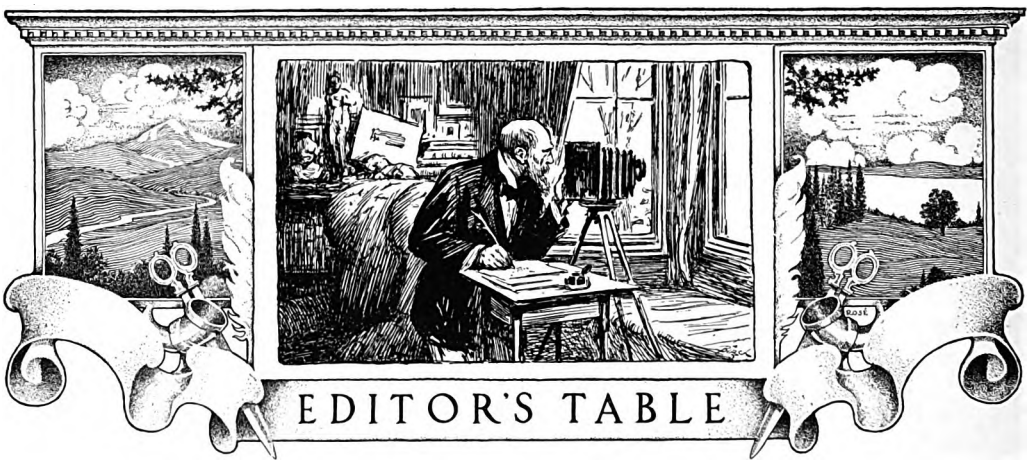
our room and still find that our photographs all look alike. We are getting rutty in spite of ourselves. One way of correcting this trouble is to visit the studios of our friends, attend stated meetings or conventions, and study the work of other men, then go back to our own shops with new ideas; or if it is not possible to get away on account of work, try changing the interior of the studio room—put the grounds and furniture in a different location and make negatives under these conditions.

The changed appearance of the room will often stimulate a new viewpoint and the effect on the work will be noticeable at once. Some time ago we were painting and redecorating our studio-room at a time when we did not expect business; but one morning, when the workmen had made a particularly bad mess of everything, I was forced to make two important sittings. The only available space I could find was over at one corner where I had scarcely ever placed the camera. I screened this off from the rest of the light and made some fine negatives. Ever since that day this particular corner has been useful in my daily work. It is a very good thing for a man to know just where the finest spots are in his studio, but there is always a possibility that he does not use all the best corners. By changing the whole appearance of the room, we get a new viewpoint and often see opportunities for picture-making that we had not noticed before. How often we have made beautiful home-portrait negatives, because we were compelled to use the only available light, and it was mostly a kind of light with which we were not familiar.

After all is said and done, balance of light and correct exposure are the two most important factors connected with the studio work. No amount of manipulation in the dark-room will make up for the defect of an unbalanced lighting or incorrect timing. Much may be done in this time, but the plate that has been wrongly lighted or poorly timed will never equal in quality the one that has been made "just right."

COMMITTEE ON THE AMALGAMATION OF THE MISSOURI VALLEY STATES

LEFT TO RIGHT—C. D. PIERCE, IOWA; ALVA TOWNSEND, NEB.; HOMER T. HARDEN, KANSAS, CARL GIST, MO.; L. S. KUCKER, MO.; CHAS. H. CADY, NEB., AND H. S. STEVENSON, KANSAS.



ART TRAINING ESSENTIAL FOR SUCCESS

THE vigorous movement in favor of popular art-education which is now taking place throughout this country is directly connected with the artistic development of American photography. The methods of art-industrial education introduced into the schools of our large cities, under the auspices of well-known art authorities, are rapidly contributing to the passive and active growth of the art system of the country. A large body of active workers in the art field is being trained by the same means to understand the application of these principles in innumerable ways. These last will form the art public of the next generation.

The photographer, like any other art worker, should be made to understand that a critical audience is growing up around him, and that he must keep pace with his public or fall behind and drop out of the ranks. On the other hand, the preliminary general art training received in schools by young men and women, before they adopt photography as a profession, is laying a foundation for their future excellence as specialists. These embryo workers in the photographic field are likely to become formidable rivals to the routine photographer who has been satisfied to plod along year by year in the trade grooves, and troubling himself as little as might be about the artistic side of his profession. Now, if photography is to be accepted as an art, and those persons who follow it seriously as an occupation, artists, we have a right to demand that they shall subject themselves to the training necessary to make them such. What would be thought of a painter or sculptor who should attempt to paint or model professionally before acquiring a knowledge of the higher technical essentials of his art as well as its mere mechanical processes of manipulation? Yet the average contemporary photographer appears to think that he has done all that society expects of him when he has mastered the secrets of the materials used in his trade, and has gained a certain ability in combining them to produce a representation of actual images.

There is no worker in the art field who is more in need of training in art principles than the photographer, and yet as matters stand with us to-day how seldom does he value it, or embrace the opportunity of acquiring it? From the artistic standpoint better work is done by amateur photographers who have a good knowledge of art principles and a natural aptitude for selection than issues from the professional studios. We are not here speaking of technical workmanship. No art worker, not even the easel artist, requires such thorough training in the principles of artistic composition as the photographer. The artist has

time to compose his subjects, to try effects, and alter details to suit himself. He may think out his combinations at his leisure. But *the photographer has to grasp his subject on the spot.* If he is dealing professionally with the human subject, he has but little time in which to dispose of it to the best advantage. His eye and brain should be so well trained that he should be able to decide upon his scheme of composition at a glance.

In order to arrive at this degree of command over photographic art resources, an art training is advisable which shall cover all the points in the construction of camera pictures. This training should be that which is desirable for any other worker in black and white art, minus the special technical training.

The earlier the artistic training of a young photographer begins the better. There is no excuse for artistic ignorance in the young men of the present generation, so far as the dwellers in our large cities are concerned. Art schools are too plentiful, and where they do not exist, in smaller towns and villages, it is easy to supply their place in a measure by personal effort. If a young photographer be forced to spend six days of the week in the mechanical drudgery of his profession, he can at least devote three evenings of the week to study. He can buy a plaster cast, a light easel, some charcoal and drawing paper, and by the aid of a handbook on charcoal drawing he can easily teach himself to draw. If he finds other young men in his profession or kindred ones as anxious to learn as himself, they can club together, hire a room for a studio, and provide casts and models for mutual convenience. If they can afford to secure the services of a good teacher, so much the better. But good teachers are rare in small out-of-the-way communities. A teacher whose methods are inferior or antiquated should be avoided as a pestilence. Mutual intelligent criticisms and the use of a good modern handbook are far better helps along the art student's paths. Clubs of this kind are starting up all over the country with the very best effect. In nearly all the large cities exist the advanced art schools, modelled on the plan of the Art Students' League of New York, and teaching the principles of art in accordance with the systems of the best contemporary European art institutions. Generally attached to these progressive American schools is a composition class for the benefit of the students. Every young photographer who has it in his power to profit by the advantages offered by such a class should make a point of so doing. There is no better way of learning the principles of composition in their various applications. It is not absolutely necessary that a photographer should learn to use color, but a knowledge of color effects would always be useful to him. It is quite possible that color may, in the course of time, by the perfection of mechanical processes, form an important element in photography. The constant practice of charcoal drawing, of black and white oil, of pen and ink, or any of the other black and white media, is strongly to be recommended to every ambitious photographer.

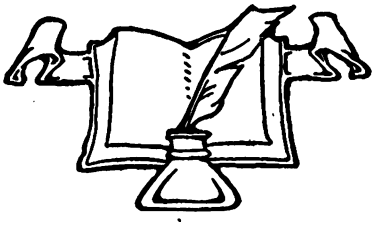
Art books are now within the reach of every one who wishes to use them. Every large city has libraries, either free to the public or accessible upon the payment of a small fee, and inexpensive editions of valuable works on art by native or foreign writers are issued constantly from our various publishing houses. Art magazines, either of a theoretical or practical character, are abundant. Then there are the Eastman Schools, held in the various localities, dates of which will be supplied on application. With such opportunities as exist to-day, surely the photographer cannot fail of gaining sufficient art education to enable him to keep abreast with the times in his profession.

Another important element of an art education, whether active or passive, is the constant contemplation of pictures. And still another is the perpetual observation of nature in its pictorial relations. Every person who has even a rudimentary art education should continually exercise the critical and mentally constructive faculties; for by exercise come health and growth. Art and nature should react upon each other in the student's mind. Every photograph,

every engraving, every etching that comes in the photographer's way, should be carefully studied and analyzed. The principles of composition once mastered, they should be applied upon every possible occasion, and the exercise of this acquired power to discriminate and criticise will be found to be an intellectual pleasure of the highest order.

One of the best results of a good art education is the increased enjoyment of life and nature which springs from it. It is given to few to create, but every one can learn to appreciate. To a well-trained eye and mind the world is full of pictures. The exercise of the faculty of pictoral construction is not limited to the studio, the workroom, or the picture gallery. Life itself consists of a series of pictures. Every room, every street is full of pictorial matter, and it is the part of the eye and the mind to learn to make combinations of line and form and color out of whatever surrounds it. The natural spontaneous ability to make mental pictures of apparently unrelated forms constitutes what is called the artistic instinct. Instruction in the accepted principles of composition develops and strengthens this instinct, and when it is almost or entirely lacking, supplies its place as far as formalized rules can atone for the absence of inherent perceptions. As the education of instinct progresses, innumerable hidden beauties reveal themselves in nature, in human life, in art. Delicate and subtle effects are more valued by persons whose eyes are more trained to appreciation than broad and coarse ones. *The amount of art education possessed by photographers reveals itself at a glance in their work.* A photograph may be categorically correct in its composition, and yet it may be entirely without artistic feeling and the higher art quality. It is not enough that the photographer should have mastered the rules of composition as a schoolboy learns his lesson. He must have learned them so long before, and so thoroughly, that he has forgotten them, and has assimilated them with his manual and mental equipment. Thus, if not an instinct, the artistic grasp of a subject is, with him, second nature.

The society of artists is of the greatest benefit to photographers. With the increasing interest felt by artists in photography, personal association with members of the painter-craft is easily obtained. Most of them are deficient in technical knowledge, and are glad to avail themselves of the practical training of the professional photographer. On the other hand, their artistic knowledge is greater than that of most photographers, and much may be learned from them.



ABSTRACTS AND TRANSLATIONS

BY E. J. WALL, F.R.P.S.

Telephotography with Infra-red Rays

In the *Scientific American*, Michaud and Tristan describe their experiments with the infra-red rays in telephotography, using Professor Wood's filter of very dense cobalt glass and a deep orange aniline dye. The purpose of this is to cut out the more refrangible rays. The region of the spectrum transmitted runs from wave length 6900 to the infra-red. Plates were sensitized with alizarin blue bisulphite, the formula for the bath being:

Alcohol 50 per cent.	200.00 c.c.
Ammonia	4.00 c.c.
Alizarin blue S	0.04 gm.
Silver nitrate, 10 per cent. sol.	5.00 drops

All these chemicals are placed into separate vials. When it is desired to sensitize the plate, the ammonia and the alizarin blue are introduced into the alcohol, the flask is stoppered and agitated for about five minutes, the solution then filtered into a flask which contains the silver nitrate solution. The solution is then poured over the plate and the dish rocked for three minutes, the plate washed for three minutes and dried in a calcium chloride box for about an hour and then exposed. Naturally the filtration of the bath to the placing of the plate in the holder must be done by a faint green light.—*B. J.*, 1915, p. 55.

Waterhouse was the first, I believe, to use this dye for red sensitizing in 1889, and it was used by Higgs for his famous solar atlas. The action was especially studied by Eberhard in 1906, and further employed by Scoble in the same year. The latter states that it sensitizes up to wave length 8300, but that with line spectra bright lines can be obtained up to 8900. The chief difficulty in the use of the dye seems to have been irregularity of action, as frequently fog is produced and the sensitiveness altogether disappear.

In all probability, the secret of success lies in the use of the plates within a few hours of their dyeing, and also in the use of the solution in comparative darkness. It would be as well to point out also, that Mees and Sheppard have proved that, in the case of dicyanin, it is essential to mix the dye solution immediately before pouring on the plate or otherwise the dilute solution of the dye fades so rapidly that it is useless.

Naphtoquinone as a Developer

Homolka points out that the monoalkylethers of hydroquinone are not developing agents, but that the similar compounds of naphtoquinone are, and that a deep blue colored image can be thus obtained. The working formula is:

Naphtoquinone monomethyl ether	10.0 gm.
Potassium bromide	10.0 gm.
Sodium hydrate	2.5 gm.
Sodium sulphite	50.0 gm.
Water	1000.0 c.c.

The temperature of the solution should not be less than 68° F. and the image appears in a few seconds and development complete in about three minutes. On fixing, a blue-black image is seen, which does not differ from any ordinary negative, and if the plate is treated with a 5 per cent. solution of potassium cyanide the image entirely disappears. If the plate is then exposed to the air the image again makes its appearance of a brilliant blue color. This blue image can be produced direct, if the plate, after development, is fixed in the ordinary potassium ferricyanide and hypo reducer. The blue image is due to the formation of a dye, which was first discovered by Russig.—*Phot. Korr.*, 1914, p. 471.

Homolka discovered in 1907 that indoxyl and thioindoxyl gave blue and red images respectively, which were due to the formation of indigo and thioindigo.

An Easy Way to Make Ice Pictures

R. E. Liesegang suggests the following as a very easy way to obtain good pictures of frost crystals. Coat old negative glasses with a 2 to 10 per cent. solution of gelatin and, as soon as set, put outside, when the temperature is just below freezing point, till the crystals are well formed, then let the plate slowly dry and the forms of the ice figures will be clearly seen in the gelatin.

If the temperature is too low, nothing but minute crystals are formed, and on drying air-bells take their place, so that one has an emulsion of air in gelatin. If, on the other hand, the temperature is only just below freezing, then fine large ice crystals are formed and it is possible to actually take casts from the dry gelatin plate, using a solution of cellulose acetate.—*Phot. Rund.*, 1915, p. 11.

Glass Positives on Gelatine Plates

E. M. Sennett suggests the following method for making positives: Underexpose any slow negative plate and develop for a short time only, that is, stop development as soon as the developer has reduced the image on the surface, and then fix in an acid hypo bath, wash thoroughly, and bleach either in mercuric chloride or cupric chloride solution, then wash well, dry and back up with a black varnish. He

states that this process ought to be useful to press photographers, as the exposure can be cut down considerably and the results will show detail which would otherwise not be visible by any ordinary printing process.—*Phot.*, 1915, p. 24.

This is nothing more than a variation of the old alabastrine method and was suggested by Mach about twenty years ago for the same purpose.

The Permanganate Bleach

D. Ireland lauds the use of potassium permanganate and hydrochloric acid as the bleach for sulphide toning and states that it gives better tones and more pearly whites than the usual bromide and ferricyanide. It has the further advantage that it may be applied more than once and thus darker tones result. The formula is:

Hydrochloric acid . .	12.0 c.c.
Potassium permanganate 2.5 per cent. sol.	12.0 c.c.
Water	1000.0 c.c.

This solution has the further advantage of clearing any stains from the paper.—*A. P.*, 1915, p. 26.

Photographs on Leaves

Dr. Molisch, of Vienna, points out that one of the most interesting and important chemical processes is the assimilation of carbonic acid which takes place in living leaves. In the green leaf there are formed from the carbonic acid of the air and water, in the presence of light, organic substances, mostly in the form of starch. In a microscopic cross-section of a leaf, the green color will be seen to be due to the minute grains of chlorophyll which fill the greater part of the cells of the leaf. These chlorophyll grains are of the greatest importance for the nourishment of the plants, for only in them does the assimilation of the carbonic acid take place and only in the exposed chlorophyll grains is the starch formed.

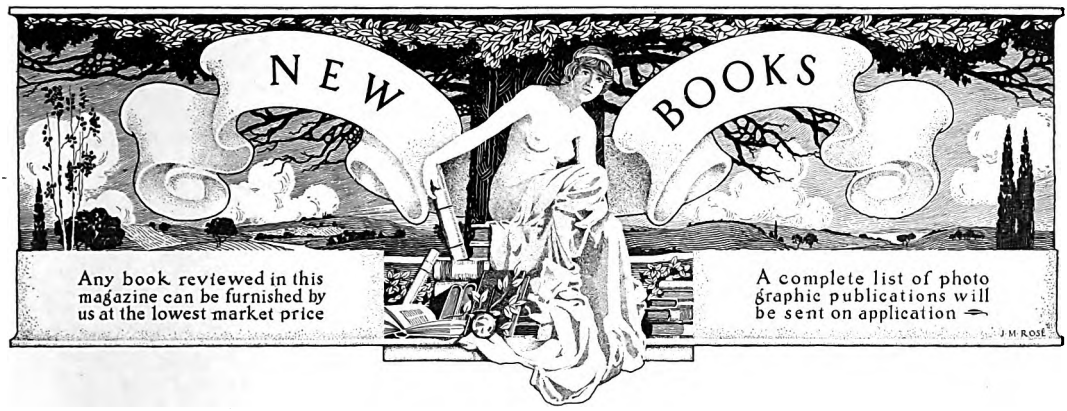
The chlorophyll grain is, with few exceptions, the only place where, in Nature, organic bodies are formed from purely mineral substances, carbonic acid and water. From these are derived all the other organic substances of which the plants consist. All plants or parts of plants that are not green, all animals and all human beings are dependent on the assimilation of carbonic acid, because, in consequence of their want of chlorophyll, they are not in a position to produce organic substances.

If a green leaf is enclosed in black paper, so as to protect it from light, it will become free from starch in a day or two. In light the starch is again formed. If upon a leaf free from starch there is laid a small pice of black paper or tinfoil, and the leaf is exposed to sunlight, preferably for a whole day, and then the leaf is cut off and subjected to the ordinary iodine test for starch, the leaf will darken all over with the exception of that place where the tinfoil protected it from the light. In this way it is easy to prove the formation of starch only in the exposed parts. If instead of wrapping the leaf in black paper a stencil or a word cut out of a newspaper is placed on the leaf then it is possible to obtain an actual photograph of the letters.

The starch test is most easily carried out as follows: The leaf, in which the presence of starch is to be proved, should be cut off the plant and quickly scalded for a minute or two in boiling water, then laid in alcohol to remove the chlorophyll coloring matter and then immersed in dilute iodine tincture of the color of dark beer. Where there is starch, the leaf colors blue, black-blue, lilac or violet according to the quantity of starch.

One of the best leaves for carrying out the test is that of the nasturtium *Tropælum majus*. It is fairly flat, glabrous and thin, and is particularly suitable in that it turns quite white when the chlorophyll is removed.

In order to obtain a photograph on a nasturtium leaf the following process should be adopted: On a leaf free from starch, that is, one that has been shielded from light till colorless, should be laid a contrasty negative, as close as possible, and the leaf exposed to the cloudless sky from morn till eve, or at least for some hours, in direct sunlight. After the leaf is cut off, it should be treated as described above and the positive will at once be seen. A picture obtained in this way is shown in the accompanying illustration. Such photographs are of great scientific interest as they prove with what accuracy the solar rays chemically act in the living chlorophyll apparatus, and because they give ocular demonstration of the law that the starch is formed quantitatively according to the intensities of the solar rays. One may look upon the leaf as analogous to the photographic plate; the sensitive chlorophyll apparatus corresponds to the silver salt, and the starch grain to the silver bromide grain and the iodine to the developer. —*Phot. Korr.*, 1914, p. 462.



UNIT PHOTOGRAPHY. By F. M. STEADMAN

Published by D. Van Nostrand Co., New York
Price, $2.00

"THIS book is written with a desire to establish a rational scientific foundation for the practice of photography," is the opening sentence of the introductory chapter. As a matter of fact it is an attempt to set up a method of estimating the exposure by adopting as unit a cone of purely arbitrary size, that is the sixty-fourth or one-sixteenth of a sphere, which is called 1 on the cone unit value scale. By this method the larger apertures have very inconvenient numbers, F. 4, for instance, being 256. Exactly the benefit to be derived from the system is not at first sight apparent, for if the average run of photographers are accustomed to think of stop apertures in terms of exposure, as I am, then the system is upside down and presents a greater difficulty than the ordinary one. Even in this the author suggests at the outset the omission of certain figures that gives an error of over 2 per cent. This can hardly be called scientific.

There are many statements throughout the work that call for anything but praise. We are told that "in photographing a person of rather dark complexion the exposure should be about four times as great as that for a very fair complexion, in the same light." If this be true, then carrying the argument to its logical conclusion, one would have to expose on a sheet of black velvet that reflected only one-sixteenth of the quantity of light as reflected by white blotting-paper, just sixteen times as long, which is obviously absurd. For a standard tinting medium there is recommended the use of roll film, but we are particularly cautioned to avoid the use of any that is orthochromatic. Now as there is no roll film on the world's market that is not orthochromatic, the very basis of the system is an impossibility.

The user of this method is given the chance of adopting any printing-out paper, and the author does not seem to be aware that these may differ, *inter se*, as much as 50 per cent., nor is there any guarantee that different batches of the same paper will not vary. The author also appears to be ignorant of the different effect of the different rays of the spectrum on this paper.

When talking of emulsions he is also entirely at sea and confounds latitude and contrast, which are two totally different things, and states that he cannot see how the Hurter & Driffield system can be of any value to the practical photographer, which proves that he knows not the subject, or else he would know that, by this system, it is not only possible to estimate accurately the correct exposure, but that through it was discovered the method of making the present-day fast emulsions.

In dealing with negative making, the author on one page directs attention to three illustrations as proving "the folly of expending mental effort on methods of exact development," and on the next we are told to take care to work in a scientific manner. The most curious statement of all, however, is that it is necessary to increase the quantity of water in the developer until a development of about five to six minutes gives the correct or approximate density. "The reason for this is to give the emulsion time enough to become thoroughly impregnated with the developing agent, and thus avoid lack of uniformity in the result." The exact time for the impregnation of the ordinary emulsion thickness is probably well under a minute, and neither the author nor anyone else can produce a negative showing lack of uniformity through want of being saturated with the developer in a total time of development of half the times given. If such lack of uniformity were likely to occur with short development, it would appear the more readily when using the despised H. & D. system and it could then be measured, but after having used this for many years and every day, I can state that no lack of uniformity from this cause has ever been met with.

The book is well printed, and contains several illustrations, and is singularly free from typographical errors.—E. J. W.

OPTIC PROJECTION. By PROFESSORS S. H. GAGE and H. P. GAGE

Published by the Comstock Publishing Co., Ithaca

IT is curious, in the face of the fact that projection is probably now more used than it

ever was, that it should have been so neglected by writers. There are, of course, several works on the subject, but they are all more or less elementary. In this book, however, we have what the authors might justly have described as an encyclopedia of the subject. It is the best and most exhaustive work that has been published in any language and will become the classic work.

There are naturally points in which one thinks that more might have been said and others which are really deficient, as for instance the authors entirely neglect the absorption of the heat rays by such solutions as cupric and ferrous sulphate, although they give somewhat elaborate tables as to the absorption of heat and energy by water and other solutions, etc. The only subject on which I think the book is badly deficient, is the treatment of flicker in moving picture projection. This is treated in such a curt, summary manner that it leaves much to be desired; on the other hand, to treat of it at length, as has been done by Marbe, would possibly have meant a weariness of the flesh to the average reader.

Again, to anyone who is at all conversant with projection, the work is at times really wearisome because it deals so carefully with matters that come naturally to the expert. It is for this very reason that the work is all the more commendable and the more valuable to the tyro.

The comprehensiveness of the work can only be briefly outlined: It deals with the ordinary lantern with direct and alternating currents, on the ordinary house supply, with the lime-light, petroleum gas, acetylene and alcohol lamps and sunlight, which naturally leads on to the consideration of heliostats. The projection of opaque objects, the preparation of lantern slides may possibly be said to conclude the purely photographic side of the subject. The projection microscope, drawing and photographing with projection apparatus, moving pictures, projection rooms and screens, electric currents, wiring, the optics of projection, and normal and defective vision are also included. There are over 400 diagrams and some illustrations of the path of the rays of light through condensers, etc., that are distinctly new. Above all things, there is that most valuable of all parts of a book, a good index, and the authors have added a brief bibliography and historical summary. It is well printed, and will form a valuable addition to the reference works connected with photography.—E. J. W.

Sound Advice

"Do not force your medium. The large picture is not always the big picture.

"Avoid the ultra-dramatic. It is wont to savor of self-exploitation. It may amuse for an hour, but will it stand the test of time? Do not be a weather vane. Have the courage of your convictions (as differentiated from self-complaisance which is fatal to progress)—and stand by them.

"Cultivate simplicity. It takes a genius to eliminate the traces of labor from his production. Bear in mind that the abstract things of today are tomorrow the quaint things of yesterday.

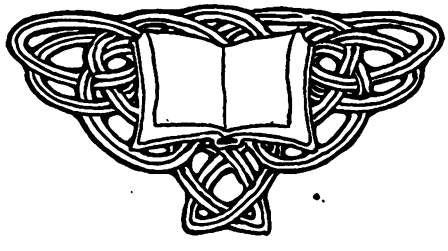
"Be sincere, be untiring. Wasted plates and disheartening failures belong to the drudgery of attainment.

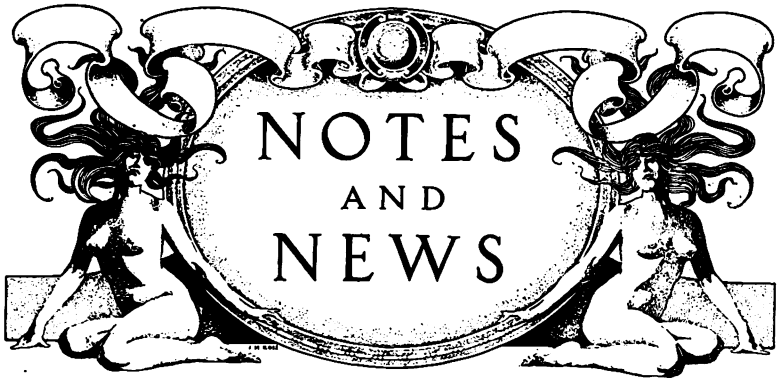
"Dream dreams, have ideals, accept the joy of it and do not aspire to skim the cream before you have milked the cow."—*Gertrude Kasebier.*

Photographic Magazines

There is more attention being given to photographic literature and text-books than ever before, and there are more magazines and books being read than ever before. The result is that better minds are finding a field for work, and the average reader is the one who is able to profit by the study and experiments of these trained minds.

Every photographer should take just as many good magazines as he or she can afford and find time to read, and now is the time to look over the list of magazines and decide for yourself whether you are satisfied with the reading you are doing at present, and whether you are not able, by the exercise of a little energy, to do more reading, and thus get much more good than you have been getting, by subscribing to more magazines. Do not let any of your subscriptions lapse unless you intend to supply its place by the subscription to some magazine or magazines. Give this matter prompt attention, for this is the season for renewing subscriptions.





Missouri Valley Photographers' Association Amalgamation Agreement

We, the Commissioners representing the Photographers' Associations of the States of Missouri, Iowa, Nebraska and Kansas, believing that each State Association working alone is not large enough to obtain the best results and believing that by working together larger benefits may be obtained for each member;

Therefore, We hereby agree to amalgamate the said State Associations and we do hereby organize an association of photographers whose charter members shall be all the members of the State Associations above mentioned.

This association shall be known as the Missouri Valley Photographers' Association.

Each of the State Associations entering the amalgamated association shall pay into its treasury the sum of $75.00.

We have drawn a Constitution and By-Laws which is a part of this agreement.

We have elected the following officers, who shall be the officers of the Missouri Valley Photographers' Association for the year 1915, or until relieved by their duly elected successors: President, Homer T. Harden, Wichita, Kansas; Vice-President, C. D. Pierce, of Ottumwa, Iowa; Secretary, L. S. Kucker, Springfield, Missouri; Treasurer, Alva C. Townsend, Lincoln Nebraska.

The first Convention of the Missouri Valley Photographers' Association shall be held in the fall of 1915, the date and location to be decided by the officers elected.

(Signed by)

Missouri:	Carl Gist,
	L. S. Kucker.
Iowa:	Charles D. Pierce.
Nebraska:	Charles H. Cady,
	Alva C. Townsend.
Kansas:	H. S. Stevenson,
	Homer T. Harden.

Baltimore Hotel, Kansas City, Mo.,
January 15, 1915.

Note.—This agreement is subject to the ratification of the Iowa Convention insofar as it affects that State, who will decide this on floor of their Convention in April, 1915.

Gustav Cramer Memorial Fund

The Cramer Memorial Committee, headed by such men as Phillips, Core, Harris, Noble, Clark, Strauss, Stein, Steckel, Walinger, Knaffl, Hammer, Topliff, Rinehart and MacDonald—men who, every one of them hard workers, are spending their time and giving their money to make the Memorial not alone a fitting tribute to the dear old man, but to show the world that photographers are first of all men who are sympathetic, strong and generous, as of course you are.

The signing of the pledge for an unknown sum is in a characteristically American spirit. The sporting instinct in the real American is so strong that the idea was taken up immediately and enthusiastically by dozens of men whom one would have been inclined to set down as conservative. If your business on May 20 amounts to only six dollars, you have only to be glad that you are able to contribute six dollars, and if it amounts to sixty or six hundred, there is all the more reason for being thankful that you have been given the opportunity of being really generous.

As the money will be sent to "Pop" Core, he being the Treasurer, and as it has been agreed that the amounts sent in will not be published, the only embarrassing feature has been eliminated. So fill in the adjoining pledge and send it to the Treasurer today.

A PLEDGE

E. B. Core, Sec.-Treasurer, Gustav Cramer Memorial Fund,
76 Landscape Ave., Yonkers, N. Y.

I agree to send at the close of business on May 20, 1915, a check equal to the gross amount of the orders received in my establishment during that day, as my contribution to the Gustav Cramer Memorial Fund.

Date.....

Signed.....

Rexo Paper

Rexo is a new developing paper introduced by Burke & James, Inc., of Chicago, and we have found it to give very pure whites and rich, deep blacks. It possesses a good scale of gradation and considerable latitude, and the various grades of emulsions and surfaces enable the photographer to choose that most suitable for the particular class of negative in hand. This paper is well worth trial by all practical workers.

The Women's Federation

Why You Should Be a Member

All women photographers should be earnest supporters of the Federation, for the same reason that nearly all progressive business people are members of some organization that represents their interests. The problems that all photographers have to meet under given conditions are the same whether they are men or women, but women look at things differently and deal with them accordingly, and just so long as this is true, it will be helpful to them to have their own organization, and hammer out their problem in their own way. "In union there is strength," is an old saying, but it is as true as it is old. A handful of women working together, earnestly, for their own advancement will accomplish more than ten times as many will, mixed with the crowd.

Photographers at large are not specially interested in the advancement of the woman photographer, though they may like her personally. They are not going to give their best thought to solving her problems. She must do this herself. Just think of the immense advantage of all the women joining together in an organization of their own, understanding each others' difficulties as men can never understand them, and thrashing things out with unity of purpose because their view-point is the same.

The object of the Federation is to help every woman photographer. There is no woman so small that she has not the right to seek aid from the Federation, nor one so large that she is above helping solve the problems that daily confront us. The little woman will be met with a strong, firm hand when she seeks it. The woman who has arrived, and there are many in the Federation, will have the added strength of giving of her abundance. These women keep in touch as no other organization of photographers do. The folio, composed of prints from the different members, keeps them informed of the style of work that the others are doing, and brings them together with a nearness and sureness that nothing else short of a personal visit could do.

Become a member of the Women's Federation, send your dollar to the Treasurer, Mrs. Bayard Wootten, New Berne, N. C., so that you will have the privilege of the exchange of prints. Send three of your best prints to Miss Clara Louise Hagins, corner State and Madison Streets, Chicago, so that you too will add to the strength of the Federation by being represented in the Circle. Every new idea that you show in a print means added strength, and we need YOU.—*Bayard Wootten.*

The Military Rocket Camera

A Dresden engineer, named Maul, has succeeded, after twelve years of experiment, in pressing the rocket into the service of military photography. Maul's apparatus and its operation are thus described in a recent issue of *Kosmos.*

The conical cap contains the camera, which takes a picture 18 centimeters (7.1 inches) square. The cylindrical head contains the charge of powder. The long shaft prevents the rocket overturning in the air and the crossed vanes at the rear prevent rotation about the axis of the rocket. During the flight, therefore, the camera continues to face the direction in which it was aimed before starting. In order to make rotation quite impossible, the camera is also provided with a gyrostat, which comes into operation automatically when the rocket is fired. The exposure is made by an electro-pneumatic device, which is operated by a small galvanic battery and acts at the moment when the rocket attains the highest point of its flight.

Immediately after the exposure a parachute, which is attached to the camera and packed between it and the rocket head, opens, and the camera is detached from the rocket, but remains connected with it by a cord about 33 feet long. The result is that the whole apparatus falls slowly until the rocket strikes the ground. The parachute, thus relieved of the greater part of its load, then descends still more slowly and brings the camera to earth without shock.

The apparatus is quite complicated, but its operation is very simple. As the rocket is about 20 feet long and weighs more than 50 pounds, it must be discharged from a support. The support is provided with sights by means of which it is aimed in the desired direction. The rocket is next placed in the horizontal support, which is then turned, on its trunnions, into the vertical position.

The rocket is now ready for firing, which is done by electricity. The first current applied sets the gyrostat into action. The second current ignites the charge, which is sufficient to carry the rocket to an elevation of about 2000 feet in 8 seconds. The exposure, the opening of the parachute and the detachment of the camera follow in rapid succession, and in about a minute the apparatus comes safely to earth not far from its starting-point.

The whole apparatus is carried on a small hand-cart, which can easily be taken to the front, and the rocket is in little danger of being shot down in its brief flight. Its great military value, therefore, is self-evident, and will probably receive many practical demonstrations in the present war.

Wireless Used to Operate Camera

One of the most interesting features of a recent convention held in this city, and one which created great interest among those hunters who prefer a camera to a gun, was the wireless apparatus for photographing wild birds and animals.

This sport, which has caused many people to penetrate the wilds of Africa and the extreme

north and south, is being rapidly developed so that exact reproductions of live birds and animals hitherto unobtainable may be secured.

The perfected wireless apparatus will do much to revolutionize the sport and be of infinite value to science. Photography with the aid of electricity is not new, but heretofore has been attended with many difficulties owing to the necessity of stringing wire in remote places.

With this new instrument all that is necessary is two aerials and the camera may be set up anywhere, in the top of a tall tree if need be, and the operator, situated at a safe distance, can observe the spot at which it is pointed, and when the bird or animal which he desires to photograph arrives he simply throws in a switch.

The apparatus is remarkably simple and the shutter of the camera is operated through two small relay stations attached to the aerial near it.

So delicate is the adjustment that the apparatus while on exhibition was set in motion several times when electrical experiments were being tried in other parts of the building, the currents escaping through the air.

There were a number of unique bird houses shown and all sorts of contrivances to attract the feathered denizens of the woods. Also a wonderful collection of pictures of rare birds in their native environment.

At present an effort is being made with the apparatus to secure a picture of a rare winter bird which up to the present has never been photographed.—*Syracuse (N. Y.) Herald.*

Camera Men in Danger

Photographers in London and other European cities must be more careful than ever how they take snapshots during wartime, for a thoughtless use of their cameras may easily cause them to find themselves in prison for a few days, to say the least, *Pearson's Weekly* remarks.

In the early days of the war, for instance, a perfectly innocent Hull ship-chandler, on a holiday in London, with his wife, was arrested by the police for taking photographs of Battersea Bridge. After being detained the best part of the day, during which inquiries were made, the authorities were satisfied that he was merely a harmless snap-shotter; but nevertheless they warned him to keep his camera out of use until the war is over.

There are probably many thousands of amateur photographers who, wishing to snap scenes in the neighborhood of barracks or other military or naval places, find themselves arrested as if they were spies. If they must take photographs in these war days, let them resort to the woods and country lanes, as far from military scenes as they can get.

At the outset of the war the military authorities issued an order that no aëroplanes or airships must be photographed at a distance of less than forty yards, or of an air station at all, without the permission of the authorities. Any one disobeying this order is treated as a spy at once.

Germany has always been the most dangerous country for the amateur photographer, and more than one tourist has found himself roughly handled by the German police for innocently taking photographs. A special bill was passed a few years ago threatening tourists with a fine of £50 or two months' imprisonment who took photographs without permission.

The French officials in the towns on the Franco-German frontier have always objected to any one taking snapshots, and, indeed, many a tourist has had his camera temporarily confiscated, to find afterward that his plates had all been rendered useless.

Italy not only bars people taking photographs near fortifications, but forbids the use of a camera in most of the picture galleries and museums. Visitors to Pompeii, where the famous Roman ruins are, must have a special license before being allowed to take their cameras with them.

Reproducing One Figure Out of a Group

One of the tasks often undertaken by the professional photographer is to take a single figure—or, as it usually is, the head and shoulders of such a figure—from a group, and make a separate portrait of it. The success with which this can be done is often very striking, and many an amateur feels that he would be glad to be able to do likewise It is out of the line of ordinary photography, however, and the result which seems so successful is almost sure to depend for that success, not on photographic skill, but on brush work.

The first stage consists of blocking out on the negative with opaque pigment all the surroundings of the part which is to be reproduced by itself. The negative being varnished, photopake is carefully painted on all round for a distance of about half an inch, and the rest of the negative is covered with black paper. When it has served its purpose, paper and pigment can be removed and the negative restored to its original condition. If the original is a print and not a negative, it must be blocked out with a mixture of Chinese white and water color, photographed, and then the negative enlarged.

When it has been blocked out in this way

a vignetted enlargement is made on a fairly smooth bromide paper. The exact size is not important, but it may be 10 x 8 or 12 x 10, if the final print is to be of cabinet size. It should be kept fairly light in character, to make what is to follow all the easier.

At this stage, the enlargement is sure to look very crude. The blocking out will seem harsh, and, in view of the great magnification, there is a spottiness about the work which is unpleasant. It may have a strange outline, also, in consequence of the intrusion of other figures from the group. All this is to be remedied, but it cannot be remedied by photography. With crayons, pencil, and perhaps the air-brush, the enlargement is worked upon until its producer would never recognize it. Missing parts are put in, shadows are deepened, defects taken out, and the photograph is only the basis for a black-and-white sketch. All turns on the way this work is done, and unless the amateur photographer is also an amateur draughtsman of no small skill, he will be disappointed if he tries his hand at such an undertaking.

When the handwork is finished, it only remains to make a fresh negative on a small scale from the enlargement, and to print from that. The reduction sharpens it up, and serves to hide the handwork, which is also made less conspicuous by the fact that the whole of the surface of the small prints has the same photographic quality.—*Photography and Focus.*

Stereoscopic Photographs of Comets

Prof. E. E. Barnard has applied this method to the study of Comet Morehouse, of 1908, with interesting results. Series of photographs of the comet made on the same date in various parts of Europe and at the Yerkes Observatory were available for stereoscopic combinations, and from the resulting series of stereographs, extending over a period of several hours, it is possible to interpret certain curious changes in the appearance of the comet's tail. At one time the tail was abandoned and drifted away into space, where it formed an irregular ring, from which a secondary tail, in cylindrical form, was developed. Soon after, the nucleus sent out a new tail which appeared to connect with the old one, but which the stereographs show to have really passed behind the latter at a considerable angle. —*Scientific American.*

Photographic Emulsions

Mr. J. H. Christensen, of Halle, Denmark, has just invented a most useful emulsion for photographic purposes. Silver bromide or chloride is emulsified in collodion. A solvent is used which will produce an impermeable film into which the silver salt is distributed most evenly. This is superior to the employment of ether-alcohol solvent. The latter merely distributes the material mainly on the surface.

The emulsion patented by Mr. Christensen may be made by treatment of 12 grains of collodion silver bromide with 40 grams of amyl-acetate and adding 60 grams of iso-butyl alcohol.

When thin films are prepared in this way and then exposed and developed with glycin, para-amino-phenol, or some similar developers, which do not require alkali carbonate, the permeability of the finished film will be greater in those parts which contain reduced silver.

Addition to the emulsion of small quantities of certain substances, such as one-tenth of a gram of benzoic acid, to one hundred cubic centimeters, aids materially in development.

If these films are applied to gelatin films supported on glass plates, and then immersed in a solution of dye-stuff, colored gelatin images may be produced. If, on the other hand, the glass is replaced by metal and the plates are immersed in an etching liquid, the process can be used to produce photomechanical printing plates.—*Dr. Leonard Keene Hirchberg.*

A New Copper Photographic Process

Photographs upon copper plate are now made by a new process. It has been desired to use the sensitiveness of cuprous salts to light, especially for transferring engraving designs upon metal, but such images could not be fixed, as reagents dissolve the copper salts, both acted on by light or unaffected, in about the same way. By a new process, a polished copper plate is exposed to chlorine gas for a few seconds to produce a sensitive layer, then it is exposed under a negative for ten minutes in sunlight, after which a positive image is seen. The sensitive layer should be extremely thin, as a thicker layer is less suitable and is found to be in some cases twenty times less sensitive. Fixing is readily done by a toning-fixing bath containing but little hypo-sulphite and already charged with silver salts coming from previous use with paper toning. On the plate the affected parts take a brown hue and the rest dissolves out. Other baths can also be used. The image made by this process looks somewhat like a daguerreotype.—*Scientific American.*

The Criminal Waste of Silver

Photography and photoengraving, states *The Inland Printer*, use up more silver than is taken for any other purpose except the United States Mint, and still we processworkers do not utilize in our negatives 10 per cent. of the silver we buy; the 90 per cent. goes into the sewer. To think that we permit the first washings of wet plates, together with the cyanid of silver and the copper and silver washings, to run away into the drain-pipes instead of into barrels, where the silver could be precipitated and saved, is one of the principal reflections on our intelligence. A book could be written on this subject, but the only object of this paragraph is to urge the adoption of a glass dipping bathholder for the cyanid-clearing solution. This upright container is the sanitary method for preventing the breathing in of the deadly cyanid fumes. It also saves the waste of expensive cyanid, but above all it retains the silver dissolved from the negative film. This upright container can be of glass,

with a cover to prevent the fumes from escaping. The cyanid solution can be used for weeks by strengthening when necessary. Drain plates well when removing them from the cyanid. To learn when the cyanid is rich in silver, take a little of the cyanid solution in a glass and put in it a strip of clean zinc or copper; these will precipitate metallic silver in a powder on the bottom of the glass. To get the silver from the cyanid solution, either evaporate it, out-of-doors, or send it, while in solution, to the refiners. As you will have to send the powder to the refiners anyway, it is better to send the solution at once.

Gelatin Reliefs

A METAL plate is coated with a thick film of of bichromated gelatin and dried. It is then printed and afterward subjected to a tolerably high temperature, when those portions that have been more or less protected by the negative contract to a greater extent than the others, and so an image in relief is obtained. The presence of moisture in the "dry" film is an essential in the working of the process, and this the author of the paper insures by the addition of glycerin to the gelatin solution with which the metal plates are coated. There is one point that occurs to us in reading the instructions for working the process. Professor Namais directs that, after the plates are sensitized, they should be put away to dry spontaneously. In the case of the thick film of gelatin given in the formula, which film is sensitized by soaking it for fifteen minutes in a tolerably strong solution of the bichromate of ammonia, it will take an unusually long time to dry at this time of year. Such a film as this is (in thickness and condition) very analogous to one for the Woodburytype process, and in the protracted drying would become quite insoluble in warm water and useless. It would be interesting to know if a film dried so that it becomes insoluble in warm water has its power of contraction by heat similarly affected. The process will doubtless receive attention by those interested in bichromated gelatin photography, for there is certainly some novelty in it.—*British Journal of Photography.*

Toning Solutions for Bromide, and Developing-out Prints

BLACK and white pictures have been very popular for years, but there seems to be much of a growing demand for changes from set rules and regulations. The artist aims for new results, and the lover of the camera also forges ahead with new ideas. Of course there are many principles that have not changed, but they, in many instances, have been redressed with new thoughts from experiences. There are so many different styles of pictures, that while one looks well black and white, another is more handsome in sepia, thus on and on, until at the present time the various colors and intermediate tones are quite numerous.

The following are a few shades that lend charms to the beautiful. First, let us consider the sepia tone, the one most familiar, and probably the most popular and useful of any. After trying out numerous formulas of sepia toning baths, I prefer the re-developing bath, and have obtained the most pleasing results with the following, which will produce excellent tones and graduations.

The prints to be toned are printed a trifle darker than for black and white, as they are slightly reduced in toning. They must be thoroughly fixed and washed, when they will be ready for solution No. 1, in which place and leave until quite bleached (the darkest shadows turning a faint light brown) when they are to be removed, thoroughly washed, and placed in solution No. 2. In this latter solution the print regains its former brilliancy and deepens to a brilliant sepia. Then the print should be removed, well washed and dried. This tone is permanent and is quickly and easily produced.

Sepia Bath

Solution No. 1.

Pure water	30 oz.
Potassium bromide	70 grs.
Potassium ferricyanide	80 grs.
Ammonia	15 drops

Solution No. 2.

Pure water	16 oz.
Sodium sulphide (not sulphite)	30 gr.

Crimson Toning

For a fine crimson tone for special prints, I like the following bath by far the best. With it this tone is easily obtained by first thoroughly bleaching the fixed and well-washed print in the solution No. 1 of sepia bath. It is then removed, well washed, and is ready to be placed in the toning bath, in which it is allowed to stay until the desired color is obtained.

Crimson Toning Bath Solution

Pure water	2 oz.
Gold chloride	1 gr.
Ammonia sulpho-cyanide	10 grs.
Sodium chloride (common salt)	10 grs.
Hydrochloric acid	12 drops

The prints first turn reddish, but finally turn a beautiful crimson in some ten or fifteen minutes.

Green Toning

While a good green-toned print is very desirable at times for enhancing the value and pictorial effect of marine scenery, I have had only a small amount of work along this line, so am not as familiar with this toning as with the above ones; however, I have on several occasions tried the following and find it does the work satisfactorily. The prints to be toned must of course be thoroughly fixed and washed, then place in—

Bath for Producing Green Tones

Dissolve 20 grains vanadium chloride in hot, pure water and a little hydrochloric acid. Add

10 grains ferric chloride and 10 grains ferric oxalate to 2½ ounces of a saturated solution of oxalic acid diluted with 10 ounces of pure water. When dissolved add 20 grains of potassium ferricyanide previously dissolved in hot water, then the dissolved vanadium chloride, and finally pure water to make 20 ounces.

Tone the prints in this bath until they turn a conspicuous blue, then remove and wash until they attain the greenish tint desired. Yellow stains that may appear on the whites are removed by soaking the toned print in a solution of 20 grains ammonia sulpho-cyanide in 10 ounces of pure water.

Any prints on bromide or developing paper can be toned in any of these solutions. If the print is freshly made, proceed as per directions, while if some old prints be used, they should first be well soaked in clear water until saturated, then proceed as with a fresh-made print.

In mixing any of these solutions use only pure water, and be sure the chemicals are all thoroughly dissolved before placing prints therein. It is much best to strain the solutions before using to be sure no undissolved particles remain.—*J. R. L.*

New Method for the Rapid Drying of Negatives

It is sometimes useful to be able to dry a negative within the shortest possible time, and the most effective method of accomplishing this has hitherto been the treatment of the negative by concentrated alcohol or acetone. This method, however, does not allow of complete drying of the negative after a single immersion, at least two successive operations being necessary. It is also costly, and involves the use of a product which is not only inflammable, but has the additional disadvantage of sometimes rendering the gelatin of the plate opaque, especially if the latter has not been completely freed from hyposulphite of soda.

We have found that certain salts, readily soluble in water and without any disorganizing action on the gelatin, may be used in concentrated aqueous solution for the rapid dehydration and drying of water-soaked gelatin.

The desired result may be effected in a more or less thorough manner by means of certain sulphates, sulphite and hyposulphite of soda, and carbonate of soda and of potash.

Among sulphates, sulphate of alumina (in 100 per cent. solution) produces the most complete dehydration. Sulphate of ammonia (in 75 per cent. solution), anhydrous sulphate of soda (in 50 per cent. solution), sulphate of zinc (in 160 per cent. solution), and hyposulphite of soda (100 per cent. solution), while acting to a certain extent, are less effective than sulphate of alumina.

Carbonate of potash in saturated (cold) solution (90 grams in 100 c.c. of water) gave the best results in our hands, in regard to rapid drying of negatives, at the same time causing absolutely no alteration of the gelatin even after prolonged contact. The negative, soaked in water, is immersed for four or five minutes in the saturated aqueous solution of potassium carbonate, then briefly pressed between blotting paper to remove the greater part of the alkaline solution. Drying is completed by wiping the gelatin coating with a linen cloth. Rubbing will not harm the coating, which will have become very firm, and will assume a glossy appearance.

A negative so dried is ready for printing from, as the surface is quite dry and resists even pressure of the finger-nail.

Carbonate of potash has the advantage over the other above-mentioned saline solutions of providing rapid and complete dehydration. Furthermore, all other salts cause white spots to appear, after a short time, on the surface of the plate, these being due doubtless to saline efflorescence. With carbonate of potash the coating, suitably dried, remains perfectly brilliant and transparent even after several weeks.

Nevertheless, certain negatives so treated develop defects in course of time, and for this reason we recommend drying by carbonate of potash only as a rapid temporary method. The negative can, of course, always be subsequently washed in water and dried by air in the ordinary way, the gelatin having undergone no permanent change by the drying treatment.

Experimental tests show that after treatment by carbonate of potash, desiccation is practically complete, only a very small quantity of water and carbonate remaining, and this does not affect printing.

To sum up, a saturated aqueous solution of potassium carbonate constitutes a new and economical method for the rapid drying of negatives, and possesses decided advantages over alcohol; it will therefore be of practical service in all cases where it is desired to use a negative as soon as possible after development.—Messrs. A. L. Lumière and A. Seyewetz, in *Penrose's Annual.*

For the benefit of those workers who have not easy access to supply stores, or those who like to make things for themselves, a number of formulæ for waterproof inks are here given, as such inks are useful for various purposes:

1. Water 12 oz., borax 1 oz., shellac 1 oz. Simmer gently for an hour, strain, and add lampblack or other pigment "to taste," as the cookery books say, *i. e.*, until a trial on the material for which the ink is required indicates the right consistence, or, as the old formulary says, q. s. (*quantum sufficit*).

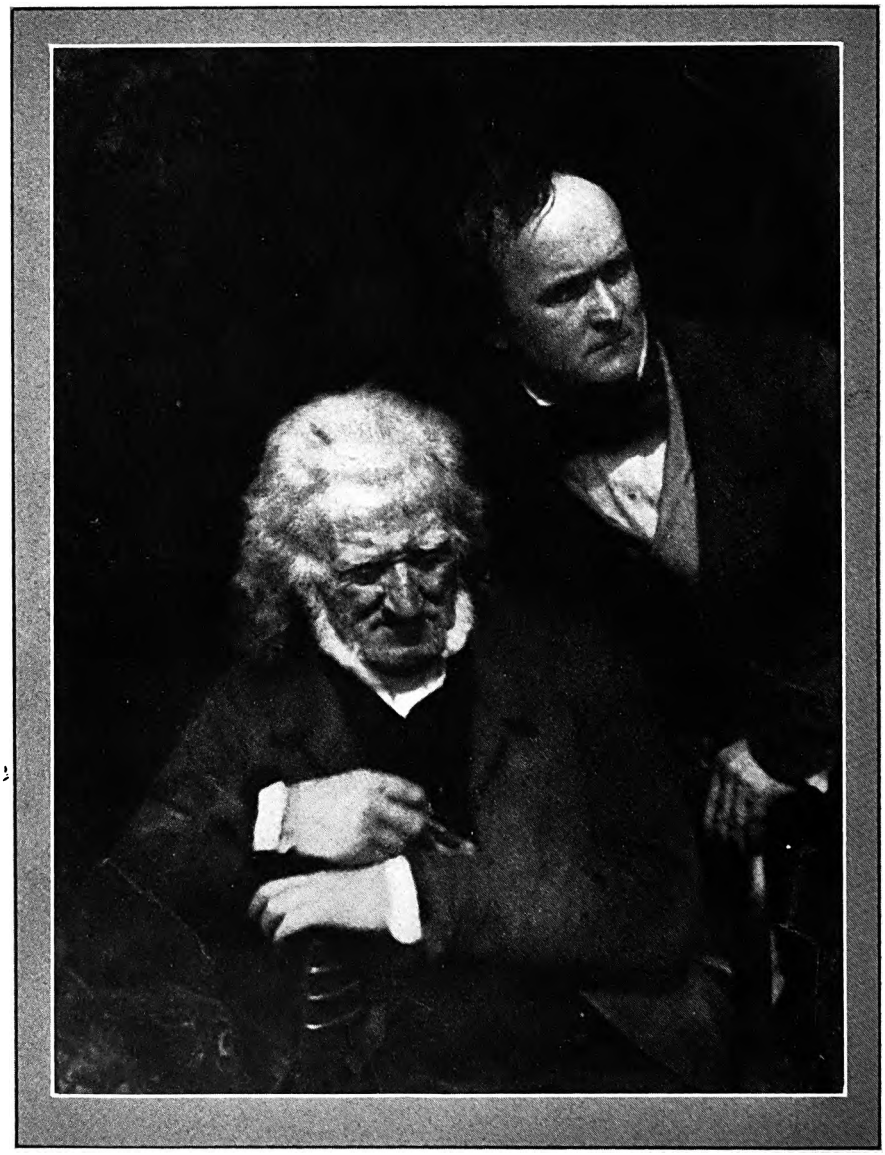
2. Asphaltum 1 part, turpentine 4 parts. Pigment q. s.

3. Shellac 10 parts, meth. spirit 30 parts. Pigment q. s.

4. Copal 60 gr., oil of spike or lavender 1 oz. Pigment q. s.

5. White lac 1 part, turpentine 2 parts. Pigment q. s.

6. Sealing-wax powdered and then dissolved in meth. spirit forms a mixture useful for many purposes in the dark-room.



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FROM THE COLLECTION OF FRANCIS C. INGLIS
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INDIVIDUALITY IN PORTRAITURE

By JOHN A. TENNANT

WE hear a great deal about individuality in portraiture, and that a portrait to have any real value must express the individuality of the subject. This is true. But there is another individuality—that possessed by the photographer—and it is with this that we are here concerned. When in looking at a portrait we see more than the mere photograph, and more even than a characteristic portrait of the subject, we say: "Who made this picture?" Here the personality of the photographer is what interests us. Or it may be that we see a portrait, and our first thought is: "Ah! that was made by Falk, or MacDonald, or Hollinger." We recognize the individuality of the maker in his work, and that gives it an interest apart from its value as a portrait. This individuality is almost invariably present in the work of successful men, and is, indeed, a very powerful factor in their success, being the expression of those qualities which raise them above "the average man" and his work. I was interested to observe how this was shown in a collection of portraits, recently gathered for use in these pages, coming from many well-known studios. It is equally exemplified in this issue.

The value of "style," simply as a matter of business, is sufficient to make it worth cultivating. It proves that a man has mastered the technique of his profession in such a degree that he is no longer conscious of it, using it merely as

a means to an end, a method of expression. By his "style" the portraitist creates a class for himself, and if his "style" attracts the public eye, the note of individuality will make his work interesting, which necessarily adds to its commercial value. This does not seem to be as fully appreciated as it should be. Not long ago I sat in the studio of a successful woman photographer whose name and work are well known in exclusive circles. I asked her to what she imputed her success—on what line she worked in the making of her portraits of famous men and women. Her answer was to the point: "Well, first of all, I try to make my work interesting. If it interests people, I find that they care little whether it is high art or perfect photography. People *must* be interested." There is much truth in this, and we see it illustrated in the progress of almost all the successful workers in the fraternity. To the lack of this interest, in a large measure, may be attributed the deadly dulness of the everyday work of the average studio. Here and there we find a good subject, and the photographic work is beyond criticism, but it does not draw our interest any more than the majority of machine-made things do. This sort of work is unprofitable advertising. It merely advertises photography, where it should advertise the photographer.

How shall the photographer cultivate his individuality? Chiefly by looking into his capabilities, watching his mental attitude toward different classes of work or subjects, trying to feel his way into a definite method of expression and then by everlasting effort along the lines chosen. The "style" will come in time, if it is sought for—not otherwise. Get a purpose, and work for it. You will arrive.

PROFITABLE SIDE-LINES—TRAILING THE BUILDER

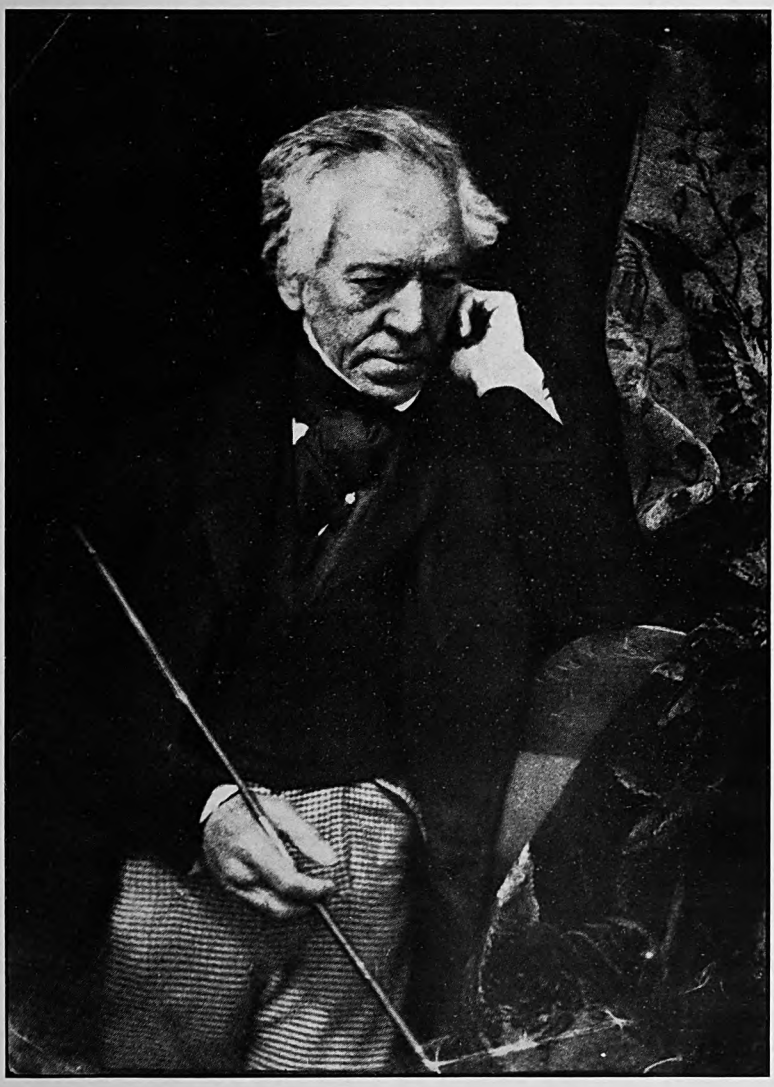
By A. E. SWOYER

"IN the spring the young man's fancy lightly turns to thoughts of love." So sings the poet—and he may be right about it, at that, for certainly the thoughts of the young man, or the young woman, do not at that time turn to the photographic studio. The result, of course, is a slack period for the photographer.

But just as every question has two sides, the same conditions which make for dulness in the studio set the building contractor to work at his busiest—and in a combination of these facts lies many a dollar for the commercial photographer, or for the portrait man who is willing to go after them.

The "going after" consists in suggesting to the builder the advisability of having photographs made during different stages of the work. All large contractors have this done as a matter of course, so that if your prospect is of this class he will need no urging but will come right down to prices—and an order. On the other hand, if the concern is a small one it may be necessary to prove your point. With this end in view it will be well to consider some of the advantages to the builder of having a photographic record of his progress.

First of these is that of protection. Most building contracts provide either that payments for the work shall be made as each several part is completed, or that the contractor shall bill monthly for the portion of the work finished during the preceding month. Suppose, then, that there is some dispute as to



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the condition of the work at any time and the owner refuses to settle; it is plain that if the builder can produce photographs, dated and witnessed, showing that the work was completed as claimed the owner will either settle up without going to court, or if he does carry it that far the photographs will prove his downfall. In the same manner, suppose that a workman injured on the job claims indemnity—stating that the work was not properly protected according to law, and setting up all of those other claims that a shyster lawyer will suggest; a photograph showing that legal conditions were complied with will non-suit such a case in short order.

Then, of course, there is the question of advertising; the success of any contractor must be based upon securing new work—and what so effectual in this line as the exhibition of photographs showing work already done?

Over and above all this, progress photographs are the eyes of the contractor; that is, if the head of the concern is too busy to be a frequent visitor at the job, they will show him whether or no his superintendent or foreman is carrying on the work in a proper manner; they will show the difficulties that were encountered and how they were overcome, and they will show at any time whether the specifications are being followed. In short, it is a pretty poor contractor who cannot be made to see both the necessity and the advantage of your proposition.

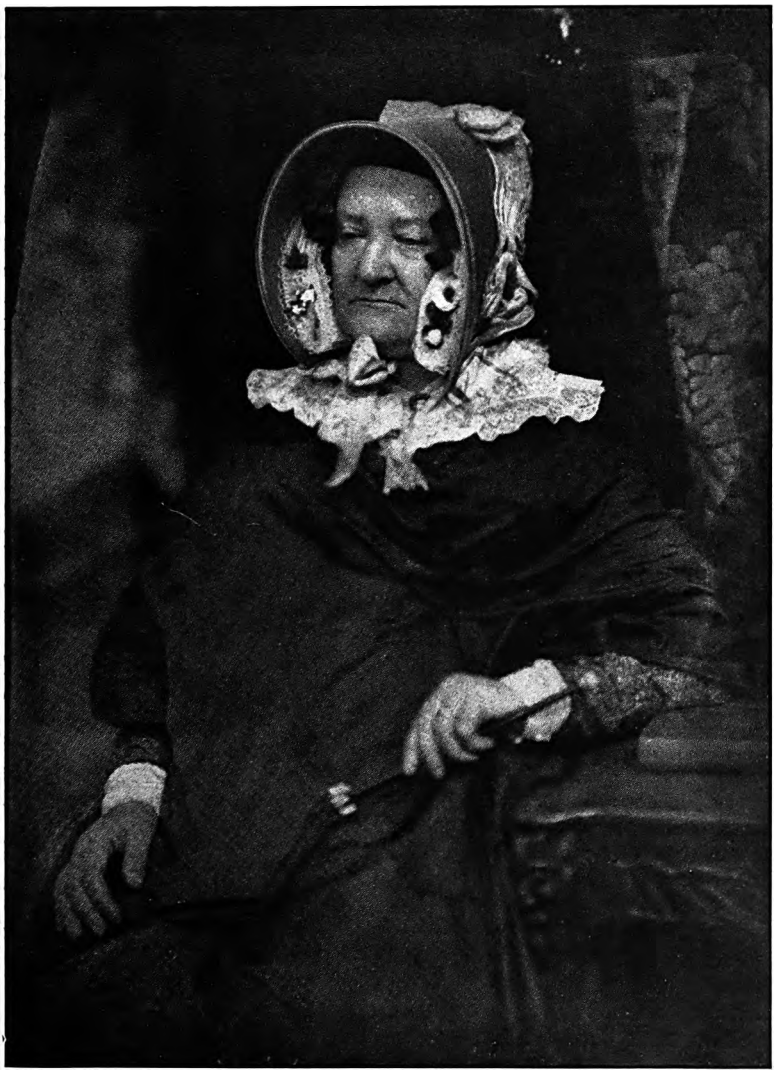
Before talking to your man it will be necessary for you to figure pretty closely the sum for which you can undertake the work at a satisfactory profit to yourself; when you interest him, he will want to know without waiting for you to sit down and figure it out. On large jobs it is usually arranged that the photographer make a number of photographs from designated viewpoints either bi-weekly or once a week; these will probably not be much smaller than eight by ten's—on smaller buildings fewer exposures and smaller negatives will be the rule. In figuring your costs, then, aside from the obvious points of actual labor, materials, and distance, remember that the big job will pay higher proportionately than the small ones—some of the latter, if the contractor is niggardly, may not be worth your trouble. Set your price, then, and stick to it.

Incidentally, at the time of making your agreement, find out whether or no you are supposed to act exclusively for the contractor; this is important, for both the owner and the architect are interested in the progress of the building, and if you are at liberty to sell prints from the negatives made for the contractor to them, you are that much in pocket. If he demands your exclusive services, point out this fact and make him pay for it.

If, on the other hand, he is willing for you to supply owner and architect, make separate agreements with each of them; explain that you have already been selected by the contractor to make negatives, and you will find it a winning point in your favor. It should be easy to prove to the owner the necessity for having such progress photographs, not only as a check upon the contractor—of whom most owners are suspicious—but as evidence, in case of possible trouble, and an interesting exhibit for future use; in short, most of the arguments applicable to the contractor will appeal to the owner—when looked at the other way around.

When you have signed up owner and contractor, see the architect—he is the go-between between the two, although nominally acting in the interest of the owner, by whom he is employed. You find him a little difficult at first, but when he finds that the other interested parties have signed up he will soon fall into line. If he does not, gently suggest that progress photographs will lessen the work of his inspection and will protect him in case of possible disagreements, and see what happens.

So far, of course, we have spoken only of the straight record photographs made to show the details and progress of building; they should be made of fair size, printed on glossy paper, ferrotyped, mounted on linen or card as the customers may direct, dated and signed—as a protection to yourself, it is a very good



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idea to do the dating on the negative, as then you can be absolutely certain that it has not been altered should you be called upon to certify to it in court. In making such photographs a large camera and an anastigmat lens are a great advantage; lacking the anastigmat, a rectilinear may be stopped down sufficiently to show straight lines as such clear to the the margins of the plate.

The question of viewpoint is of greater importance, since it is not to be taken because of its merits artistically, but rather to show important points—and all of them. It is an advantage to have the builder fix the locations for the camera at the beginning of the job; then, by invariably erecting your camera at these points, you can secure a set of prints that will accurately gauge the progress of the work. Failing this, make friends with the foreman; he will be interested in the work and free with information—incidentally, he is another likely customer for prints, inasmuch as he either hopes to be a contractor himself some day or else is considering the advisability of going to another concern; in either case, such photographs will show the character and importance of the work upon which he has been engaged, thus proving a valuable reference. The foreman, too, can give you many hints—both as to the most interesting parts of the work and any novel construction methods being used to overcome the difficulties encountered in almost every building job.

If you have done anything along the line suggested you will find a good paying market for such prints in the journals devoted to building trades, concrete, and the like; nor will either architect or builder object to such sale, provided you give their names as such on the back of prints sold—it is good advertising for them, and if they don't know it you can so inform them.

For progress photographs, then, instead of the one customer who is originally contracting with you to do the work, you have chances of sale to architect, owner, foreman, superintendent, and various trade journals; incidentally, if the workmen do not ask you to make one or more group pictures—then I don't know human nature. If, then, your price to the contractor covers your total cost and a fair profit besides, so that these other sales are all "velvet," it looks as if trailing the builder might be made to show pretty fair returns, even on a small job.

Then, of course, there is another class of photograph which you, as the man on the spot, will have the opportunity to make—that is, the views of the completed structure. In this, of course, you are required to display more taste than in the record photographs; you must select the best viewpoint to show the house to advantage, and you must do your utmost to bring out every good point. Also, don't be afraid to expend a few extra plates; the owner of a new house ranks next in pride to the father of a new baby, and he will want prints for himself, his relatives, and his friends—and incidentally, your work will prove an introduction to him that will prove of great value to your studio. Then, of course, architect, builder, and superintendent are other sure customers; if the job is important, artistic, or workmanlike these gentlemen will probably call upon you for enlargements of large size—and corresponding profit.

The outfit used for views of the completed structure may differ from that employed in the record work; a smaller camera is often an advantage, inasmuch as the small prints to be sent by the owner to his friends may be made by contact, and the high-priced enlargements made almost as well from the small negatives as from those of greater size—the expense to you, of course, being less. Your own judgment and equipment will, of course, be the best guide in this.

Finally, without wishing to harp too strongly upon the subjects covered in "Press Photography,"* don't forget that the views of the completed house or other building are as salable as the detailed prints of its construction, although possibly not to the same markets. Thus, suppose the building to be a house or bungalow of artistic design; go to the architect and explain

* Wilson's, March, 1914.

the use that you wish to make of the print, and that you intend to mention him as architect of the building—then ask him for floor plans, and the cost of the building in round numbers. When you get this data, send it with the prints to one of the household journals or those advocating country living—if they can use it, you will be anywhere from five dollars to twenty five dollars in pocket as a result.

Whether all of the facts previously given work out in your own case exactly as per schedule or not, unless your town is one of those in which the first houses built were also the last—and I take it that in a town of that variety the photographer would have starved long years before this article goes to press—you will find that trailing the builder is both interesting and profitable; at least fully as much so as sitting in your studio and waiting for the "Young man's fancy" to turn him thither.

AN IRON DEVELOPER FOR PLATES, FILMS, AND PAPER

By ALFRED J. JARMAN

SINCE the introduction of hydroquinone, metol, eikonogen, amidol, and many other developing agents, nearly all being the derivatives of the coal-tar compounds, the once photographer's friend, ferrous oxalate, appears to have been quite forgotten.

There have been many variations of this valuable developer, none of which surpassed the plan of dissolving the true ferrous salt in a strong solution of potassium oxalate. More iron and developing power can be secured by this method than by any other, for the simple reason that the solution of potassium oxalate is not overloaded with other products of chemical decomposition. A solution of ferrous oxalate in potassium oxalate, possessing the greatest developing capacity, is to be made by making a hot solution of potassium oxalate, and dissolving therein as much ferrous oxalate as it will take up; in other words, this method produces a saturated solution, which may be made acid with various acids, or it may be modified so as to produce a different color by the introduction of either ammonium bromide or potassium bromide, or it may be used in a perfectly neutral state. This developer must not be used in an alkaline condition; should this be attempted, the exposed plate will become fogged, and a thin image will be the result.

The question now is, where can ferrous oxalate in its true state be obtained? Like many other salts that were, and still are, used in photography, they can only be obtained of the wholesale chemist. Oxalic acid, which is necessary for the production of ferrous oxalate, can be purchased at any drug store, while protosulphate of iron would have to be purchased in quantity of the wholesale chemist. At the present time, 1915, the price of oxalic acid has gone up considerably. In the wholesale line, the price increased from nine cents per pound to thirty cents; while all the salts of potassium have also gone up in price. The photographer, today, could not in his ordinary way of business make oxalic acid, the process being too intricate. The base from which oxalic acid is made today is just common sawdust, the same kind that is used to sprinkle the floors of warehouses. Before this discovery was made, oxalic acid was produced from sugar; this, however, was too expensive. It is not the intention of the writer to go into the manufacture of oxalic acid. The method of making

ferrous oxalate will be described, because the materials can be purchased readily anywhere in small quantities, which would enable the photographer, professional or amateur, to prepare ferrous oxalate with ease and at a small expense, and from this chemical, when made, to make a developer that will produce negatives upon plates and films and prints upon paper that will rival the more modern developers. It may be mentioned here that the action of this developer is not so vigorous as the various developers made with metol and hydroquinone, although it rivals the latter salt in speed action, and, like hydroquinone, development must be carried farther in its reducing action so as to allow for the drop in density when the image is fixed in a chrome-alum-hypo fixing bath. Lantern slides may be developed with this particular developer readily, which will produce results like pyrogallic development, if a few drops of a 10 per cent. solution of bromide of potassium be added previous to commencing development. The high-lights of a transparency developed in this solution will present bare glass, and if the color is not quite to our liking it may be changed by any of the methods employed for the color changing of lantern slides.

How to prepare ferrous oxalate: In the first place, two stoneware jars or crocks will be required of one gallon and a half capacity each, either with or without lids; they must be well cleaned with hot water. Then procure 1 pound of oxalic acid and 2½ pounds of protosulphate of iron; dissolve the protosulphate of iron in one gallon of filtered cold water, preferably distilled water; now dissolve the oxalic acid in half a gallon of water, also cold. As soon as these salts are dissolved, which will be aided by considerable stirring (the mixing must not take place until the salts in each crock are dissolved), then pour the oxalic acid solution into the protosulphate of iron solution; stir the mixture well with a strip of glass or a stick of white pine; then in the course of half an hour stir the mixture again well. It will then present a very turbid or muddy appearance. The mixture must now be allowed to stand undisturbed for twelve hours. At the end of this period the clear liquor standing above the precipitate must be decanted carefully so as not to lose any of the precipitate, or it may be drawn off with a siphon and thrown away. Upon examination there will be found at the bottom of the crock a copious, pale-yellow precipitate, very much like a mixture of mustard and water, but very different in composition. This precipitate is *ferrous oxalate.* This precipitate must now be washed by pouring upon it two pints of filtered water. Stir the mixture well, allow it to settle (which will take about three hours), pour the clear liquor off again, add another quart of filtered water, continue the same process, when the clear, faintly yellow liquor must be again poured away, and the precipitate poured into a large filter-paper in a glass funnel with a piece of absorbent cotton, pulled out cobweb fashion, placed at the apex of the filter-paper. This precaution is necessary to strengthen the filter-paper at this part to prevent breaking. The crock must now be rinsed with cold water, the rinsing being poured into the funnel. As soon as the liquid has passed through the filter, the funnel may be filled to the brim with distilled water and allowed to filter until no more water passes through. The whole mass may then be lifted by the filter-paper and laid down upon other absorbent paper, in such a way that the filter-paper holding the precipitate may be opened and the contents exposed. In this way the whole mass may be placed in a warm place to dry, resting upon clean cardboard. The iron receptacle over an ordinary kitchen stove, where the pots and kettles are kept, or the plate heater, will be found to be just the thing. As drying proceeds, say at the end of a day, the whole mass will be stiff enough to handle. Then withdraw the wet blotter and cardboard and substitute another set. In the course of about twenty-four hours the precipitate will be perfectly dry, and the mass, although it may appear to be very lumpy, may be easily crushed because of its friability. The resulting yellow powder is the ferrous oxalate of commerce. Upon

weighing the powder, it will be found that there is just about one pound and two ounces, or, should there have been some loss in the operations, a full pound of sixteen ounces will have been acquired in a thoroughly dry state. To make up a powerful developer with this chemical, prepare the following solution:

Hot water	60 fl. oz.
Neutral oxalate of potash	16 oz. av.
Bromide of ammonium	20 grains.

Now add as much of the ferrous oxalate powder as the hot liquid will take up or dissolve, which will be about three ounces; stir the mixture with a glass rod and add three drams of acetic acid No. 8. The resulting liquid will assume a deep yellow color, bordering upon red. As soon as it is cold enough pour this liquid into a wide-mouth, amber-glass bottle close up to the cork; then, when it is quite cold, it will be fit for use to develop plates, films, or paper.

The description given may appear to indicate a tedious process; this will be found, however, not to be so. All the operations are quickly performed, to say nothing of the pleasure and correct knowledge obtained in producing the material. Occasionally the image may appear to be slow in starting up compared with metol and similar chemical substances; the result, however, will be perfect. When paper is developed, the shorter the time of exposure the blacker will be the resulting print, while if the time of exposure has been a little too much the print will assume a brown color. The writer has obtained with glossy papers, beautiful prints, both in black and brown.

The usual acid water is required between the developing solution and the fixing bath; this stops development and aids in preventing fog.

After the fixing of the image is complete and the prints have been washed, the whites may be made very brilliant by passing them through the following clearing solution:

Water	30 fl. oz.
Common alum	2 oz. av.
Citric acid	1 dram.

If there is the faintest trace of discoloration in paper prints developed with the above developer, this clearing solution will remove it rapidly, the blacks becoming improved at the same time.

This developer may not be suited for ALL kinds of paper, owing to the variable components of the emulsions, but for bromide and chloride developing papers it has yielded prints of unsurpassed beauty. A separate solution should be kept for negative work, and another for paper prints. A 10 per cent. solution of bromide of potassium will be found useful for restraining purposes; it acts with more vigor than the bromide of ammonium. The latter salt answers every purpose with this developer, and for that reason it has been included in the makeup.

The ordinary acid hypo fixing solutions may be used, but they will reduce the image slightly, so that development must be carried a little farther to counterbalance this tendency. The developer may be used several times over, if returned to a bottle well-corked and filled nearly to the top. The ferrous oxalate in a dry state will keep without deterioration for any length of time, if kept away from the air in a well-corked or stoppered bottle, and be ready for use at any time for making new developer.

THE ARRANGEMENT OF A GROUP

THE further we advance in what may be justly termed artistic photography, the more we emancipate ourselves from that monotony of subject which has overruled the photographic representations of the last twenty years, the more pressing become the questions as to how, after the difficulties of the single picture have been successfully dealt with, other difficulties may be similarly overcome. One of the most difficult, perhaps the most difficult, of all tasks undertaken by the photographer, is the efficient representation of several persons in one picture—the group. The group must consist of a number of single pictures together, but may not be broken up into isolated pictures. The space, looked at from a distance and as a whole, must appear filled with lines and forms expressing life and action as well as a certain amount of design. However simple these requirements may sound, they demand of the photographer artistic sympathy, much study, and patience.

He must be acquainted with the laws regarding the structure of a picture; he must know the principles (akin to those of pictorial art) of composition; he must be able to separate the important from the unimportant, and to combine, suppress, or tone down accessories.

It seems, therefore, not out of place to write about these requirements, as only on the sound basis of knowledge and capability can art in photography be developed and protected from the so-called "works of art" which have so little to do with art.

Many of our up-to-date practising photographers do not possess energy, ambition, or love of their calling sufficient for self-education, and in thinking over the photographic industry we are forced to come to the conclusion that a considerable part of the blame is due to many professionals lacking knowledge and ability. It has been recently remarked that the beginnings of photographic portraiture indicated progression along similar lines to those now worked upon by the great bulk of photographers.

Originally, photography was practised by artists and by real art-lovers, and we have pictures from among those "beginnings" which might well serve us as examples. This opinion is shared by many competent judges. When we consider how vastly superior are photographic materials of the present day to those of forty years ago, we think it would be well to investigate the reason of this retrogression and also find out the differences between the early photographers and those of today. Any connoisseur would tell us that the difference lies in the conception of the subject. We might reply: "Other times, other views," but nature remains the same. While from the earlier portraits real flesh-and-blood people look out at us, the photographs we possess nowadays seem better fitted to adorn the pages of a fashion journal. The human countenance, once the point of interest, must give way to the fashionable or *chic* gown, the dainty hat, the immaculately dressed hair, in fact to the art of the modiste and of the hair-dresser. We would not wish, of course, to banish all that is modern—fresh methods of expressing beauty must ever be given a place of their own—but the fact remains that the point of view of most photographers is a very narrow one, and in only exceptional cases are we striving to repair the ravages of the photographic "man of business."

Formerly group photographs were taken by painters, men of artistic taste. How had they the advantage over us, seeing how far behind us they were in technique? They possessed artistic feeling, which we lack. They knew of nature from their own studies, whereas we know nature only through more or less bad copies. If we wish to overtake them we must, at least, use good instead of bad copies, and, above all things, we must return to nature.

By VANDYK
LONDON

With regard to the good copies, we can earnestly recommend our readers to obtain some of the beautiful reproductions after pictures by the Old Masters. They are comparatively very cheap. It is not enough, of course, for these pictures to be casually glanced over and then placed in an album. Their value may not be appreciated until the master's work be pondered over and studied carefully for perhaps a year. Let the student hang these, in simple frames, upon his studio wall; let him constantly look at and compare them (however useless this may at first appear) with his own work; and in time he will come to recognize a few of their wonderful qualities, and at the same time to confess that in order to compose *pictures* in the stricter sense of the word he will have to set about his work in a very different manner.

When we speak of the masses of light and shade, balance and unity, contrast and harmony of a landscape, we must remember that the functions of these must never be omitted in the arrangement of a group of figures.

The arrangement of form, line, and space can be manifold, but must always aim at a self-contained, pictorial appearance. It is just as dangerous to "stretch out" a group as it is to select a monotonous background. Let the figures be posed as close together as possible without crowding, taking care that the principal person be the centre of interest pictorially, and let the tones emphasize the important points at the cost of the unimportant ones.

An old writer has the following prescription for the composition of a group: "Give the first place unto the king, the next unto his attendants or other persons of note; should there be present those of lesser worth, place them without more ado in the shadow." This advice must not, of course, be literally followed, "those of lesser worth" being liable to take offence if treated merely as so much background; but the idea is right in principle. Figures placed in the shadow need not be on that account unrecognizable, and in following the above advice the difficulty of a "restless" appearance in the picture is obviated.

Straight, hard lines should be avoided as much as sharp corners, regular, repeating shapes, and parallel figures and actions.

A life-like photograph should seldom represent a symmetrical appearance, for only in rare instances do these occur in nature.

Let us consider another popular method of photography than which nothing could be more objectionable.

In having to do with pictures of a very large size "cutting out" and "pasting on" are frequently resorted to.

After a hasty sketch of the general arrangement the persons represented, as well as the accessories and the background, are photographed separately in a given position, size, and light, and the plates are enlarged and printed separately.

Then begins the work of the retoucher. He laboriously cuts out the picture with knife and scissors and pastes it on to the ground according to his sketch. The edge of the photograph will then be erased, corrected, or completed with pencil and brush and united as far as possible to the ground. Afterward, when the picture is framed and glazed, the deluded public will either not observe the cutting-out business, or in observing will admire the dexterity and neatness with which it is carried out.

In the reduced photograph the work of scissors and brush is less obvious, but the picture possesses even less clarity and interest. The price of such a photograph must be very high, otherwise it would not pay to do the work, and the method is pursued in every branch of modern photography.

Many a reader may say, "Why disparage this method? Have we not for years attained good results, earned any amount of money, and satisfied our public with it?" We answer by describing the effect given by one of these same productions, which came, by the way, from one of the best studios.

In spite of every effort made by the photographer the "cutting out" and "pasting on" was sufficiently obvious to even an unpractised eye, any depth of tone was lacking, and the perspective of the painted background was wholly

BY SPEAIGHT
LONDON

false, as the figures in the foreground were as clear and sharply defined as those behind, besides which, one beheld retouched boots and drapery, forced high-lights, etc., and yet the whole tone was gray and of an equal value all over.

Could not even this method be used with better effect? Yes, with regard to certain points, not with regard to all. Depth, perspective, and a natural effect must ever be lacking.

Money may be made, and a not too exacting and inartistic public may be pleased with the results of such a method, but a *good* photograph will never be attained by it.

It seems very necessary to do something to combat the one-sidedness and the limited range of treatment in present-day photography, and as there is no means of learning, save by personal experience, we should use every available means of adding to our store. One of these means, demanding only diligence and a love of the art, is the hand camera. The study of typical or accidental appearances in nature by means of the hand camera is of the greatest importance both for groups and for single pictures. But how many photographers set to work in this manner? Most of them never bring their apparatus out of the studio; many of them look upon "snap-shotting" only as an amusement for amateurs. But is not the progress of many amateurs a proof that there are snap-shots and snap-shots, that instantaneous exposures can be made in an artistic spirit and can be of immense educational value? Thousands of opportunities are daily offered to the photographer of making studies of a charming pose, a quick, life-like action, and when he not only "snaps" but takes the opportunity of discriminating between the accidental and the characteristic, when he exerts himself to form of the scene a picturesque whole, and, finally, if he gives himself trouble over the careful finishing of the picture, even his studio work will derive benefit from the habit. Not only his technical powers, but also his powers of imagination will be strengthened, and he will find it easier to divide the natural from the unnatural. He will also keep further away from the set pose, which is always a forced and stiff arrangement.

Let us now run over the leading principles of group-taking: After receiving a commission to take a group find out the number and character of persons. In many cases the studio may not afford sufficient accommodation, but the question *where* the exposure is to be made being of the greatest importance, the artist should make himself accurately acquainted with the locality. Let him carefully note the light and shade and the background, which will probably require altering. Then let him make a hasty sketch of the arrangement, which, however poor in execution, will be of the greatest service to him. Lines leading upward and outward should be looked for as giving life and action. After making this sketch pose the persons and strive to let them forget that they are about to be photographed (this will present some difficulty) and to look as if there were some meaning in their being thus assembled.

Then comes the critical moment of exposure, only to be rightly decided upon by the artistically educated photographer. It seems at first an impossibility, but even here practice will make perfect.

There are several ways of attaining the end, but the end remains always the same, the lifelike and harmonious picture.

HENRY HAVELOCK PIERCE

AN APPRECIATION

By SADAKICHI HARTMANN

(SIDNEY ALLAN)

WHAT surprises me most in Pierce's work, even more than the prodigality of his output and the energy and enthusiasm with which he absolves his manifold duties as a pictorial portraitist, is the excellent average of his work. I never met anyone to equal him in that respect, and I have admired him for this particular quality, and in a way considered it the keynote of his personality, ever since I first met him, and that is quite a number of years ago, at a State Convention in Washington, where we two were elected judges and both judged with such severity that hardly any of the exhibitors received the percentage mark which was necessary to obtain the certificate of honor. I mention this merely to show what a high standard he applied to photographic productions.

He was always a champion of "as much art as is possible in professional portraiture." At one time of his career he was near being asked to join the Secession. As far as I know (after the organization had been started) Pierce and Goldensky were the only professionals ever considered. As the Secession stands for art for art's sake, this is after all quite a compliment to a man who has sometimes eight to ten sittings in a morning.

During my last visit to Boston I frequently called at his studio, and as soon as I had entered he would, print in hand, greet me with, "How is this? Isn't it fine? Oh, I will do better yet!" And he would show me hundreds of prints, prints just finished and prints made years ago, and then he would talk about new ideas for prints that he would make in the near future.

He seems to be at all times absorbed in his work. We had occasion to spend an entire day together and the topic was hardly changed. In the morning he had about half a dozen sittings, and in the intervals he made me come into the dark-room, into the printing-room, into the finishing-room and meet the retouchers, always explaining some technical point or commenting upon some peculiarity of composition. Then we went to his Cambridgeport home, where some prize pictures or special favorites of his, hanging on the wall, furnished new material for discussion. Then we entered his auto and drove with break-neck speed to his summer studio at Manchester-by-the-Sea, where he had a sitting. There again were pictures galore: I must have looked at two or three thousand prints that day. Then he took me up almost as far as Gloucester, where he exposed a few autochromes. And all the way from Cambridgeport, along Revere Beach and as we passed through Lynn, Salem, Beverley, Danvers, Manchester, and farther on—a trip of easily seventy miles—he kept up the conversation with the same zest. He referred to pictures, talked pictures, saw pictures, and pointed out pictures to me; here a group of pedestrians, there a vista of the ocean, a group of trees, or a house amidst foliage. "There are pictures everywhere!" he would exclaim again and again; "Nothing easier than to get material for pictures. They come to you. Look here!" and again, "Look over there! Why one could make a hundred pictures in one day."

I do not know how Pierce obtained his mastery of composition, or rather

the faculty of instantaneous selection, of discovering a favorable viewpoint even under the most harassing conditions, such as every home portraitist must encounter. I do not believe he ever sat down deliberately to study.

BY HENRY HAVELOCK PIERCE

It was more or less inborn with him and developed by actual experience and experiment. But he had the thirst for information, and the gift to learn by observation and practice. He was always fond of paintings; he has even a small collection of his own, nothing wonderful, but every picture is in good taste, which is more than can be said of most collections. He has picked up stray fragments of knowledge everywhere, and he gradually entered so well into these pictorial ideas that they were incorporated with his own. They enter into his work without bidding. They come trooping to him with every new sitter. He originates even when he remembers. Scheme on scheme of lighting; arrangement upon arrangement; special poses, ideas, and facts crowd into his pictorial vision and give clearness to a character, animation to a countenance or gesture, at the same time ceaselessly correcting and changing his interpretations. Thus he found his own style. All his prints have one quality in common: From the first glance to the final contemplation they hold the interest of the beholder by some vivacity of expression or brilliancy of workmanship.

As I look at his prints, piles of them, I am shocked at the crudity and negligent treatment of some, while others impress me as masterpieces, and yet all, even the most commonplace poses, have something that lifts them above the ordinary. Look at the accompanying illustrations. It is easy to point out flaws. Here a shadow is too opaque or monotone; there an outline is too much lost in the background. In the lady with the dog, the light comes from

BY HENRY HAVELOCK PIERCE

both sides, yet the painted-in background shows a clouded sky. The young lady in bridal array is taken in a twilight atmosphere out of doors, which is an absurdity. The train of the lady standing near the portiere is jerked

By HENRY HAVELOCK PIERCE
BOSTON, MASS.

forward, just because something was needed to fill that particular spot, no matter how awkward it may look at closer scrutiny. In the picture of the lady in fancy dress in a conservatory an entire glass door has been scraped

BY HENRY HAVELOCK PIERCE

away and the remnants are still visible, while in the group of three the ordinary shutters still show under the improvised lattice work. All these shortcomings are due to carelessness, of conception or technique.

Is it because he works with such amazing rapidity, so that some exposures are little more than a guess? No doubt. Besides nobody can work hours after hours with the same intensity of perception. Nobody realizes that more than the photographer himself. And there he shows his true character. He knows that it was but a guess. He is convinced at all times that he can do better. So he continues and all the thousands of exposures tend but toward the realization of more and more perfect pictures. He is interested in everything that pertains to pictorial expression, whether it is the satin skirt of a lady or her lace fichu, whether his quick glance discovers a peculiar type or marks a special feature or movement of physiognomy. The graceful fall of a piece of drapery, a peculiar coincidence of lines or any unusual background, a flicker or flash of light, a decided contrast, the suggestion for a pattern design, a curious piece of furniture, children at play, gossiping women, every spontaneous attitude and occupation stimulates his picture-making faculties and he works

BY HENRY HAVELOCK PIERCE

with double speed at the slightest provocation. He is fully aware that he cannot get all the beauty a subject or incident suggests into *one* picture, but he succeeds in getting something into every one. Pierce really enjoys being a

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photographer. Unlike so many others who pursue it merely because they have once chosen it as a business and profession, he is really in love with his vocation, with the daily practice of it, and his pictures, the endless variety of poses and groupings, of lighting and environment, show it. When the search is so eager, when the paths in which it proceeds are so numerous, when it is so active and untiring in perfecting itself, the issue of the pursuit is sure, it cannot be far away from the best that photography is producing.

And his method of working is but an echo of his personality. He is brusque but genuine; he lives freely, liberally, amidst living things, and he portrays them as he sees and feels them, more boldly and more beautifully than most of his colleagues, sustained as he is by the roughness and vigor of his impulsive temperament and by the extraordinary keenness and abundance of his observations.

If you want to become still better acquainted with him, study his prints. The two ladies with the glow of firelight upon their light gowns, the young girls standing on the staircase, and the man seated in the bay window, are masterpieces of direct, unadulterated home portraiture.

THREE-FOURTHS of the mistakes a man makes are made because he does not really know the things he thinks he knows.—*James Bryce.*

No man can make a success of any work if he cannot become enthusiastic about it; and you cannot become enthusiastic unless you like your work. Enthusiasm is necessary to make a success of it.

No man does as well as he might do if he is working at one thing and wishes he was doing something else. Study the work you are doing. Find out if you are doing it the right way. Try and discover a better way of doing it.

There would be little pleasure in working and striving if work was not difficult and there were not limitations in your way.

EFFORT means doing your every-day's work as well as you know how.

An honest, conscientious worker has little time to count his successes and to pat himself on the back for what he achieves.

Remember there is sunshine and clouds in every year, so both must enter into your life experience.

If you are happy in your work be sure that you will succeed; be sure that contentment is the first step toward success.

"REFRAIN from reminiscences. Blot out the mistakes and disappointments of the past. Associate with the live ones, and live now, now, in the present.

"If you are sixty, and you keep on hovering over the mistakes you have made, you will look and act seventy.

"If you are sixty, and you keep up the spirit of doing things—if you refuse to let your mind run down, you will look and act fifty. It makes twenty years' difference."—*The Silent Partner.*

BY HENRY HAVELOCK PIERCE
BOSTON, MASS.

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BOSTON, MASS.

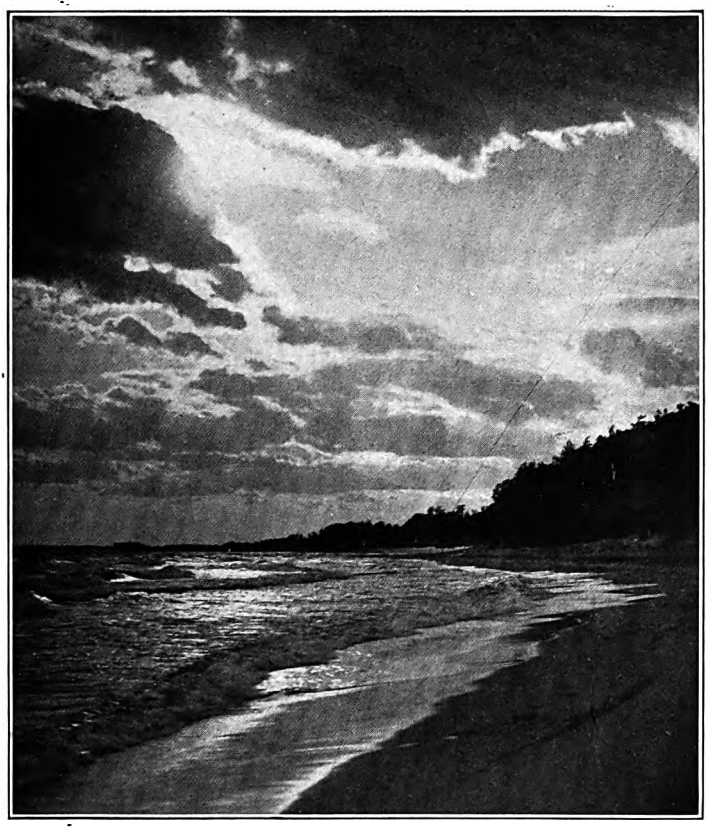
OUR PHOTOGRAPHIC OPPORTUNITIES

By A. H. BEARDSLEY

THERE comes a time in the affairs of nations when there is an upheaval, an overturning of accepted methods of conducting government, business, and society. Conditions either favorable or unfavorable are thrust upon us, and upon our ability to deal with the unexpected problems depends our national and social growth. At this writing a titanic struggle of the European nations for political, commercial, and social supremacy is being carried on to the finish. More and more, as the war lengthens from days to weeks and from weeks to months, are we confronted with facts which demand attention. If the manufacture of a commodity by one man is suddenly stopped by death, we naturally turn to another man to assume its manufacture; and if the second cannot reproduce the article, we continue our search until we find a man who can. In this manner, sooner or later, a commodity of equal or superior value is developed. This is true of merchandise, literature, and art to a great extent. It is the purpose of this article to point out briefly some of the photographic opportunities which are nudging our very elbows for recognition.

At the outset we must admit that our European friends have surpassed us in many of the photographic opportunities of the past. They evolved the wonderful Jena glass from which all true anastigmat lenses are made. Their skill and ingenuity in the manufacture of high-grade cameras has made us marvel. From the artistic point of view we must acknowledge that their schools have surpassed our own in reflecting the highest conception of photographic art. Now, however, all this superiority in creative manufacture and art is ebbing away through the loss of skilled and brilliant men upon the battlefield. Does this mean that all the work of generations has come to nothing, or does it mean merely the shifting of the responsibility upon other shoulders? It is the writer's conviction that other shoulders will and must carry the burden and that the shoulders in question are our own. At first we hesitated to admit our responsibility. We argued that we could not make the commodity. We claimed that we could not obtain the raw materials. In short, there was no alternative—we must quit. Then, however, some of us took another grip on the load and gradually raised it to our shoulders, thereby convincing ourselves and others that our strength was equal to the task. Already we have covered considerable ground, but now we must increase the pace. Upon us rests the responsibility of carrying on that which has taken generations to evolve. Let us do it with efficiency, honor, and pride.

We make photographic lenses in America. We have made them for many years. Why then was there any market for European lenses? Because we considered them better than our own. Why was this? Because when we bought a foreign lens we knew that it was the pride of its maker, and that the formula, polish, grinding, and mounting were right. Why had we never developed this accuracy? Because it took too long to make such perfect objectives. Moreover, commercially they were not such a success as those we made by machinery instead of by hand. We could turn out a hundred where the Europeans made twenty; but those twenty were perfect, and we bought them in preference to our own when we wished the best. Now, however, many of the hands that could polish the finest anastigmats in the world are grasping the sword. Here is our opportunity. If we never before equalled a foreign anastigmat lens we must do so now or go back to the rapid rectilinear. We can do it. All we need



"THE WOODED SHORE." BY W. E. BERTLING

is more patience, care, and attention to detail. The hope of "getting by" must give place to the determination to have it right or else discard it. The European lensmaker loved his lens. It was his pride. It was "art for art's sake" with him from start to finish. Hence his lens, though laboriously made, always reflected credit to his name. The point to be made is for us to continue, rather than depreciate, the product of these men who worked for a high standard and maintained it. We must come to the conviction that an article can be well made and still be a financial success.

In this country we first produced cameras for the masses. We made, in great measure, amateur photography what it is today. Our instruments were reasonably well made, and, most important of all, they really took good pictures. There we stopped. We concluded that few would ask for anything more. Our European friends thought otherwise. They slowly developed a series of minature pocket- and view-cameras which have no equal in this country. They fitted anastigmat lenses and high-speed shutters to these cameras and succeeded in producing instruments so efficient that we were forced to admit their superiority. Then we suddenly woke up to find that we were too far behind to catch up. Now, however, we can more than hold our own in the race. Our large camera companies are well equipped and prepared. All we need is the chance and now we have it. Here again we have opportunity on our very doorstep. Let us take pride in our product and realize that financial success is far more permanent in making good goods than in just making something salable.

As regards plates, film-pack, and roll-film we also have a great opportunity before us. Think of color photography! We cannot and must not let this wonderful process remain undeveloped or unimproved. We were always a nation to simplify—here is one of our greatest photographic opportunities. We have always made good general utility plates, but we have let our European friends surpass us in the manufacture of plates for important scientific and special research work. Moreover, our plates, as a rule, have lacked the fine grain, the thin glass, and the careful packing of the foreign product. These matters can now receive the attention they merit. Among roll-films and film-packs there is not such a difference. We have made and do make good film in this country, and our only need is to maintain the standard already set. In short, our attention under the head of plates, roll and flat film should be directly concentrated on the plates; especially those emulsions which have to do with color photography and correct rendering of color values. The writer believes that this entire process will be improved and that our American platemakers are going to do it.

Chemically, the opportunity of a generation is at hand. Our dependence upon Europe has been abject. For this reason the outbreak of the war created the greatest fear for our chemical future. Practically a panic occurred among professional photographers, and for a time we all trembled for the very existence of our livelihood. Yet, today, we are still in business, and as the days go by we are becoming more convinced that we, as a nation, are "sufficient unto ourselves." Companies in this country who have never given photographic chemistry their serious consideration are now finding ways and means to produce all the chemicals of importance to photography. We will realize that though we were once dependents we are now the dictators. Chemical concerns who can market photographic chemicals at a reasonable price will have a future which will startle them with its opportunity.

Lastly, we come to the artistic phase of our subject. For generations this country has sent thousands of students abroad for instruction in the highest and best in art. In fact, an artist was not a real artist until he had studied in Europe. We have our art schools, but they have always been more or less dependent upon foreign methods. Now we have the opportunity to develop our own art along original lines which will reflect the spirit and life of America. A wonderful new era for photographic art is dawning right here and now. Think of it—American lenses, cameras, plates, and chemicals united with American art! Is it not a prospect to stir our patriotic blood? It will require work, thought, and determination to make our photographic opportunities a success. Every red-blooded man connected in any way with the photographic industry and art of this country should rejoice, bury the past, and look ahead. Men of wisdom tell us that opportunity knocks but once upon our door. Listen; do you hear the knock?

SEPIA TONES WITH POTASSIUM SULPHURET

By EMIL FREY

OPINIONS as to what constitutes a true sepia tone are about as divergent as are the reports from European battlefields. Some workers seem to be perfectly satisfied to call any reddish or brownish tone sepia, so long as it is not actually jaundiced. The processes and mediums employed in securing sepia tones are nearly as numerous, and it seems to resolve itself into the proposition of "you pays your money—you takes your choice."

Among the processes advocated or published during the last year or eighteen months is one which came, I think, originally from England, and a short outline of it was given in the "foreign correspondent's" columns of WILSON'S PHOTOGRAPHIC MAGAZINE, October, 1913. The apparent simplicity of the process appealed to me very much, and, being of somewhat inquisitive turn of mind, I was willing to give it a good and thorough try-out—and I don't regret having done so, because the results obtained seem to be as nice and durable as those got with the more complicated formulas, and they are attained at less expense and in shorter time. I do not mean to say by this that this bath and process should be used in preference to all others, but that it will very likely prove an excellent auxiliary to any studio doing mixed finishings of part black-and-white and part sepia.

The process as published in WILSON'S gave little more than the bare outlines, and it was therefore "up to" the printer to work out his own salvation, and I am giving below the results of experiments and experiences gathered during the year I have been using it almost exclusively.

It should be stated at the outset that the potassium sulphuret bath is primarily intended or indicated for buff prints. Prints on white paper may also be used, but the white will be converted more or less into a light buff.

TONING BATH

Potassium sulphuret . . .	120 gr.
Water	14 oz.
When dissolved add:	
Saturated solution hypo . .	1 oz.
Mix and filter through cotton to avoid black specks, then add:	
Water	24 oz.

Prints: Prints lose but little, if any, in this bath, and should therefore not be too dark. Fix in the usual manner. After prints are properly fixed place them direct from fixing bath into dish with water sufficient to cover them. The fact that the toning bath contains a goodly per cent. of hypo is in itself indication sufficient that they do not need additional washing before toning.

Toning: For best results bath should be used *cold*, summer or winter. Its action being quite rapid, it is advisable to put in only a few prints at a time, and have them side by side, without overlapping. Toning begins almost immediately and is practically completed within a few seconds, or, in other words, just as soon as the shadows assume a brownish tone. As soon as prints reach that tone, remove from bath, rinse, and place in tray containing clear water. When all prints have been toned in this manner give them two or three quick changes of water, handling them over to remove the slight milkiness, and leave them then to their own resources.

You have now a batch of rich *dark-brown* prints, but they will come up to full sepia by the time you are ready for the final washing. The full sepia may also be obtained direct in the bath, but it is a waste of time and the results are not as pleasing.

If your day's printing consists of part black-and-white and part sepia, do your sepia *first*, and by the time you are ready for the washing your sepias will be ready also. The prints come up to full sepia in from one to three hours.

The bath yields quite a nice range or scale of tones; but, remember, they depend more upon the character of the negative and upon the depth and quality of the black-and-white print, than they do upon the length of time the print remained in the bath; and it may be stated here that this same fact applies, so far as I know, to all the other known sepia processes.

Oh, yes! I came very near forgetting one other thing: The odor of sulphurated potash in full bloom is not anything near like the fragrance of the rose or new-mown hay; and customers entering your studio while toning is in progress would never accuse or even suspect you of having just broken a large bottle of cologne. I don't know their chemical relationship, but making a rough guess and judging by family resemblance I would be inclined to call it brother or first cousin to sulphuretted hydrogen.

Hence, if possible, do your toning in a room separated from your business rooms.

Potassium sulphuret is not a very stable chemical, and soon deteriorates on exposure to air. It is therefore advisable, if received in pasteboard or tin containers, to re-pack in bottles with air-tight stoppers.

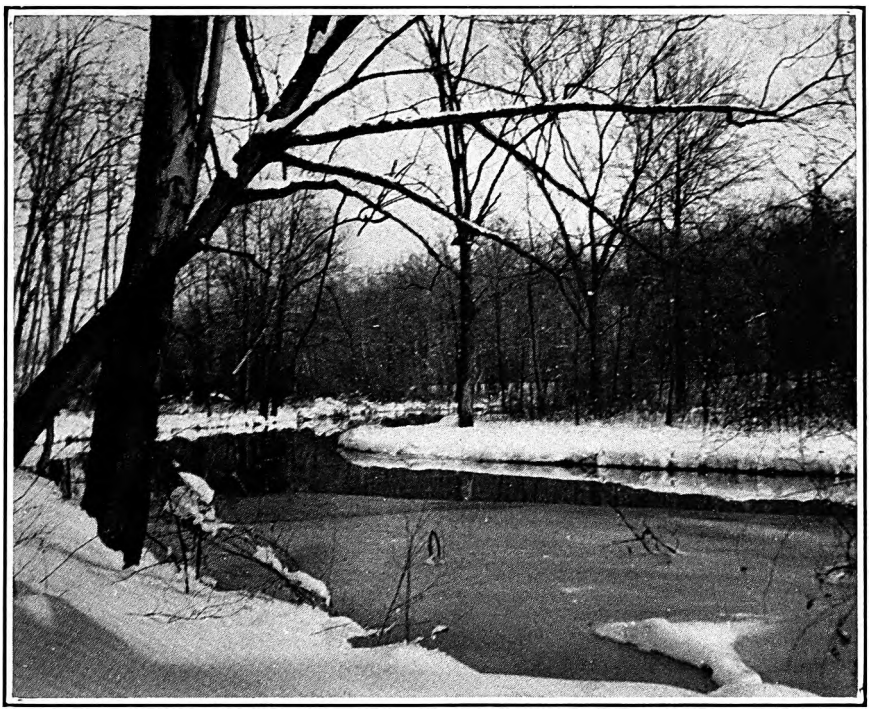
ON CRITICISM

By SIGISMUND BLUMANN

A SURGEON who permits his sympathies to affect him is, in that much, weak and inefficient. His operations must be performed with a lack of personal feeling, inexorably toward the one end of a successful consummation. The just critic is in a way like the surgeon: His first object should be to wield his pen like a scalpel, without that weakness which so often passes for mercy, toward the end that faults may be eradicated. But the surgeon who leaves the wound undressed and goes his way content with the first success is a butcher. The patient dies and all the skill and pains are wasted. The success of the operation is after all to be estimated by the improvement in the patient. And the critic who having lanced, dissected, and laid bare the faults of his subject feels his whole duty performed is not a critic but a destroyer. Defects shown and proven, comes the helpful advice as to the obtention of perfection. A critic is not a fault finder but a fault corrector. If not that, then may he pass out of existence.

Let us for a moment consider the old-fashioned family doctor, God bless him! that specialist in all diseases, whose lance is less painful (when he must be accepted in the absence of the specialist) for the anodyne of sympathy; whose medicines are not so bitter when he sweetens them with a sincere kindness of manner and a gentle word. His duties are manifold. He supercedes the surgeon. He takes the convalescent and aids him to complete recovery. The appendix is on McBurney's line to him, too, but the patient is an individual, a friend to be helped. Every word in the sickroom gives strength to the sick and hope to those gathered around. And when he is forced to tell that bitter truth which takes away all hope, he does it in a way so full of grace and feeling that there is almost consolation in his aura. God bless such! I repeat with fervor, for I know one of him.

This is another aspect in which the real critic should strive to show himself. Nowheres more than in the critic's



BY ALBERT S. HAVILAND, NEW JERSEY

vocation is it true that "The quality of mercy is not strained." Consider how under the didactic pages of Ruskin there runs a current of love and appreciation. With every new development of keener discernment grew in this master the greater faculty of understanding.

An adverse criticism is in its uature the taking away of something. Let all beware therefore and refrain unless they have something better to put in its place. This supplying of what may be lacking to those who do things is what justifies the inability of most critics to themselves create and produce. Their mission is to work through others. A precarious, dubious calling; a delicate position in life. Let every critic therefore be so careful to fulfil his place rightly that the good he does shall prove his right to be.

But of all, the persistent optimist, the indiscriminate praiser of all things, the glosser of evils, the exponent of Taurus, in our modern slang, is the most pernicious. He has no place in heaven, or earth, or hell. He is a surgeon who hides the cancer he should eradicate under a flesh-tinted plaster and calls it well. He is the family doctor who gives a bottle of sugar water to the typhoid patient and laughs or pretends to laugh away his sickness.

Reduced roughly to a deduction, let us say that the real, the true critic is capable of finding faults when and where they exist: That he is capable as well of appreciating the minutest merits: Of sympathizing with the hopes, aspirations, objects of his subject: That for the faults he is able to offer a remedy and to the ambitions an aid. Secondary to this, if the good God will grant us so much, let us ask that the critic may be versed in the rules of the language in which he writes and be gifted with something of what is called "style." Not too much ability as a writer, or too fine a purist, else he may for all his merits fall to the temptation of authors and sacrifice homely truth to language—even to sacrifice a man to make an epigram.

PRACTICAL TALKS ON STUDIO WORK

IV. THE DARK-ROOM

By RYLAND W. PHILLIPS

HERE we have the most interesting little room in the whole place. Here are the four walls within which our efforts in the studio can be carried to perfection or utterly ruined.

The development of an exposed plate requires the use of the finest kind of judgment, notwithstanding the statement anent a chemical, mechanical operation (see preceding article), and the room in which this work is done should have all the convenient arrangements for manipulation that can be procured. Everything should be done to save time in manipulation. All graduates, chemicals, and trays should be in convenient places so they can be reached with the least possible effort.

Ventilation is the first consideration. Dark-rooms are usually small and must be sealed up to prevent lights from entering. A man spends hours at a time in the dark-room and is breathing foul air, which is detrimental to health, unless some adequate system of ventilation is constructed.

One of the best arrangements for obtaining pure air that I know is a *maze* entrance. This is a double passage that eliminates light and yet gives a chance for plenty of air; but even with this scheme an electric fan should be used at times for circulation. There are many ways to get in good air, and it depends largely on the construction of the room, as to what method to use. In our present dark-room, we have a large sliding window which is almost the width of the room, and at all times, except when we are developing, this window is kept open.

A safe light is the next consideration. In every case try to have the maximum of illumination to secure absolute safety. A simple device is a square box with a door in front fitted with a combination of ruby glass and post-office paper. Just inside the door, a ground-glass of the same size for looking at negatives, and at the bottom of the box a smaller hole fitted with the *safe light* to throw the light down. Always test the safe light thoroughly, and after a month's use, test again, as both the ruby glass and the post-office paper fade quickly. It is easy to get used to the presence of a slight fog in the negatives and not notice it until some comparison is made with a perfectly clean plate. This test should be repeated every once in a while.

If it is possible, use an electric light in the box; but if gas must be used, try to construct it so the back will be open to the outside of the room, as gas burns up the oxygen rapidly and the air becomes foul.

The fixing-box and wash-tank should be off to one side, where they will be away from the space for developing negatives, so there will be no danger of getting hypo mixed with the solutions.

Always have good, heavy towels in handy places and change them often. Many troubles are eliminated in the dark-room by cleanliness. The washing-box should be so constructed that there will be a continuous flow of fresh water between the negatives, the latter being separated from each other by at least one-half inch. One of the best boxes I know is constructed with a coil of pipe in the bottom, perforated with holes. The water enters here and runs off at the top, passing through the negative racks on its way up and out. If such a washing-box is constructed large enough, the negatives of one day's work can all be washed at once, thus saving a lot of time.

Provide a shelf in a dry end of the room and use it exclusively for undeveloped plates. Do not keep the dry or wet chemicals on this shelf, as chemical dust is often the cause of trouble very hard to trace. Never pack exposed plates in boxes back to face; always face to face, and back to back. The glass side of a plate often has chemical spots on it, which in damp weather will start an action on a film laid in contact with it.

A fixing-box should be made with a capacity based on the busiest season of the year, for at that period it is important that you have all the conveniences possible, to facilitate getting out your work on time. Every plate should remain in the hypo from three to five minutes after it *appears* fixed. If this is done, the plates will be thoroughly washed in twenty or thirty minutes, depending on whether the water is soft or hard. A thoroughly fixed plate will wash quickly.

It costs nothing to be particular in mixing chemicals for developer, and care in this stage of dark-room work saves many a troublesome hour; also some lost time and material. Very often we discard a certain manufacture of carbonate or sulphite only to find later that we have been making some little mistake in the weighing or mixing of our chemicals. Always dissolve in warm water, otherwise you may not get the full power of the different ingredients. Filter if solutions are kept in bulk.

I have seen the bottom of a graduate covered with sulphite crystals after mixing up stock solutions, and, of course, the developer made with this will be short on sulphite. Stock solutions kept in bottles must be watched for deterioration, and the bottles should be wiped off daily. Small particles of crystallized sulphite or carbonate, which accumulate round the top, are very often the cause of small spots in the negative film, which will take valuable time in retouching or finishing to eliminate.

Water at 65° temperature must be used when developers are being mixed by the hydrometer test, as these little instruments are all registered at that temperature, and tests made warmer or colder will seldom be correct.

All combinations recommended by the plate manufacturers are based on distilled water, and it is dangerous to use these formulas with the ordinary hydrant or street supply unless they are thoroughly tested out, and even then they may not be chemically the same from week to week. The supply of water in your town may register a certain test during a rainy season, but be entirely different chemically when the water supply is low. It is a very simple matter to boil the water necessary for mixing developers, and while this will not eliminate all the trouble, it will at least give a uniform action, and is the best thing to do if you cannot use distilled water.

The manufacturers send out, with every box of plates, a list of developers and instructions. These combinations have been tried out at the laboratories and are designed for general use. They will work well in some localities; but,

as a rule, must be modified to suit the particular studio in which they are used.

Theoretically, a prime negative will render a good print from any standard paper, but practically, this is not always the case, as you will find if you take such a negative and test it out on the paper from three different manufacturers. Some require much stronger negatives than others, and if the studio is using several brands, the work in the dark-room as well as the studio, will be very complicated, and it will be difficult to fix a standard of negative strength to suit all papers.

Tank development is based on a theory that a certain combination of chemicals will develop a quantity of negatives in a given time, but this will not always work. If five exposures each, on white and dark grounds, are placed in the tank together, the former will require considerably more time for full development than the latter, and often a minute or so in a tray of strong developer, to get the proper printing quality, will be found necessary.

It requires more judgment to develop a negative to the *right* point than most people realize. In the studio one is required to make all manner of lightings and to expose on all sorts of things, from snap-shots of children to the full timing of adults, so that when the day's work goes to the dark-room, there must be a good deal of care used to bring the best results from every exposure, and this is important, for the one mistake may mean the one best seller lost. This fine point of judgment is where a lot of dark-room men fall down and the fault is largely carelessness. Very often a whole batch of negatives will be too weak or too strong; the man has not been on the job, and when the orders come in, the printer will be up in the air.

Many studios keep the exposed plates in three lots—snap-shots (meaning children), white grounds, and dark grounds. By so doing the work in developing is made much easier, as the snap-shots, being the most liable to undertime, can be attended to first, then the white grounds, and finally the regularly-timed plates. Judgment in developing means not only knowing just how much sulphite or carbonate to use, or what proportion of new and old solution, but at just what stage to stop development. It is a fact that, with most developing agents, there comes a moment when the shadows stop developing and the high-lights continue, and if a properly lighted and timed plate is carried beyond this point, the original balance can be entirely upset. This is especially noticeable in negatives of children with white dresses.

The color of a negative is a matter worth considering. I suppose pyro is the most popular developing agent used; but there are many others, such as metol, eikonogen, hydroquinone, ortol, and the like, and they can all be used with very satisfactory results. The pyro combinations give a certain warm color or stain, while most of the others produce a pure gray film, with no perceptible tint. In our own studio the gray negative has been used for more than a year, and we hope to continue developing plates without color.

We reason it out in this way. Different printing mediums, platinum and silver, are not sensitive to the warm-toned (pyro) negatives in the same relative degree, and a plate that has been kept thin, expecting the color to improve its printing quality, will not register the desired result if printed on a paper sensitive to the pyro stain. A negative full of color will register too hard if a paper is used which is not sensitive to this stain. Also, the pyro developer registers a deeper color in the whites than in the shadows, and we who have been using pyro for years, have not only been allowing for this color to help the printing quality of a negative, but have demanded of our printers a certain fine calculation. All the time this was unnecessary.

Color calculation is misleading for two reasons: first, because all papers are not affected by it; and, second, because the negatives will not run from day to day with a uniform color. A little overtiming and forced developing or a new fixer will make a variation in color for the day's work, and when it comes to using old negatives to reprint

they will be found so yellow that a duplicate is almost impossible. Some time ago I was looking over a lot of negatives made in 1898 and 1899. At that time we were using hydroquinone as a developing agent, and these negatives were practically of the same color as when first made—gray and clear—but with a full deposit of silver. They looked almost thick. This made me wonder why we could not get back to the illumination of color and the consequent necessity for calculation in developing and printing. I do not wish to advocate such a change in any studio where results are perfectly satisfactory, but my experience has taught me that the illumination of color in our negatives has made it possible to improve the uniformity of our finished work.

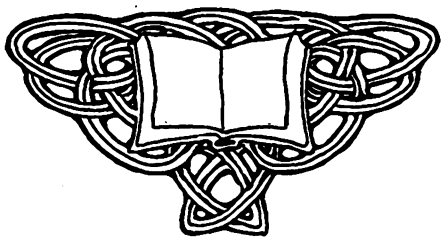
In starting to develop it is always safest to move tray or tank as far from the light box as possible, until after the image begins to appear; it is then about half as sensitive as when dry. Always rinse in clear water before fixing so as not to clog the hypo bath with developer. Never allow a fully developed plate to remain in the rinse water unless you want it to sink a little deeper.

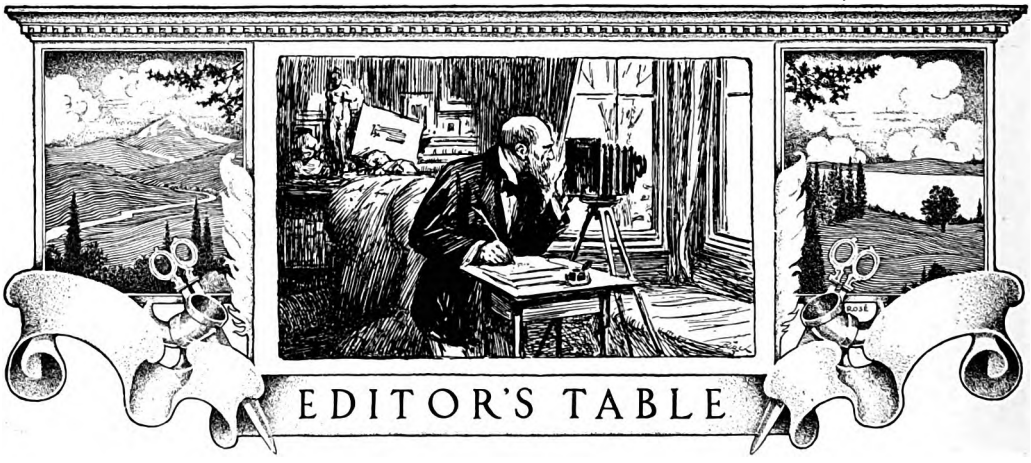
The actual process of development is so well known that a description of it would be out of place. Bear in mind that you are endeavoring to produce all the chemical action that is possible with the length of exposure the negative has had, and that the greater the amount of silver acted upon the richer will be the resultant print. Many beautiful prints have been exhibited from very thin, fuzzy negatives; but for regular studio work, as applied to the establishment doing business with the general public, it is advisable to make real *ripe* negatives.

When it is found necessary to use a reducer to cut down white draperies, always wash before cutting, to eliminate the possibilities of stain. This also applies to strengthening as well.

The cleanness of a dark-room means a great saving to the photographer; it should be possible to wipe up the floors at least once a week and all shelves oftener, if possible. Dirt is an antidote for profit.

We photographers are soon to reap the benefit of extensive experiments which are now being carried on by plate manufacturers. The cut film is now on the market and will undoubtedly be of great advantage to us when we can so change our present system of work to adopt it. The question of storage of large numbers of glass plates has been a bothersome expense and worry to us, but the universal use of the cut film will practically eliminate this trouble, and in the end will prove a great time saver.





SPRING IS HERE

SPRING is upon us. According to the calendar, the year has been with us a full three months; but according to the cycle of the seasons, it is but dawning. Winter is the last sleep of the year; and the beginning is with the warm rains and returning robins and budding trees. We—that is, the country at large—have been a little out of sorts. We have lived on some prosperity for several years, and have had a touch of the feeling which sometimes follows too much Thanksgiving dinner. We have shown a little momentary irritation. We have troubled over many things, from trusts to the color question. What has the future for us?

Whatever may be in store, we at least start with confidence. For the last five years business men have been asking themselves how long good business was to last. And every year has borne out the sanguine expectations of the optimists and discomfited those inveterate pessimists, who, apparently, *must* predict a slump. The outlook today is, for a man with good digestion, as full of hope as ever.

Will that hope be fulfilled? We confidently expect it for the country; how about the individual. Well, for ourselves we can answer the question more easily than we can for the country. It may be that some of us have prospered in spite of ourselves (but that is usually the other fellow rather than one's self); but on the whole, if we have proved successful, we may confidently anticipate that the energy which serves us now will not fail us as times begin to pinch.

How about the man who has not tasted of prosperity; who has had a hard fight to keep his head above water? It may be that he is the most unfortunate of mortals—and even if not so he will be the last to admit that he is his own fate. But the cause is more easily explained than the consequence endured. He is up against a hard fact, and it is more important to get rid of the fact than to account for it.

How get rid of it? If there is one thing sure in this world, it is that man must work out his own salvation. It is a hard gospel; but the old theories about "royal roads" do not exist now (even if they did in the golden age), and so we must accept the hard fact. Once a man has fallen behind, it most often means that he has formed a habit—and habits are hard things to overcome.

So as spring comes again and hope springs eternal, we face the hard fact—which loses much of its hardness when looked squarely in the face. The future is before us, and it is in our own hands to mar or to make. In confidence and strength we shall win. Spring is here!

HENRY HAVELOCK PIERCE AND HIS WORK

IT is with pleasure we grasp this chance to put our readers in touch with Henry Havelock Pierce and his work in portraiture. There is so much in the man, and his work offers inspiration and encouragement. Mr. Pierce has compelled the appreciation and substantial recognition of his public by the quality and individuality of his work. It is the old story, always fresh and interesting: There is "room at the top" and "merit will win."

Looking critically over the pictures in this number, it is not difficult to find reasons for his success. These portraits are remarkable for their virility. This quality is the essence of pure portraiture, the quality which compels attention and makes work live. Apart from this, Mr. Pierce's work shows exceptional skill in lighting and posing. In the prints reproduced here there is only one in which there is the least stiffness; the others are naturally and unusually posed. Each picture has its own individuality and its own suggestions, and we commend them as examples of home portraiture, worthy of thoughtful following. It is not easy to produce such work, to unite in the finished print the separate individualities of artist and subject, but the success which comes to those who accomplish this should inspire all portraitists to attempt. If work of this class were more general there would be less complaint of lack of appreciation. Let us hope that Mr. Pierce's pictures will set our readers thinking and working in the right direction. There is still "room at the top." How to climb is of course the question. We can only repeat the old advice: study the principles and apply them; learn first what is essential in a portrait; see how other workers interpret the human document with which they have to deal; compare notes and revise your knowledge. Climbing may not be easy, but it is interesting —and profitable.

ABSTRACTS AND TRANSLATIONS

BY E. J. WALL, F.R.P.S.

The Sensitometry of Papers

An extremely important paper has just been published by Mr. L. E. Jones and Drs. Nutting and Mees, of the Kodak Research Laboratory, which practically applies the Hurter and Driffield system to papers.

A sector wheel with apertures in the ratio of the square root of 2 is used, the illuminant being a tungsten incandescent lamp. After development the strips are read by means of a Bechstein illuminometer, care being taken to avoid specular reflection. The reflecting power, D_r, is expressed decimally and not in per cent. and plotted as log. $(1 \div R)$, in which R is the reflecting power, as against the logarithmic exposure.

The authors point out that whilst the density as applied to plates is proportional to the mass of silver in the deposit, the same is not true for papers. This is due to the fact that surface reflection plays such an important part in the reflecting power of surfaces having a high density; also since that part of the reflected light not due to surface reflection has to pass through the silver deposit twice, being reflected from the paper support, the intensity of such light is proportional to the square of the mass of silver in the deposit, and to the reflecting power of the paper stock. Therefore the density of any portion of a print depends on three factors, surface reflection, reflective power of the paper stock and the mass of silver in the deposit.

The constants for the standardization of papers are the maximum black, contrast and rendering power. The maximum black is the reflecting power of the deepest deposit that can be obtained with full development and exposure. Papers reflecting above 8 per cent. of the incident light have visibly grayish blacks; from 6 per cent. to 3 per cent. means good strong blacks, and less than 3 per cent. a very intense black. As the reflecting power is expressed as the logarithm of the reciprocal of the reflection, a 5 per cent. reflecting power would mean a density of 1.3. The average run of papers give densities for their maximum blacks between 1.3 and 1.6. Other things being equal a glossy paper gives

a higher maximum black than the same emulsion matt, as the material used to give the matt surface causes scattering of the light. The following are the maximum blacks of some of the Kodak papers: glossy Velox, 1.63; velvet Velox, 1.5; carbon Velox, 1.28. The weakest blacks are given by the softest papers, as Azo B soft, 1.12; Azo B hard, 1.24; Azo hard X, 1.34.

Contrast is synonymous with the Gamma of a plate, and is the tangent of the slope of the straight portion of the characteristic curve. As the velocity of development of papers is high the value of Gamma is practically the Gamma infinity of plates. The total scale of the paper also determines the contrast and this is the range of light intensities expressed in exposure or log. exposure units, which the paper will reproduce as areas differing perceptibly in density. The total scale of the paper is taken as the distance, measured along the log. E axis, between the points of the curve at which the difference in exposure is about 25 per cent., and produces a difference in density of 0.2. The following are the total scales of some papers expressed in logarithmic exposure units: Azo soft, 1.65; Azo hard, X 0.9; Velox special velvet, 1.3; Velox special portrait, 1.2; Velox regular velvet, 1.0; Velox regular carbon, 1.0; Artura Iris, 1.4; Artura carbon black, 1.7; BB bromide, 1.45.

Rendering power is the capacity of a paper to reproduce a scale of exposures by a series of densities having proportional values as in the exposure scale. The latitude of a paper is the length of the straight part of the characteristic curve, measured along the exposure axis, and whilst exact reproduction presupposes a Gamma of 1, if Gamma is not unity the rendering may be proportional and yet the contrasts may be altered. The distinction between *exact and proportional* reproduction is an extremely important matter. In practice the latitude is seldom greater than one-half the total scale, so that the latitude divided by the total scale, both quantities being in the same units, represents the rendering power of the paper, and the authors have adopted the following definition:

$$\text{Rendering power} = \frac{\text{Latitude} \times 10\text{m}}{\text{Total scale}}$$

The authors then deal with the questions of "standard exposure," "adaptation of papers to negative," "the effect of development on the curve of a photographic paper," which cannot be fruitfully abstracted.—*Phot. Jour.*, 1914, p. 342.

Personally I think this one of the most important contributions to photographic science of recent years. It is important as placing at once on a scientific basis the testing of printing papers. It is of the utmost value to the manufacturer, as it will enable him to deal with papers as plates have hitherto been dealt with, and its importance to the user of papers lies in the fact that it will result, *if adopted generally*, in a far better uniformity of the products that he uses and also conduce to less waste and a more intelligent choice of printing surfaces.

A New Projection and Enlarging Apparatus

Koesters calls attention to the adoption of an old principle for photographic work. It is well known that when enlarging in the usual way with condensers and a small source of light there is always increase of contrast due to the scattering of light by the silver particles of the image. As was pointed out by Callier, this can be overcome if the negative is illuminated by diffused light. Schmidt & Haensch, the well-known instrument makers of Berlin, have now adapted the Ulbricht globe, the principle of which is as follows: If an incandescent electric lamp is placed within a sphere, the interior of which is painted a dead white, the whole of the light emitted by the lamp falls on the interior of the globe and is repeatedly reflected from every point of the interior, which becomes in itself a source of light, the result being that the whole surface becomes absolutely evenly and diffusely illuminated. According to Ulbricht the indirect illumination can be calculated from the formula:

$$Q = \frac{(1 - a)\, I}{a \times r^2}$$

in which

Q = the indirect illumination.
$(1 - a)$ = the albedo, the reflected light.
I = the candle-power of the lamp.
r = the radius of the globe or sphere.

As an example, let us assume that the sphere has a radius of 12 cm., and four metal filament lamps are used, each of 25 candle-power, and $a = 0.2$, then

$Q = 0.8 \times 100 \div 0.2 \times 0.12$ squared $= 28000$ meter-candles.

Obviously such an illumination as this would only be used for projection.

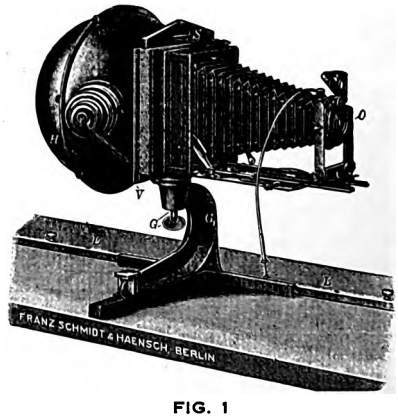


FIG. 1

The accompanying illustration, Fig. 1, shows the external form of the apparatus. The globe *H* is composed of two parts and inside are fitted two tungsten lamps, which are so arranged that the direct light is not received by the negative. The other parts hardly require any explanation; *V* is the frame that carries the negative, *G* is a screw that fastens the whole to the tripod foot, that slides along the lineal *L*. The interior of

the globe must be painted white, and chalk, magnesia or barium sulphate suspended in waterglass or celluloid varnish can be used.—*Phot. Rund.*, 1915, p. 17.

The Ulbricht globe, sometimes called an integrating sphere, is used in photometry for measuring the mean spherical candle-power of arc lamps. There is no particular virtue in the spherical form and any convenient shape may be used. The theory of the globe is very simple.

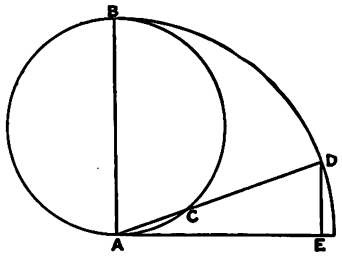


FIG. 2

Let *A*, Fig. 2, be a small luminous patch or light source; the point *B* will be illuminated by it. Let *C* be another point. The distance *A*, *C*, being one-third the distance of *A B*, then if *C* directly faced the light it would receive nine times the illumination of *B*. But according to Lambert's cosine law *C* only receives one-third of the total light, as the cosine *D E* is one-third of the distance *A B*, and as *C* is inclined to *A* it receives only one-ninth of the light, or the same as *B*. The same reasoning applies to every point of

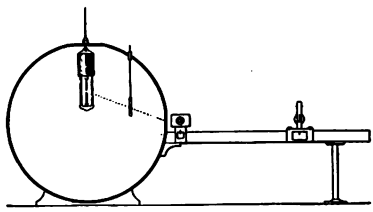


FIG. 3

the sphere. Fig. 3 shows an Ulbricht globe as used for the photometry of an arc lamp, the direct rays from the arc being shielded from the small opal glass window by the hanging screen. These two figures are taken from *Illumination*, by A. P. Trotter.

Blue Pictures by Bleaching Out

Dr. Ihren, continuing his experiments, has found that if gelatinized paper or glass is impregnated with a 20 per cent. solution of sodium sulphite or acetone sulphite to which a few drops of methylene blue have been added, and dried in the dark, it will completely bleach out in less than ten seconds in the sun and in about thirty in diffused light. Under a transparency an image is obtained in a few minutes and a camera image can be obtained in about two hours. In order to fix the images an aqueous solution of picric acid is used, which tinges the whites greenish and the shadows violet.—*Wien. Mitt.*, 1915, p. 31.

Von Huebl has pointed out that ammonium molybdate tends to make methylene blue images more stable in light and this has no effect on the color.

Platinum Prints from Soft Negatives

O. Kuehn recommends the following method of obtaining good platinum prints from soft negatives that will not otherwise give good results: Expose for ten to fifteen minutes in direct sunlight or in diffused light till a vigorous negative image appears or till the shadows are distinctly bronzed, then immerse in plain water till the desired intensity is reached and then fix in acid.—*Wien. Mitt.*, 1915, p. 36.

Time Development for Bromide Prints

O. Kuehn suggests the following method of developing a large number of bromide prints from one negative. Having ascertained the correct exposure, by a trial, expose as many prints as required, then immerse one by one in the following developer—

Amidol	5 gm.
Sodium sulphite	25 gm.
Potassium bromide	1 gm.
Water	1500 c.c.

till they are soaked, and then lift them out and place in a heap on a clean sheet of glass; then turn the pack over and again immerse them one by one in the developer, and repeat the operation for about eight minutes and then immerse them in water, and if any are not sufficiently developed treat them again, then fix.—*Wien. Mitt.*, 1915, p. 37.

The particular virtue in this method is not at first sight apparent, and it would seem that there ought to be more chances of stains through oxidation of the developer.

Ferrotype Effects on Dry Plates

P. R. S. states that the following developer used with very slow dry plates will give white images:

	A	
Pyro	10 gm.	10 gr.
Water	1000 c.c.	2 oz.
Nitric	1 drop	1 drop

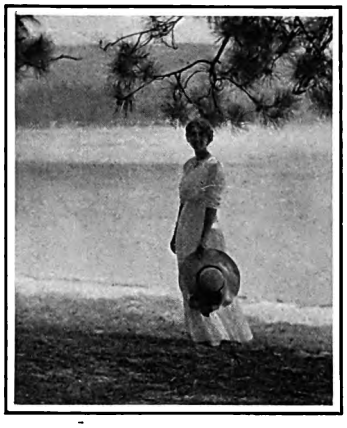
	B	
Water		
Potass. bromide	1000 c.c.	2 oz.
Potass. nitrate	20 gm.	20 gr.
Potass. chlorate	30 gm.	30 gr.
Sugar candy	80 gm.	80 gr.

For use mix 1½ oz. of water, 60 minims of *A*, 180 minims of *B* and add 8 drops of ammonia. The sugar candy must be as white as possible. It is advisable to use potassium cyanide for fixing.—*B. J.*, 1915, p. 126.

VIEWS AND REVIEWS

PICTURED WITH THE STRUSS PICTORIAL LENS
By Karl Struss, New York. Paper, 25 cents.

THIS attractive and beautifully printed brochure contains many illustrations, showing the different kind of subjects which may be successfully photographed with the Struss Pictorial Lens, and suggests the solution of various problems.



For some years Mr. Struss has been privately making, for pictorial work, both doublets and single lenses, which have given satisfaction to some of the most distinguished American artists

in photography. Having demonstrated its definite value as giving a quality of image quite different from that obtainable by other lenses, he has decided to place on the market his Struss lens. No claims are made as to its superiority over other lenses, but the prints, wide in variety and treatment, shown here, and made by Mr. Struss with his own lens, speak for themselves. Then, too, one finds in the text the essence of Mr. Struss's noteworthy lectures given at the Columbia School last year. These points are full of practical and valuable suggestions, causing one to reflect and realize that this lens is the tool of an artist—a man with ideas back of his photography, and back of his wonderful prints.

Copies of this book can be had through this office on receipt of price.

THE BRITISH JOURNAL ALMANAC
Edited by G. E. Brown. Price, 75 cts., paper; $1.00, cloth.

Though shorn somewhat of its usual bulk, in consequence of the conditions in Europe, this volume still maintains its high standard of usefulness. The Editor contributes a thoroughly practical article on "Modern Methods of Enlarging," which is up-to-date and lucid. Dr. Duncan Reid treats of "Photography with the Microscope" in the simple yet thorough manner for which he is so well known. This subject he has made particularly his own and the simple way in which he deals with points that are by no means easy makes a very instructive and readable article. Following the lines of past years there is also the "Epitome of Progress," which of late years, under Mr. Brown's rule, has become one of the most valuable features of the work. The usual review of novelties and formulas close the work, which has long been a standard work of reference.

DEUTSCHER PHOTOGRAPHEN-KALENDER
Edited by Karl Schwier. Price, 50 cts.

This is the thirty-fourth issue of an almanac that takes in Germany the place of the B. J. A. in England. It contains many formulas and optical tables and chemicals and is for the readers of German a very useful work.

THE "WELLCOME" PHOTOGRAPHIC EXPOSURE RECORD AND DIARY

Published by Burroughs, Wellcome & Co., 35 West Thirty-third Street, New York. Price, 50 cents.

This is one of the most useful little books published, containing as it does many practical hints condensed into tabloid form, a record for exposures and a plate speed list with the calculator at the end. It is handsomely gotten up and has long been our familiar friend, and ought to be that of all photographers.

AMONG THE SOCIETIES

The New York State Convention at Rochester

BY OUR SPECIAL REPRESENTATIVE

THE Eleventh Annual Meeting of the P. P. S. of N. Y. was opened at the Hotel Seneca, Rochester, N. Y,, on Tuesday morning, February 23, 1915, at 9 A.M., under the name of "The Whys and Wherefores Convention."

The first event on the program was the "viewing of exhibits." At either end of the commodious banquet room was a distinct exhibition, well hung, and exceptionally well lighted. At one end, the photographs proper made a decidedly good display, and it may be instructive to note that nearly every picture forming the exhibit was from a New York State member of the Society.

The exhibition at the other end of the hall was composed exclusively of the new Eastman color photographs, called Kodachromes. These were about three dozen in all, half of which were made at the Eastman plant and the other half by President J. E. Mock. These pictures, eight by ten inches in size, backed up by electric lights, were very brilliant and beautiful. It is unnecessary to say that an endless amount of hard work had been bestowed upon the production of these pictures. Mock's pictures proved that the individuality of the photographer becomes paramount in this process, as in other branches of the art. His pictures showed wonderful technical skill, color appreciation, and style.

At 10 A.M., the meeting was called to order by President Mock. An address of welcome was delivered by a member of the Chamber of Commerce, and responded to by Howard D. Beach, Secretary of the New York State Society.

President J. E. Mock then outlined the object and purposes of the Society. He advocated, very strongly, the idea of belonging to some section, even though it become necessary for one to travel thirty miles or more to attend the section meetings. He said: "All should take an interest in improving the profession and at all times do everything in his power toward its uplift. We, in this society, are not antagonistic toward the manufacturer. We like him, but we want to be independent; we don't want him to feel that he must go down into his pockets for our support." Again: "The amalgamation of the National Association is a good idea, but not for us. We want to manage our own household, as we have so ably shown that we can. Our society is prospering under a more ideal system and why should we change for the worse? Yet these matters will be left to you. You are to have the final say, so think it over carefully —don't jump at conclusions, but ponder the matter well."

The matter of amalgamation with the States of Pennsylvania, New Jersey, Maryland, Delaware, West Virginia, and District of Columbia, under the P. A. of A., was brought up through a committee comprised of Pirie MacDonald, Carl K. Frey, and F. E. Abbott. Their reports showed that after careful consideration and consultation with a large number of members that it was unwise to make such amalgamation at the time of this convention. The report was unanimously adopted.

Reports from the various sections showed a good working condition of these important factors of the State organization.

Through the suggestion of Pirie MacDonald, an informal vote was taken to help settle the question as to which of the two months, February or April, should be considered better for New York State conventions. The vote showed that more than three-fourths of those present were in favor of the month of February.

Mr. E. B. Core asked permission to speak of the Cramer Memorial Fund. He outlined in brief the object of the committee, which is, as he said, "to perpetuate the memory of one who was noted for self-sacrifice, especially toward photographers. He went to Atlanta against his physician's wish, and when it became necessary for him to return, a private car was about to be ordered for himself and family, but he would not listen, as he could not, he said, 'permit such a waste of money,' he could not 'take it from his charities.' All photographers have benefited, at least indirectly, as he always had in mind the betterment of the profession." Mr. Abel mentioned the fact that seventy pledges had been received, thus far, from the photographers of the country, for this fund.

At 2 P.M., Frank Scott Clark, of Detroit, gave a talk on the "Brass Tacks of Photography." For once in his life, Frank Scott became serious, and in exquisite tones and lovely suggestion presented his ideas in a strain of poetical language that flowed as placidly and calmly as the river that glides past the doors of his home town. The effect was bright and sunny, as now and again he brought a ripple of laughter when his inexhaustible wit caught an eddy or a bit of Scotch dialect came to the surface.

W. H. Towles, of Washington, D. C., President of the P. A. of A., occupied the floor for half an hour. He stated that though he knew that after the resolution adopted in the morn-

ing, concerning the amalgamation project, it would be impossible for him to render a great service, yet he believed that if the matter could be thoroughly understood, the Society might view it in a different light. He argued his case in a clear and concise manner and showed the efficacy of the plan from the standpoint of the other State organizations.

"Tales of the Past" was responded to, first, by E. B. Core, who told many of his experiences, and, among them, how he found it better always to spend a little less than he made, whence he struck an engaging vein of good advice; then, as is characteristic of "Pop" Core, when he thought he might be preaching, he turned his talk abruptly into a few delightful yarns. Vice-President Clarl K. Frey then told some of his experiences, always winding up with a hit on some one in the audience, and, as Carl's love of veracity is second only to Munchausen's, there were some startling revelations. Mr. J. E. Hale gave a romantic touch to this topic of "Tales of the Past" by telling how he engaged to become a photographer at twenty, after finding employment on the farm too strenuous for his strength. Close application of hand and brain are accountable for his success. Alex Fournier, the artist, gave a number of stories, including some tales of his experiences with Whistler, pointing often to his eccentricities. Whistler's sarcasm, he said, "was nursed artificially, as a foil to protect his extremely sensitive nature."

About this time a beautifully worded letter of thanks to the Rochester Section was received from the ladies attending the convention, for the delightful luncheon served to them in the hotel dining-room. Over forty partook of this repast and, if appearances count, it was enjoyed to the full.

At eight o'clock in the evening, Dr. Kenneth Mees, chief chemist in the experimental laboratory of the Eastman Kodak Co., gave a talk on "Chemistry of Light and Color Photography." This was conceded by all to be one of the finest and cleanest technical talks ever presented at a convention. Dr. Mees, with his clear enunciation, careful reasoning, and aided by stereopticons and color slides, kept his large audience of men and women interested for nearly two hours. This is very remarkable, when such a topic might so easily have been rendered dry and difficult to comprehend. Dr. Mees received congratulations on all sides for his sense of fairness in granting to each discoverer or inventor full credit for what he had accomplished. The Kodachrome, he said, was brought forth from many processes, with some new features added. His explanation of color reduction by the elimination of one or two of the primary colors was most enlightening. This lecture was alone worth the price of a long trip to anyone who cares to keep himself up to the minute in this profession.

The exhibit of Kodachrome pictures was the sensation of the Convention. Whisperings of the success of this new process had been reaching the photographers for some weeks, but to most of them the Convention exhibit was a revelation.

Color photography, at least so far as professional portraiture is concerned, has arrived. Full of brilliancy and vigor, marvellously life-like in the rendition of flesh tones, these pictures would seem to open an absolutely new field in photographic endeavor. The exhibit consisted not only of pictures made by men connected with the Eastman staff, but of a charming exhibit by J. E. Mock, who is now, by the way, making the taking of Kodachrome portraits an important part of his every-day work. Beautiful as were his results, the most interesting phase of the Mock exhibit was the fact that it was so evidently "Mock." It proved once and for all that this new process, though simple in the hands of a good photographer, is not merely mechanical, but that it is plastic, will bend to the will of the master workman and permit him to exercise originality, stamp it with his own individuality.

The Kodachrome process is, we understand, to be solely exploited for professional portraiture. Though it may have other possibilities, it is evident that the Eastman people propose, first of all, to let the professional photographer have the benefit of its advantage. The only other sphere in which it has been shown is in pathological work, where it promises to be of great scientific advantage, especially to the surgeon.

In the Kodachrome process of color photography, the Eastman Company may justly claim to have solved the problem of a commercially practical and thoroughly satisfactory method of color portrait photography. The beauty of the portraits speak for themselves, while the interest to photographers is that the Kodachrome process requires no technical training or skill beyond the needs of every-day work in black and white. The simplicity of the process is the wonder of all who have looked into it; but, like so many other simple things, it was only arrived at after many years of patient investigation and the expenditure of a great deal of money in experiment.

For at least the past fifteen years the Eastman Company has been actively interested in the subject of color photography and their laboratories unremitting in their search for some practical solution of the many problems involved.

Two years ago their investigations reached the point where increased facilities for experiment and research became necessary. Their laboratory facilities were even then unequalled by any photographic industry in the world, but the problems under investigation, and on which the success of their experiments depended, went considerably beyond the scope of investigations ordinarily associated with photography; and so, at a cost of nearly a quarter of a million dollars, the present extensive research laboratory at Kodak Park was built. In organization and equipment it is one of the finest and most complete industrial laboratories in the world.

A physicist of international reputation, Dr. C. E. Kenneth Mees, is in charge and under his direction the physical and chemical problem connected with this entire subject of photography are investigated in a scientific and orderly manner. While its primary object is the testing and betterment of photographic materials, there is no attempt to limit its investigation to commercial ends. Its reports are widely published for the benefit of the scientific world and here

are made photographic products for scientific work for which there is no profitable commercial demand.

What was aimed at in the Kodachrome process was an entirely new commercial process which should give transparent results, a long range of gradation and photographic quality equal to black-and-white work. To be commercially practical, simplicity was, of course, essential—some method that would avoid the technical difficulties of other processes.

It was obvious that the first step in simplification would be the substitution of two colors for three. It was equally apparent that if the two negatives taken under the two color filters could be directly transformed into the positives for the completed picture, the advantages would be enormous. For one thing, the number of plates is reduced to a minimum, as is also the final difficulty of accurate registering. Moreover, with the original negative transferred into color positive, one would reasonably expect to retain all its original gradation. Also, since there is no screen and the high lights are represented by clear, unstained gelatin, the transparency of the positive should be equal to black and white.

This is precisely what has been accomplished in the Kodachrome process. This method, however, involved one big problem which had never yet been solved: The direct transformation of a negative image in black silver into a positive in which the silver of the negative should be represented by clear gelatin and the places that were lightest in the negative by a full strength of any color dye which might be chosen—the transformation being correct throughout.

It was the solution of this scientific problem of transferring a negative silver image into a dye positive that made the Kodachrome process possible.

The method adopted is briefly: To make two exposures, at one sitting, on special panchromatic plates (Kodachrome), one through a red and the other through a green filter. For these exposures, which, of course, must be made without any movement of the sitter, either a specially designed camera or one with a shifting back may be used. The plates are developed in the usual way, and washed. They are then chemically treated to remove the silver image, leaving the plate in appearance a clear sheet of gelatin. After drying, the plates are immersed in baths of suitable dyes, the exposure made through the red filter being dyed green, the one made through the green filter dyed red. The dye enters the gelatin where the silver was not present after development, and a dye positive is the result. The two dye positives are then superimposed in register and bound together to make the finished picture. When placed in the illuminator, which is merely a frame lighted from behind, they display all the colors of the original, within the limits of a two-color process. In such a process it is obvious that all colors cannot be correctly rendered. The colors for which it fails are blues, violets, magentas, and purples. However, as these colors appear only in garments, they may easily be avoided. The flesh tints, on the other hand, and all shades of red, orange and green—as well as black and white—are faithfully rendered. The colors are fast both as to light and heat.

In the matter of cost, the most serious item, is the light equipment. This, however, is modified by another consideration: that a powerful light equipment, such as this requires, also serves for black-and-white work and gives independence of weather conditions. Many of the modern, up-to-date studios already have such an equipment and instead of constant uncertainties, short hours, postponement of sittings, with all the annoyance and loss of business these entail, they have something better than daylight for twenty-four hours of the day and for every day of the week.

In Kodachrome work a new process has been placed at the command of the photographer—a process that gives him opportunity to show his mastery of color as well as his mastery of line and lighting. It is such steps ahead as this that make devotion to one's art worth while.

On Wednesday morning at 10.30, Mr. H. C. Goodwin gave a talk on advertising. Unlike most advertising lecturers, when they tackle photography, he made no apologies on account of imagined ignorance of the subject, but sailed right into the "Whys and Wherefores." He said he did not want to know, "but why was the exhibition of pictures not open to the public? People like the attention shown them in follow-up letters. Advertising is becoming simply truth-telling. Photographers are poor advertisers. 'I wonder where I can get color work done? Guess I'll go to Eastman's some day and inquire.' Eastman's ad has made a tremendous stir in the magazines. Show pictures of a man taken at different ages. People are too busy to do things without being reminded. My boy has to be reminded every morning to get up. All advertising starts with the article or proposition you have to sell. The prospect is one who wants your article. Where is your prospect? Reach him by letter or by the most direct or efficient method. People like the letter of thanks: say—'I appreciate your thoughtfulness.' Keep in touch with and take care of the people you already have. That is your best method. The best ad is one gotten up in third person. He preferred the engraved or well-printed card to personal letters. The letter of thanks should be personal and signed with ink. Don't forget to take people into your confidence." Mr. Goodwin received a rising vote of thanks.

Pirie MacDonald talked on "Organization and Coöperation." Pirie began by inducing his audience to move up close to him. Some were loath to leave the large, comfortable, easy chairs in the back rows, but Pirie has a way of producing results—everybody moved and no one was sorry for having done so, for after he got warmed up he made the best speech of his life, and that is going some. Pirie said, in part, "the criminal and the lunatic are not well organized, and I am not a criminal. We are peculiarly organized, as photographers—we have an unusual amount of imagination. No one of us is satiated with imagination, no matter how old. Imagination, unbridled, causes one to become unbalanced. I see many before me whose faces show them to be in the condition

that I have had to work away from. A photographer should be organized to the extent of being able to express himself at his best in his work. When the customer gets such results he should pay for it. The reason of non-success is in myself. If something is wrong, I buy a box of tobacco and go off into the corner and examine myself, and smoke. It is better to roll your own cigarettes, because you don't smoke so many. I am a servant of the public. I have not produced what it wants. If I am a well-organized photographer I must get myself into position to find out what the public wants. Then, either make what people want, or, if you are bound to make what you want to make, remove to the place where people live that want what you are willing to make. People are prone to think photographers grouches. Well, perhaps they are; but why? They go about looking ugly and mad, as if it would hurt them to crack a smile: Why? The photographer is restless because he has been so often hurt by people who do not understand what he is making. He has done his best to give people what he thinks they ought to have; his efforts have not been appreciated; he has become disheartened. Suppose you have a haberdasher whom you have faith in; you go to his shop to buy a tie; he will sell you nothing but a red tie, because that, in his opinion, is what you should wear. Now, a red tie is very good once in a while; but suppose you have always to wear a red tie, just because the haberdasher says you must; do you see how it works out? Your people do not always want red ties. Then again, things you don't want are your red ties. Say to yourself, 'I will know what my people want and perhaps we can come together. I will get into sympathy with my people.' This is difficult. It used to be difficult for me to make resittings, because I put all of myself into the first. Why, I made a sitting for a woman once and I thought I had secured just the best possible result. I was surprised when she wanted a resitting and asked what the trouble might be. 'Well,' she said, 'do you know this picture is so much like the one you made for me ten years ago, that I feel that I want something different.' And really, they were almost identical, which showed me the persistency of the mind in its choosing. If the photograph of the man is for his mother, and the picture does not suit the mother, it is a failure. You are exhibiting yourself, and not the boy, to his mother. She will perhaps say, 'These are all good, but the expression is not the one that I love.' I wonder what she does love?—there's the grouch! One of the surest things to wear corners off is sympathy. An ashman was emptying a can of ashes into his cart when the horse suddenly started, allowing the can to come down heavily on the man's foot. A little girl who witnessed the occurrence stated to her mother: 'Mother, he was an awful nice ashman; he didn't whip the horse, nor blame him at all, but just sat down on the curb and held his foot and talked to the horse about God!' Sympathy, too, makes for the organization of the studio. The photographer does not have enough sympathy with his help. Perhaps a negative is broken; you at once lose sight of all the good things the girl has done for you; you have lost five dollars through the breaking of that negative; the negative is gone; the girl is feeling a great deal worse about the accident than you ever can. It would be better for you to say, 'Come here, Mary; come here—come right here—now that negative—that's all right—you've been a mighty good girl—we don't care about that five dollars—you've got the stuff in you to make the best girl I ever had. Now forget it.' Say, that girl will fight for you, and real organization is to get a bunch together that will do just that thing—fight for you. Then again, don't pick out the faults in their work, and harp on those, but pick out the good points, so they will always try to produce good results. When I get an unusually good thing I take it to one of them and say, 'Look at this; just look at it! You're gettin' um!' In that way they are not always trying to avoid this, that and the other thing with fear and trembling, but are looking up for something better. A minister and a sailor each had a parrot; each thought his own bird the best ever; finally, to settle the matter, they brought the two parrots together and put them on the table side by side. They squinted at each other, as such birds will, spreading their wings and tails. When the parson's bird started off with, 'What shall we do to be saved?' The sailor's bird gave one look and came back with, 'Pump like hell or we'll go to the bottom!' It takes self-control and a lot of pumping to organize the man. You say it gets irksome doing the same thing all the while. Is there anything worth while that is not irksome?" Pirie thrilled his audience. He was in excellent condition, vigorous and strong. It is too bad that every word could not be preserved.

The Secretary then introduced President Mock. Mr. Mock made it possible, through the most difficult and painstaking labor, to have exhibited the beautiful Kodachromes that graced one end of the room. Mr. Mock gave a number of "pointers" to those who may soon take up that kind of work. He advised cleanliness above all things. Retouching he deems necessary to their success. He supplemented the talk of Dr. Mees on the same subject, making his points practical. One other thing he mentioned was the necessity of an even temperature for the drying of the plates in order that they may absorb the dyes evenly. He believes $75 each to be a minimum price for this kind of work, though he started out selling them at $50 each.

In the afternoon, Wednesday, ten minutes were allowed to every one who cared to present new ideas, with a view to securing the ten-dollar prize. Six names were registered: Oliver Lippincott featured an electric lighting apparatus for the operating room; Mr. H. F. Wilcox presented a scheme for selling large prints; Mr. F. E. Abbott demonstrated a pyro-stain remover, and came out tie with Mr. Wilcox for second place; Mr. Al. Downs Rice advocated a quick-drying method for negatives; Mr. J. S. Wooley explained a tank system of development; Mr. W. E. Burnell, the winner by two votes, successfully promoted a scheme for scoring mounts. This he accomplished by laying the cardboard

on a damp blotter and drawing a heavy grooved line along the edge of a ruler by means of a screw-eye or toothbrush handle, the dampness of the blotter keeping the card from cracking in the process of folding. His results were very creditable. This is the second prize Mr. Burnell has won from this Society in two years.

The only demonstration in operating was conducted under the auspices of Allison and Hadaway, who kindly furnished their new lighting equipment for the purpose. Messrs. Bradley, of New York, Kennedy, of Toronto, Frey, of Utica, and President Mock did the posing. The light is exceedingly like daylight and very quick-acting. The operators and audience were all much pleased with the lighting effects so easily secured.

At the evening session Will H. Towles, President of the P. A. of A., gave his famous illustrated lecture on "The Value and Control of Light in Portraiture." In this lecture Mr. Towles was able to give exact knowledge of his method of lighting. His results are remarkable for the evenness of tone throughout the half-lights and shadows. He never drops into a shadow except with the greatest caution. Dash is not in his category of terms, but his subjects are always wrapped in a soft atmosphere, pleasing alike for man, woman, and child. Great benefit is always derived from this lecture, given at many conventions, but never twice alike. Mr. Towles is one who has made rapid progress and is still climbing upward in long strides, as those must have observed who have followed the development of his ideas in this lecture.

Mr. Chester F. Styles, of the Bausch & Lomb Optical Company, followed with an illustrated lecture on lenses. All of the lecturers must have been impressed with the Rochester convention motto, as no better title could be applied to this lecture than, "The Whys and Wherefores of the Lens." Mr. Styles accomplished a most difficult feat, in that he made his points clear, not so easy where optics is concerned. He showed conclusively the use of and how to use diaphragms, the advantages of the flat-field lens in many situations; for instance, a flat-field lens can be used with full opening in making a full-length picture of a man, whereas the curved field in the same size would require stooping down to obtain the same degree of sharpness, with a corresponding loss of speed. He favors a long-focus lens at all times where the room permits the necessary distance; this on account of truer perspective. Many things we have long known about lenses we know better now.

"The Value of the Card System" was explained by E. H. Gilman, Jr. He eulogized the smoothness of a system where filing is resorted to at every turn. If "time is money," then money can be saved by adopting at least this way of registering and numbering negatives.

Lewis Donner, also of the Eastman Kodak Co., impersonator, talked on non-technical subjects in Irish, Scotch, German, and other dialects, much to the delight of those who love a smile just before bedtime.

On Thursday morning all business of the convention was brought to a close.

Mr. E. B. Core was elected a life member of the Society, unanimously.

A committee was appointed to draw up resolutions concerning honorable membership, and report at the next convention.

The following officers were unanimously elected: E. B. Core, New York, president; W. M. Furlong, Rochester, vice-president; E. L. Mix, New York, secretary; F. E. Abbott, Little Falls, N. Y., treasurer. Mr. Core said he was willing to "pull his pound." Everybody knows that "Pop" Core's "pound" will be a generous one; therefore all are, even now, looking forward to the convention to be held in New York next February.

Mr. J. C. Abel, with commendable loyalty to the Society and to the profession, exposed the tactics of the "Man who gets your goat."

Mr. J. Geo. Nussbaumer, of Buffalo, gave a half-hour's talk on "Plate Development." He showed the importance of extreme care in mixing the developer and testing its temperature. "If your results are not satisfactory don't blame the plates, but look for defects in the handling of them." This, from one who really knows, as he is a past master in the art.

The meeting was then adjourned so that the conventioners might have the afternoon to visit the manufacturing plants.

The "Eat Fest" was an unqualified success, and, considering that it was held on the third and last evening, the number in attendance was very gratifying. Men and women were all bonneted in striking colors. President Mock looked very dignified in a fireman's helmet of red. Vice-President Frey and Secretary Beach, in Kaiser Wilhelm helmets looked somewhat austere, but confident. Fred Abbott, as a policeman, proved himself equally proficient in the slinging of pen or club. The headgear worn by the ladies was most becoming and fascinating. Mr. George Eastman proudly displayed the plumed hat of the Roman Conqueror, while Charley Lewis was arrayed to look like a Knight of the Garter and Frank Scott Clark had Napoleon cooked in his own gravy, for looks. Tin horns, balloons, rattles and tongues nearly drowned out the orchestra, until Herr Mock took the baton and brought order out of chaos. "Pop" Core, who looked every inch the artist with his studio hat cocked over on the side, was toastmaster. After he had introduced a number of speakers, Kaiser Frey felt that "Pop" was not quite up to snuff, so after exhausting all the rules of parliament, he succeeded in gaining the coveted title of toastmaster. However, self-appointed monarchs are soon superceded by others, and Kaiser Carl found himself in conflict with a superior force in the form of Emperor Beach, who rallied to his aid the forces of the fire brigade, through its chief exponent, Chief Mock. This gentleman, artist and scholar, wound up the speaking with a rousing tirade upon "The Lost Art of Daguerrotyping Colors with the *x*-ray." As each speaker stood, he was greeted with an original song, giving his own past history in popular tune.

To become aware of the popularity of the Rochester President, the reader must know that Herr Mock was about to be presented with a

beautiful cut-glass punch-bowl, when, through an accident, caused by the broken arm of Frank Bangs, and the carelessness of Charley Hallen, it was dropped to the floor, where it flew into a million pieces. "Pop" Core reprimanded the bearers severely, and sent them out for some gift to replace the short-lived bowl. So, since Herr Mock, in song, was heralded as "one whose breast could hold a keg of beer," they thought to do him honor by bringing that amount in a huge schupper. But hereupon, "Pop" Core, again in wrath, sent them from the room, and several others to accompany them, to find a present more befitting the occasion. In time these gentlemen returned bearing in procession, marching to a funeral dirge, another huge "bier" covered with a sheet. When they reached the speaker's table they unveiled the tribute, and low and behold, was found a divan with cushions and seat of leather from the Orient! Then, said "Pop" Core, "Well done! At least this looks substantial, and we hope it will be prized by the chief and his family." With all this, let it be clearly understood that no spirituous liquors were drunk, and the merry "Fest" was one of seemly behavior. After dancing until midnight, the guests dispersed to their several homes, though it has been whispered that a large company could have been seen in the Palm Room of the hotel some hours after.

Thus ended the New York State Convention of 1915.

Gossip in the Corridors.

"That Mock is a great fellow, there's not another like him."

"Never again will I miss a N. Y. State Convention."

"Pirie's talk was the best thing I ever heard."

"Our ladies are the right sort—they are as crazy to be here as the men."

"Say, old man, give me a criticism on my prints, will you?"

"If all the State societies had been like this, the National wouldn't have to reorganize them."

"Sipprell has three dandy autochromes in his pocket."

"Is his sister there, too?"

"Not one ex-president has missed a convention since he became president. Can you beat it?"

"You can't slide past Abbott."

"Where's Geo. Harris?" "Rotary Convention." "Oh!"

"Amalgamation is just the thing for the other fellows, but we're all right as we are."

"What makes Abel so quiet?" He says "the N. Y. State boys have got onto the trick of running a convention, and that puts him out of a job."

"You can always tell Dud's pictures."

"Some hotel, this Seneca; treating us fine."

"I guess Charley Lewis has attended every one of our conventions."

"The Mocks are a dandy bunch."

"Anybody left in Buffalo?"

"Advertising! That advertising man knows his biz."

"The 'Mets' do stick, all right—all right."

"Dr. Mees is a gentleman. Not a word of self-praise."

"Those confounded Kodachromes are great! Who's making them beside Mock?"

"This is just like a family reunion."

"Even the war doesn't keep you Canadian fellows away. By Gosh! you're all right."

"We are getting better and better acquainted, so we are having better conventions and better times together."

"This is the peach of all the photographic societies on the face of the globe."

"Pop's got something up his sleeve.—Wait!"

"What became of Harry Bliss and Col. Marceau?"

Posing the Figure in Portraiture

No. 136 is the latest issue of *The Photo Miniature*, and covers this vital question in an authoritative and most comprehensive way. Indeed, it seems to be the first and last word on the subject, showing why it is necessary to pose or arrange the figure in order to get a pleasing portrait, and how to go about it, with many plates and illustrations as a guide.

For those of our readers who do not know of this standard publication, we are glad to bring it to their attention. It is a monthly magazine of photographic information, edited by John A. Tennant, for the man who wants the plain facts about one thing at a time. It is unique among photographic journals, as each number is a complete book in itself and tells all worth knowing about the subject treated. Moreover, its information is fresh and original, without waste of space, and by practical workers from actual experience. A complete set of this magazine forms the most comprehensive library of photographic information in the language. All the numbers now in print can be obtained from dealers in photographic supplies, or by writing the publishers, Tennant & Ward, 103 Park Avenue, New York.

Studying Mounting Effects

The following suggestion is given in *Photography and Focus:* "A frame with a piece of glass and a removable back—a large printing frame does very well—is very useful for the study of different effects that are to be got by multiple mounting. There is no need to attach the print to the papers; they may just be laid one on top of another on the backboard of the frame, the glass put on, and the whole fixed into the frame. This may then be placed in a conspicuous position for a few days, and in this way one can form a truer judgment of the result than when the effect is tried momentarily in the process of mounting."

PRACTICAL POINTS

Design Cut-out Masks for Combination Photographs

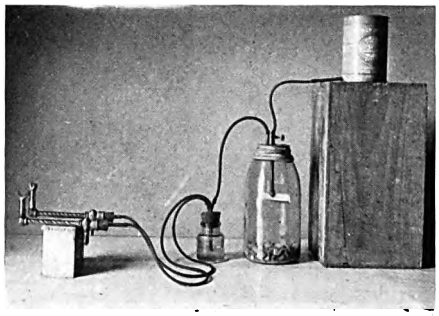
If I may judge from the local view cards put out by some photographers, it would appear that many of my *confrères* have not troubled to think which is the most workmanlike and professional way of going about this branch of the business. How often it is that one sees a good postcard view spoilt by the crude lettering upon it. It is evident that very often the title and the name of the photographer are simply painted in reversed lettering on the negative with an opaque mixture. I don't suppose that every photographer can make it worth while to have the title of each postcard set up in type and transferred to the negative according to the method used in the postcard publishing houses, and, by-the-bye, described in the *B. J. Almanac*, but, at any rate, they could write the lettering on a fairly large scale with all the neatness at their command, and then photograph down to a small size for transference to the view negative, thus securing the required neatness of lettering. But what I wish to refer to more particularly in this note is the form of view postcards in which a number of small views are printed on the one postcard. This is a very popular form of postcard with the public, as it shows, as a rule, the half-dozen or so chief show places of a district, and, therefore, I think it deserves to be produced rather better than it is when turned out by the photographer himself. The workmanlike method, of course, is to prepare three or four of what I may call "design cut-out mounts." Each of these consists of a mount of fairly large size (according to the size of the photographs to be used) and of the same proportion of length to breadth as a postcard—namely, 7 x 11. The mount is first marked where it is to be cut, so as to provide apertures behind which the photographs to form the mosaic are placed. Then some decorative work of an appropriate kind requires to be done on the mount. The simpler this is the better. The most common fault is overloading the photographs with ornamentation around each. The reader can easily judge for himself what are good and what are bad designs by looking at the specimens to be seen in almost every stationer's shop window. The mount having been made and the design produced on it, the photographs to form the mosaics have then only to be attached behind each aperture with a touch or two of fish glue, and the whole photographed down to postcard size. One mount will thus serve for a number of mosaics—that is, if the title is not put in on the mount under each picture. And there is no need that it should be, for neat title-slips can be simply placed in position upon the mount by means of just a touch of adhesive, and kept firmly in place during photographing by pressure against a piece of glass mounted in a frame, such as ordinary printing frame. In fact, at one time, when I happened to have the convenience, I simply laid the title-slips on the mount, laid a piece of glass over that, and photographed with the camera pointing vertically downward—an ideal method of doing copying work of this kind. If the title is not wanted under each subject, as often it is not, the general title and the name of the photographer can readily be put in, in the same way, or, if thought more convenient, can be separately photographed and transferred by stripping to the copy negative according to the method to which reference was made in the early part of this note.—James H. Clark, in *B. J. of P.*

Telling a Bromide from a Platinum Print

It is not always possible (says a writer in *Photography and Focus*) to tell from a mere superficial examination whether any particular photograph is a bromide or a platinum print, but there are many tests which will give the desired indication. One is to nip a corner of the print between the teeth, when, if one surface appears to any extent to adhere, it is clear that the print is not a platinum one. But some bromide prints, when old and well hardened, show so little adhesion that one may be misled. In such a case a chemical test may be used. The platinum image is notoriously permanent and unattackable, whereas a great many chemical solutions at once affect the silver image. Almost any reducing solution or bleaching bath will suffice for the purpose. A good one is made by dissolving a grain or two of copper sulphate and of potassium bromide in a drachm of water. A drop of this placed on any silver image will bleach it very speedily, whereas it has no action at all upon a platinum print. There is no need to let the bleaching proceed very far if the print is wanted. As soon as the outline of the spot is perceptibly lighter than its surroundings it has told its message, and the liquid may be washed off. The print may then be dried and any sign of the test carefully spotted out; or, if the tester is not very sure of his ability to do this, he can apply to the spot, after washing, a drop of the developer he usually employs for bromide or gaslight paper. This will soon darken it down to the tint of the surroundings again and make the spot quite unnoticeable, although anyone who knows where to look will generally succeed in finding it, as a faint mark usually persists. A good washing completes the operation.

A Home-made Acetylene Generator

There are many photographers who would like to construct an enlarging lantern for use at night, but having no supply of electric current or city gas, and knowing that oil lamps are useless, give up the idea as hopeless. However, acetylene light is very actinitic, as can be proved by lighting an acetylene burner in daylight. The flame appears perfectly white, not orange, as does the flame of an oil lamp. A good acetylene generator can be bought for about ten dollars, but for the photographer who does not care to invest such an amount the following described home-made apparatus is just as satisfactory, and the cost is very small.



A reliable and very cheap acetylene generator may be made from an ordinary Mason fruit jar, a one-quart size being large enough for two one-foot (48 candle-power) burners, or a proportionate amount of smaller sizes. If you desire to use more burners you should use a two-quart jar. Having secured the jar, procure about two feet of copper tubing with an inside diameter of $\frac{1}{8}$ in., also a supply of rubber tubing (in the absence of gas tubing nursery tubing will do). Knock the porcelain out of the cap for the jar, and drill two holes through the zinc, one in the middle and one near the side, just large enough to pass the copper tubing through. Cut a piece of the copper tubing long enough to reach about half way to the bottom of the jar; solder this tube in the hole in the middle of the cap. Also cut a piece of the tubing about two inches in length and solder it in the side hole to let the gas out of the generator. Both tubes should be soldered air-tight; but zinc is treacherous metal for soldering, and a tinsmith's help may be useful. Attach a tin trough or pan to the long tube at the bottom to let the water drip in two or more places, which will result in a more steady light. Attach some kind of a valve to the top of the long tube to control the water, one with a needle-point being the best.

The water can be supplied from an ordinary tin fruit or carbide can by punching a hole in the side of the can near the bottom and soldering in a short piece of copper tubing, making connections between the can and the long tube of the generator by means of a piece of rubber tubing. This completes the generator, which is now ready for use by simply filling about one-third full of carbide. The cover should be screwed on tightly, and it is advisable to use two or more gaskets to prevent possibility of any gas escaping.

After connecting the burners by means of pieces of rubber tubing, turn on the water just a little, and after waiting a few seconds light the burners. If the flame is scattered, do not let the water drip quite so fast; but if the flame is not full size, turn on a little more water.

A safety device is advisable, as this prevents any possiblity of an explosion. It is made by taking a small wide-mouthed bottle and boring two holes through the cork with a piece of sharpened copper tubing. Now, cut two pieces of copper tubing, one about one inch and one three inches in length, and pass them through the holes in the cork. Fill the bottle about one-third full of water and insert the cork, making sure that the long tube passes into the water. Connect a piece of the rubber tubing to the generator with one end and to the long tube of the safety bottle with the other end. Connect another short piece of the tubing to the burner and to the other tube of the safety bottle. If you desire to use more than one burner with this devise, make extra holes in the cork of the safety bottle for each burner, and insert short pieces of the copper tubing.

The luminosity of acetylene can be greatly increased by adding hydrogen peroxide to the water used in the generator. One and a half ounces of twenty-volume peroxide in ten ounces of water increases the light 70 per cent.

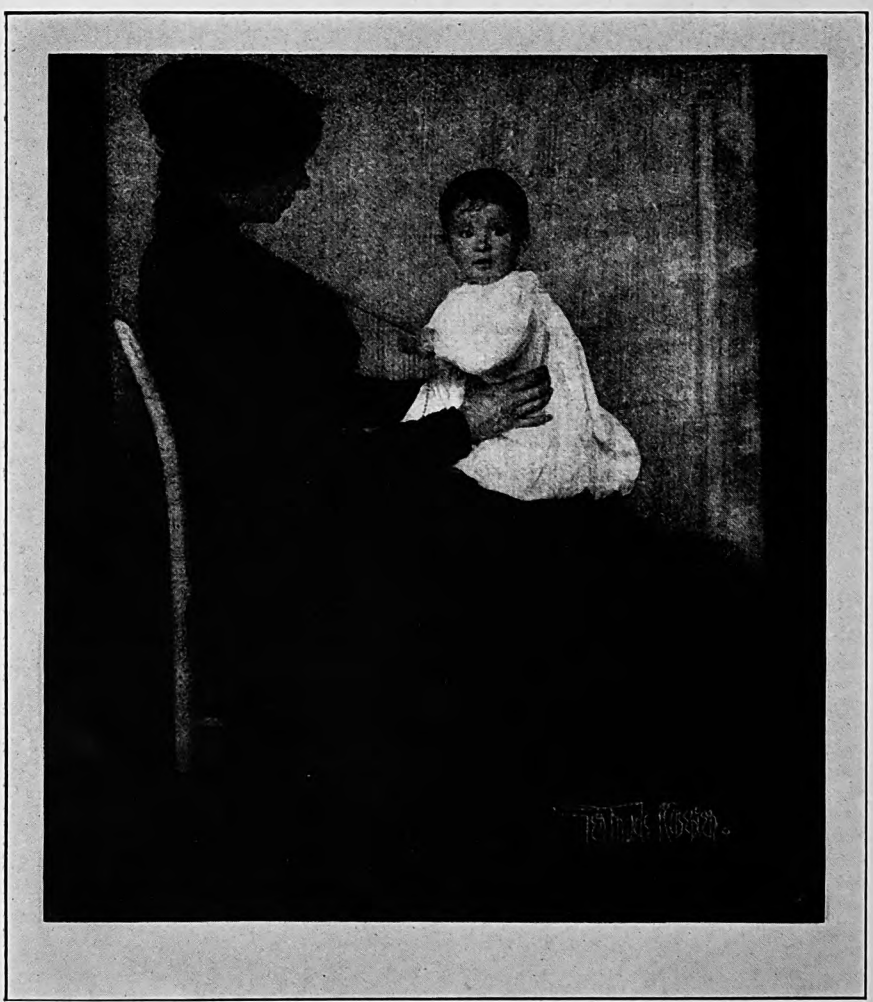
Charles I. Reid.

Tapestry Photographs

Now that tapestry backgrounds are so popular the following method of producing a tapestry effect in a photograph may be of interest:

The photograph (an enlargement) should be in a low key and tinted in oils or water-colors; the style of coloring rich and subdued. The effect is obtained by wax-varnishing the print and combing with a grainer's tool, just as it is setting. The best white wax is stirred up whilst hot into copal varnish for this purpose. Varnish alone would suffice, but the wax gives a richer and deeper grain to the surface. The combing must run evenly and horizontally, resting the tool on a long, firm straight-edge, stretching from end to end of the print. Naturally, the real success lies in the right selection of subject and harmonious coloring.

Thank God every morning when you get up that you have something to do which must be done whether you like it or not. Being forced to work, and forced to do your best, will breed in you temperance, self-control, diligence, strength of will, content and a hundred virtues which the idle will never know.—*Charles Kingsley.*



"MOTHER AND CHILD"
By GERTRUDE KASEBIER
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THE PITTSBURG SALON

By W. H. PORTERFIELD

WHEN the Pittsburg Society held its first salon, a year ago, it was in the name of the Pittsburg Salon of National Photographic Art. Such plans and arrangements as could be considered at that time were discussed by the committee with the intention of perpetuating the event providing the initial venture was successful. Having acted with the caution which is characteristic of well-trained business men, we find the promoters of pictorial photography in Pittsburg announcing, some months ago, the second annual Salon, and we therefore may conclude that the results of their first attempt in an exhibition of Salon proportions was of a nature which prompted them to continue.

Since the most prominent art galleries in the United States have opened their doors to photographic exhibitions, and since the Albright Art Gallery in Buffalo recently hung the work of "Old Masters in Photography," it seems that the word "Art" may justly be used in the future when describing the serious work of those who have chosen the camera as a "means of individual expression."

With few exceptions the more important photographic exhibitions previously held in the United States have contained the work of foreign artists; but in view of present conditions abroad and the difficulties necessarily encountered in securing examples of the work of our belligerent brothers, the use of the word "National" in connection

with the Pittsburg Salon is at first a departure and, secondly, remarkably prophetic.

It is not at all likely that an invitation to our friends across the water would meet with any response at this time. Though the exhibition were International, would not an invitation under the circumstances as they exist today be considered quite out of harmony?

When that day comes, which we all hope will not be long delayed, and the implements of war shall be laid aside forever, when the click of the trigger gives way to the snap of the shutter and the pursuits of peace succeed the horrors of conflict, welcome again indeed will be the pictures of Mortimer, Barton, Blake, Arman, Hofmeister, Demachy, Dubriel, Meissone, and that host of incomparable picture-makers whose productions are known wherever pictorial photography is appreciated.

In the meantime photographic exhibitions in the United States will perforce assume a "National" character, and if we may judge by the work at present displayed in the Carnegie Gallery at Pittsburg, there is material sufficient to warrant the perpetuation of the Salon as originally organized in Pittsburg a year ago.

Other exhibitions international in scope will have their place in the future as in the past, for there is no desire or intention on the part of any American society to erect a barrier which will have the effect of keeping beyond our reach the help and inspiration to be obtained from an intimate acquaintance with the good things done abroad.

Therefore it is not uncomplimentary to our over-sea coworkers that we have come into a realization of our own strength and that the Second Annual Salon of National Photographic Art is a material demonstration of the fact that a condition exists which warrants the inauguration of an annual exhibition limited to pictures "made in the U. S. A."

That the collection of an exhibition of this size, coming as it did from all quarters of the country, is not accomplished without great labor on the part of the enthusiasts who have for many months applied themselves untiringly to their task, must be apparent to all. Surely it was appreciated by those who took advantage of the opportunity to become acquainted with the marvellous results made possible by a discriminating use of the camera.

In the exhibition at Pittsburg there were prints which have won renown both at home and abroad and that justly entitled their makers to the recognition which has come to them.

The upward struggle of the aspiring pictorialist has been tiresome and painful, nor are those conditions always confined to the "said party of the first part," but as there is no success which is not attended by a corresponding expenditure of energy, the course of the camera artist is not different from that of the devotee of kindred pursuits.

Speaking generally of the three hundred odd prints which occupied two large rooms in the art museum, one finds subjects from every land, illustrating the peculiar types and characters which have attracted the eye of the searcher after pictures: One could revel in the sunshine of a summer day or gaze on the cold dead landscape of a New England winter, or, if one preferred, there were portraits and figure studies for the studio worker; there were pictures of the river and the sea, the mountains and the lowland, and hardly any condition of city or country life seems to have escaped the eagle eye of the man with the camera. All these, with numerous variations, were done in printing mediums according to the preferences and tastes of the various workers and were accorded the approbation which Pittsburgers extend to art.

The Photographic Section of the Pittsburg Academy of Fine Arts is widely known for what it accomplished on the occasion of the First Annual Salon of National Photographic Art and that success was more than eclipsed in the show of 1915.

Of the three hundred and seventeen prints shown, sixty-one were the work of local artists, and conveyed a wonderful impression of the picturesqueness of Pittsburg and environs.

Things and places which are daily

passed by the average citizen without a thought of their artistic possibilities revealed unsuspected beauty under the deft manipulation of the photographer.

A most striking instance in illustration of the above observation is print No. 28, by Reuben Miller, Jr., "The City—Beyond," showing the Union Station and other tall structures seen through a neighboring arch. This print possesses every qualification required in a good picture. In it is an element of life, fine tonal quality, excellent balance and composition, and a sunlight effect rarely seen on paper.

In No. 33, a rendering of the same subject but from a different viewpoint, Mr. O. C. Reiter gives us more of an evening effect. The composition is without fault and the interest is held by the big sweep of the arch, through which are seen the familiar skyscrapers. Mr. Reiter shows two other pictures, No. 32 and No. 34, a landscape in early spring and a portrait of a young woman.

The "Old Canal" and "The Canal Lock," Nos. 24 and 25, by Mr. Miller, are well worth study by reason of their excellent atmosphere effect and general pictorial quality.

Charles E. Beason in No. 1, entitled "At Memory's Gate," shows an old home in the country, the afternoon sunlight falling on an old gate, all of which carries out the meaning expressed in the name.

No. 7, by Mrs. Fannie T. Cassidy, entitled, "The Master Painter," a beam of sunlight illuminating flowers, has been recognized in magazine competitions; while "Gospel Measure," by the same author, shows technical skill equal to No. 7.

W. A. Dick shows four prints, of which No. 9, "Evening," is the best. Nos. 10, 11 and 12 suffer in comparison on account of lack of quality.

No. 13, "Devotion," by S. A. Martin, is a fine piece of work, though rather heroic in size, yet it makes a strong bid for recognition in spite of the heavy frame which it carries. Nos. 15, 16, and 17, by the same worker, are so similar in character and arrangement that one is inclined to feel his exhibition would have gained strength had two of the number (16 and 17) been eliminated.

Included in Mr. W. C. Mellor's contribution of six prints is one of the loveliest prints of the show, namely, "The Mountain Flock," No. 19. A peaceful landscape of exquisite quality, a sheep picture *par excellence*, full of poetry, perfect in composition and technique, it deserves to rank with the best that has been done of this popular subject.

Mr. H. C. Torrance is one of the most prolific workers in the Pittsburg Society, if one may judge by the number of prints hung in the show. His exhibition comprises subjects of a wide range in character, though his best is No. 43, "Trinity Church," which is a remarkably fine print of the old structure surrounded and dwarfed by the skyscrapers of Pittsburg. The "Coal Hoist" and "Industrial Pittsburg" show possibilities which will require additional study in order to attain the same class as No. 43.

Leonard L. Witting is represented by one print, No. 48, "On Lake Como." This is another of the exceedingly successful creations and scores a full 100 per cent. in pictorial value.

No. 49, "The Crest," and No. 55, "A Short Day," by Mr. N. S. Woolridge, are two very commendable pictures, showing an intimate knowledge of the subjects and are the best of his collection.

The six exhibitors representing the Buffalo Camera Club send prints which reflect great credit on their organization.

The "Summer Storm," by Charles L. Peck, is a panel in dark blue carbon, showing the effect of wind on tall poplar trees.

No. 63, by Harlow C. Boyce, is another storm scene, very effective in portrayal of boisterous elements.

Henry W. Shonewolf exhibits two very fine prints in carbon: No. 64, "A Winter Marine," on Buffalo River, and No. 65, "Sailing Vessels Lying at Dock," with large expanse of water in foreground which admirably balances the arrangement of the boats.

Wallace Lumney's "A Highland Pasture," No. 66, and "After the Shower"

are two landscapes in his usual good style.

Emile Strub's "Thunder Cloud," an old Indian chief, is a picture of great strength and dignity, full of the determination and defiance poetically associated with the artistic conception of the American aborigines. "Labor," by the same artist, is reminiscent of Millet, and shows women performing the labor of the fields.

"A Quiet Haven," No. 72, by E. I. McPhail, takes us to the old town of Gloucester, where the rigging of idle fishing vessels casts interesting reflections on the quiet waters of the harbor. Another and equally as great a picture is McPhail's "Portal," No. 70, a view into a dense grove of pines, full of mystery and stillness.

The majority, if not all, of the prints of the department of photography of the Brooklyn Institute are moderate in size and very similar in tonal quality. Being exceedingly tasteful in mounting and minus frames they present none of the crudeness which is so striking in a number of the other collections. If they require somewhat closer inspection than the larger prints, it is not because they are without strength, but, instead, refinement is discovered and not weakness.

Nothing but the highest praise would do justice to Miss Bruckerseifer's "Heidelberg," while the two prints of William Elbert Macnaughton, "The Connecticut River" and "The Top of the Hill," seem fairly saturated with the spirit of poetry. Other prints which raise the average of the Brooklyn Society, and "set a pace" which in the future will require no small amount of work to maintain, are the two pictures by Henry G. Bohn, the "Monument" by Underhill, Montgomery's "Birches" and "Sand Dunes," "Wind and Mist" by Florence Baker Gray, and a portrait of Clarence H. White by Anna Eaton Collins.

The thirteen prints catalogued from The Camera Club of New York can hardly be considered adequate representation for a society of this size, which includes in its membership many of the most advanced workers of the metropolis; however, since quality is more to be desired than numbers, the New York Society maintains a standard of excellence which should serve to stimulate more critical judgment by committees whose office it is to select the material to represent their respective organizations at the Salons.

A print of the quality which C. I. Berg shows in No. 97, "Her Debut," together with Stephen de Kosenko's beautiful studies, Nos. 91 and 92, argue more for the cause of pictorial photography than a room full of—well, that kind of thing one so frequently encounters in photographic exhibitions libelously advertised as the Art of the Camera.

Another picture worthy of special mention is A. J. McKenna's "Farmyard Gossip," a print well named and delightful in its rural character.

"The Day's Farewell" and "Thames Embankment," by Maximilian Toch, are both excellent pieces of work, whose value, however, could be still enhanced by a little judicious trimming.

Mr. C. W. Christiansen, of the Chicago Photo-Fellows, has evidently been "working overtime" on the Field Museum, and with great success, since his six subjects—all of which show that structure—represent it apparently at various hours of the day and night.

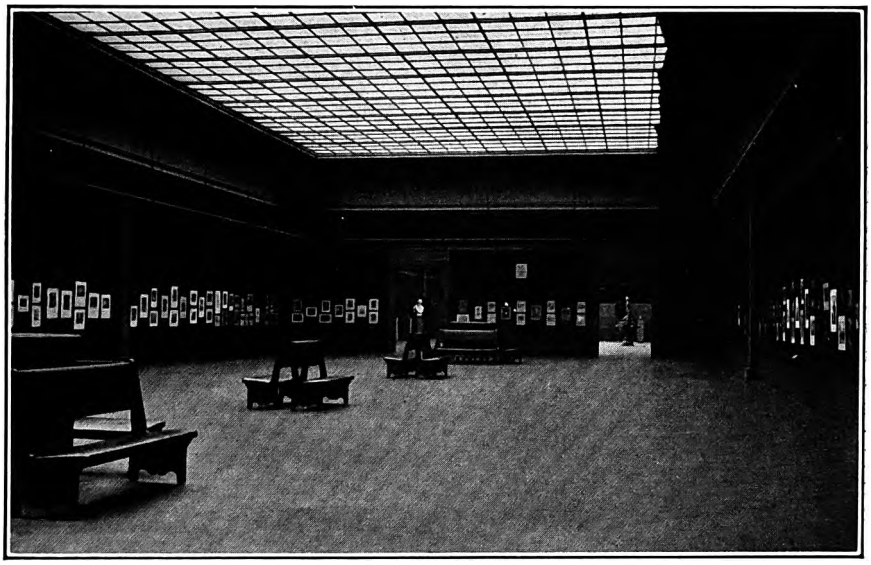
"The Blue Crane," by George Alexander, is a decidedly original treatment of hanging vines and that elongated bird so dear to the Japanese artist.

No. 105, also by Mr. Alexander, as well as Nos. 124 and 126, by Mr. B. J. Morris, all of the Field Museum, complete a remarkable series of artistic architectural studies from Chicago.

A very charming water-lily picture in appropriate color comes from William A. Grayton, while D. H. Brookins also contributes a lily picture, different though none the less attractive. "Market Day," by Mr. Brookins, also a picture entitled "Stranded," are excellent compositions.

Six pictures each from two members of the Orange, N. J., Camera Club, constitute that club's representation at the Salon.

Everitt Kilburn Taylor has two



MAIN GALLERY—PITTSBURG SALON
256 PRINTS IN THIS ROOM

creditable pieces in "La Villa Fiorenti" and "Springtime in Venice," as has also O. E. Davenport in "Beeches."

With the exception of Sylvan B. Phillips' print, No. 50, "At the Dock Near Sunset," the Portland, Me., Club's work shows no improvement over the exhibit which they sent to the 1914 Salon. Persistence in the use of unsympathetic printing mediums, together with heavy frames and careless mounting, leave the critic no alternative except to criticise as stated above.

Ben J. Boyd, of Wilkes-Barre, has a beautiful child study in No. 158, "The Cherub." The other seventeen prints which make up the Wilkes-Barre collection are not of sufficient pictorial value to merit further notice here.

Frederick Archer, of Los Angeles, sends one print, a beautiful landscape in dark green.

In the department of color there are seven entries: four by Charles Booz, of Buffalo; two by M. Richard Witt, of Philadelphia, and one by A. T. Snyder, of Utica.

No. 256, by Mr. Booz, is an evening effect, with poplar trees and water, done in rich luminous colors strikingly truthful of the hour which it represents and is easily the best color work in the show.

Mr. Witt's No. 312, "The Meadow Brook," is next in order of merit and much more successful than his "Japanese Gate," while Mr. Snyder's "The Husbandman" suffers from a too liberal use of yellow.

In addition to Mr. Booz's color work in multiple gum he sends five carbon prints, all landscapes, in excellent quality.

Mr. Witt shows also a good figure piece in "Judith," No. 316.

In the Individual Section, and not heretofore mentioned but worthy of notice, are five character studies by A. D. Brittingham, of Tuckahoe, N. Y., and a collection of "arrangements" in the nude by Imogen Cunningham, of Seattle, of which No. 272, "Reflections," is the best, though each print of the collection is a testimonial to the refined conceptions of its author.

John Paul Edwards, of Sacramento, deals not with the big things which abound in California, where nature has built landscapes of such tremendous proportions, but rather is he attracted by the "Dawn of a Gray Day," "Morning in the Lowlands," and kindred

themes, which he selects with the vision of a true artist. This is discernible in all his eight prints, notwithstanding the fact that he has employed a printing medium incapable of rendering full justice to the possibilities contained in the negative.

Louis Fleckenstein's "The Life Class," Margaret Mather's strong portrait of a man, called "Menace," Charles F. Mazdon's "Portrait Study," No. 299, and the delicate "Etching Study" of F. E. Montverde, complete the notables in the Individual Section.

The big feature, however, of the Pittsburg Salon is the seventy-seven prints from nineteen exhibitors collected by Mr. Edward R. Dickson, and catalogued as a unit under the caption of "Platinum Print Collection."

Mr. Dickson, aside from the arduous duties required of an Editor, has found time to essemble this very wonderful exhibition, and the success of the show is in a great measure due to his valuable coöperation in this respect.

In the limited space at my disposal it is impossible to attempt a comprehensive review of this splendid collection further than to simply mention the names of the individual contributors, confident that the photographic public is sufficiently familiar with their work to render remarks in detail unnecessary.

Arranged in the catalogue in alphabetic order are the names:

Jeanne E. Bennett, Francesca Bostwick, A. D. Chaffee, Arthur D. Chapman, Alvin Langdon Coburn, Dwight A. Davis, Edward R. Dickson, Mrs. Walter L. Ehrich, John W. Gillies, Gertrude Kasebier, Spencer Kellogg, Jr., Florence D. Livingston, Marion Meisel, W. H. Porterfield, Dr. D. J. Ruzicka, Wm. G. Shields, Karl Struss, Aug. Thibaudeau, Clarence H. White.

So much for the detail of the show. A few impressions may not be amiss in closing:

Upon entering the exhibition room one is for a moment quite overpowered by the number of prints, which seemingly stretch away almost to infinity. Prints! Prints! Prints! Along both sides and across the ends of a gallery sufficient in size to accommodate the national game, with no danger of the batted ball going over the back fence.

After making several circuits of the "field," critically examining each unit of the exhibition, one is conscious of having seen *en route* dozens and dozens of exquisite examples of the photographer's art; there are also many of that class of prints which have no right in the Salon except, perhaps, as they demonstrate to the student the things which should be avoided in photography. As a matter of fact the judgeless, invitation policy adopted at the first Salon and perpetuated in the second is directly responsible for the condition just mentioned, and unless greater care is exercised in issuing invitations, or a "weeding-out" process resorted to in the usual manner, the same verdict will apply *ad infinitum*.

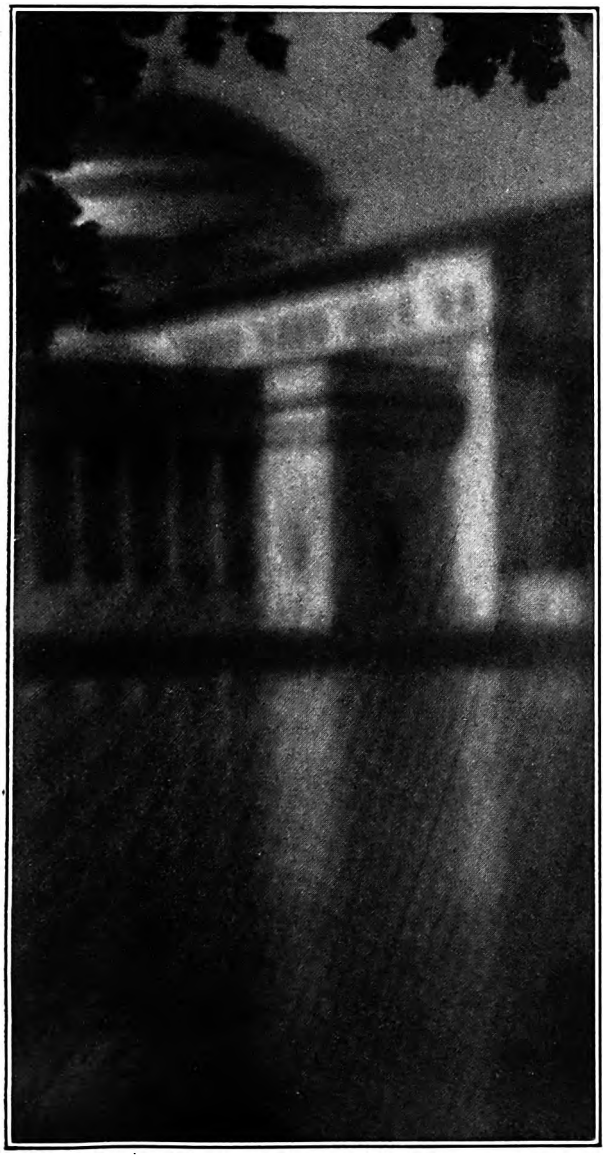
The general absence of frames (the majority of prints were on spacious mounts under glass) and the excellent taste displayed in placing them on the walls remains as another of the delightful impressions of the Pittsburg Salon.

THERE is a big difference in worrying about your work and being interested in it: the one gets you nowhere and the other somewhere. No man who was ever really interested in his work was a complete failure.

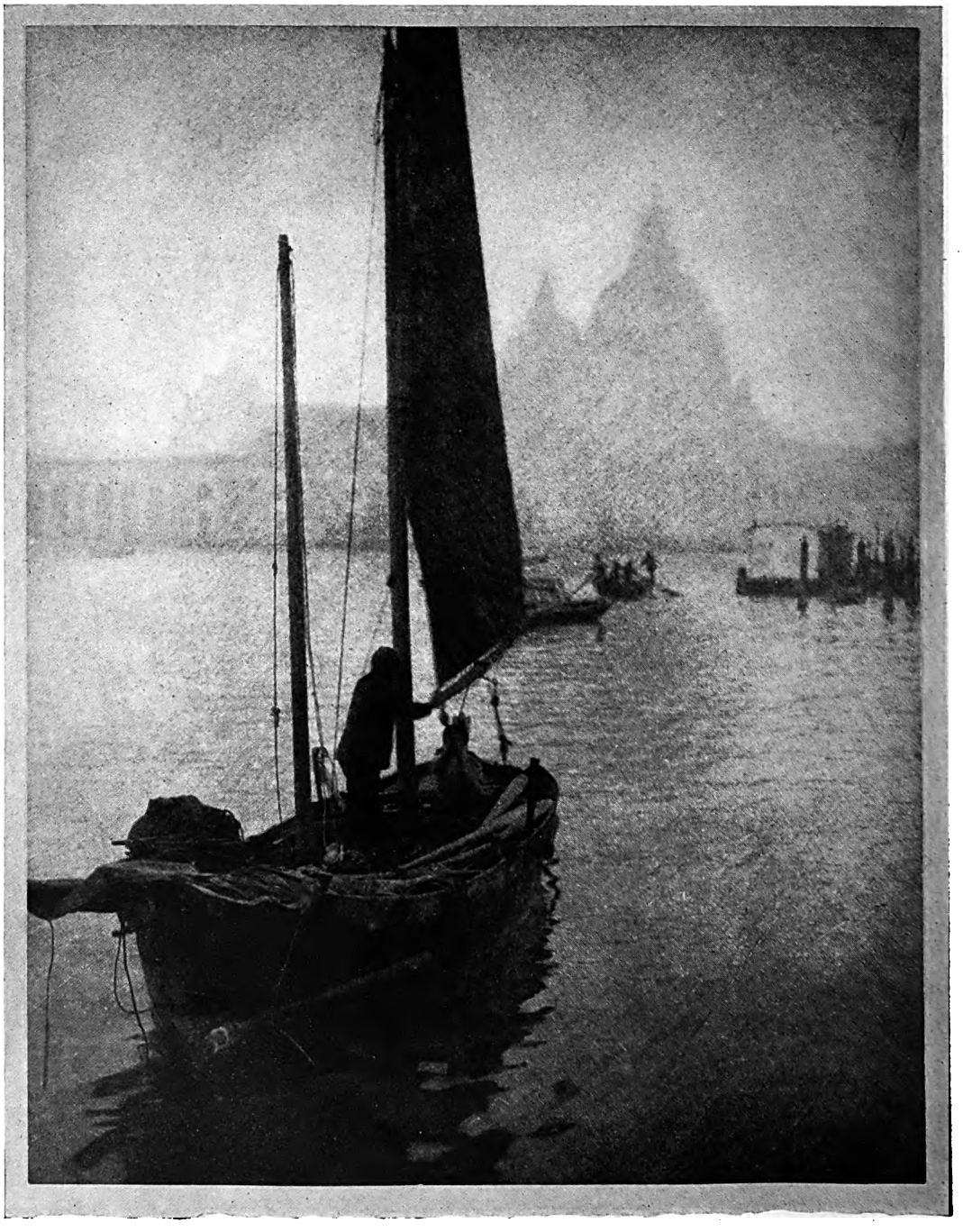
MAKE men feel that you are a success and they want you; make them feel that you are a failure and they scorn you.

REMEMBER that you are heir to all the experience of the world, the experience of those that have lived, as well as those that are working alongside of you.

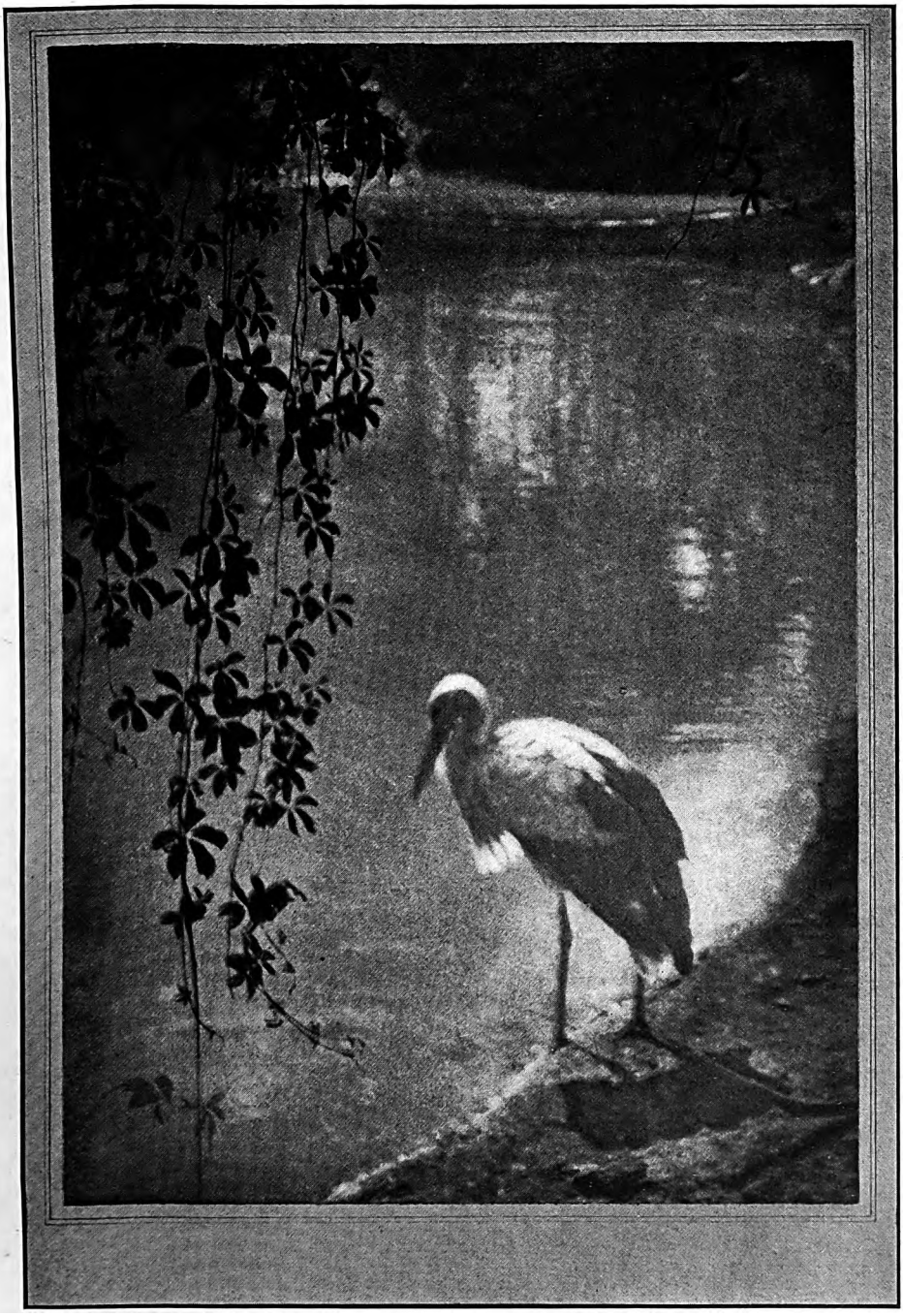
DAMAGED goods will have to go for less than cost. Don't have them around to catch comment. The money they'll bring is a good investment in new and first-rate wares.



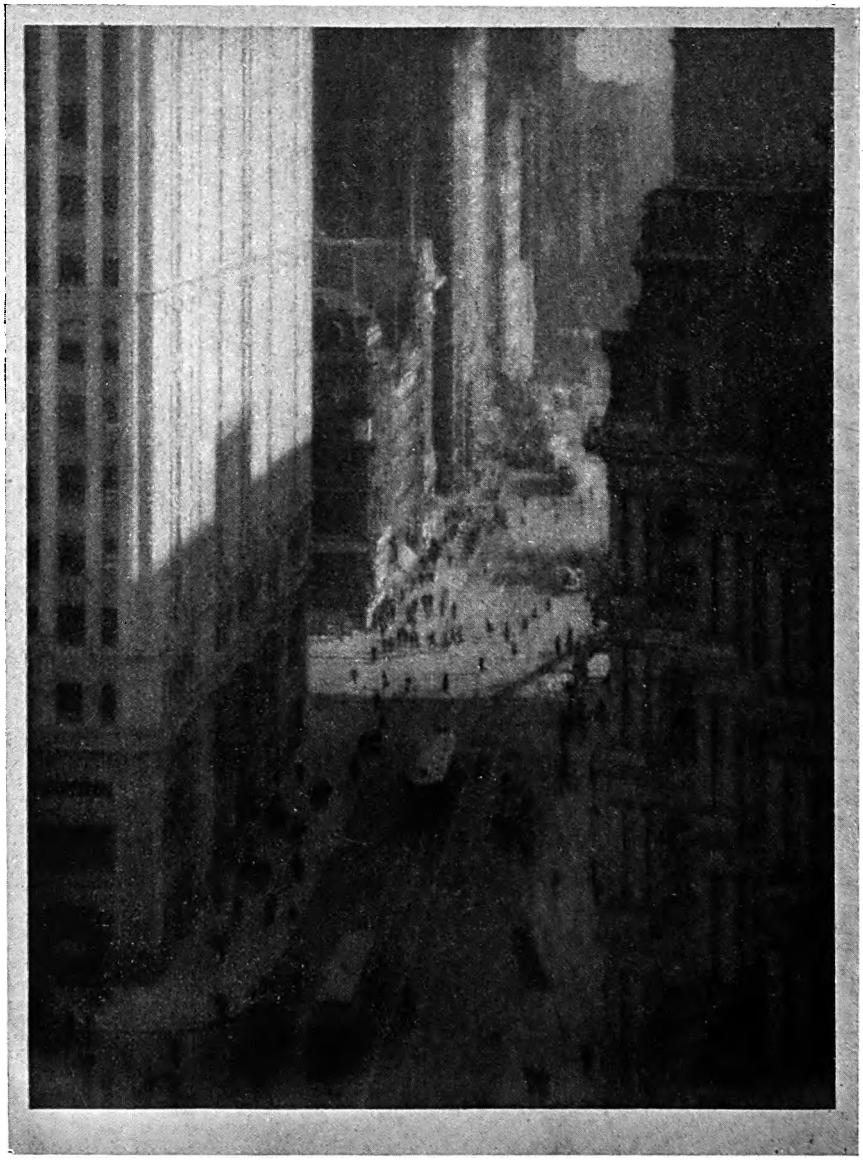
"THE CUPOLA"
BY C. W. CHRISTIANSEN
CHICAGO, ILL



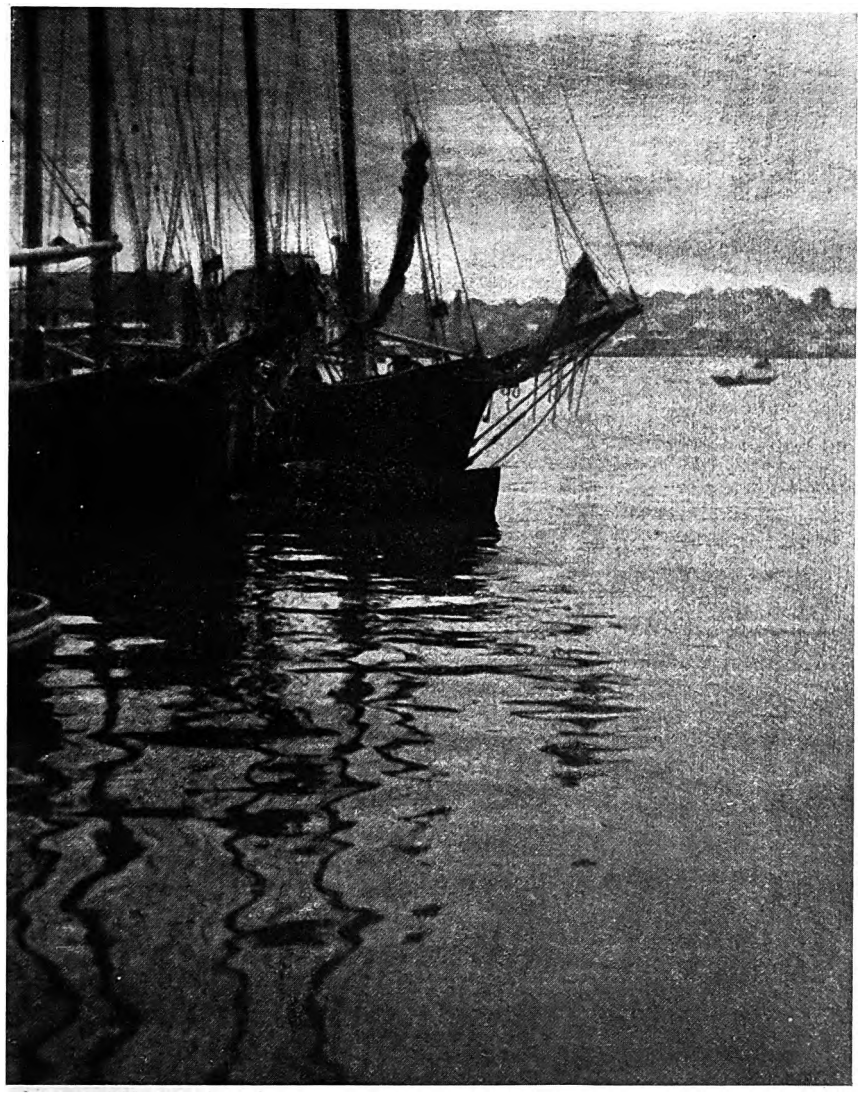
"SANTA MARIA DELLA SALUTE"
By DR. D. J. RUZICKA
NEW YORK



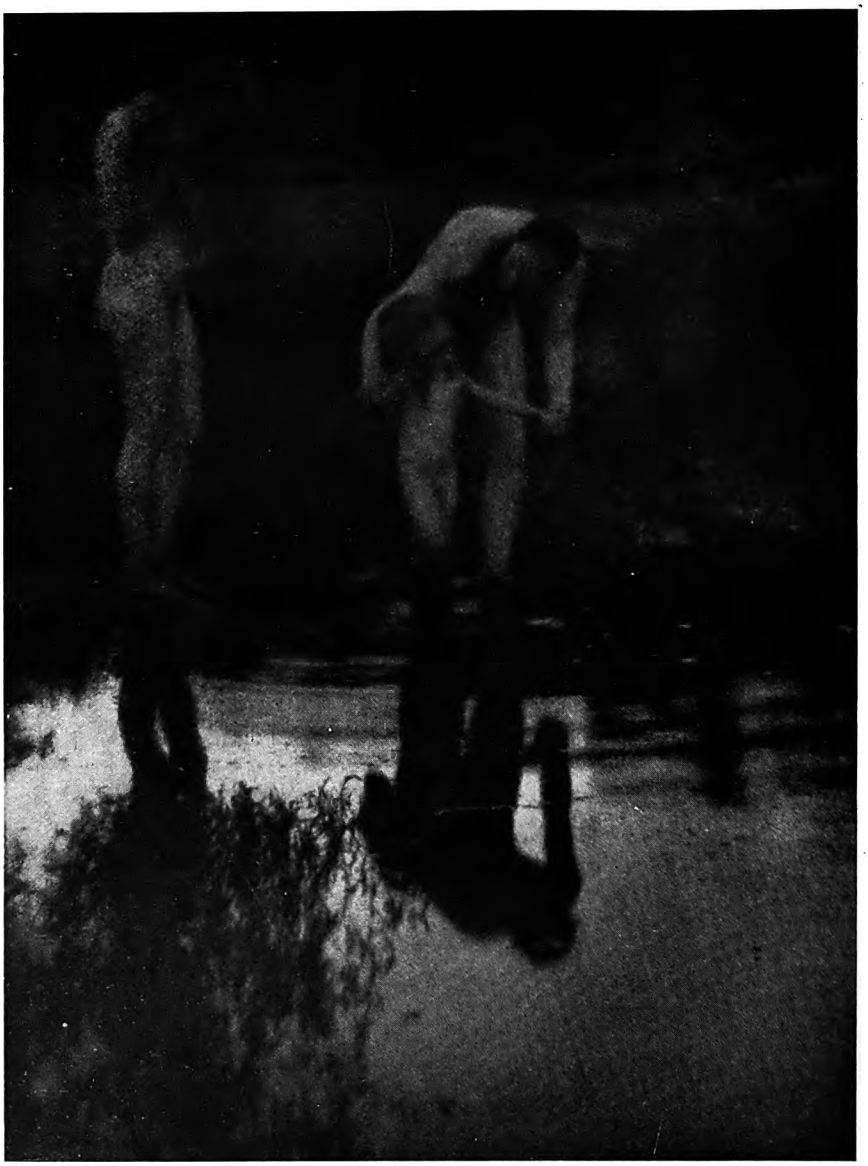
"THE BLUE CRANE"
By GEORGE ALEXANDER
CHICAGO, ILL.



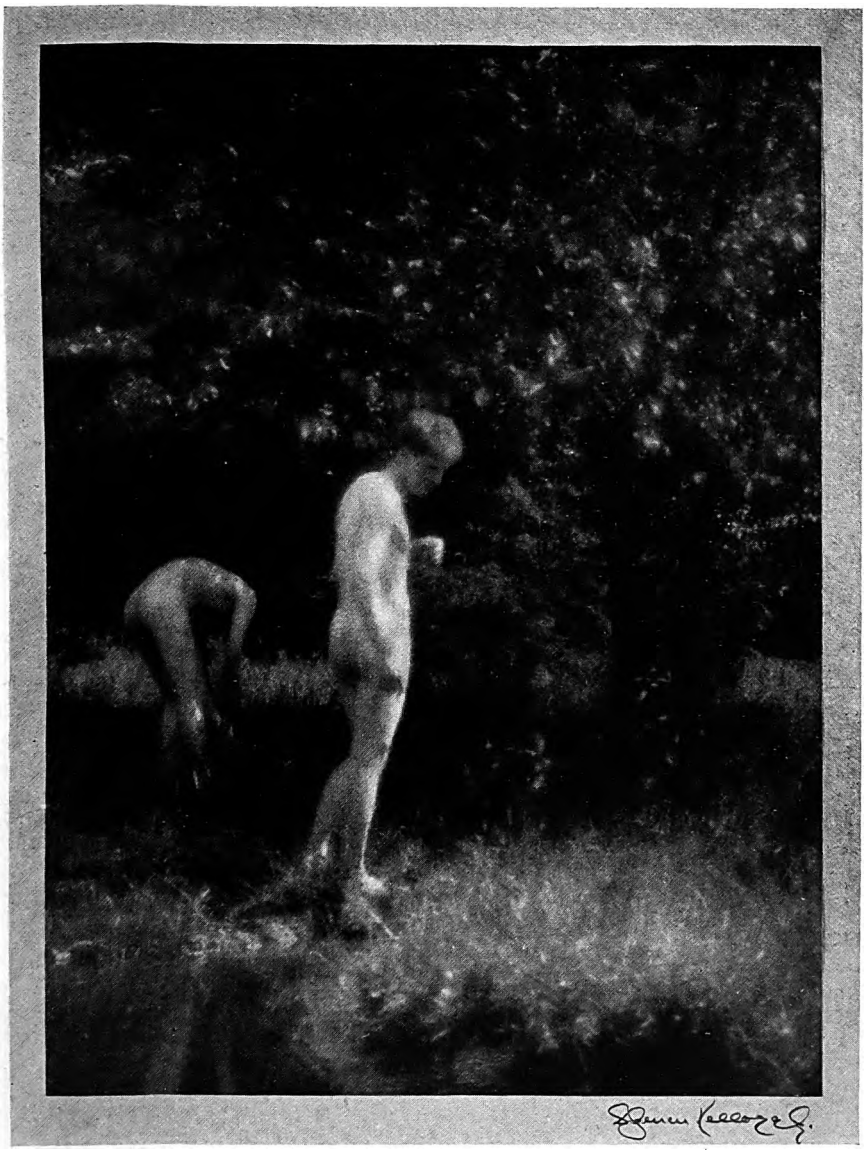
"ANTS"
BY JOHN W. GILLIES
NEW YORK



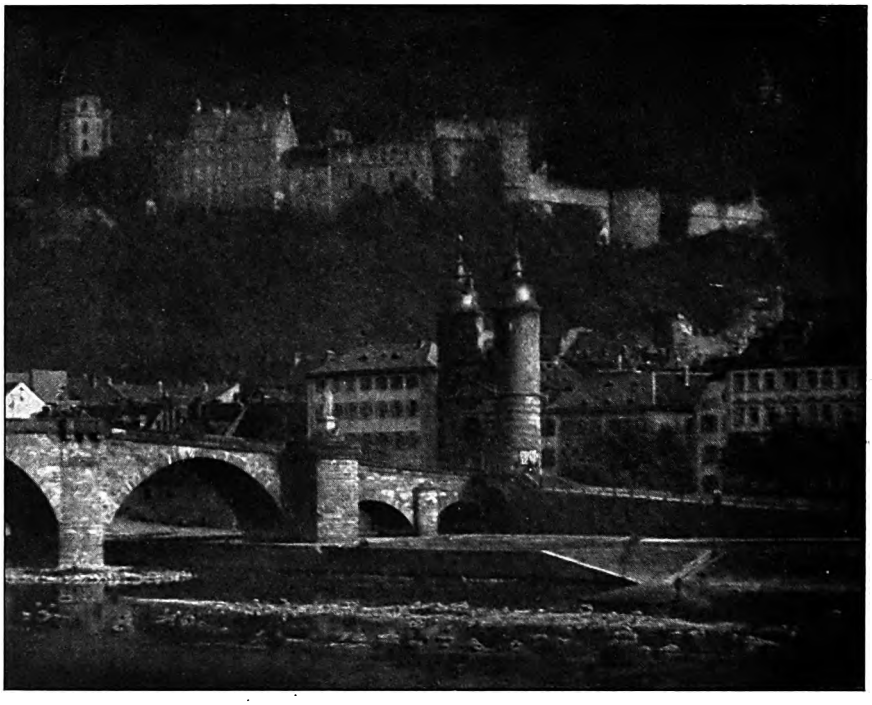
"A QUIET HAVEN"
BY E. I. McPHAIL
BUFFALO, N. Y.



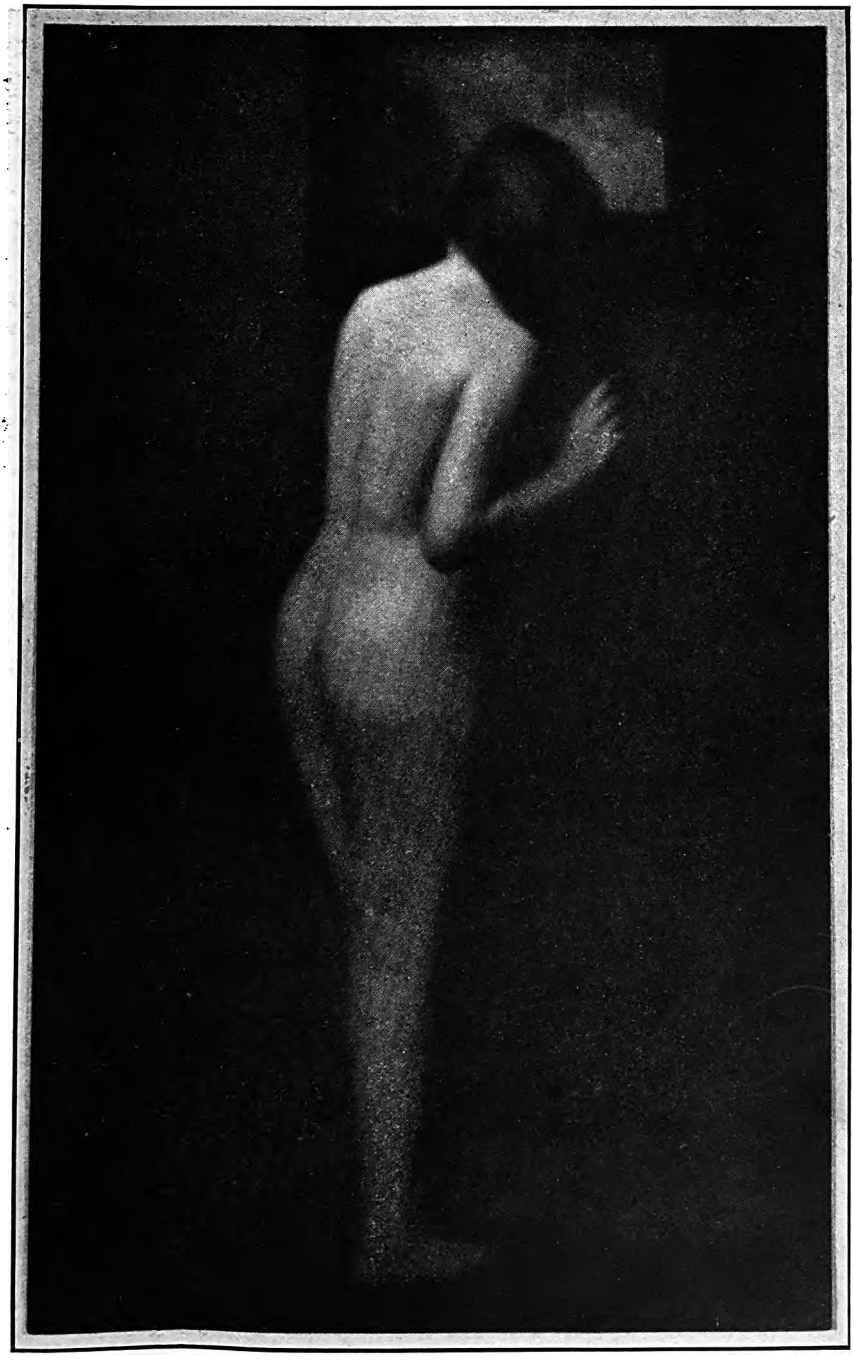
"REFLECTIONS"
BY IMOGEN CUNNINGHAM
SEATTLE, WASH.



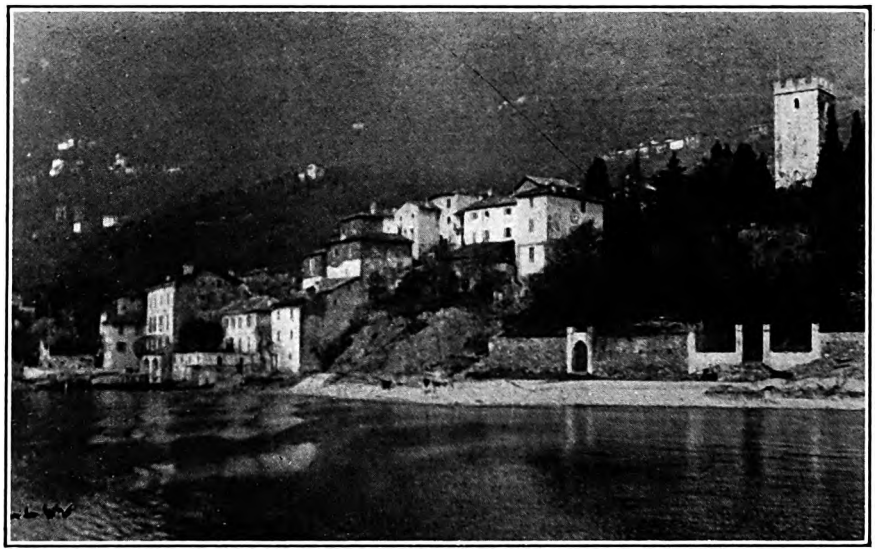
". . . AND I WILL CUT A REED
BY YONDER SPRING AND MAKE
THE WOOD-GODS JEALOUS"
BY SPENCER KELLOGG, JR.
NEW YORK



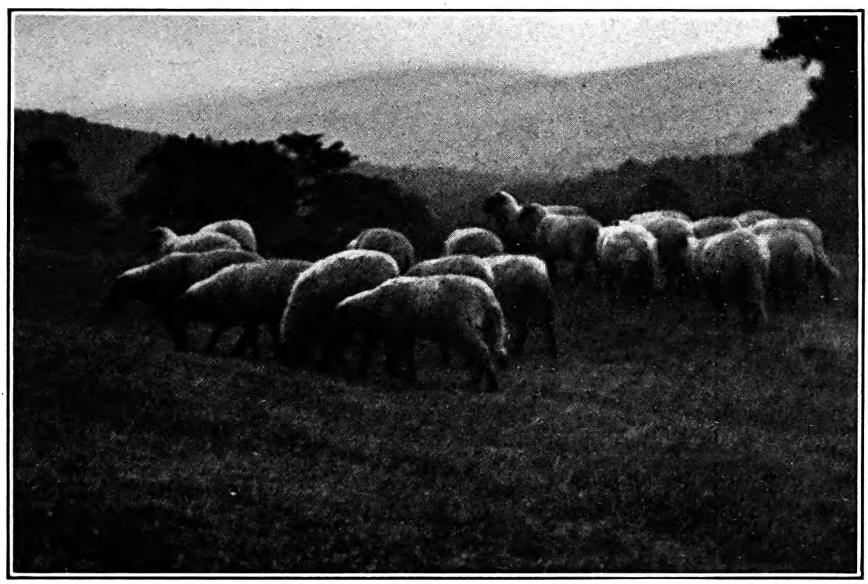
"HEIDELBERG"
BY KATH. BRUCKERSEIFER
NEW YORK



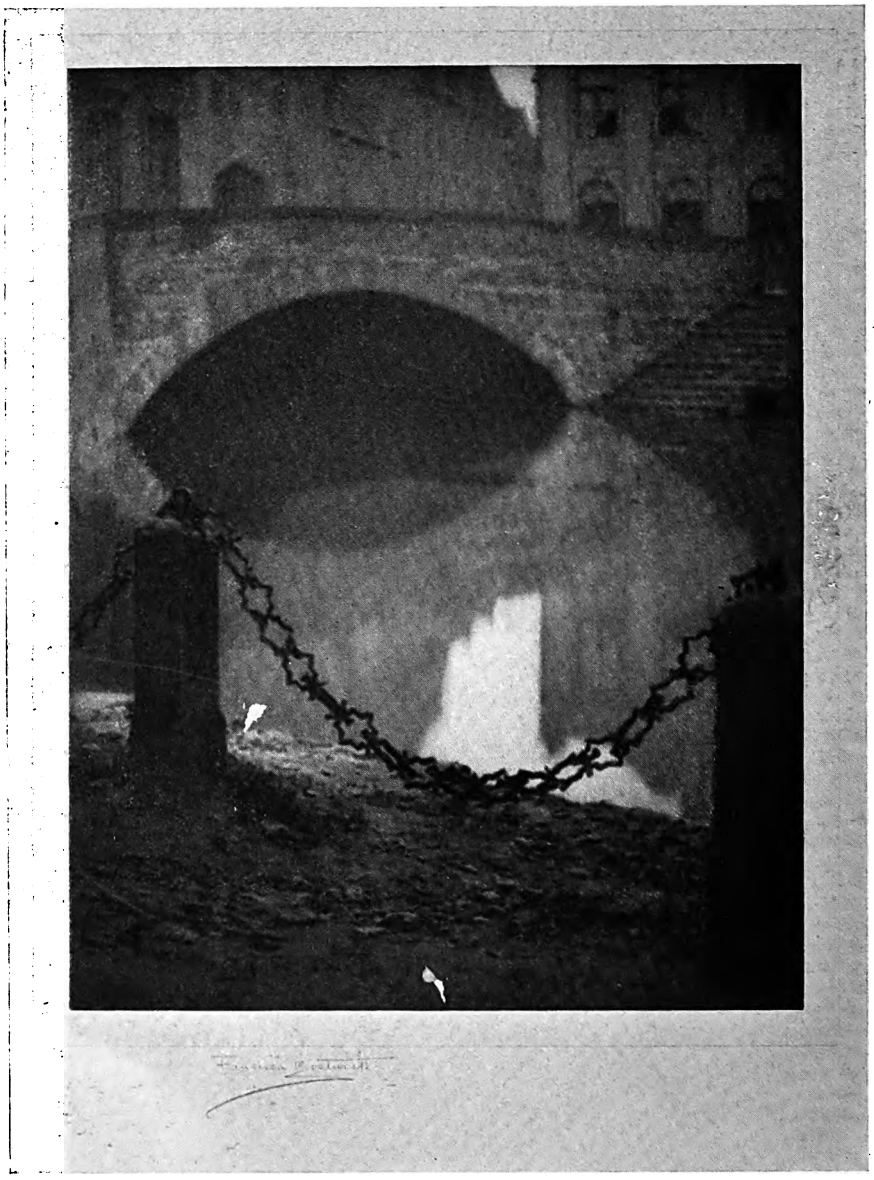
"THE MIRROR"
BY JEANNE E. BENNETT
NEW YORK



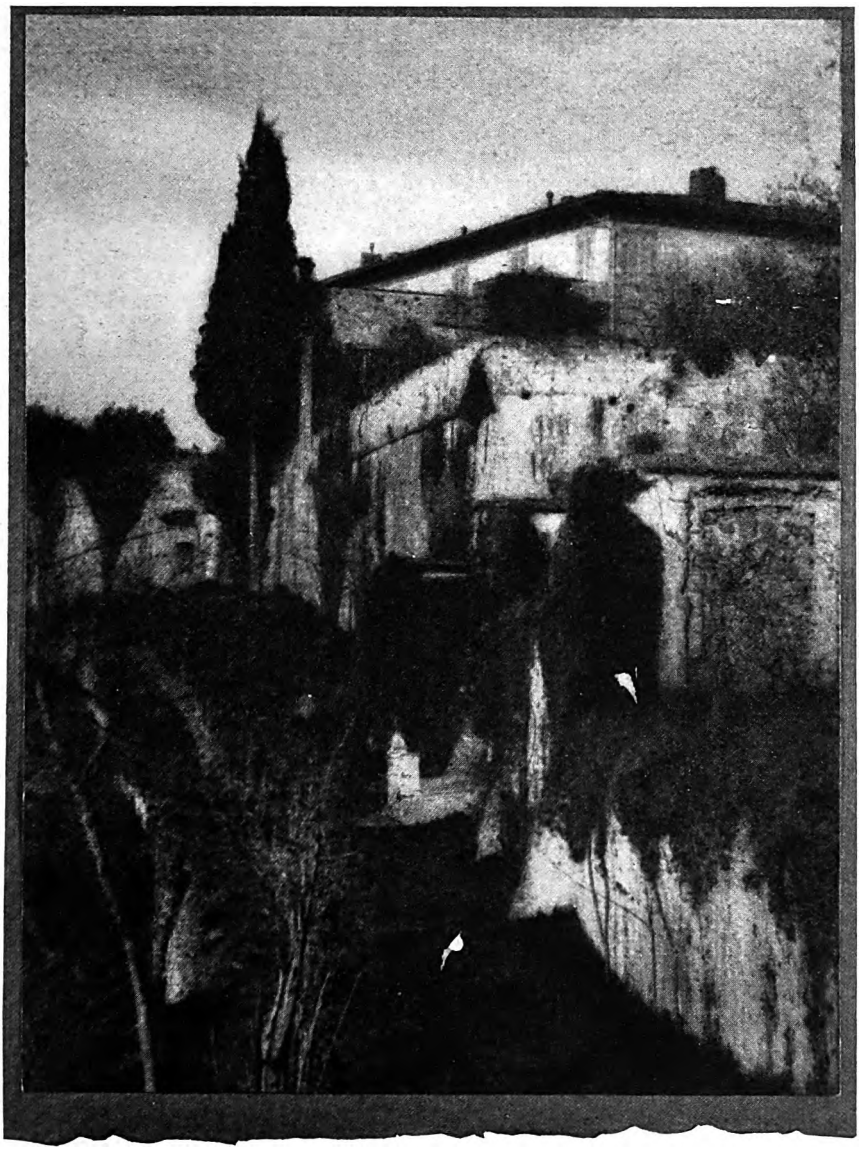
"ON LAKE COMO"
By LEONARD L WITTING



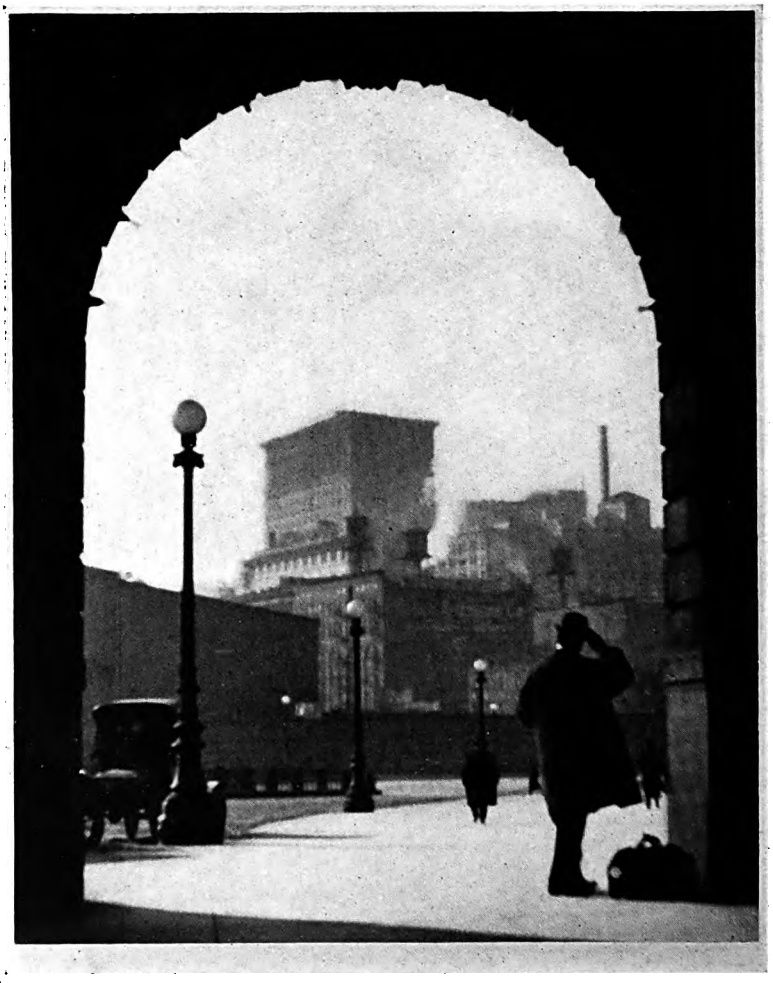
"THE MOUNTAIN FLOCK"
By W. C. MELLOR



"CANAL—BRUGES"
BY FRANCESCA BOSTWICK
NEW YORK



"LA VILLA FIORENTI"
BY EVERITT KILBURN TAYLOR
ORANGE, N. J.



"THE CITY—BEYOND"
BY REUBEN MILLER, JR.

ILLUSTRATING "A PERSONAL CORRESPONDENT AT THE PANAMA-PACIFIC INTERNATIONAL EXHIBITION"

ILLUSTRATING "A PERSONAL CORRESPONDENT AT THE PANAMA-PACIFIC INTERNATIONAL EXHIBITION"

THE KODACHROME PROCESS

By E. J. WALL, F.R.P.S.

THOSE who have seen examples of this process must certainly have been struck with the effects obtained, and, personally, although I have a natural and intuitive objection to any two-color process as being scientifically wrong, yet I have to admit that the results are not only passable but very good; in fact, could I have thrown over my inherent objections, I should have been proud to have produced such a process.

Naturally I have to consider the process from my own point of view, and the first thing is to determine what has been done before. It is purely a two-colored process; therefore we have merely to turn to the records to find out what has been previously accomplished by others.

In 1895 Ducos du Hauron published an article[1] "La Photographie aux trois Couleurs, réduite à Deux," in which he suggests that it would be possible to eliminate yellow as one of the printing colors in three-color photography. He says:

"During my last researches I have discovered a marvellous law, by virtue of which an image composed of only two monochromes is capable of producing on the visual organs, under certain conditions, a colored sensation as complete as the trichromatic images which I have already obtained. The novelty consists in eliminating the yellow monochrome, but taking and superimposing the red and blue monochromes as usual: I do not go so far as to say that I should continue to use madder lake and Prussian blue, or that under the circumstances they are the best pigment possible; but they give the desired effect and that should suffice.

"The phenomenon that I have suggested requires one condition, and that is that the double image should be examined, not by white light and plenty of it, like bright daylight, but rather by weak daylight and just enough to see the subject, or, better still, by the yellow light of candles or lamps. Viewing the results by daylight is possible with very great reduction of the light if the image is produced on a yellow or gray support. It is well known that the sensation of yellow cannot be detected when the general coloration is yellow, either through the nature of illumination or the nature of the support of the print; practically white parts are reproduced as white, while the yellows are reproduced by the yellow. Observers actually believe that they see the three colors where they ought to be, although they actually know that they are absent. Apparently this is a physiological equation: the two known terms being red and blue, and the third term, which we will call x, is evolved, so to say; virtually and actually, yellow is non-existent. It should be noted that the yellow element, by reason of its brightness, which closely approaches white when it is weakened, produces by its absence a gap, which is less noticeable than if the red or the blue were absent, and it is possible to conceive that a process which shall fictitiously reconstitute it may accomplish it in the brain with the same facility as is done with the other two colors."

Du Hauron then goes on to outline his anaglyphic process, with which we are not interested particularly, as it is not a color process.

Gurtner[1] appears to have been the first to have tried to apply this principle to color photography, and thus describes his process in his patents, of which

[1] Photo-Revue Africaine, 1895, December 10, and La Triplice photographique des Couleurs, 1897, pp. 443–447.

[1] E. P. 7924, 1903; D. R. P. 146149; U. S. P. 730454.

the following is an outline: Two plates are placed film to film, and that nearest the lens is a transparent chloride or chlorobromide emulsion, and the gelatin is stained an orange or deep yellowish-red. This stained film not only acts as a color filter but also as the sensitive material for the blue sensation image. The ortho plate behind it records the orange and red constituent image. In printing from the negatives thus obtained Gurtner used either paper or transparencies, and the print from the ortho plate was toned with ferric chloride and potassium ferricyanide, so as to obtain the well-known Prussian-blue image. The impression from the front negative was printed on gelatino-chloride printing-out paper and was fixed without toning, thus giving an orange-yellow image. The two prints or plates were then bound together. It will at once be seen that pure red was missing, and for landscape work this may not be of much moment, but the process is hopeless for portraiture.

The Chemische Fabrik auf Aktien, formerly E. Schering, patented the use of a stripping film of a chloro-bromide emulsion on celluloid for this process,[1] and J. K. Heuberger[2] patented the use of an isolating film of rubber or other material, the placing of a yellow printing substance on the same, and subsequently sensitizing another layer under the isolating film and printing thereon with iron salts to obtain the blue image.

The chief defect of any process in which two plates are used, film to film, is the want of sharpness in the ortho film image, that is, in the underneath image, which is printed in blue and therefore gives the drawing of the picture. To avoid this, Smith, of Zurich, placed on the market, in 1906, a plate which was double-coated, with an isolating film of collodion between the two coats. This, however, does not get away with the trouble, as the want of sharpness is caused principally by the diffusion of the light by the silver grains of the front plate. Obviously the sensitiveness of the front plate must be so adjusted that it will not be hopelessly over-exposed during the long exposure required for the ortho plate behind it and to which it acts as a filter.

Friese Greene and Lascelles Davidson were the next, I think, to use two colors, and this was for the projection of motion pictures in colors, and then we had the advent of the Kinemacolor process[1] and the abandonment of the blue sensation and the use of red and green.

The Kodachrome process follows on these lines, and it is admitted that violets and blues cannot be faithfully rendered, and for portraiture this is not of so much importance; in fact, the process is designed for portraiture only.

The plates used are naturally panchromatized and a special portrait panchromatic plate is issued. The light to be used is twelve 750-watt nitrogen tungsten lamps. And in connection with this the Eastman Kodak Company are wise in cautioning the would-be user of this process that "it must be remembered that in color work the contrast is largely color contrast, and that consequently the lighting used in ordinary negative making is not necessarily the best for color work, a lighting similar to that employed by a painter being desirable, but avoiding heavy shadows, as the color portrait will reproduce the lighting as seen on the focussing screen." This is extremely important and is one of those simple points on which beginners in color work so frequently fall down.

A repeating back is used with the filters in contact with the plates, though I understand that a special camera is to be put on the market with which both exposures can be made at once, a reflector or other device being used to obtain one direct and one reflected image. The exposure through the red filter, with the lighting arrangement advised, is about one second with *f*/6, and that for the green is stated on the boxes of the plates—this being determined by the Research Laboratory for each batch. From the printed instructions a correctly exposed, rather soft and delicate negative is to be aimed

[1] D. R. P. 169313, class 57b, May 4, 1905.
[2] D. R. P. 174144, class 57b, February 14, 1905

[1] E. P. 26671, 1906.

at; one, in fact, which judged by ordinary rules would be underexposed and thin. The plates are issued with a black backing and they must be washed for two minutes, after development for three minutes with a weak Elon (metol) and hydroquinone developer, then the backing removed and again washed for a further eight minutes, when white light may be turned on.

It is at this point that the operator has to make his choice of two paths: Either the original negatives may be converted into dye images, or, and this is obviously the better plan, duplicate negatives can be made and the originals reserved for further orders. Naturally this latter plan will appeal most to the professional, as it will enable him to fill repeat orders at any time.

It must be obvious that as the dye images are obtained from the negatives direct, there must be some action on the gelatin that will prevent it absorbing the dyes where there is the silver image. For this purpose a special bleach, compounded of two powders and a liquid, is employed and this not only bleaches the negative image but at the same time renders the gelatin *in situ* incapable of absorbing the dye solutions. Presumably we have here the application of the oil and bromoil processes, which are based on the observation of Howard Farmer[1] that a silver image imbedded in gelatin when treated with a bichromate renders the gelatin insoluble.

The details of working the process have not been dealt with; my purpose is rather to show the various steps that have led up to this extremely effective and practical result.

TONING BROMIDE PRINTS

By HENRY W. BENNETT, F.R.P.S.

IT would be difficult to imagine a method of printing that could surpass or even equal the bromide process in its suitability for the requirements of the serious photographer. To the professional worker who aims at getting the best result that his skill will permit with the maximum degree of uniformity and the minimum of loss in time and material, or to the serious amateur who wishes to secure his desired result with certainty, though his opportunities for practice may be intermittent, it is equally valuable. It appeals to all for its quality combined with its flexibility or adaptability to varied requirements. Results that vary considerably or differences in character or strength in the prints may be secured with ease and certainty. To the amateur and to the professional the process is invaluable, as it may be worked with a degree of uniformity and certainty unattainable in any other process that can yield results of similar quality.

It is unquestionable that the method of toning by means of sulphide has considerably enhanced the value of the bromide printing process; not only by reason of the greater variety of colors obtainable, but also on account of the richer character and quality of the prints. In many cases the cold neutral black of an untoned print is admirably suited to the subject and its rendering; but there are many others for which a warmer tone is far preferable. The greater the variety of useful tones that a printing process can be made to produce without undue trouble or complicated working, the more valuable will it be; especially in the hands of those who are never satisfied with anything less than the best that they can produce.

The modification of the sulphide toning process described in this article is a method of working that I introduced

[1] B. J., 1894, p. 742

a few years ago: and ever since that time it has proved a very valuable addition to my own practice.

By this method any tone desired can be produced with absolute certainty, the colors obtainable ranging from a rich, warm brown, through deep brown and brown-black, to a pure engraving black. The black produced by sulphide toning is distinctly different from the cold neutral color obtained by development: it resembles very closely the tone of a good engraving. And, in addition, a print that has been toned to a black possesses a richer quality, with greater transparency in the shadows, than can be obtained by development alone.

Prints toned by this process are as permanent as any photographic prints on paper can possibly be. The limit of their existence is determined by the durability of the paper which forms their support. They are practically unaffected by any atmospheric influence.

The sulphide toning process is not only exceedingly simple in working, but it is absolutely certain in its results; with ordinary care it is quite impossible to fail. If the desired tone or quality is not obtained, the reason must be sought in the preparation of the print rather than in the toning process.

It must be fully recognized that in order to obtain uniformity in toning, uniformity in the preparation of the prints is absolutely essential. The development of the print influences the tone that the sulphide bath will produce far more than any other factor in the production of the print, or even in the toning, other than a distinct modification in the process. Assuming that a reasonably good negative is used, the sole determining factor with regard to the quality and richness of the toned print is the development.

The actual reagent used for developing is, to a large extent, immaterial. A number of different developers may be employed without any material difference resulting when the prints are toned; provided that, in each case, the development is equally thorough. In the same way, dilution or concentration of the developing solution, or even the addition of bromide, within moderate limits, does not seriously modify the result; provided that the duration of the development is lengthened or shortened to compensate for the alteration in the composition of the solution, and to produce the same degree of development.

Full development of a print will ensure a rich, strong brown tone when it is treated in the sulphide solutions in the usual manner. If, however, a print is developed for only half its full time, for example, the result of sulphide toning will be a weak and poor yellow-brown tone with neither strength nor quality. The same result will follow the employment of an exhausted developer, a solution that has been used for several prints in succession. The weak character and poor quality, frequently attributed to over-exposure, in reality are due solely to insufficient development; the print is withdrawn from the developer at an early stage on account of having been over-exposed.

The best time for development should be ascertained for the solution employed and the brand of paper selected, by developing several correctly exposed prints for different times and testing them by sulphide toning. The time of development having been determined by this method, all prints should be developed for that time at a uniform temperature. And, in order that all prints may be so developed, correct exposure is an absolute necessity. The exposure for any negative can be determined by exposing a small preliminary test piece of paper; and, if uniform conditions of working are adopted, estimating the correct exposure for any negative should not be difficult.

The strength of the developing solution and the time of development may have to be varied according to the brand of paper selected. With most of the papers on the English market, the strength of the solution should be one and a half grains of the developing substance in each ounce of solution for obtaining the best results. A few require a stronger solution. My favorite developer is:

Sodium sulphite	150 gr.	30 gm.
Diamidophenol	15 "	3 "
Potassium bromide	3 "	0.6 "
Water	10 oz.	1000 c.c.

This solution must be used within three days of preparation, and this, for many workers, is a serious objection.

For Wellington papers the full time of development in this solution is three minutes; with some others four minutes has been found necessary, the temperature being sixty degrees. If the time of development is reduced much below these amounts, it is impossible to produce the same richness and quality when the prints are toned.

For those who prefer a developer that may be prepared in sufficient quantity to last for several weeks, the following metol-hydroquinone formula will give very satisfactory results. The time of development may be the same as for the diamidophenol solution already given. In each case the various chemicals should be dissolved in the water in order in which they stand in the formula.

Metol	10 gr.	2 gm.
Sodium sulphite	180 "	36 "
Sodium carbonate	180 "	36 "
Hydroquinone	20 "	4 "
Potassium bromide	5 "	1 "
Water to make	10 oz.	1000 c.c.

This solution should be diluted to half strength for use.

It is my invariable rule to use fresh solution for every print: it is the only method by which uniformity in the conditions of development can be secured. If a developer is used for two or more prints in succession, extra time must be allowed for each successive print and this increase is difficult to determine and involves uncertainty. Unless such economy is absolutely essential, it should be avoided. It is preferable to use the smallest quantity of solution practicable so that fresh may be taken for each print.

In considering the question of uniformity there is one factor that appears to be not recognized by most photographers, though its influence can be easily demonstrated. Prints should be dried after fixing and washing before toning is commenced. If a print is toned when taken from the washing water after fixing, without being dried, the color will not be pure and the shadows will be muddy and lack transparency. The loss of quality is really serious.

As in all photographic work, thorough fixing followed by reasonable washing is essential to success. An acid fixing bath, prepared by adding one ounce of potassium meta-bisulphite to each pound of hypo, is preferable to a plain solution of hypo. The strength of the fixing bath for bromide papers should be three ounces of hypo to sixteen fluid-ounces of solution, and the minimum time of immersion for fixing the prints at sixty degrees, twelve minutes. Considerably longer time in this acid fixing bath—even an hour's immersion—will not injure the prints in any way.

TONING

Bromide prints may be toned at any time after washing and drying, even after an interval of several months, without any appreciable difference in the result. The process is very simple.

The print is first immersed in a solution which can convert the silver image into a haloid, or a form amenable to the action of a sulphide. And then, after washing, a solution of an alkaline sulphide quickly transforms this modified image into silver sulphide which is an exceptionally stable substance. A moderate washing completes the process. In each case the prints must remain in the solution sufficiently long for its action to be completed: the process is, consequently, quite mechanical in its working.

Three stock solutions are required, each of which will keep in thoroughly good condition for an indefinite time.

A

Potassium bromide	3 oz.	150 gm.
Potassium ferricyanide	2 "	100 "
Water, sufficient to make	18¼ fl. oz.	1000 c.c.

B

Potassium bromide	120 gr.	2½ gm.
Mercuric chloride	120 "	2½ "
Water	10 fl. oz.	100 c.c.

Hot water should be used for preparing these solutions.

C

Sodium sulphide . .	2 oz.	200 gm.
Water to	10 "	1000 c.c.

It is very important that a suitable sample of sulphide should be obtained and that the solution should be prepared and stored correctly; if not, it deteriorates rapidly. The sulphide should be in clean grayish-white crystals, quite free from moisture or any green discoloration; they are not clear, but semi-opaque. They must on no account be exposed to the air as they rapidly absorb moisture in such a manner as to become quite unfit for use.

The crystals must be dissolved in boiling water, and the solution must be stored in a bottle with a stopper that is absolutely air-tight. A cork is useless, it is an insufficient protection, and a glass stopper will become so firmly attached to the neck of the bottle by the action of the sulphide solution that its removal is practically impossible. In England, aërated mineral waters are supplied in bottles fitted with screw-stoppers, each stopper being provided with a thick ring of india-rubber, which, pressed firmly against the neck of the bottle, by screwing in the stopper, forms an absolutely air-tight joint. Such a bottle is a perfect receptacle for preparing and storing the sulphide solution. Ten ounces of water are measured into the bottle and a mark made on its side at the point to which the water rises. The bottle is then emptied and carefully heated, the crystals of sodium sulphide put into it, and boiling water poured in until it reaches the ten-ounce mark. The stopper is then screwed in as tightly as possible, and the solution is ready for use. Prepared in this manner a solution of sodium sulphide will remain in thoroughly good condition for a year, or even longer: and, provided that the stopper is replaced tightly each time that the bottle is opened, the solution may be used to the last drop without the quality of the toned prints showing the slightest deterioration.

For toning to a rich warm brown color, the prints are immersed in a bath prepared by adding forty minims of solution A to each ounce of water required. Any number of prints may be treated together, provided that sufficient solution is used to ensure that it can have free access to their surfaces. The prints should be kept constantly moving, as in toning ordinary silver prints, so as to ensure even action of the solution. They must be allowed to remain in the bath until the image has completely changed to a pale fawn-brown color. The time necessary for this change to be effected perfectly may vary from two to five minutes, according to the number of prints in the dish and the manner in which the solution has been able to act on their surfaces. Longer immersion than the time necessary to complete the change will not do the slightest harm.

The prints must then be washed, preferably in water completely changed from time to time, until the washing water shows no trace of yellowness. This may vary from fifteen to thirty minutes, according to the number of prints being treated together.

They are then immersed in the sulphide solution, prepared by taking about thirty minims of solution C—the stock sulphide solution—to each ounce of water required. In this bath the prints change rapidly to their final color, from one to two minutes' immersion being ample to ensure the complete conversion of the image into sulphide of silver. A similar washing to that given after the ferricyanide-bromide bath completes the process; the print is toned and permanent.

The process as described produces a rich, warm-brown color; this result being absolutely certain provided that the print has been correctly developed and perfectly fixed. In the working of the toning process, failure is impossible. Should there be any defect in the print liable to imperil its permanency, that defect will become evident during the toning process; any deterioration will show by the time the toning is completed. If no defect is seen when the print leaves the toning bath none will

arise later; the permanence of the print is assured in the exact form that the sulphide solution leaves it.

This method of working may be varied by adding various proportions of solution B to the ferricyanide-bromide bath for bleaching the prints, the relative amounts of the two solutions, A and B, determining the final color of the print. This color may vary from the warm brown produced by using solution A alone, to any desired shade of cold brown, brown-black or pure black according to the quantity of solution B added to the bleaching bath, all the colors produced being characterized by the same rich quality as that given by the ferricyanide solution A used alone. The brown-black and black tones are strong and rich, equalled only by the same colors given by the carbon process, and at the same time the softness of the original gradation is retained.

The print is bleached in the mixture of solutions A and B in the same manner as when solution A is used alone; the working of the process is unchanged, excepting in one small detail.

When any proportion of solution B is added to solution A for the first operation—bleaching the prints—an acid bath should be used during the washing after this solution. A very weak solution of hydrochloric acid is one of the most suitable; sixty minims of the acid will be sufficient for twelve ounces of water.

When taken from the bleaching solution, the prints should first be washed for about five minutes in three or four changes of water, and then they should be immersed in two or three successive acid baths of this composition, remaining four or five minutes in each, and then they should be washed in water frequently changed for about fifteen minutes. They are then to be treated with the sulphide solution as usual.

Prints toned by means of this mixture of potassium ferricyanide-bromide and mercuric bromide are as permanent and as satisfactory in every way as those bleached in the potassium ferricyanide-bromide solution alone. The image is converted into metallic sulphides, the sulphides of silver and mercury, both of which are exceedingly stable substances.

Tables showing the various proportions of solutions A and B to be used for obtaining warm or cool brown, brown-black or black. The quantities given are those recommended for one ounce of water, though the working solution may be stronger if desired. But the proportion between the two solutions determines the actual color obtained.

	Quantities for each ounce of solution.		Color resulting.
No. 1 . .	A.	40 minims	Warm brown.
No. 2 . .	A.	40 minims	Medium brown.
	B.	40 minims	
No. 3 . .	A.	30 minims	Cool brown.
	B.	40 minims	
No. 4 . .	A.	30 minims	Brown-black
	B.	60 minims	
No. 5 . .	A.	20 minims	Black.
	B.	80 minims	

There is one point in connection with this method of working which has to be recorded as a disadvantage, though at times it becomes a positive advantage.

The addition of solution B to the bleaching bath acts has an intensifying as well as a toning action. When a print is too light as the result of an error of judgment in printing, it may be strengthened as well as toned by selecting the solution that will intensify it to the desired extent. Or, equally, when a strong print is desired from a weak or flat negative, the same method will assist in securing the result required.

But a process is not designed as a method of rectifying errors and the most satisfactory plan will always be the preparation of a print with a definite object in view, and printing to normal or less than normal strength according to the toning solution that it is intended to use.

Solution called No. 1 in the table does not intensify the print at all, though it confers a much richer quality: No. 2 intensifies slightly, and No. 5 intensifies considerably.

Compensation can be easily made for this intensifying action by decreasing the exposure when making prints for toning in solutions numbered 2, 3, 4 and 5. And the extent of this decrease in exposure necessary for each solution

being known, it is easy to determine which solution should be used when a print has been made too weak, unintentionally.

If ten seconds were the correct exposure for a print of the normal strength, for toning in solution No. 1 in the table, the relative exposures for toning in the other solutions should be: for solution No. 1, 10 seconds; No. 2, 9 seconds; No. 3, 8 seconds; No. 4, 7 seconds; No. 5, 6 seconds. The development may remain normal for all, or the developing solution may be diluted to half its normal strength for Nos. 4 and 5, longer time being allowed for its action. The results of these shorter exposures will be, naturally, weaker prints, the intensifying action of the toning solutions Nos. 2, 3, 4 and 5 strengthening the prints so that, when finished, they are all uniform.

HINTS ON RETOUCHING AND THE REDUCTION OF HALATION

By ARTHUR DARING

ALTHOUGH there are many books published on this branch of photography, and simple as their language may be, it is still very difficult for an amateur to make headway without the assistance of a professional friend.

One of the chief reasons is that, while they all dwell on the things one must do to become a successful retoucher, few get past the first stage on account of the difficulty experienced in making the various strokes that are said to be absolutely necessary.

We will imagine that the negative to be retouched is one with good lighting. This is necessary, as it is very hard, but not impossible, to make a good portrait print from a flat negative.

We will also suppose that the embryo retoucher has all the necessary tools, such as desk, medium, pencils, and opaque. A knife will also be necessary, but this can be made by hammering a needle into a piece of wood and breaking off the point (if it is not already broken in the hammering) and sharpening it to an angle of forty-five degrees on an oilstone.

With the negative on the desk and everything ready, in a good light, shake the bottle of medium and apply the wet cork on the film side to the part that is to be retouched, and rub with a circular motion with the tip of a finger until it becomes tacky, then put the negative aside until it becomes *absolutely dry*. This is one of the points I wish to emphasize, for if the film is not dry the

FIG. 1

first stoke made with the pencil removes the medium, and the next cuts through the film.

The stroke mostly used by professionals is the cross-hatch, the transparent parts in the negative being filled

in with curves all going one way and then crossed by others in a slightly different direction, but never at right angles. This stroke, while exceedingly useful to an experienced worker, is of very little use to a beginner; and the stroke I advise is one made with a series of elongated figure eights, close together, very small, and all going one way.

Exception might be taken to this method on the ground that it does not enlarge well; but this is not true, as I have enlarged the first negative I ever retouched (see Figs 1 and 2) and found that it compared favorably with some I had paid an experienced professional to do for me.

I know very well that the illustrations are far from good, but they illustrate my point, and serve to show what can be done by this method by a person without previous experience.

FIG. 2

Fig. 3 perhaps gives a better example of the difference that is made by the "cleaning up" of a face and the removal of an objectionable background. The portrait was taken in a workshop with a number of machines behind the figure, and the sitter badly needed a shave!

When retouching the face it is best to repeatedly turn the negative so that the stroke can always be made up and down, and the pencil (an H.B., sharpened to an extremely long thin point, whenever possible) handled so lightly that it would be possible to snatch it from the hand without the worker feeling it go.

All books on this subject say, "follow the grain of flesh," but the beginner asks, "What is the grain of the flesh?"

All good portrait negatives (which should be rather thin) are made by over-exposing and under-developing, and

FIG. 3

show an exceedingly small network of lines running different ways. This is the grain, and if followed by the retoucher he will have to travel something like as shown in Fig. 4.

It is best to start on the forehead and work systematically on one part until it is finished, pressing a little harder on those places it is desired to lighten, such as the bumps over the eyebrows. When the forehead is finished work over the nose and under the eyes, then down the cheeks to the mouth and chin. The nose will also look a lot better if it is lit up a little where the light strikes it, or should do so.

Care must be taken and judgment used as to what shall be filled in and what shall be taken away, in order not

to lose any of the characteristics of the face.

It will be noticed in Fig. 1 that nature having made the sitter a very thin man, the angle of the jaw protrudes in the photo in an unpleasant manner. In Fig. 2 this has been scraped down gently with the home-made knife (in one direction only) with a decided improvement in appearance; but on the other hand the deep line over the nose has been left strictly alone.

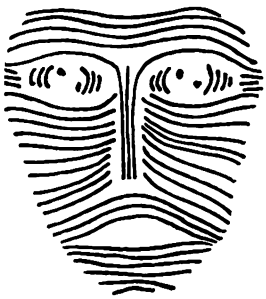


FIG. 4

The eye also must have attention: the small dot usually high up on the eye and the other on the shadow side should be strengthened, if at all weak, with a circular motion of the pencil; but all other small dots (caused by false lights) should be carefully scraped away in the manner previously described. The eyelid can also be made to help, by pressing a little heavier toward the centre.

No lines should be entirely removed, but only softened, even though customers in these days do not ask, like Cromwell, that "every pimple and scar shall show."

In the blocking out of objectionable parts in negatives, such as backgrounds, etc., it is best to make a weak solution of opaque and mark round the object with a pen, afterward filling in with a medium-sized brush dipped in a much thicker solution. There is no need to be sparing with opaque, as it is very cheap. I use an Eastman 9*d* tube, and find that it will do dozens of negatives.

A word is perhaps necessary as to the choice of plates. Although it is nice to be able to do retouching, it is much better to have a negative that does not require any; and it will no doubt surprise many amateurs when I say that it is possible to get a perfect negative, requiring no retouching, by using panchromatic plates with a suitable light filter.

The reason ordinary plates show freckles and wrinkles in an exaggerated manner is because they are not sensitive to the colored light. They reflect mostly red and yellow, and the panchromatic plates, being sensitive to all colors, a perfect negative is the result.

Although the use of a screen increases the exposure considerably, it is quite possible to take a photo of a child with an aperture as small as *f*/8. Fig. 5 is of a little boy under two years of age, and

FIG. 5

as can be seen by the expression on his face he is not the kind of model to stand still.

These plates are also useful at night time, as a portrait can be taken without a screen (and require no retouching) with the light from an ordinary incandescent gas burner with from four to six seconds' exposure.

Another trouble the retoucher has to face is "halation."

There are several old-established pho-

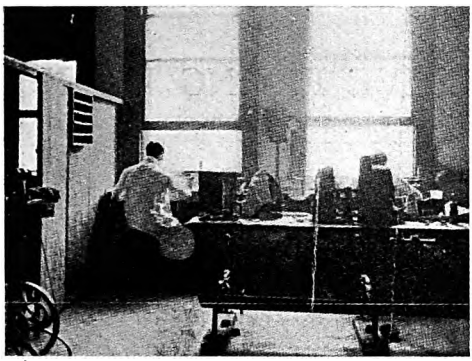


FIG. 6

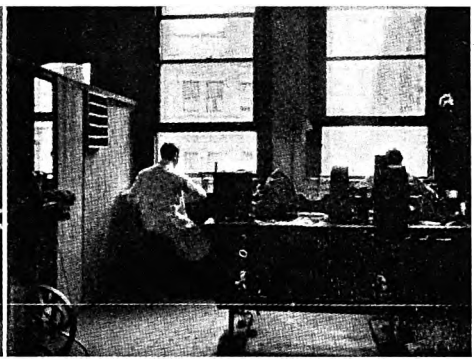


FIG. 7

tographers exhibiting pictures of workshops, etc., suffering very much from halation, and as it is very little trouble to remedy this defect I cannot understand why it had not been done. Of course it is necessary to use backed plates. They never do any harm, and very often do considerable good. If it is only a small amount of halation to be removed it can very often be accomplished by rubbing the film away by a finger covered with one fold of clean rag and dipped in methylated spirit. It will be noticed that it does not "bite" immediately, and not fully until it begins to dry. Care must, therefore, be taken never to let the film get quite dry, and to keep on moistening it with the spirit until sufficient of the film is rubbed off. This method can be used to advantage by landscape photographers, as often a patch of grass lit up by the sun, or a river running out of the picture, can be rubbed down on the negative and an otherwise objectionable print be made pleasing to the eye.

Fig. 6 was taken with two seconds' exposure to show the detail of a workshop, and although the plate was backed, halation could not be avoided.

The correct way to take this picture would be to cover the window with some dark material, and make the exposure by flashlight, and leaving the camera in the same position remove the cloth from the window, and give a short exposure for the house on the other side of the road, say, one-fifth second at *f*/8 would be a good guide. But this procedure is not necessary, as can be seen by Fig. 7, a print from the same negative as Fig. 6.

The negative was soaked in clean water and a thin solution made of Farmer's reducer (which can be obtained in tabloid form), and while still wet the part to be reduced was dabbed with a piece of cotton wool dipped in the solution, quickly rinsed in water, and the result noticed. This was repeated until the required amount was removed, and then the negative washed in several changes of water and set on one side to dry. This method will also be useful to the landscape worker who has good clouds on his negative but cannot get them to print.

I have found it much better to work on the negative rather than on the print, as then any number of prints may be made with uniform results.

If the question should arise as to whether all this is legitimate, it can immediately be dismissed. After-work on a negative is a means to an end.

"Photography is a drawing by light," and when a print is made from a negative, faked or controlled though it may be, it is nevertheless "drawn by light." A photograph consists of a print on sensitized material, and whatever way it is produced it is legitimate. Can this be said of a poor print that has been attacked by pencil or crayon?—*Photo. Review.*

WHEN DOES A NEGATIVE FIXING BATH BECOME EXHAUSTED?

By "OPERATOR"

THAT very necessary preparation for the photographer's use known as the fixing bath receives probably less attention than anything else that is employed in photography. All the while an exposed plate can be cleared, as it is more frequently termed, the negative fixing bath is worked to the limit, or until it is noticed that a number of pinholes show themselves, or more frequently when the negative is removed from the fixing bath it is observed to present a decided opalescent bloom all over the surface. When this is observed it may at once be taken for granted that the fixing power of the solution has become exhausted. This bloom is due to the presence of hyposulphite of silver in a concentrated form, together with an extremely fine deposit of sulphur, all of which may be freed from the plate by placing it into a freshly made chrome-alum-hypo fixing bath. If a plain hyposulphite of soda fixing solution is used the liquid soon becomes discolored, especially if the developing agent is pyrogallic acid, which becomes oxydized, thus producing the brown stain mentioned, a stain that will remain permanent if the plate is washed, dried, and exposed to sunlight in the process of printing. In a case of this kind the best method of clearing the film of the pyro stain, either before the final washing, or, if washed, before printing, is to place it into a tray containing the following preparation, which will clear the film and harden it at the same time. After this treatment the plate must be wiped with a tuft of wetted absorbent cotton, while a stream of water is flowing over it from the faucet.

Clearing a Stained Negative Film

Common alum	1 oz. av.
Water	6 fl. oz.
Citric acid	½ oz. av.

As soon as the salts are dissolved, the solution will be ready for use, or the following clearing liquid may be used, as it acts with more vigor:

Saturated solution of alum	10 fl. oz.
Hydrochloric acid . . .	½ fl. oz.

Either of these clearing solutions may be depended upon to act thoroughly and effectively in clearing any stain produced by the developer.

When a negative fixing bath has reached the stage mentioned and becomes saturated with the silver haloids it should not be thrown away, because it is richer in silver by far than any of the paper-fixing solutions. Every time a negative fixing bath becomes exhausted, pour the contents into a large stoneware crock, together with the disused fixing solutions that have been employed for paper prints, so that the metallic silver may be thrown down or precipitated by means of a few pounds of sheet scrap zinc, stirring the mass occasionally with a stick so as to shake off the precipitate. This method is to be preferred to the use of liver of sulphur (potassium sulphide). All the silver is precipitated by this means in a more cleanly way than by the sulphur method, as well as being more healthy. Sulphur fumes of any kind should be kept away from the darkroom or workroom if for no other purpose than to prevent the injury that will always occur to both plates and paper, by the sulphurizing of the sensitive surface.

Another point should be attended to, soon after a new fixing bath has been in operation, and that is to filter it, wash out the negative fixing box, replace the filtered bath, and then examine the negatives that have been fixed in it. They will present an appearance that

will give pleasure to view them; there will be no pinholes, no bloom upon the film, or nerve-like markings upon the surface. Every negative will present a clean and clear appearance, and because of the entire freedom from surface markings there will be less labor for the retoucher and less money to be paid by the proprietor, owing to the work of retouching being reduced to a minimum. Those photographers who have never made this trial should do so, and when they see the result in their negatives they will never begrudge the time and the small amount of labor expended to secure such good results.

PRINTING WITH PLATINUM

By LEONARD KEENE HIRSHBERG, A.B., M.A., M.D.

FOR simplicity and rare beauty the results which are obtained with platinum printing, says Mr. Edgar Senior, in *Knowledge*, are as yet unsurpassed. It is capable both of rendering shadow detail in a most perfect manner, and at the same time able to produce all of the delicate gradations in the lights. There is also the additional advantage of great permanency, for which both platinum and carbon stand preëminent. Although the platinum does not enjoy the advantages attending the carbon, of giving an almost unlimited choice of colors, both warm or cold blacks and sepia are readily obtainable.

The papers manufactured by such companies as the Platinotype Company are of many grades and kinds as to surface, texture, and thickness. As this paper has a great affinity for moisture, special precautions have to be taken to keep it in a perfectly dry atmosphere. Neglect of this is a great cause of so many failures in practice; hence, in order to keep this type of paper in good condition, it is sent out by the makers in sealed-up tins which contain a small quantity of desiccating material, such as chloride of lime. This absorbs the moisture contained in the tin and the air which leaks in. Thus put up the paper will keep for many years. Mr. Senior in fact found such paper in good condition after two years. If, however, the tin is once opened the paper must be quickly removed to a storage tube, which is provided at one end with a chamber to hold chloride of lime, which must be frequently taken out, dried, and again put in the tube. Indeed it cannot be too strongly urged upon those who use platinum paper to keep their tins in a dry place, as well as to keep the calcium salt dry. Attention to all of these things means a good, well-preserved, available paper. On the other hand, neglect of such necessary precautions means a flat, muddy, sunken-in appearance of the reproduced image.

The next consideration is the kind of negative that will give the best results with the platinum process. It may now be taken for granted that any negative that produces a good gradation of high lights and shadows will yield a good print; but that poor, flat, or thin negatives will not be as a rule suitable. Before you begin to print, it is necessary to carefully dry the printing frames before a fire and especially the backs of the frames. Then the negative is placed in a frame and the coated surface of the paper is put in contact with it. This whole operation must be conducted in as low a light as possible, because the paper is very sensitive and even the briefest exposure to light will show only after the print is developed.

In order to protect the paper from moisture during the time of printing, it is usual to place a piece of vulcanized rubber upon it before placing the back of the frame in position. Sometimes sheets of water-proof paper can be made to answer this purpose even better.

Before exposure to light, platinum paper is of a lemon-yellow color; as the printing proceeds it changes to a greenish-gray, and the shadows finally become a blue gray and with some negatives a light orange-brown color. It is, however, not advisable to continue to print until the details in the lights are plainly visible. The time of exposure also, be it remembered, varies with the kind of negative, and is about one-third that required for a silver print. It is also plain that the process of printing can be inspected from time to time. Since, however, overprinting is not made apparent until development has taken place, a certain amount of experience is required to know just when the printing should be stopped. After a few trials this knowledge is quickly gained. Unless a number of prints are required, it is generally of little help to use one of the many forms of actinometers.

Once the printing has been carried far enough, as to depth or what not, the next procedure is one of developing. Either carry this out at once or return the exposed paper to the calcium tube until your time or opportunity for developing presents itself. The reason you must farther develop the print is due to the action of light upon the iron salt only. That is, before the product formed is able to reduce the platinum salt which is in contact with it, it becomes necessary to float the exposed paper upon a solution of either potassium oxalate or a mixture of this with sodium phosphate, known as developing salts. If you use the former, a stock solution of this formula is made.

Oxalate of potash	16 ozs.
Water	54 ozs.

For use one part of this is diluted with two parts of water. If this bath is made slightly alkaline, with carbonate of soda or potash, it gives slightly warmer tones, and if made slightly acid, by means of oxalic acid, a colder or bluish color results. In either case the alkalinity or acidity should only be such as to just alter the color of the test-paper used. If developing salts are used, then a stock solution of the following strength is prepared:

Developing salts	½ lb.
Water	50 ozs.

And for use one part is taken, to which is added one part of water. It is claimed for this developer that it gives better half-tones, as well as a colder tone generally. Whichever developer is employed, the print is floated face downward upon it, and the print is at the same time turned over to watch the progress of development, which should be complete in about thirty seconds.

The temperature of the solution should be about from 60° to 100° F. If the solution is below 60° the deposit is apt to be granular, while if above 100°, or otherwise too hot, there is a tendency to a brown and muddy color, although underexposed prints may frequently be saved by the uses of a warmer solution for their development. As soon as the desired result is obtained the print is placed in a dish which contains a dilute solution of hydrochloric acid.

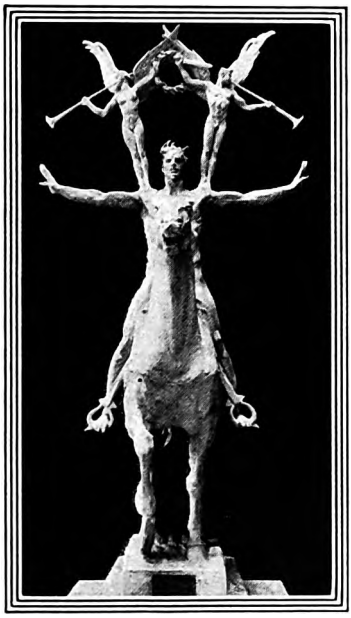
Hydrochloric acid pure . .	1 oz.
Water	100 ozs.

The prints are allowed to remain in this bath for ten minutes, after which they are transferred to a second bath of the same nature, and finally to a third, remaining for ten minutes in each. After this they are washed for about half an hour in several changes of water and a little carbonate of soda is put into the last washing water to insure the removal of all traces of acid. If the prints on removal are allowed to blot and dry slowly they will be found to remain perfectly flat and ready for mounting by any method that may be thought desirable.

A PERSONAL CORRESPONDENT AT THE PANAMA-PACIFIC INTERNATIONAL EXPOSITION

I. THE OPENING

HOW many hundreds of thousands of people visited the grounds during the process of construction, the management know and like to tell in a boastful spirit. I do not know it and have not asked. What is the use? I stayed away with a determination to see the finished whole and to keep myself in an open frame of mind. Let



"ENERGY, THE VICTOR"

me confess it was hard to wait. The papers have been filled, page after page, with lurid illustrations and no less lurid descriptions and one longs to see the things of which one reads, but I resisted the impulse for the year. Saturday the twentieth of February came at last, and when at daybreak I started on the second car for the grounds I found it crowded. There was a line a block long at the gates when I reached there.

That the reader may get a feeling of actual attendance I shall use the names of places as if they were familiar. And before many weeks the localities shall be known over the world. Photographs while given to help the text must be viewed with these facts ever in mind: that they can give no idea of dimensions, color, or context; that perspective is often sacrificed by wide-angle lenses, and that the ever-changing colors of the sky, the shifting shadows, the moving clouds, and the use of millions of candle-power of lights when the night comes, cannot be reproduced. I have used the word "context" as referring to the buildings. It is a good word for the purpose. Every palace has been designed and tinted to form a part of one ensemble. Each building forms a part of a Court which is in turn a part of the entirety—essential, unchangeable. Any part taken alone is a word of a great poem, a note from a symphony.

My choice of entrance was the Scott Street Gate. That should be yours. With an effeminate delicacy I kept my eyes from looking until I got off the car. I'm glad I did. A vision broke upon me. It was as if I were six years old again and my mother had read Alladin to me for the first time. Before me was a high wall of living sod from which waved tendrils of fresh green vines: a smooth, even, green wall, mind you, as much like a blue-grass lawn stood on end as like anything else, but with foot-long vines varying the velvet smoothness here and there. Over this verdant wall towered domes, towers, pillars, and minarets colored with the varied tints of the quietest sunset you ever saw, or perhaps I had better say the colors

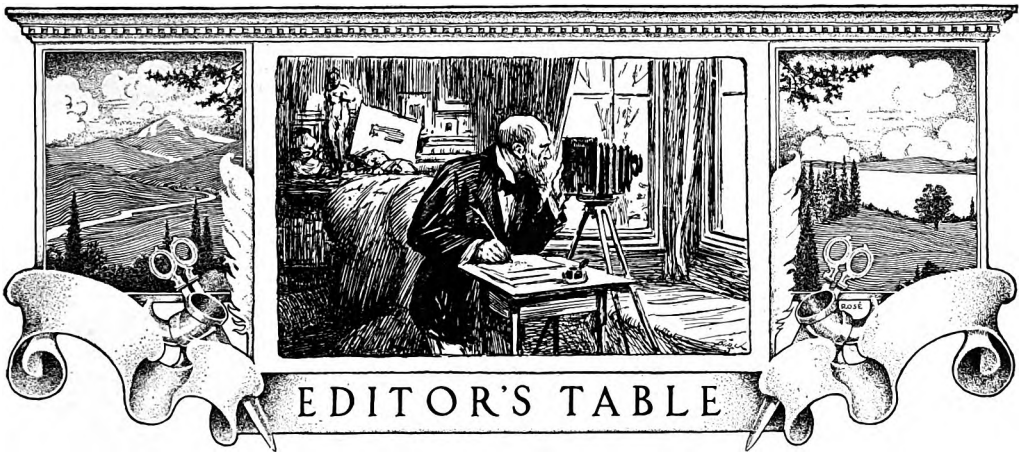
were of that dull, subdued tone we call "Oriental." I was transported and might never have got any further had not a more sane and practical person in the form of a very aggressive lady in green velvet and cloth-covered, high-heeled shoes nudged me and said most raucously, "If you'll move along we'll get a chance to get our tickets." She was glaring at me through very thick-lensed eyeglasses and quite intimidated me. I stepped out of line and gave her my place. No doubt she thinks me half-witted. And perhaps, for the time anyway, I was that. And all this merely from the outside.

As one enters this gateway his eyes are immediately arrested by the Tower of Jewels. Divest your mind of all ideas of a glass-encrusted, highly colored, fantastical, stage-painted structure. It is between 400 and 500 feet in height. To a child it may look like the epitome of all the finest ice-cream and sugar candy that ever was made. To the poet it may be a dream of God-built snow and frost-tinted by a watery sunset. To a mere mortal, like myself, it was the most beautiful thing I had ever seen, and I must let it go at that, at least for the time. There was no garish encrustation of glass. Here and there, all over its expanse at one time or another, a flash as from a diamond or a ruby or an emerald pierced through the color scheme. If the ladies of our land only used the taste and moderation shown in the bejewelment of this tower they should be famed for good taste.

Presently I found a corner and a seat and there I stayed for hours watching the crowds surge in that passed the Palaces and flowed steadily to and through the Zone. Here are the concessions—the pleasure resorts. Toyland, Little Japan, Turkey in the small, Creation, the Dayton Flood, the Grand Canyon, Irish Villages, German Towns, The Yellowstone Park and Old Faithful Inn in its real magnitude, Merry-go-rounds, Cafes, Cabarets, Mining Camps, Indians, Chinamen, Moors, Maoris, Samoans, Spielers, uniformed officers, gay-colored foreigners and dun-colored natives. Every amusement place was packed with a jolly crowd and the eating places were sold out by eight in the evening. I dined sumptuously on four frankfurters and a cup of coffee at nine, for which I had bribed a cook's helper. The rich sat at reserved tables in the Old Faithful Inn, where they ate potted fowls and consumed quart bottles, as is their way. My people were having the time of their life, on foot, in crowds.

Midnight found us all footsore, mind-sated, eye-tired and ready for home and bed. So ended the opening day. It is past and I have leisure to consider what I have seen, and shall take time to consider what I shall see. I hope to spend a day in each court and palace, and if it interest the reader shall tell what is to be seen as one man's eyes see.

In closing this introductory to succeeding installments let me pay one great tribute to the powers that made this Exposition what it is. The one strongest impression is that it is not New. It is the best of ancient Greece, the best of Paris, Vienna, Rome, and Fairyland put into perfect condition without the uncomfortable, obstreperous newness that marked the previous World Fairs. Someone, meaning to be nasty, told me this was all a railroad proposition, got up and run by the railroads, and that the people were the suckers who had to pay the bills, before, during, and after. As a taxpayer, who must bear a share of the costs, I will say here and now that if this be true, I change my opinions of the railroads and shall consider them hereafter the great benefactors of our country, commercially and artistically. And that is saying a great deal, isn't it?
—*Sigismund Blumann.*



ART IN PHOTOGRAPHY

EMERSON held that a community or a man is entitled to be judged by his best. This being so, we must grant that photography should be classed as art as much as painting, sculpture, and architecture; but were we to acknowledge the predominant proportion of inferior or mediocre imitative expression in photography, it would be most ludicrous to term it art.

As the rival of painting, photography has its distinct advantages. The painter must acknowledge that the abundant product of the lens has helped to develop appreciation of the esthetic, has evolved a spirit of criticism in portraiture, and all its tendencies are for advancement and more universal discernment of the beautiful. It is subordinate as compared with sculpture and painting, but it has not attained anything like its possibilities as yet. We contend they are almost as limitless as those of the brush or the chisel.

We do not question the capacity of the man who audaciously heralds his genius to the public by the words, "art photographer," and then surrounds it with caricatures, like a halo of recommendation; the author's freedom with English is commendable; but he should grapple with his opportunities and prove himself entitled to his pretensions. Although the masses may not be able to discriminate, his perverted ignorance has demoralized and endangered the profession, the principle of the critic unfortunately being to judge by the worst. We claim there is no excuse for any man's walking in the old conservative paths today, simply because they are old. We take no such narrow view of life in any channel; slowness cannot be tolerated.

There is a standard of excellence, which is truth, consistent with our inherent element, ever higher in its character and attained only through the culture of our faculties. The resources are at hand; *the trouble is lack of application, a disposition not to improve by blunders, egotism, and a reposeful state of sensitiveness which ignores knowledge and criticism.* This arrests all possibilities of endeavor, assumes the joy of superiority, and, enwrapped in the air of self-satisfaction, the unambitious "art photographer" keeps cool in summer, warm in winter, sleeps and eats like other mortals, and his spiritual nature appoints its own limits, the ideal of which is correspondingly low. This, of course, applies to men in all vocations of life; they rank by their moral, intellectual, and spiritual status; but the fact that to the word "Art" essentially belongs the classical, the beautiful, the sympathy and companionship of all that is noble, the surpassing of the ordinary, indicates the importance of an ethical consideration of the word.

With all the forces of beauty at our command, the excellences of painters'

and sculptors' conceptions, books for a mere song—what is needed? We answer, a keener sense of personal responsibility, application, observation, ambition, and determination, sentiment, and the cultivation of the imagination. There must be interior harmony consistent with high ideals if the products are to be of pleasing order. All the theories of mechanical manipulations, all the formulas ever enunciated, are of secondary importance when compared with these requisites.

It is unfortunate for the confirmed experimentalist that these are principles which cannot be bottled up and bought and sold. They are to be obtained only by the striving; yet the observer, if he be a student of Nature, acquires them almost unconsciously. Nature spontaneously contributes to the æsthetic consciousness, and, if our relation to it is not abnormal, we affirm that its sublimity will illuminate our perception and develop our faculties in symmetry and purpose of expression. Nature calls forth our best thought and feeling, wider sympathy, and an exaltation of the spirit. We gather strength from the winding snow and springing stream, blossoms and fragrance, and in consequence feel a grasp of knowledge and a wealth of position which the power of money cannot bestow. And more than this: there is a ceaseless growth associated with this communion. Thus, as the rainbow seems to color itself, so the senses become more and more susceptible to the lavish enrapture afforded.

To him who says this is vague we reply: he knows not the discipline, and would he beautify his art, let him refine his own nature, learn of the fields and woods, the waters, winds, and sky, and not confine himself too closely to the prison-house of commercial measures.

John H. Garo, master of portraiture and pictorial photography, presents this whole question most forcibly in the following sound advice:

"A photographer who aims at excellence must assiduously study the problem of color and of values. Beware of imitations. Do not wear another man's clothes because you like them; carry your own methods to the limit. If they prove not to be successful, adopt new methods, but do not borrow another man's and say good-by to individuality. *To dignify photography we must have dignity and we must uphold the dignity of that which we wish to call artistic.*

"We have as a body of men greatly neglected the feature of our training which we now most value, the artistic. Making a portrait by the camera to look like a painting in texture, through the medium used, does not make our work artistic. What if the picture appears as if it was made on canvas? All paintings on canvas are not artistic —many artistic things are made on common brown paper. The thing to be desired is expression, the satisfaction of our hearts. All work worthy of being considered good must make its sentimental impression.

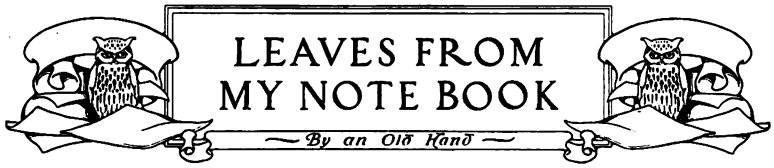
"Go out of doors for inspiration, then you can find the immense and varied nature in all its different moods. There is where your soul can feed and expand. For a time, close your studio behind you. Above all, when you return, be sure that there is a bit of sunlight in your soul and some ambition in your heart."

THE PITTSBURG SALON

THIS exhibit represented the achievements of many of the foremost pictorialists of this country, and it is a special pleasure and privilege to offer our readers so fine a selection of pictures, which we think will command admiration and praise from all who perceive their value and significance in this important branch of the arts.

The camera is now a recognized medium of artistic expression, and the Photographic Section of the Pittsburg Academy deserves great credit and commendation in its aim to foster and encourage new talent and promote the advancement in pictorial art with the camera as a medium.

Mr. Porterfield's excellent review is sure to be read with special interest.



WEIGHTS AND MEASURES

ONE would imagine that this was a subject everyone knew all about, yet I have met many who have but hazy notions and others who have completely forgotten what they learnt at school. It is unfortunate that we have inherited the two systems, "troy" and "avoirdupois," and it must not be forgotten that all photographic chemicals are sold by the latter system, and the ounce contains 437.5 grains and not 480 as does the troy ounce. Frequently some writer will hand us a mixture of the two and will talk about drams; the dram is the eighth of a troy ounce and is equivalent to 60 grains.

Fluids are or should be always measured and not weighed, though occasionally one finds in a foreign formula instructions to weigh a heavy liquid. The fluidounce is divided into eight drams, each of 60 minims; but an ounce of water only weighs 437.5 grains. This is the cause of no end of trouble and more ink-spilling which could have been spared with a little common sense. The main trouble has been over the definition of "a 2 per cent. solution." Photographers are in the habit of measuring out such solutions in small quantities and therefore, as the name implies, every 100 parts of the solution should contain 10 parts of the solid. Now if we take an ounce, 437.5 grains, of potassium bromide and dissolve it in sufficient water to make ten ounces, we should have a 10 per cent. solution if we weighed it out for use, but when we measure it out we do not have one. For instance, suppose we had made our solution thus and wanted 1 grain of bromide in a developer, how much solution ought we to measure out? If we took 10 minims we should have only 0.9 grain, and we ought to measure out 11 minims. If, on the other hand, we weigh out 480 grains of bromide and dissolve that in sufficient water to make ten ounces then we shall have the photographer's 10 per cent. solution.

On the other hand, a man may buy 1 ounce of a chemical and does not want the bother of getting more or of weighing it out and yet wants a 10 per cent. solution. This is easily done, for $437.5 \times 10 = 4375$ minims and this equals 9 ounces, 55 minims, which should be the total bulk of the solution.

There is one important point to remember, and that is if you get hold of an English formula their pint contains 20 fluidounces and their gallon 160 fluidounces.

Frequently the word "parts" is used, and this seems to be a trouble to many. It is easy enough really, and it simply means that all the weight and measures must be in the same unit. Take for instance such a formula as the following:

Pyro	8 parts
Sodium sulphite . . .	100 "
Sodium carbonate . . .	100 "
Water	1000 "

Now you can use grains, ounces, pounds, or tons as long as you stick to the unit you started with. Or you can work backward if you want to make up a certain quantity of solution. For instance, let us suppose that we want 16 ounces of the above, then the sulphite and carbonate will be one-tenth of that or 768 grains and the pyro 61 grains. It is obvious that we might also have taken the weight of the water and then we should have 700 grains; both may be said to be right, but the former is preferable.

It will be noted that there is an error

in the quantity of the pyro. It should be 61.44, but if we are to take note of such minute fractions then we should all of us have to take a course in chemistry. Such needless accuracy is quite unnecessary, and the average photographer will probably make more errors or a bigger error when measuring or weighing out his solutions and chemicals. Not that this should be taken as an excuse for carelessness, accuracy is readily attained with a little practice and attention to the balance or scales. Do not flop the dry chemical straight on to the scale pan so that it bumps down and stops down. Weigh out on a piece of paper and put another piece in the weight pan, then see whether you get a fair balance between the two; the pointer of the balance should swing evenly to and fro. Bumping the pan may actually mean anything from 19 to 15 grains more than there ought to be.

There is another point on which there is also some doubt, and here there is room for argument; but I have adopted a rule that works well: In the above formula how much water should be used? If we used 1000 and added the dry salts we should get more than 1000 parts and possibly our bottle would not hold all the solution. I always assume that in all cases sufficient water should be used to make the total bulk given in the formula. Even if the writer of the formula did not mean this the error is not large, and it is a safe and convenient plan when we have bottles of a given size.

For some years I have entirely thrown over the ordinary weights and measures and have used nothing but the metric system. All my graduates are, it is true, provided with ounce and cubic centimeter scales, and I as often as not use the one as the other in the darkroom, it entirely depends upon which side comes next to my eyes. But for weighing up and making solutions I use the metric alone. It is so simple and all that one wants is a method of converting the one into the other and this can be very much simplified for photographic purposes. Suppose we take a formula for a developer:

A	B	C	D
Metol . .	24 gr.	3.4 gm.	3.0
Sulphite .	¾ oz.	47.0 "	46.0
Hydro . .	36 gr.	5.1 "	4.5
Carbonate	½ oz.	31.0 "	31.0
Water . .	16 oz.	1000.0 c.c.	1000.0

I should deal with this as shown in column B. I write 7000 c.c. for the 16 fl. oz., because it is actually 7000 fl. gr., and I convert all the solids into grains and call them grams, and I have the formula at once, and as I always work out for 1000 c.c., I get column C. There is another method as shown in column D: call the total bulk of solution, no matter what it is, 1000 c.c., and divide the grains of solids by half the bulk in ounces; in the case above this is 16/2=8. Where the solids are given in fractions of an ounce the same fraction of 1000 is taken; for instance, ½ oz. of carbonate is $\frac{1}{32}$ of 16, therefore we take the same ratio of 1000 which = 31. There is, of course, a slight error in all these methods, but it is not enough to make or mar a negative, and after about ten years' use of the method it is about as practicable a one as I have ever met with.

Let me add just one or two more points: All my solutions are kept in the so-called Winchester quarts, which will hold 2000 c.c. very comfortably. Whenever I get a new bottle I at once measure out 2000 c.c. of water, put it in the bottle, and mark on the outside with a diamond the level of the liquid, so that unless I wish to be extra careful or I have not previously marked a bottle I never measure my solutions in a graduate, but just dissolve the ingredients in a graduate roughly and add enough water to the bottle to make up 2000 c.c.

All bottles, no matter what their size, are treated in the same way, so that at any time I can take up any empty bottle, narrow or wide mouthed, and at once read exactly how much solution it will hold, and I always work to even divisions or multiples of 1000.

Failing a diamond, I should use a stick of aluminum, which writes well on glass; or even failing that, I should put a label on the bottle and mark on

that with pencil. This little dodge saves no end of time.

Roughly one may reckon that 100 c.c. are equal to $3\frac{1}{3}$ fl. oz., 100 grams as equal to $3\frac{1}{2}$ oz. avoirdupois, and a fluid-ounce equals 30 c.c. For those who want rules of conversion here they are:

To convert grams per liter to grains per ounce: multiply the grams by 0.44.

To convert cubic centimeters per liter into minims per ounce: multiply cubic centimeters by 0.48 or divide by 2.

To convert grains per ounce into grams per liter: multiply the grains by 2.3

To convert minims per ounce into cubic centimeters per liter: multiply the minims by 2.

I have long given up the use of hydrometers for the simple reason that I found assistants were so careless about the temperature that the solutions varied considerably.

When I see a formula and the author says, "so many drops of a saturated solution," I let it alone. Neither he nor I nor you know what he means. He means the solution that he used; you and I think that we can get the same solution, but we cannot, for a saturated solution differs for every degree of temperature, and a drop may be anything, for its size depends on the liquid or its viscosity or thickness, and the diameter of the thing it is dropped from. He who uses saturated solutions and drops is a slipshod worker and would never put foot in my operating rooms.

ABSTRACTS AND TRANSLATIONS

BY E. J. WALL, F.R.P.S.

Sulphinol

Valenta comes to the conclusion that this developing agent has no particular advantages over those in general use and gives the following formulas:

Sulphinol . . .	15 gm.	105 gr.
Sodium sulphate .	25 gm.	175 gr.
Sodium carbonate	30 gm.	210 gr.
Water	1000 c.c.	16 oz.

The image appears in about fifty seconds and development is complete in six minutes. A more concentrated solution can be made as follows:

Sodium sulphate .	75 gm.	525 gr.
Potassium carbonate		1400 gr.
Sulphinol . . .		525 gr.
Warm water . .		16 oz.

Dissolve in the above order and dilute for use with 4 or 5 parts of water. Borax is an energetic restrainer with this solution.—*Phot. Korr.*, 1915. p. 26.

For note on this agent, see Wilson's, 1913, p. 404; 1914, p. 289.

Bright Colored Images on Dry Plates

Valenta points out that wet collodion and collodion emulsions give bright, almost white, silver images and were much used for ferrotypes for this very reason. With gelatin emulsions it is not so easy to obtain this colorless deposit and therefore ferrotype plates coated with gelatin emulsion are, after development, usually bleached with mercuric chloride. In the Lippmann process of interference color photography a white reflecting deposit is very important and this is obtained by the use of a pyro developer containing ammonia and without sulphite; on ordinary plates, however, this only gives black images containing a lot of stain. After experiments with sulphinol (see note above) this was tried, and with ammonia instead of potash or soda, and this gave bright reflecting deposits but with too much fog to be useable. To avoid this ammonium carbonate was tried, as the alkali, and this was effective; but as has been pointed out by Wall (Eder's *Jahrbuch*, 1913, p. 109) there is deposited *in situ* with this developer a very strong orange dye image which prejudicially affects the reflecting power of the white silver image. Other developing agents were therefore tried, and of all the following was found to be the most satisfactory:

Hydroquinone .	5 gm.	35 gr.
Sodium sulphate (dry) . . .	20 gm.	140 gr.
Ammonium carbonate . . .	60 gm.	420 gr.
Water	1000 c.c.	16 oz.

A negative developed with this and laid on a black support appears quite white. Adurol (Schering) gives a dark-colored image and pyrocatechin and glycin do not give such satisfactory results.—*Photo. Korr.*, 1915, p. 58.

Silver Sulphate

At one time in Germany, and obviously but a few weeks ago, there was very great danger that silver nitrate would be put on the list of prohibited articles of manufacture in consequence of the dire need of the government for nitric acid to manufacture explosives. As soon as this was apparent silver sulphate was at once prepared and tried out for emulsion making. The first trouble met with was, of course, the very low solubility of the sulphate, which is only 1 in 87, as against 1 in 0.4 of the nitrate. For any process in which ammonia is used this is of no moment, as the sulphate is readily soluble in ammonia. It has been necessary to vary the actual methods of emulsion making, to obtain the same results, but there has been no particular difficulty. Taking the molecular weights into consideration, 312 parts of the sulphate are equivalent to 240 of the nitrate.—*Photo. Wochenbl.*, 1915, p. 31.

Photographs on Watch-dials

A negative is taken of the subject in the usual way, and a positive transparency on glass made from it. The part of the film containing the subject is cut all round so that it is separated from the remainder whilst *in situ* on the plate, and the whole plate is then immersed in a strengthening and hardening solution. Such solution may be:

Water	100 parts
Formaldehyde (40 per cent.)	8 parts
Carbonate of soda crystals	7 parts
Glycerine	1 part

After, say, ten to fifteen minutes, the plate is taken out and immersed in the second solution which effects the loosening of the film. This may be:

Water	100 parts
Hydrochloric acid (conc.) .	5 parts

When about one minute has elapsed and the plate withdrawn, the portion of the film required may be freely peeled off, and may be immersed in an agglutinant bath, say, of gum arabic, and the photograph then applied to the dial.

It will be found that the film will curl and contract round the edges of the surface under treatment and draw tight that portion bearing the image on the front of the dial. The picture may be tinted afterwards in the usual manner.

Making Line Drawings from Photographs

Line drawings for newspapers or other printing purposes that require paper of an antique finish are usually made by drawing on the photograph and when the drawing is finished bleaching away the photographic image.

The drawing, *Process Monthly* tells us, is made with waterproof India ink. The artist draws only such parts of the photograph as he may desire to include, and adds and alters as he may see fit.

Waterproof qualities may be given India ink by a solvent composed of

Hot water	20 oz.
Borax	1 oz.
Shellac	5 oz.

Dissolve the borax first, and then add the shellac, boiling the mixture until the shellac is all dissolved. Then cool and pass it through filtering paper. This solution is then used as a solvent for rubbing up ordinary India ink.

Bleaching is accomplished by the use of this preparation:

Thiocarbamide	120 gr.
Nitric acid	2 dr.
Water	10 oz.

The photographic image is removed by dampening the print, laying it upon the bottom of a clean porcelain tray or a sheet of glass, and then pouring over its surface a sufficiency of the bleaching solution.

While You Wait Photography

The usual method of procedure in this class of work is as follows: Four exposures are made upon a plate 6½ x 2⅜. The negatives are developed in an M.Q. solution, and fixed as usual. From the hypo bath the plate is taken and rinsed by shaking in a dish of water, then a shaking rinse in Hypono, another in water, another in sat. sol. of alum, and a final one in water. Next the film is dabbed surface-dry with a damp leather, finally polished with the palm of the hand, and the back wiped dry and clean. Then the negative is placed film downwards in the carrier of enlarging lantern, fixed up against the wall in a vertical position. Adjustment as to centering, etc., is quickly made, and the necessary three or six postcards exposed without a hitch. Sometimes single cards are used, sometimes strips of three or six. After development and fixing the cards get a hurried rush through water, followed (sometimes) by a bath of Hypono, and a final rush (not a wash) through water. They are then bundled in a heap on a piece of sheeting and well pressed with a roller squeegee, or laid out on blotting-paper and squeegeed, and are ready for delivery. Time for the four sets—forty minutes or thereabouts.

The cameras sold for this class of work are well made and strong, a 4-in. anastigmat at f/5.6 being a very useful lens.

The lights used may be gas or electric. The *clièntele* are usually rather a rough sort, and, as a rule, are far more interested in getting the result of sitting at the time promised—viz., in an hour—than they are of the quality.—*W. Wilkinson.*

NOTES AND NEWS

The International Exposition of Photographic Arts

March 27 to April 3, 1915, New York City

The International Exposition of Photographic Arts and Industries was not international in scope owing to conditions abroad; nevertheless photography plays such an important part in the entertainment and education of the world today that this first exhibition was regarded as well worth while. It is rather astonishing that such an exhibit was not undertaken long ago.

While this exhibition was of greater value and interest to the professional photographer, in its display of equipment and material, there was much of novelty that appealed to the public and the attendance during the week considered good.

The exhibit of pictures was disappointing and not at all representative of the best work that is being done by professional and amateur. Such an exhibit to show forth the achievement and progress of photography should have included not only examples of the foremost professional photographers of this country, but numerous reproductions and prints of the pictorialists, who have reached something really deserving the name of art and have been the means of raising the standard here and abroad. Let us hope that in future exhibits of this character and scope a more comprehensive and practical exposition of photographic art and industry, from every feature, will be successfully accomplished.

Report of Prize Winners

Class 1. *Professional Portraiture.*—Gold Plaque: No. 188, "Portrait of Girl," R. C. Nelson, Hastings, Neb. Silver Plaque: No. 132, "Girl with Fan," Carl Klincheck, Philadelphia, Pa. Bronze Plaques: "Lady with Hat," Dudley Hoyt, New York; No. 114, "Clythe," Gerhard Sisters, St. Louis, Mo.; No. 102, "The Fra," R. Morris Williams, Evansville, Ind.; No. 205, "The Sisters," J. H. Field, Fayetteville, Ark. Diplomas: No. 357, "A Composition," M. Goldberg, New York; No. 84, "Gypsy Girl," E. R. Trabold, Adams, Mass.; No. 356, "Portrait," E. G. Dunning, New York; No. 274 "Portrait," Clara E. Sipprell, New York; No. 247, "Miss Dorothy Wilson," Jos. D. Toloff, Evanston, Ill.; No. 65, "Madonna," Stephen W. Roach, Harrison, N. Y.; No. 422, "Little Girl," W. Burden Stage, New York; No. 631, "Baby and Bear," Ernsberger & Sons, Suburn, N. Y.

Class 3. *Commercial Prints.*—Gold Plaque: General Exhibit—Press Photography, G. Cook, Morning Telegraph.

Class 4. *Scientific Photography.*—Gold Plaque: "Portrait of a Sunbeam" (spectrum analysis), Oscar G. Mason, New York. Silver plaque: No. 488, "Deer," Hobart V. Roberts, Utica, N. Y. Bronze plaques: No. 606 "Timber" (Continental Divide), G. O. Shields, New York City. Diplomas: No. 293, "Photo Relievo," Dorothy E. Wallace, St. Louis, Mo.; No. 543, "Baby Squirrel," J. B. Strachota, Detroit, Mich.

Signed by Judges.

The Pennsylvania State Convention at Pittsburg

The 1914 Scranton Convention of the Professional Photographers' Society of Pennsylvania has been classed as the top-notch of success for State Society meetings, and many of us looked for a small imitation of the Schriever success of that year, but we did not reckon on the quiet, persistent effort of E. E. Seavy and his board of officers nor the splendid assistance of the travelling men representing the manufacturers and stockdealers, for the Pittsburg Convention of March 16, 17, and 18 was as well attended and the members of the Society even more enthusiastic than at last year's conclave.

Mr. Seavey was very wise in securing the advice of Past-President Schriever and continuing his plan of convention work. We doubt if a more successful State meeting will be held under the existing depression in business.

The program was carried through without a hitch, and every advertised feature came off at the time appointed.

The business side of photography received a push that should do a world of good to those who heard the talks, and Mr. D. E. Agler, of Van Wert, Ohio, was largely responsible for making this feature the telling one of the Con-

vention. Mr. Agler is a comparatively new man among us. He is a successful photographer and an orator who has the courage of his convictions. Being a photographer, he puts his ideas to us in a practical way which all can understand. He was so convincing that he made G. W. Harris, of Washington, do his best in his talk on business-getting hints and we all know that Harris is good at this line.

Will H. Towles, Jane Reese, G. Hanmer Croughton, and Ryland W. Phillips handled the producing end of the business and the members received practical hints that covered all branches of the business.

The print exhibit showed a complete vindication of the rating system started at last year's convention. The judges testified that the average this year was nearly 50 per cent. higher than last and many men spoke of the good that the criticisms have done them.

The exhibit was poorly lighted, which caused many a good print to be overlooked in the general inspection. This is a mistake—every exhibitor has the right to demand that his photographs be placed in a good light, so that he may be able to compare them with others on the screens and see for himself the faults that exist in his own work. Many prints were on developing papers with no mounts and by the second day were so curled up that they were useless for exhibition; the public, in large numbers, were admitted on the last night and these curled prints spoiled the general appearance of the show.

We noticed a marked improvement in the quality of the prints made on developing papers; whether this was due to last year's criticism or not we could not say, but there was a pleasing absence of poor printing.

It is only fair to mention that the following numbers represent prints that were above the average of excellence and well worthy to be hung among the best collections.—Nos. 7, 43, 50, 52, 55, 66, 68, 71, and 167.

Three of these prints were unusually fine. No. 66, a child's head, was treated in an absolutely simple manner and was beautiful in a warm black tone. No 68, a fine head and shoulder study of a man, gave the impression of charcoal drawing and was mounted with excellent taste. No. 71 was a beautiful half-figure of a girl in rich warm tones. The handling of double light in this print was very fine, and the pose combined dignity with grace to produce a photograph of high merit.

There were no gum prints in the regular exhibit, but in Mr. Blum's German collection we saw a fine view made by the oil pigment process.

Taking the Convention as a whole, and counting in the splendid private collection of masterpieces sent by individual photographers to Mr. Seavey, the Pennsylvania boys can well say they have set a high mark to be topped another year.

The Society endorsed the amalgamation plan proposed by the P. A. of A. and ably presented by Messrs. Towles and Hoffman.

An invitation is extended to the societies of New York, New Jersey, West Virginia, and Virginia to coöperate in forming an Eastern Atlantic States Section and it is hoped that this will be accomplished before July.

List of Goods Stolen from Burke & James, Inc., 225 Fifth Ave., New York, N.Y.

1 pair of 6-power 36 mm. Voigtländer & Sohn Prism Binoculars No. 24090, 50/v, No. 5556.

1 Voigtländer & Sohn Model A Bergheil Tourist Camera, 3¼x4¼ size, fitted with No. 2 Heliar lens, No. 124646, in compound shutter.

1 Voigtländer & Sohn Model C Bergheil Tourist Camera, fitted with Radiar lens, No. 130778, fitted in compound shutter; size of camera, 3¼x5½.

1 Voigtländer & Sohn Alpine Camera, fitted with Series III, No. 2 Collinear lens No. 121600, in compound shutter; size of camera, 3¼x4¼.

1 Voigtländer & Sohn Vida Reflex Camera, fitted with No. 3 Heliar lens, No. 114432; size of camera, 3¼x4¼.

1 Voigtländer & Sohn Metal Folding Camera, fitted with Series III, No. 2 Collinear lens, No. 84060; size of camera, 3¼x4¼.

1 Voigtländer & Sohn Metal Folding Camera, fitted with Series III, No. 2, Collinear lens, No. 76453; size of camera, 3¼x4¼.

Dr. R. Neuhauss, who has been for many years the editor of the *Photographische Rundschau*, died last month from diphtheria caught from some of the German wounded. He has been a prominent figure in the photographic world for many years and was the author of an excellent text-book on photomicrography, which was his special hobby. His work in the fields of the Lippmann and bleach-out color processes was characterized by that careful attention to detail that made him famous.

Dr. Emil von Hoegh, the scientific advisor to C. P. Goerz Optical Co., has just died after a long illness. In 1892 he introduced the first anastigmat with both combinations spherically, chromatically, and anastigmatically corrected.

Women's Federation, Attention!

The members of the Federation are earnestly asked to send their dues at once to the Federation and to the National Association. The expenses of running the Federation are met by the dues of its members, and if these are promptly paid its efficiency is greatly enhanced. Remittance of $1.00 for the Federation should be sent to Bayard Wootten, Secretary Treasurer, New Bern, N. C.

Judges' Report of the Ansco Competition

In the name of the judges I report that all the pictures submitted for the Ansco Competition were submitted to the judges.

The judges examined every picture, their procedure being by process of elimination. When the first viewing had been finished, the judges called for the pictures set aside for further con-

sideration and to their regret found that only forty-two pictures had been thus reserved, and upon further consideration three of these were eliminated and prizes were awarded to the thirty-nine remaining.

The attention of the judges was called to the fact that the Ansco Company had offered fifty prizes; notwithstanding this fact the judges were unwilling to designate eleven other pictures as worthy of award. While they greatly regret this decision, they felt that any other procedure would have been unfair to themselves and to the competitors.

The judges suggested that if the Ansco Company does not care to withhold the balance of the prize-money, the Company should, in its own name, award the other eleven prizes or, declining to do this, devote the amount to some charitable organization in the name of the Ansco Loveliest Women Contest, or in the name of all the contestants.

(Signed) ALFRED STIEGLITZ,
February 10, 1915. For the Judges.

PRIZE WINNERS AND SUBJECTS

First Prize—$500, Philip Conklin, Troy, Subject Miss Justine Johnstone, New York City; Second Prize—$450, Wayne Albee, Tacoma, Wash., Subject Mrs. Charles Gill, Edmonton, B. C.; Third Prize—$350, W. Burden Stage, New York City, Subject Miss E. Coyne, New York City; Fourth Prize—$250, Florenz H. Ziegfeld, Baltimore, Md., Subject Miss Kay Laurell, New York City; Fifth Prize—$200, J. P. Haley, Bridgeport, Conn., Subject Miss Dorothy Clinton Lyon, Bridgeport, Conn.

18 SIXTH PRIZES OF $100 EACH

$100, Wayne Albee, Tacoma, Wash., Subject Mrs. Charles Gill, Edmonton, B. C.; $100, Kenneth A. Arthur, Detroit, Mich., Subject Miss Florence Palmer, Cleveland, Ohio; $100, Leo J. Buckley, Binghamton, N. Y., Subject Mrs. Frank Paull Mitchell, Binghamton, N. Y.; $100, Miss Juliette Courtot, Weehawken Heights, N. J., Subject Miss Marguerite Courtot, Kalem Co., 235 W. 23d St., New York City; $100, The Evans Studios, Philadelphia, Pa., Subject Mrs. Walter A. Carl, Boston, Mass.; $100, Gerhard Sisters, St. Louis, Mo., Subject Miss Lydia Schilling, St. Louis, Mo.; $100, J. Ellsworth Gross, Chicago, Ill., Subject Miss Marjorie Hamilton Kerting, Chicago, Ill.; $100, J. P. Haley, Bridgeport, Conn., Subject Miss Esther Burns, Bridgeport, Conn.; $100, E. O. Hoppé, London, S. W., Subject Mrs. Malvina Carter, Baltimore, Md.; $100, E. O. Hoppé, London, S. W., Subject Mrs. Malvina Carter, Baltimore, Md.; $100, Keedy Studio, Chicago, Ill., Subject Mrs. J. A. O'Dea, Chicago, Ill.; $100 Knaffl & Bro., Knoxville, Tenn., Subject Miss Josephine Knaffl, Knoxville, Tenn.; $100, R. C. Nelson, Hastings, Neb., Subject Mrs. R. P. Ross, Sioux City, Iowa; $100, R. C. Nelson, Hastings, Neb., Subject Mrs. R. P. Ross, Sioux City, Iowa; $100, A. O. Titus, Buffalo, N. Y., Subject Miss Hazel Dawn, New York City; $100, J. G. Tomlinson, Trenton, N. J., Subject Miss Ebba Kallstrom, Trenton, N. J.; $100, J. G. Tomlinson, Trenton, N. J., Subject Miss Gertrude Hamilton, Philadelphia, Pa.; $100, E. R. Trabold, Adams, Mass., Subject Miss Marion R. Whittaker, Adams, Mass.

16 SEVENTH PRIZES OF $50 EACH

$50, Charles R. Albin, New York City, Subject Mrs. Paul M. Kempf, New York City; $50, Charles R. Albin, New York City, Subject Mrs. N. S. Hanief, New York City; $50, Gerhard Sisters, St. Louis, Mo., Subject Miss Lydia Schilling, St. Louis, Mo.; $50, Gerhard Sisters, St. Louis, Mo., Subject Miss Fern Leonhardt, St. Louis, Mo.; $50, E. O. Hoppé, London, S. W., Subject Mrs. Malvina Carter, Baltimore, Md.; $50, E. O. Hoppé, London, S. W., Subject Mrs. Malvina Carter, Baltimore, Md.; $50, C. A. Myers, San Francisco, Cal., Subject Miss Marguerite Clayton, San Francisco, Cal.; $50 R. C. Nelson, Hastings, Neb., Subject Mrs. R. P. Ross, Sioux City, Iowa; $50, R. C. Nelson, Hastings, Neb., Subject Mrs. R. P. Ross, Sioux City, Iowa; $50, J. I. Saad, Pikeville, Ky., Subject Mrs. J. I. Saad, Pikeville, Ky.; $50, Robert W. Scott, Philadelphia, Pa., Subject Miss Edith Pierce, Philadelphia, Pa.; $50, Robert W. Scott, Philadelphia, Pa., Subject Miss Margaret Lindsay Feilder Urben, Philadelphia, Pa.; $50, A. M. Smelser, Rockford, Ill., Subject Miss Agnes Osborne, Rockford, Ill.; $50, Melvin H. Sykes, Chicago, Ill., Subject Miss Nina Ward, Chicago, Ill.; $50, E. R. Trabold, Adams, Mass., Subject Miss Marion R. Whittaker, Adams, Mass.; $50, Harry D. Williar, Baltimore, Md., Subject Miss Margaret R. Rice, Baltimore, Md.

AN AID TO BETTER ENLARGEMENTS

WHEN making enlargements from portrait negatives, to soften retouching or eliminate "retouching rough," a lens cap or diffusing screen made of marquisette placed between two pieces of plane or negative glass will be found excellent. If desired without glass this cap can be made in a very simple manner by taking a strip of cardboard one-half inch wide, wrapping it around the lens, and with another strip glued around this, a cardboard ring will be had to fit over the lens hood. To this may be glued black silk marquisette, around which a strip of binding or another thickness of cardboard may be added.

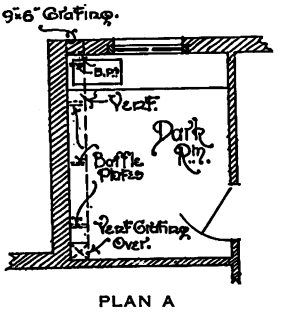
This cap may be made to fit inside of the lens hood, and thus need not be removed when focusing.—*Portrait.*

THE WORKROOM

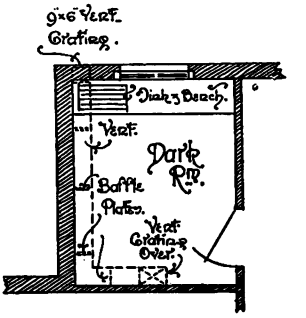
By the Head Operator

The Ventilation of Dark-rooms

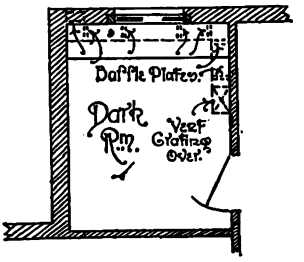
Although seldom realized, practically the most important of dark-room fittings is that of an efficient but light-proof ventilator. Most dark-rooms are usually odd-box rooms—large cupboards—or something of this character, which have been converted for the purpose. They are further—in the majority of cases—either felted up at the door joints and dark shutter—where a window occurs—or to all intents and purposes hermetically sealed in some other way to render these openings perfectly light-proof. In these circumstances, they



PLAN A



PLAN B



PLAN C

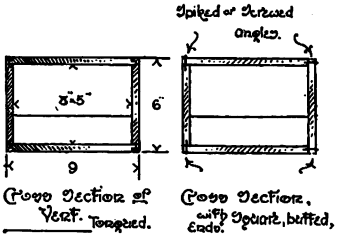


FIG. D

are practically air-tight also. For anyone working under such conditions, often for hours at a stretch, it is certainly not conducive to good health. Yet I have known photographers wonder why they have what is termed "a beastly head on." The majority could easily knock up adequate means of safe ventilation themselves by a few hours' work with the tools. The vent tubes requisite are really very simply and easily constructed, but, at the same time, they require care and a certain amount of knowledge of correct fitting and the placing of baffle plates. Plan A, for instance, illustrates an average size dark-room—about 7 or 8 ft. x 5 or 6, with a simple tube ventilator overhead in the angle, against the ceiling. For fair-size rooms of these dimensions, the tubes should be constructed of the double brick dimension of 9 in. x 6 in., as shown on Fig. D. For a very small room or a cupboard, a single brick tube might be used, giving a 9 in. x 3 in. internal dimension, the baffle plates then running lengthways. For most work of a fair size the double brick depth is infinitely preferable. Larger rooms still, however, with possibly several operators, should be provided with tubes 9 in. x 9 in.; that is three brick in depth. The single tube shown on plan A is, of course, the easiest form for fitting by the amateur, being in one length, or piece only. A bearing is obtained in the wall at one end, and on a fillet bracket piece, 9 in. x 3 in. x 2 in., at the other. A 3 in. x 2 in. fillet piece is also preferably tacked along the wall face, under the whole length of the tube. Tubing itself can be readily constructed out of ½ in. tongued and grooved matchboard, which can usually be obtained ready for fixing together, as shown by the first section on Fig. D. When properly glued up this forms the soundest and most workmanlike method of construction. The second section, however, on this figure illus-

trates a very substantial and simpler method which would doubtless prove easier to the amateur, particularly where ready tongued and grooved boarding is not obtainable. The edges here, instead of being tongued and grooved, are simply butted with a square angle joint, and either tacked together with small nails or screwed up with 1 in. or 1¼ in. counter-sunk screws. The latter method also has a slight advantage for fixing. One side and the top piece can be first placed in position—the side itself bein, nailed to the wall first, the other side and bottom being tacked on after, thus dispensing with fillet brackets, etc., to keep it in position. The straight section of tube shown on Plan A, provided with five or six sets of baffle plates and a small outside hood, as shown on Fig. F, is quite practicable. The baffle plates

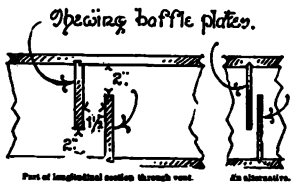


FIG E

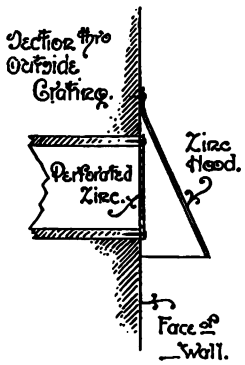


FIG. F

should also be set a trifle closer together toward the external grating, as shown. These are also preferably tongued to the sides, the top and bottom respectively, in the same thickness of material, thus stiffening the whole considerably, as shown by the longitudinal section on Fig. E. A slightly easier method is illustrated by the small alternative section on the same figure. The baffle plates here shown are in ¼ in. material, with pointed edges, simply fitted into a V-shaped groove, run with a V gauge, the edges, of course, being glued and fixed. A better method, however, is to provide the ventilator with an elbow piece, as shown by Plan B. This system quite obviates any possibility of light percolating through, particularly if it is taken right along into the further corner. As will be seen, however, this method requires careful mitreing, etc., at the angle joint. A better method still is that illustrated by Plan C, as this gives a double elbow joint. The latter system, provided with sets of baffle plates as shown, would be perfectly safe with the most rapid and sensitive plates. The position of the inside grating, in the latter case, is also more directly central; and, therefore, as a rule, nearer the operator's head and work, which proves a distinct advantage in carrying off fumes or vapors. The vent gratings, both inside and out, are merely pieces of perforated zinc tacked on. The outside grating is preferably further covered with a bent zinc or galvanized iron hood, as shown by Fig. F. This not only prevents

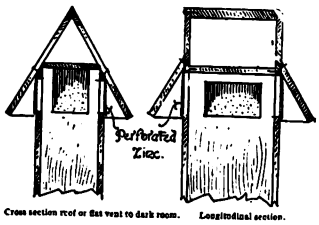


FIG. G

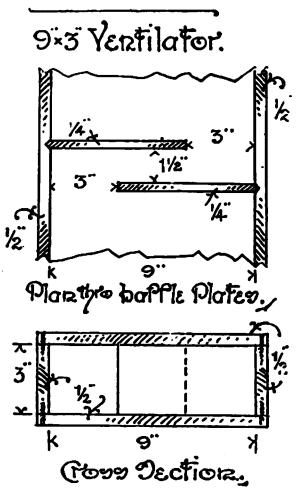
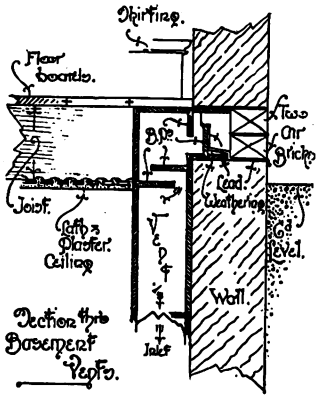


FIG. H

any moisture from driving in, but is also of considerable aid in diverting direct light rays. Both the hood and the tube itself should be painted a dead black inside. The outside of the hood piece is best painted to match the brickwork, when it is then practically unnoticeable. Occasionally it happens that the dark-room is situated inside entirely, without an external wall. In this case the outer vent grating can usually be arranged in a passage. If it happens to be a top room it is sometimes more convenient to take a piece of vertical tubing through the roof or flat, flashing around with lead at the foot abutment, on the roof. The top of the lead, turned up against the ventilator, should

be covered by a notched fillet piece, the notched end extending well over the lead. The top hood for such a vertical roof ventilator is shown by Fig. G, which could be easily constructed, and might be either nailed or screwed together. Projections of an exterior nature, such as the latter, should, of course, be painted three or four coats of good oil color. A single tube ventilator, at the ceiling angle, as a rule, is quite sufficient in small rooms for only one operator, who is merely working occasionally for two or three hours at a time. In large rooms, for several operators, or even where work might often be required for several hours at a stretch, it would be necessary to provide a similar tube at the floor level as an air inlet also, to ensure a continual circulation. The trifling amount of cutting required to the brickwork for such a ventilator is really a very small item.

With regard to dark-rooms in cellars and basements, these are occasionally so situated that work can be carried out with perfect safety when the door is left ajar, or even wide open, for proper ventilation, when nothing further is required



in this respect. In other cases this is not possible, and such rooms often have a damp, musty odor as well, which, when combined with vitiated air and the smell of chemicals, becomes quite intolerable after a short time. It should be needless to observe that this class of dark-rooms are those most in need of, and really require, the largest amount of ventilation. Here vent tubes can often be inserted to discharge in an area, or taken out through the thickness of the floor above, and provided with the perforated zinc grating and hood piece. In most cases the ground floor invariably comes slightly above the ground level itself, enabling this to be done with very little trouble, merely a few square inches of cutting to lath and plaster ceiling being involved, besides the brick cutting on face. If the vent happens to discharge on a public highway perforated air bricks would then have to be substituted for the zinc netting and hood piece. This is clearly shown in detail by the section for basement vents. It is also necessary to furnish such an outlet with a feathered weathering board at the bottom, covered with lead or zinc. The latter should be taken under the bottom air brick, turned up at the sides, and slightly over the bottom baffle plate, as shown. Although rain cannot drive absolutely straight in through the air-brick perforations, a certain amount of moisture invariably percolates through and has to be guarded against. The section shown is taken through the air inlet, which should, of course, be continued down to the floor. The extract flue would either be turned around at the ceiling level, or continued along underneath, similar to those previously illustrated. With this type of underground dark-room the air inlet, as well as the extract, is an equal necessity. Where the ground floor may be slightly lower than the ground level itself, and the method illustrated not applicable, it can be taken right through the floor and up an angle of the room over, being turned out at the ceiling level, or lower down if preferred.

The great necessity for proper ventilation to a dark-room is a most vital and essential point, largely influencing as it most certainly does the grade of work turned out. From this point of view as well, it should in consequence never be overlooked.—*British Journal of Photography.*

Answers to Two Questions Often Asked by Photographers

How to overcome the curling of glossy paper after the prints have been removed from the ferrotype plate?

No trouble should arise with ferrotyped prints, either in single or double weight paper if proper care is given to prints after finishing. Prints should not be removed from plates and then left to lay about subject to variation in atmospheric conditions, as the first tendency of all glossy gelatin paper is to curl after removal from ferrotype plates. In fact, no gelatin prints should be allowed to remain scattered loosely about, as they will curl more or less by contraction and expansion of gelatin surface under the same variable conditions.

Ferrotyped prints should be trimmed if necessary and placed at once under pressure for a few hours or until required for delivery. At times it may be found advisable to bend the prints slightly backward by drawing face up over edge of table on removal from plates before putting under pressure, taking care to avoid cracking the surface. Another good plan is to dampen the backs of prints with alcohol and place face down between cardboards under pressure until thoroughly dry.

The best colors to use for obtaining satisfactory results on glossy prints previous to the squeegee process, so that the work may be permanent and may not in any way be affected by the water?

In coloring glossy prints to be squeegeed a dye must be used that will be absorbed by the gelatin and become impervious to the action of water. The color must be applied when the print is damp, using a blotter to remove surplus color. After the coloring is finished the print should be thoroughly dried to insure permanency of color when again wet for ferrotyping. Dunn's pastel colors will be found very satisfactory for this purpose.—*Portrait.*

Multiple Mounts by Dry Mounting

The makers of adhesive tissue sell a large variety of "border-tints" coated on the back with adhesive. These can be had in sheets 24 in. x 20 in., or in the usual cut sizes at the same prices as the tissue. They are supplied in smooth or linen surfaces, and provide the means of making an almost unlimited variety of mounts in styles to suit all classes of prints. Of course, other papers can be used as tints if desired, and for these one merely has to attach a sheet of tissue just as for a print. The range of colors supplied ready for use should be ample for most tastes, though the addition of one or two grays inclining to green would, I think, be advantageous. Most of the ordinary grays are too blue in character to show bromides to the best advantage, and are apt to make them look rusty by contrast. Although any kind of board can be used as a base when making multiple mounts, it is not easy to get, and inconvenient to stock, such a variety as one could wish for, and I find a pulp board of four-sheet thicknesses faced on one side with white paper an excellent material. It can be bought very cheaply in imperial size, 32 in. x 22 in., and pieces covered on the pulp side with a sheet of "tint" are easily cut clean with a knife and straight-edge or in a guillotine trimmer. The large 24-in. trimming desk will also cut these boards quite easily, and yet they are quite stiff enough for all ordinary purposes, and will remain flatter than the usual "art mounts."

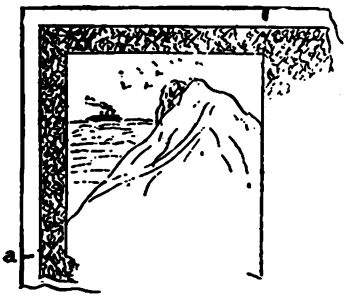


FIG. 1

To cut a border tint a piece of suitable size is taken and one corner trimmed to an accurate right angle (it is no good relying on the accuracy of the cut pieces as they come from the makers). The trimmed print is then laid on it at a distance from the two cut sides, just double the margin required. That is, if a quarter of an inch all around the print is wanted, the print is laid half an inch from the two cut edges of the sheet of tint. This is lightly marked with pencil against the other two sides of the print as shown at *a* in Fig. 1, and the piece is then trimmed to those marks. It is desirable to try the print on the cut tint before proceeding further, and if found correct a mark is made on the tint near the right hand top corner. It will be found that with narrow borders the print will fit only one way up, and in all cases the same trimmer must be used for both print and tint. Another plan, which is really a better one when cutting rather narrow borders, is to arrange the print on the sheet of tint as before, seeing that the corresponding edges are quite parallel, and trim the other two sides of print and tint in one operation. Extreme care must be taken not to allow them to slip in the slightest degree, but if skilfully done there is not so much margin for error as in the other way. After a little practice several tints can be done at once to form a most effective mount with borders of various widths and colors around the print.

FIG. 2

When cutting thin lines the precautions of keeping everything dry should be strictly attended to, and when cut they should not be allowed to lie about and absorb dampness from the air, but should be pressed on the mount without delay. In this way extremely fine lines can be arranged if desired. Where very slight corrections in trimming are needed it is best to do them with a sharp knife and a good steel straight-edge, rather than try and cut small shavings in a trimming desk.

As one generally mounts several prints at a time a little system becomes advisable in trimming, marking, and pressing the borders and prints. Each print and tint must be pressed separately unless a very soft thick base be used. The reason for this is shown by a diagram representing a multiple mount in the press in section. I think this (Fig. 2) is self-explanatory. The first print is marked on the back with soft pencil 1, as also the border tint on the front near the right-hand top corner (where it will not show after mounting), and if several tints are to be used on a mount each one is similarly marked, with the addition of A, B, etc., commencing with the outside one. The second print with its tints is marked 2, as before, and by always marking in the proper corner there will never be any doubt as to which is the top, or whether a mount is for an upright or landscape print. The prints are laid in one pile, the borders in another, and the cards in a third as they are cut, so as to keep them in order and prevent any muddle. When all are cut each card has its first tint fixed and then the set is pressed, the next tints are fixed, pressed, and, finally, the prints. In addition to the saving of time and gas that this system effects, the need of a higher temperature for tints is more conveniently arranged for than if each print is separately mounted.—D. B. in *British Journal of Photography.*

PRACTICAL POINTS

A Simple Telephoto Lens

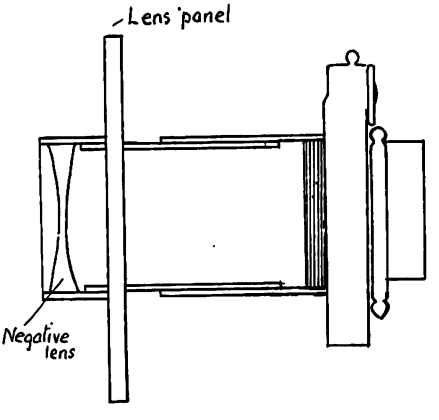
Telephotography is a branch of photography which does not seem to be exploited as much as it might be.

The reason of this is, of course, fairly obvious—a special lens is required; and a great number of photographers cannot see their way to laying out anything from $10 to $50 on an objective which is only to be used occasionally.

This is, however, as may be, but anyone possessing the ordinary type of bellows camera can, with a very small outlay and a little manipulative skill, increase the scope of his work to a considerable extent.

In a little book on *Telephotography*, by Lan Davis, will be found a table giving data as follows: Supposing a 5-inch positive and a 2½-inch negative lens be employed: (*a*) separation of elements (negative and positive lenses), (*b*) extension of camera, (*c*) focal length, (*d*) magnification of image.

Now, if a negative lens of about 2 or 2½ inches focus be obtained, it is not a difficult task to construct a telephoto combination which—if not quite so rapid as one specially constructed for the purpose—will be found quite a good enough instrument with which to obtain excellent results. Mountain scenery, details of architecture, distant views, and portraits being subjects which are particularly amenable to this kind of treatment, the results being much more true on account of the better perspective obtained.



The instrument which the writer uses was constructed as follows: From an optician, a negative lens of 20 diopters, that is 2-inch focus, was obtained, specially ground with a flat edge. The cost of this was $16. The next step was to make the tubes to which the camera lens and negative lens could be fitted.

The first tube was made to accommodate the positive lens (Aldis, 5¾ inches, in Unicum shutter). A piece of stiff mounting paper was cut about 12 inches long and 1½ inches wide. This was "stroked" with a ruler until it had a considerable curl. It was then rolled up into a tube around the threaded portion of the lens behind the shutter. The end of the paper inside was marked by pencilling a line. The paper was now unrolled and seccotined all over, except that portion from the pencilled line to the end, *i. e.*, the inside visible portion of the tube. It was then rolled up carefully, keeping the edges perfectly straight, and then wrapped with cotton or twine until the whole had set into a firm tube.

The next tube was made similarly to the foregoing, and just large enough to fit nicely but not loosely into the first one. This second tube was made about 1¾ inches long. The negative lens now required a small tube by itself as it was of larger diameter. This was made about ⅝ of an inch long and "packed" by seccotining a strip of paper round and round the end of the second tube until a tight fit was produced. The two were then seccotined together, one in the other.

A lens panel is the last requirement, and may be made of three-ply wood, with a hole just large enough to accommodate the second tube carrying the negative lens. This is pushed through the hole and the short tube seccotined firmly to the back. The squareness of the tube to the panel should be tested with the set-square.

If the camera should not possess a removable lens panel, proceed as follows: Cut a piece of cardboard about 2½ or 3 inches square, and about the same thickness as the metal flange into which the lens screws. In this a hole is cut large enough to fit just outside the flange, and making it flush with the card. Now cut a piece of three-ply wood or white holly (used in fret work) the same size as the card, and cut a hole in the centre just large enough to fit on tube No. 2. This is to be pushed through from the inside of the camera, and the two squares pushed on, up to the camera front, where it is held tight.

All that has to be done now is to screw the lens (positive) into the first tube, and slide it by a screw movement on to the other one.

In use, this telephoto combination will be found to give magnifications of from 3 to 4½ or 5 diameters, according to the amount of camera extension available. The greater this is, the larger the scale of the picture.

When the camera is set up (opposite, say, some distant view), and the front racked out to the infinity point, the tube carrying the positive lens is slowly pushed ("screwed") in until the image on the ground glass is clearly defined. It will be noticed that very slight motion, backward or forward from this position, throws the picture out of focus. If the camera be limited to this extension, the two tubes may be sectioned together very carefully (though not unless the camera has a removable lens panel). If a double or triple extension be available, then greater magnification may be obtained by pushing in the front tube very slightly. At these longer extensions it will be found that the area of good definition is increased without stopping down; that is, the covering power of the lens is increased in proportion as the image is increased. Thus while the 5¾-inch Aldis (*f*/6) will, in conjunction with the negative lens, cover a 3½ x 2½ inch plate at *f*/11 and about 5-inch camera extension, the same at about 10 inches extension will cover a postcard plate at *f*/8.

Regarding the exposure required: The Aldis works at *f*/6. At about three magnifications the focal length has been increased three times, while the aperture of the lens remains the same. The exposure then at this aperture would be that required by a lens working at *f*/18. If the lens be stopped down to *f*/11 then the combination is working at about *f*/32. Then if one-twenty-fifth second be the correct exposure for the positive lens alone, with stop *f*/11, then the exposure with the combination would be about four times this, *i. e.*, one-sixth second. According to Mr. Lan C. Davis, the exposure should be only one-half or one-third this, on account of the greater actinic value of distant objects. This is confirmed in the writer's practice. If any dark object, however, be in the foreground of the picture, the full exposure should be given, as also when a color filter is used. Portraits also should receive full exposure.

In conclusion it may be said that the telephoto lens, used at about two or three magnifications, is excellent for portraiture, particularly if the hands are included, as, owing to the greater distance between sitter and camera, a much more truthful drawing or perspective is obtained. The hands may be several inches in front of or behind the plane of the face, but their size is neither exaggerated nor diminished, as when using the ordinary lens at close quarters.

To obtain perfectly clear pictures it should be noted that a long hood, say about 3 or 4 inches long, and painted with dead-black varnish inside (as the other tubes should be), should be made to fit the lens. This is necessary to cut off as much extraneous light as possible.—*H. Mills.*

Pyro–acetone Developer

As a preventive of halation, is advanced by Mr. W. H. Zerbe in the *American Annual of Photography*. He shows some illustrations of extreme subjects which amply demonstrate the utility of the formula he recommends. The formula is:

A	
Distilled water	16 oz.
Pyrogallic acid	1 oz.
Metabisulphite of soda	90 gr.
B	
Water	20 oz.
Sulphite of soda (anhydrous)	2 oz.
Acetone	4 oz.

For a normal subject, without much violent contrast, use—Water, 10 oz.; (*A*) 1 oz.; (*B*) 2 oz. For subjects with violent contrasts, or containing the factors of extreme halation, use—Water, 10 oz.; (*A*) 2–4 drm.; (*B*) 2 oz. The developer is not a rapid one, and the developing dish must be rocked during development. With this developer beautiful gradation is obtained, and it is particularly suitable for subjects with light draperies, against the light, or where fine texture rendering is required.

A Hint

Old or used developer acts the same as bromide, retards development and clears. Useful when plates are greatly overexposed or general fog is apparent.

Saving Dry-mounted Prints or Mounts

Dry-mounted prints can be taken from the mounts, without soiling the print or the mount, in the following manner: On the top of a slow-combustion stove place two pieces of iron (or something similar, that will not burn), about one and a half inches high. At this height try the temperature with a thermometer, and allow the stove to give a temperature of 120° F. Then place your mount, face up, on to the pieces of iron, and you will find in a few seconds the print edge will spring up. Take hold of this and gently pull print and tissue away. It will be found, at the temperature given, that the tissue and print leave the mount separately if both are taken hold of when gently pulling away from the mount. This method can be applied when using an ordinary fire—holding mount in front—but one is liable to get it too hot and to make print crisp and likely to crack if re-mounted; also the tissue will adhere to the print, although if it does adhere it can be mounted again by using a further tissue on top.

Copying Platinum Prints

I had to copy a platinum photograph which was rather yellow and most of the shadow detail was of a bluish tint, also the grain of the paper showed very plainly. In copying it, whichever way it was lighted, I could not get rid of the blue tint or minimize the grain. I tried three plates, but could not get a good result, as the grain showed so much and the blue tint seemed to be intensified. I took the photograph down from the copying board, and noticed it was a little dirty. I cleaned it with methylated spirit, and could not help noticing that while it was wet how bright and fresh it looked, also the disappearance of the blue tint and the absence of the grain, which, however, all came back again when it was dry. An idea struck me. I placed the photograph back on the copying

board, focussed, put in the slide and got ready to expose. I wiped the photograph over with spirit again, made the exposure, which was fifteen seconds (before the photograph dried), with the result that I got a perfect negative, which anyone would have thought was a copy of a good recent print. Perhaps this dodge is not new, but it may be useful to someone in the same predicament.—*Herbert Hearn.*

Leaky Slides

Dark-slides, when not in use, should always be kept in a warm corner. Never, on any account, should they be left in the dark-room, where they will draw damp and work quite stiffly. Dark-slides which are open a little and leak at the corners should be carefully drawn apart at those places, a little thin glue applied, and pressed well home again. Small cracks can be filled up by rubbing with "cobblers' black ball."

A small brad driven through each side of each jointed corner will keep them from opening up. Any ordinary brad is too thick and clumsy; an ordinary household pin is the very thing. Nip off to the required length with a pair of pliers, make a small hole with a large needle, and hammer the pins gently and straight home. This will never crack the wood, and is not the least bit noticeable.

Soft-focus Lenses for Enlarging

In the production of enlargements, says the *Amateur Photographer and Photographic News*, the soft-focus lens can prove a great help to the photographer who desires to make the most of its special characteristics, as it is not generally realized that all the subtle quality and pleasing diffusion peculiar to the lens can be introduced subsequently when making an enlargement from a small, sharply defined negative. But it should be clearly borne in mind that to get the effect it is absolutely necessary to make a new negative (which may be enlarged or not, as required) with the lens from a *positive*. If a direct enlargement is made with the lens from a negative the result is generally very displeasing. It will be found in this case that the enveloping secondary image is formed round the shadows instead of the high-lights, as would be the case with an enlargement from a positive or in a negative direct from nature. The same effect may also be achieved by using the lens in the production of a negative by copying a print.

To Wash Prints Quickly

It may not be so well known as it deserves to be that the hypo can be removed much more quickly from prints than is possible in the ordinary way (says a writer in *Photography*), if the prints after each change are laid in a mass upon a stout sheet of plate-glass and the liquid is squeezed well out of them by rolling with a roller squeegee. They are then picked up and immersed singly in fresh water, and after a minute or two are squeegeed again, and so on. Six changes of this kind, if followed by squeegeeing, will remove all the hypo that is at all readily removable and constitute an effective washing. The pressure when squeegeeing may be anything short of what is likely to bruise or tear the prints.

PATENT NEWS

Under this heading it is proposed to include each month a list of all the U. S. patents, and brief abstracts of the more important, and to include also such foreign patents as present special features.

Copies of any patent can be obtained from the Commissioner of Patents, Washington, D. C. Price, five cents each.

Developing Tank. G. W. Botz, 1131817.
Film Reel Mechanism. E. Lytton, 1132369.
Lantern Slide. F. A. Apfelbaum, 1132423.
Shutter Tripping Mechanism. W. Sykes, 1132229.
Picture Machine Film Guard. Carrol and Merkel, 1132822.
Printing Frame. E. W. Sweigard, 1132046.
Postcard Printing Machine. H. Blair, 1131657.
Winding Key for Film Cameras. J. Goddard, 1133128.
Adjustable Film Reel. M. G. Delaney, 1132596.
Lens Fastener. F. H. Kahn, 1132945.
Film Pack. H. Wyman, 1132993.

English Patent.

Screen Plate. C. L. A. Brasseur, 28631–1913. Colored threads of celluloid or cellulose acetate are woven and then veneers cut from a solid block of the same.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, ETC.

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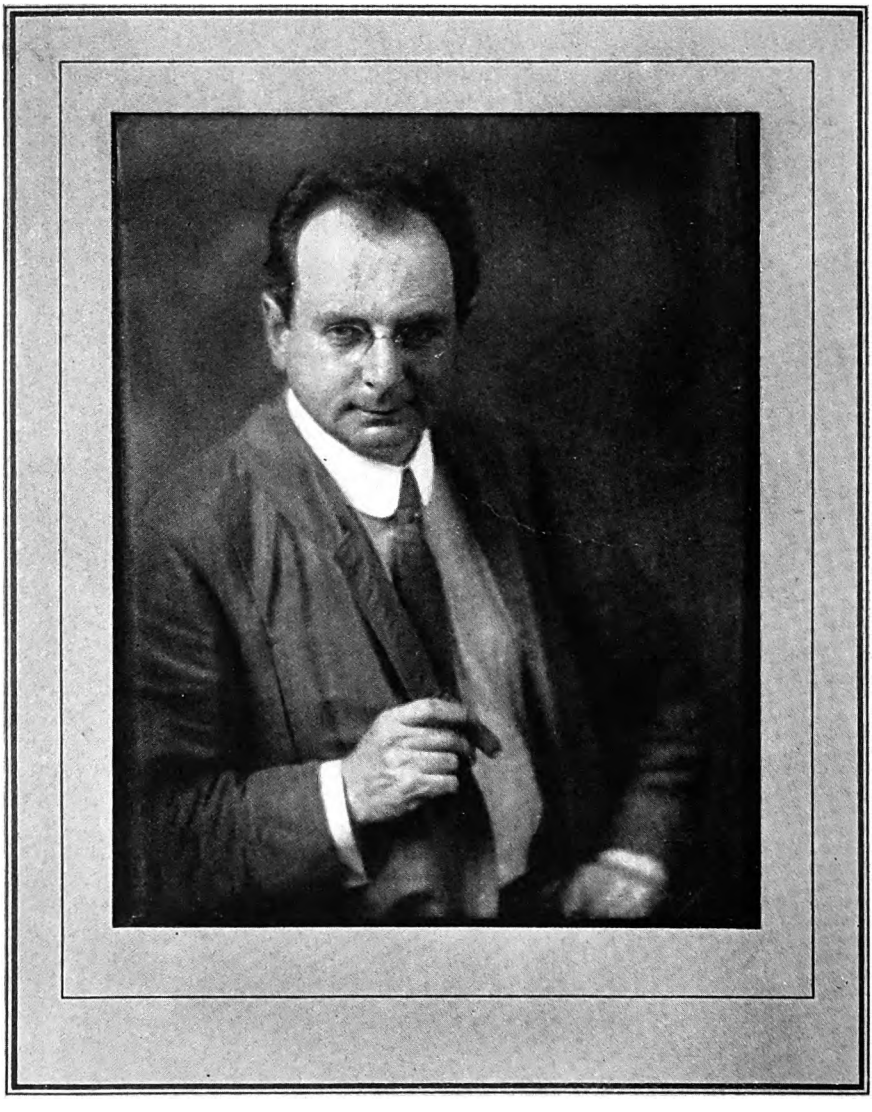
Thomas C. Watkins, Editor.

Sworn to and subscribed before me this 18th day of March, 1915.

Catherine C. Blair,
(Seal) Notary Public.
(My commission expires March, 1916.)



ELIAS GOLDENSKY
PHILADELPHIA, PA.

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COLOR COLLOTYPE

AN ADDRESS BEFORE THE ROYAL PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN

BY F. T. HOLLYER

COLOR printing in various forms has come to stay, for people recognize that reproductions of sufficient faithfulness can now be done, and of certain subjects, especially paintings by some modern artists, color plays a very important, and in many cases the *most* important part; in such works a black and white rendering, however good, will be but an inefficient substitute.

Of color work from nature I have little to say: the greatest achievement of photography will be when we can adequately record upon paper the wonderful effects of a beautiful landscape, the glories of an autumn sunset, or the charm of white clouds over a blue sea; but to my mind the means are not yet to hand to accomplish these: the reproduction of an Autochrome holds out many possibilities for such work, but I think the three negatives at one exposure camera will, when perfected, solve the difficulty; although even then there will still be many, in some cases insurmountable, difficulties, owing to the extreme subtlety of the colors of nature, colors which in a painting are reduced to a comparatively simple and definite scheme.

Collotype printing seems at first an ideal process for color-work, and for our particular aims it is the best; but when taken up practically it will be found there are so many uncertainties and vagaries to be encountered at every step, that one who has been through it would not lightly advise others to attempt the process.

Beyond a few simple formulæ and directions, to be found in text-books, there is but little of an exact or definite nature to be said about collotype.

Further, it has been already adequately dealt with in this room before—far more adequately than I can deal—while as regards its application to color, there is really very little to talk about, though needless to say, when it comes to practice, there is much to be done.

Our prints—of which you see some examples on the walls—are from negatives taken through the usual tri-color filters—blue-violet, green, and red-orange—and of course very good negatives are necessary, or rather they are desirable, for it is astonishing in collotype what poor negatives can be used and yet produce quite good results, but good ones are better for they allow of the plate being worked at its normal state, thus giving a far better chance of evenness in the batch of prints than is possible where the plate from an indifferent negative has to be forced, in one direction or another, in order to produce a good print, for a forced plate will not be a steady one and will jump about from brightness to flatness, and from taking too much ink to not taking enough, with bewildering rapidity, consequently producing a delightful variety in the prints; therefore get good negatives by all means if you can.

I shall refer a good many times in the course of my paper to this question of evenness in the printing, it being most difficult to attain in collotype, while its importance in doing good work cannot be too strongly insisted upon.

When three-color printing is spoken of, four-color is almost always meant: number four negative is taken through a rather deep yellow filter, is fully exposed and developed and is printed in black or any color that may be required to correct or assist the subject in hand.

I will here say a few words about filters, for although not perhaps strictly belonging to my paper, it is an extremely interesting subject and the experience gained in its study is really valuable. If you want to get the best results in the shortest time, by all means buy your filters; but to gain both experience in the study of colors and no little amusement at a trifling cost, make them yourself. I have spent many most enjoyable weeks dabbling in all sorts of gorgeous aniline dyes, incidentally with my hands in a perfectly unpresentable condition (this being part of the fun) and have produced some very good filters indeed; in fact, one I made for ordinary orthchromatic work was a better filter than any commercial one I have ever had. Eventually it was broken and as, with characteristic carelessness, I had kept no record of its formula, it could not be replaced. I have always regretted the loss of that filter.

Now, if you buy filters be sure and get the best, and this is important—very important. I do not say that cheaper kinds will not, with luck, work properly, but they cannot be depended upon, under some circumstances, to produce images of identical size; in other words, the prints from them will be out of register, and the fearful effect of this need not be dwelt upon. I believe that inferior filters give identical images when working at a short focus, and the longer the focus the further out of register they will be; but on this point I am open to correction, as for some years we have been using the best flats, which can be absolutely relied on, and I have forgotten exactly how the others worked.

In connection with this point, register, some lenses suffer from chromatic aberration, that is, the image taken through the red filter will not be exactly the same size as that taken through the blue; but a good modern copying lens rarely, if ever, suffers from this defect.

As I have already said, the few necessary formulæ and general directions for collotype printing may be read in books on the subject, but it will be well to run briefly right through the process, dwelling on some important matters, rather than going into well-known details.

A piece of plate glass, which should be considerably larger than the negative to be printed on it, and five-sixteenth inch thick, is ground on one side; it need not be as even as a focussing screen, but requires a tooth for the gelatin film to grip on to, and when ground is placed in the oven to warm. This oven may be an old packing case rest-

ing on an iron plate—a cistern, or one made, as ours is, of plaster slabs—but whatever the material there are several vital points to consider in making the oven; it must be free from cracks or holes, for, if not, cold air will come in during the baking, and wave marks will appear on the plates; it must be firm and resting on a firm floor, for vibration during the drying will again cause markings—and sufficient heat must be provided to raise the temperature up to 130° F.

The plates having been warmed in the oven, are now coated with a thin substratum again to prevent the film leaving the glass, a thing it would do at once if it were given the chance. Beer and silicate of potash, 2 drams of the latter to half a pint of the former, form this coating—but it should be only 4*d*. ale, or lager is not bad for the purpose; I tried stout once, thinking to get a fine strong substratum, but I got a fine thick jelly instead—which would not run in the plate—it was evidently too rich in albumen, or whatever the sticky stuff is.

The plates having been flowed over with plenty of substratum, are returned to the oven to dry and when dry are levelled, on the levelling screws it contains—and this should be done with great accuracy, for in the hot oven the gelatin solution remains liquid for a long time, and consequently if the plate is not level will become thicker on one side than the other—now in the subsequent printing the thicker side will take much less ink than the thinner, and I leave you to imagine the beautiful result of this in a color print.

The temperature of the oven having been brought up to 130°, the plates are now ready for the second coating—almost every collotype worker has his pet formula for this, the secret of which is jealously guarded—but really in actual practice they all come to very much the same; the thing is to find a formula that suits your particular kind of work and stick to it. We have tried sodium bichromate, ammonium bichromate, and potassium bichromate, separate and combined and in varying quantities—and have also added fish glue, isinglass, and different gums, to the gelatin, and some of these experiments have worked very well, but we have now settled down for a long time to the ordinary gelatin, potassium bichromate and water formula as follows: middle hard collotype gelatin $\frac{3}{4}$ oz. soaked for an hour in 9 ozs. of cold water; this is then dissolved in a water jacket, the temperature of which must not exceed 115° F., 95 grains of potassium bichromate is then added, and when this is dissolved the whole is twice filtered through fine muslin.

Now the amount of this mixture to be poured on the plate is important, and here again you must find the quantity that best suits your particular methods and keep to it—for upon the amount of emulsion on the plate the character of the plate will very largely depend. A thinly coated plate dries evenly and takes the ink very nicely in the high lights, which will come up sharp and clear, but the shadows are apt to clog, and it is very difficult to press the ink out. I do not know if this latter trouble occurs with a machine press, my only experience is with one worked by hand, and the matter of pressure is of no small consideration with a hand press—to pull 100 prints through with a very heavy pressure is a back-breaking job, to say nothing of the constant fear of breaking the plate in the bargain. Now a thickly-coated plate is liable to dry unevenly, that is with streaks or waves, which will probably show in the print. The high lights are difficult to print because the lighter tones will be inclined to merge into the extreme high lights, but the shadows will come well, no tendency to clog and full of detail, while little pressure is required.

So again the happy medium must be found, we use 2 ozs. of solution to a 15 x 12 plate, which gives, I believe, a rather thicker coating than is generally recommended.

The plate then is coated, placed on the levelling screws, the muslin lid put on and it is left to bake for about one and a half hours, at the end of which time the gas is turned out and the plate left till cool.

The exposure under the negative should always be sufficient—an under-exposed plate is useless, nothing can be done with it—while one that has had even a good deal too much can often be used after a prolonged etching.

The plate is then washed out in cold or tepid water, and if it is going to be used at once the washing need not be very thorough, but if it is to be left for several days before printing, every trace of bichromate must be washed out. It is then allowed to dry spontaneously, and after soaking for ten minutes in cold water is ready for etching.

From this point onward I should have liked to give a practical demonstration, but my brother, who is responsible for that part of the work we are now coming to, flatly declined to assist me; and probably he was right, for it is impossible to know how a collotype plate would have behaved here, for a collotype plate is the most freakish and abnormally sensitive thing in the world; it is full of nerves; the least change of temperature, a passing motor bus, an opening or shutting door, or a slight shower of rain will cause it to do all sorts of unexpected and ridiculous things —and probably in these strange surroundings and before a large and critical audience—it would have refused to do anything at all, and I should have looked extremely foolish.

So having shirked a demonstration, I must explain as well as I can the various and tricky operations which follow; up to now it has only been necessary to weigh or measure the few chemicals used with reasonable accuracy—and watch the thermometer—but in the printing constant care and attention are necessary in order to keep the pulls sufficiently even.

The plate having been in water for ten minutes is placed on a levelled stand and the etch poured on it. The word etch in this connection is really a misnomer, for to etch is to bite a metal plate with an acid or other mordant; however, the word is handy and is always employed, so let it suffice. It consists of glycerin and water in roughly equal parts and is left on the plate normally for fifteen minutes—it should not be less, while considerably longer will do no harm. The etch is then sponged off, the plate laid on the bed of the press, wiped or rather dabbed with soft rag till all surface moisture is removed, and is now ready for printing.

The plate exposed through the blue violet filter is taken first—and is, of course, printed in yellow—some yellow ink thinned with a little varnish is distributed on the slab and rolled up on a nap roller—by the way, a separate roller must be used for each color—for the nap roller cannot be cleaned like those made of a glue composition which are used for half-tone work.

The respective quantities of ink and varnish cannot easily be measured, but with a little practice the required consistency can soon be found—this is a matter of considerable importance, for if too much varnish has been added—the ink will spread too easily over the plate and a flat, dirty print will be the result: while if too thick it will be difficult to persuade it to go on the plate at all.

While on the subject of ink we can discuss the practice of rolling up the plate—over which we have considerable control and by which variety in the printing can be obtained, for both pace and pressure in using the roller can be varied to suit the requirement of the particular subject in hand: a slow, light rolling will distribute the ink too evenly over the surface of the plate, unless the ink is very stiff, but a slow rolling combined with heavy pressure will produce very good results; this, however, is tiring if continued for long, on the other hand a quick, brisk action with a flourish of the wrists will clean the ink right out of the lighter tones, and give a bright, hard print. So again you must find by observation the right pace and the requisite amount of pressure to apply to the roller.

I feel that this important detail has not been very clearly explained, but without a practical demonstration it cannot be shown the control there is in rolling up, and how two different plates by using this control can be made to produce almost the same results,

and, on the other hand, by not using it properly how a very undesirable variety may be had in a batch of prints that should be all alike.

When starting a plate, nine times out of ten it comes up too flat and takes too much ink all over; but perhaps with brisk rolling after half a dozen pulls it will come all right, showing that the negative is good and the plate made and exposed correctly, and with such a plate, which has received only normal treatment, it should not be difficult to print off a fair number of even copies. I may say our batches usually consist of thirty or forty pulls, though, of course, many more may be taken from a good plate if required.

If, however, after a few pulls the prints will not come right, some modification of the etch must be tried. In this modification the greatest power for good or evil lies. If the prints are flat, the plate is cleaned with turpentine and a thinner etch containing a smaller proportion of glycerin is applied for a few minutes, and if this does not suffice, a few drops of ammonia can be added; but this must be done with caution, for if there be too much ammonia the plate will not take ink at all in the lighter tones and will be exceedingly difficult to bring back to a proper condition. It is much better to give a prolonged etch, say an hour, with three parts water and one of glycerin, with only a few drops of ammonia, than to try and brighten the plate in ten minutes by using more ammonia. The latter method is not conducive to even results, for after about three pulls the prints will begin to get flat again, showing that the plate requires re-etching, while with the longer soaking at least twenty even pulls should be obtained.

If the first prints were too bright, lack detail in the high lights, or do not take sufficient ink, the etch is thickened by the addition of more glycerin. In a few cases nearly three parts of it to one of water can be used, but should a plate require so much flattening it would probably indicate under-exposure and had better be discarded.

Up to now I have said nothing about color printing and as my paper deals with this subject it will be desirable to say something about it. However, the preceding matter has been strictly relevant, for I have tried to indicate some of the steps that have to be taken toward securing a good print, which after all is the main thing for to my mind; the color part is not a matter of mathematical precision but of a correct eye.

We use the normal three-color collotype inks—yellow, red, and blue—as supplied by Berger & Wirth, and find them excellent. The yellow plate is printed first, because this color is far less transparent than the other two; there are transparent, or so-called transparent, yellow inks, but I believe they are not permanent, and at any rate we have never succeeded with them. Printing the yellow first is the cause of considerable trouble, because being a pale color it is extremely difficult to judge the tones of the print, and gauge the right amount of ink to put on; indeed, you are seldom certain of this point until the other colors have been put on, when it is of course too late to rectify the errors in that batch.

I must explain here that the yellow prints must be left for twenty-four hours to dry before the reds can be superimposed, and these again for thirty-six hours before putting on the blue. So it takes nearly a week before a print is finished. It would be very desirable if the three plates could be printed quickly one after the other; we would then see so much easier how we were getting on. Inks have been made that could be superimposed within a few minutes, but we have not obtained good results with them.

We now come to the matter of register: when the original picture was photographed, pieces of card ruled with fine lines in India ink were pinned on three sides of it; these show on the print, which is cut so that these lines project a little beyond it, and when the yellow print has gone through the press it is marked on the back in pencil, where the lines touch it, and with the subsequent plates these pencil marks are laid to exactly correspond with the lines on them. This of course requires great

accuracy, for defective register produces horrible effects.

There are, I believe, a number of devices for registering the prints, but for small batches I think this method is very suitable.

Having done the yellow prints, the red plate is now got ready; it is usual to print the red second, because in the finished print there is a slight preponderance of the color last put on, and in most cases it is preferable that this should be blue, otherwise it is immaterial in which order blue and red are taken.

Well, having our red plate in working order, we lay a yellow print on it, registering the lines in the manner described, and now for the first time we shall get some idea of the kind of yellow print required. I say some idea; we cannot really tell until the blue has been printed on as well; but we shall probably recognize that some of the yellows are no good, and out they go. The remaining yellow prints are sorted into their different kinds—flat, bright, full or weak, and an effort is made to adapt the red prints to these varieties, and the same with the blue when we come to it, for by so doing we shall obtain at least evenly-balanced prints, though naturally they will not match each other exactly.

It is obvious, if this adaptation is not resorted to, some weird results will be obtained. Imagine for a moment the combination of a flat yellow (not a really flat print, but a little flatter than it should be) with a rather bright red, and say a perfectly normal blue, and then just ring these changes on a dozen prints and a kaleidoscope will be out of it for color combinations.

If fine work be your aim, too much variety cannot be permitted, even though each print is well balanced both in tone and color, though to my mind a little variety is permissible and even desirable, because one person will like a deep, rich copy, while another prefers a lighter, more delicate version of the same thing. This statement to some will be rank heresy I know, and it is not a counsel of perfection, for the absolutely right thing to do is to make all the reproductions as near as possible facsimiles of the picture they represent, or if from nature, to carry out your original intention, and not depend upon upon chance results.

After this little digression we return to the printing. The blue plate does not call for much comment, it is only a repetition of what was done with the red, except that it is easier, for the blue ink is the best working of the three, and being the last, we see exactly how much ink to put on. Frequently, when this stage is reached, we decide that for some reason the batch is no good, and have to start over again from the beginning with experience gained from what has been done, and if the plates are properly made there should be no great difficulty with the second batch in correcting the faults of the first. I may say that with a new subject we have hardly ever succeeded in getting any good copies from the first batch printed.

It has been our aim to attain perfection, or something like it, with the three colors, but in a large majority of cases a fourth printer is found necessary; if you can do without its help so much the better, for it is bound in a greater or less degree to degrade the colors, and they rarely come too pure and clean. I am here speaking of a straight negative taken through the yellow filter, and the only alternative to this is hand work. It has always been our tradition to avoid hand work, and I think it a right one, for however skilfully done, whether it be shading, blocking out some portions or retouching the negative, another person's touch is added, and that of the artist is not reproduced in its entirety nor his scheme faithfully adhered to. However, there are very few subjects that can be properly reproduced in three colors without the assistance of this undesirable fourth, so it must be given due consideration. Of the prints you see here nearly all have been helped by the use of the yellow filter negative, and in most cases black has been the color used. I need not say that a plain pull from this plate is not a fine, rich black print, giving all the details both in high light and shadow. More often it will be a pale, smeary-looking thing with blank high lights and very open

shadows; but poor as it looks in itself, this will sometimes do wonders in softening garish colors and generally pulling the print together.

And it is extremely difficult to obtain black with the three colors alone; the darkest parts will be either plummy or greenish (you know exactly the shades I mean: they were very popular, if unintentional, in the early days of three-color work); but the addition of even quite a light gray, the complementary of either of these colors, as necessary, will make them into a very good black or dark neutral gray.

The locally controlled fourth printer is another matter and opens a field too wide to survey in the course of this paper; very fine prints are produced by collotype done from negatives that have never seen a tricolor filter, but these depend entirely on very skilful touching and blocking out and appertain more to the lithographer's art, but local control has to be used in three-color collotype at times, for there are colors that will not come correctly without; greens are generally the worst offenders in this respect, but some shades of crimson and purple are almost equally troublesome.

I need not describe the various dodges that can be resorted to in order to lighten colors in one printer or darken them in another, because anything of a local description must be done on the negative or on a positive from which another negative is made. Nothing local can be done with any degree of certainty on the collotype plate itself and in this respect it is at a considerable disadvantage compared to the half-tone, where local corrections can be made by means of fine etching.

So any of the old ways, of retouching, stumping on matt varnish, or putting cotton wool on the back can be used, especial care being taken where this is done on the first three printers; with the fourth greater freedom can be used, because, as I have said, this is never fully printed and consequently rough work will not show so much.

Many varieties of paper can be used in collotype printing, and this offers considerable scope to the worker's individuality and allows a choice suitable for the subject in hand; naturally many papers will not do for ordinary work and are difficult to handle, such as real Japanese, which is a beautiful paper in itself; it is, however, very difficult to register correctly. We once did some very fine prints on white blotting paper, this, you will easily understand, picks up the ink exceedingly well, but without the plate is very hard, will stick to it and tear; it also dries the plate very quickly, being so absorbent, and in fact entails etching between each pull. Plate paper in a lesser degree has the same defects, but for many subjects is very suitable.

Most drawing papers are rather hard for printing on, but by soaking them for some hours in warm water and then drying, they will print well, though even then the ink will take a long time to dry and sometimes as much as a week must elapse before a second color can be superimposed.

For general use there are several good collotype papers to be had, and these in three varieties, smooth, medium, and rough, will answer nearly all requirements, and it is an advantage in this, as at all other points in collotype, to eliminate variety, and thus, as far as you possibly can, eliminate the chances of failure and conduce toward uniformity of result.

I have said so little in praise of collotype and so insisted on its many vagaries and possible causes of failure that you must wonder why we continue to work such an aggravating and uncertain process, but, without decrying other means that are employed for reproducing pictures in color, collotype has, at least to my mind, one great advantage over its kindred processes.

Of all the methods I have tried I have found none other give so true a rendering of the tone and color values of the original; happily in these days it is not necessary to dwell upon the importance of securing this result in picture reproduction, for you all are aware how much depends upon preservation of the values of the original in the print, nor need I say how much, not only the beauty but the individuality,

the very life of the picture depends on keeping faith with it in this respect.

In the examples of our work that you see upon the walls of this room, I will vouch for the fidelity of the tone values and reproduction of the textures; for the colors I will not claim so absolute a precision, though you will find they approximate pretty closely to those of their originals.

REPRODUCTIONS OF OLD MASTERPIECES

IN studying the work of the master painters of portraiture it will be found, almost without exception, that the originals are strong in the drawing of masculinity, graceful, dainty and fascinating in the delineation of feminine beauty, and rich in the coloring of background and accessories. Many of them, even after the lapse of centuries, are full of warmth and rich in flesh tones and draperies, glowing with local color as the faces are modelled by the lights and shadows playing across them. Facial expression, anatomical accuracy and the subtle play of light and shadow are interpreted by the old painters through the medium of color so pure as to withstand the attack of time, and at the same time so delicate as to tinge the cheek and nostril with the apparent glow of living, pulsing youth or middle age. To the photographer the study of such originals should be of untold value, but, unfortunately, only a few of us are ever privileged to view these masterpieces face to face. We must get our inspirations from some cold, meaningless reproduction, which, unfortunately, in many cases, does not reproduce. At best, our reproductions, or, at least, such as are based on photography, are imperfect in the translation of tone and color value, while the ordinary photograph, unassisted by orthochromatic plate or color filter, is little more than a travesty upon art.

Is it then to be wondered at that there sometimes appear among us scoffers, who, gauging their opinions by their education, fail to find in these reproductions the inspiration they seek? It is not to be taken as a matter of surprise that men who have learned from their own experience the tonal quality of high lights on forehead, nose, and cheek, refuse to accept as their ideals of perfect reproductions pictures in which these high lights are rendered in distinctly darker tones than the surrounding masses that they are intended to relieve.

It has been held that paintings reproduced by photography should present fair parallels with which to compare other photographs from life. The parallel does not, in fact, exist, and such a premise is fatal to the success of any student working upon it.

How often does it happen that the high light of a painted portrait is built up of color rich in crimson, red, or yellow, either one of which is, by any ordinary process, impossible of photographic interpretation as a high light. The parallel would only hold if the original were painted in some low key of color more nearly akin to the range of color presented in a photograph of a living model.

In such a subject the high lights, middle tones, and deep shadows are all present and may be reproduced as seen upon the model. But in pictures painted in a higher key the element of color is a fatal objection, and presents an almost impassable barrier to correct interpretation in monotone. It may only be obtained by the use of the most carefully sensitized orthochromatic plates, the most careful adjustment of color filter to each particular subject, combined with intelligent manipulation on the part of the operator making the original negative.

Two things, then, seem to be essential if the photographer desires to gain the

greatest possible amount of assistance from his study of reproductions from the work of the old painters. First, that he procure the *very best* reproductions obtainable at any cost, bearing the endorsement of artists capable of judging; and second, that before studying them for lighting, composition, and pictorial qualities, he study them most carefully from the viewpoint of common sense, reinforced by his own experience. Analyze critically every trace of light and shade or questionable feature or unusual perspective; imagine the original before him and decide whether the false or questionable note may not be traced to some false interpretation or imperfect translation of color in the reproduction. Reproductions of the work of the old masters, if viewed in this way and treated as translations only, and that by an agent acknowledged to be not infallible in correctly translating color into monochrome, may be of inestimable aid to the thinking photographer. He may draw from them inspiration and suggestion without limit.

If viewed as literal interpretations of the master's work they will prove dangerous rather than helpful, and the student following blindly the teaching of his reproduction will frequently find himself, where many conscientious and hard-working photographers have been found before, dazed, bewildered and confused, and farther than when they started from a correct understanding of true art as exemplified in these magnificent specimens.

In conclusion, we would not be understood as in the least belittling the reproductions of these paintings, by whatever process they may be made, but rather as urging upon every student the importance of analyzing and deciding for himself, before going on with his study of the subject, how much of what he sees is truth and how much error.

COMBINING THE PINATYPE PROCESS WITH OZOBROME

THE combination of pinatype with ozobrome leads to a series of practical and interesting results. The pinatype process, as is well known, depends on the use of a gelatin film which is sensitized with bichromate and printed under a positive transparency, the pinatype dye being absorbed on those portions of the film which have not been rendered insoluble by the exposure to light.

The pinatype print-plate which thus results from the exposure under the transparency carries a positive image, reversed as regards right and left, and copies are obtained as by laying upon it sheets of paper coated with soft gelatin. The dye in the print-plate transfers itself into the gelatin of the paper, and the result is a positive print correct as regards right and left, and capable of being produced in reasonable numbers by repeated dyeing of the print-plate. In the ozobrome process the film of the tissue or plaster is similarly hardened by contact with the bromide print, which has been bleached in the ozobrome solution. A pinatype plate may thus be prepared in the same way, the sensitizing with bichromate and subsequent exposure to light being dispensed with. A pinatype plate coated with unhardened gelatin is immersed in the ozobrome solution and brought under water into contact with a softened film negative, the two removed together, squeegeed in contact, and put aside for a while. On separation in cold water, a finished pinatype print-plate is the result, the bleached film negative being developed for further use. If a glass negative is to be used, an unexposed, fixed and washed celluloid film is used as the pinatype plate, it being impossible

to bring two plates into proper contact. This method gives a negative, but it is still simpler to obtain a pinatype print-plate if the original negative is converted into this latter by taking advantage of the hardening action of the ozobrome solution, as is done in the "Carbograph" process of preparing direct pigment prints without exposure to daylight.

In this method, also, the degree of hardening of the gelatin stands in exact proportion to the metallic silver of the negative. A clear, vigorous negative is bleached as directed for the ozobrome process, fixed, washed, and dried as usual, when the result is a pinatype print-plate. Such a plate dyed up with, say, "Pinatype Portrait Brown M," gives a fine positive transparency of brownish carmine-red color, distinguished from transparencies by other processes by a complete absence of grain. It is used for making positive prints in the ordinary pinatype way, and if it is prepared to use one's original negative for the making of the print-plate there is no more simple method than that with the ozobrome solution. Such a print-plate may be used for the making of fresh negatives to be printed in other photographic processes, reproductions being made by the pinatype process itself when required of same size, or same by other camera methods when a larger or smaller negative is wanted; or these enlarged negative on an ordinary lantern plate, bleaching in ozobrome solution, washing, fixing, and again washing, and dyeing up with a pinatype dye solution. The result is a negative of good printing quality, which may be correct or reversed as regards right and left. Paper prints taken off from such a plate would, of course, be paper negatives, but there is no obstacle to inking-up such a plate with lithographic ink and taking off prints, the portions of the gelatin film hardened by the bleaching in the bath having acquired the property of "taking" a fatty ink. This is a simplification of the Sino process.

As there is no longer a special plate to be sensitized and printed, but only a positive transparency of the ordinary kind to be converted into a printing-plate, a transparency made by contact with the negative will, of course, give a proof reversed as regards right and left. By making several negatives, either by contact or enlargement, from one positive transparency, and covering each of these pinatype print-plates, a simple method of preparing prints on one or more colors by means of transfer on to a single piece of paper is provided. So long as the paper reserving the several dyed images is not allowed to dry between each operation, the registration of the different colors is readily performed. When using the pinatype process for three-color work, transparencies are first to be made in the camera from the three negatives, bichromate print-plates prepared from these, and prints then taken off on paper. By taking advantage of the ozobrome method the process may be greatly simplified, films from the original negatives being converted directly into pinatype print-plates, and a further step may be taken by converting, as above described, the original negatives into pinatype plates. Those who have not the means of making the three separate negatives by ordinary three-color methods may employ for this single Autochrome transparency, the method being as follows: Using the three-color filters intended for the pinatype subtractive process, the Autochrome plate is photographed separately three times on panchromatic plates. Artificial light may be used for this purpose with great advantage, although a new adjustment of the ratio of exposure given through the filters is necessary. We thus obtain three negatives, the positives of which will correspond to the three printing color: yellow for the blue filter-plate, red for the green filter-plate, and blue for the red filter-plate. Instead, however, of preparing three positive transparencies and from these making pinatype print-plates by the daylight bichromate method of printing, the three negatives are themselves converted direct into pinatype print-plates by means of ozobrome solution, dyed up in the respective pinatype colors, and the prints taken off.

By ELIAS GOLDENSKY
PHILADELPHIA, PA.

Before we close this communication a few words may be said about the use of eccentric stops, for the ancient experiment of using double stops with the photographic lens has recently been revived, and we have heard a good deal with regard to the supposed extraordinary properties of "two-eyed" lenses and eccentric stops. One of the most popular features of the two-eyed stop is the fact that under certain conditions two dissimilar views can be produced with it; and as these two views can then

BY ELIAS GOLDENSKY
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be combined in a stereoscope it is, of course, assumed that these are stereoscopically dissimilar. It is theoretically possible for them to be so, but in practice a serious difficulty arises: The conditions necessary for a true stereoscopic effect cannot be fulfilled by Brewster's expedient of cutting two apertures in the cap of a large portrait lens. The "eyes" must be quite differently situated, and it is doubtful if they could be placed in the correct position without using a specially designed and corrected lens. Some examples that have been produced show very violent distortion owing to the wrong placing of the eyes, and it is manifest that two incorrect images cannot combine to give a correct stereoscopic effect. It is, we think, equally evident that it is not worth while making a large lens that will give the effect correctly, seeing that the method at its best is a very inconvenient one. This question of untrue drawing is generally ignored when the stereoscopic question is under consideration, and it is rather amusing to see that another claim is made for the eccentric stop that depends solely on untrue drawing. It is pointed out that by shifting a single stop eccentrically an effect of altered drawing is obtained that cannot well be obtained in any other way.

As a matter of fact if the drawing is correct with the eccentric stop, the shifting of the stop is exactly equivalent to a corresponding shift of the whole camera, therefore the eccentric stop fulfils no other purpose than that of fine adjustment of the station point. On the other hand, if the effect is peculiar owing to an exaggeraion of the drawing, then the idea that two eccentric stops produce a truly stereoscopic pair breaks down altogether. If a correctly situated stop is shifted eccentrically, then, according to elementary laws of optics, any image that is in sharp focus undergoes no alteration whatever, and shows no movement. All the strange effects of multiple images, etc., that have recently been described depend on want of focus, and, in the case of solid objects, the varying aspects of the image produced by different eccentric positions of the stop are simply evidences of lack of depth. That this is not generally realized is shown by another remarkable suggestion that has followed upon the revival of these ancient experiments. It is seriously suggested that by placing an agglomeration of stops in front of a lens a useful form of diffusion may be obtained! A much simpler method is to put nothing at all in front of the lens, and leave it to work in its own regular fashion, when it will produce precisely the same amount of diffusion.

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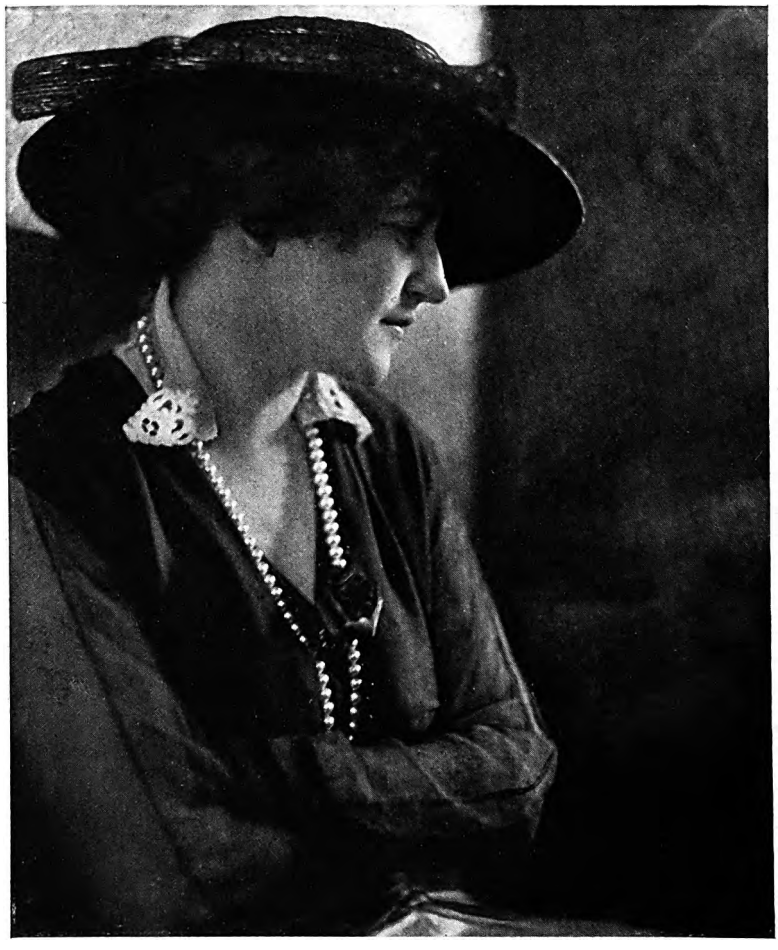

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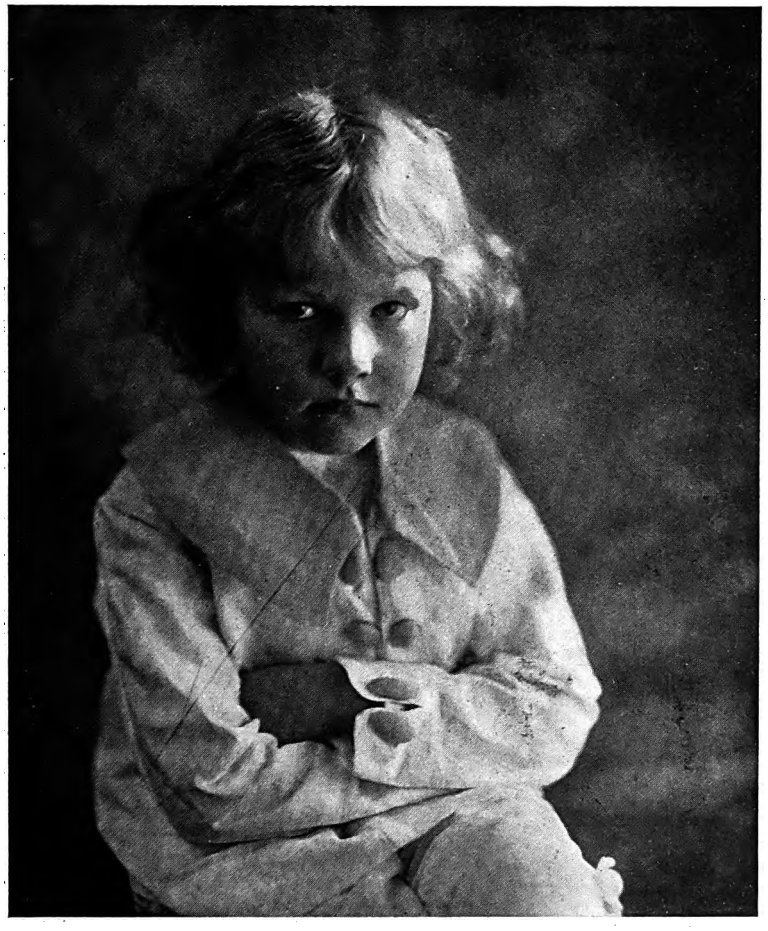

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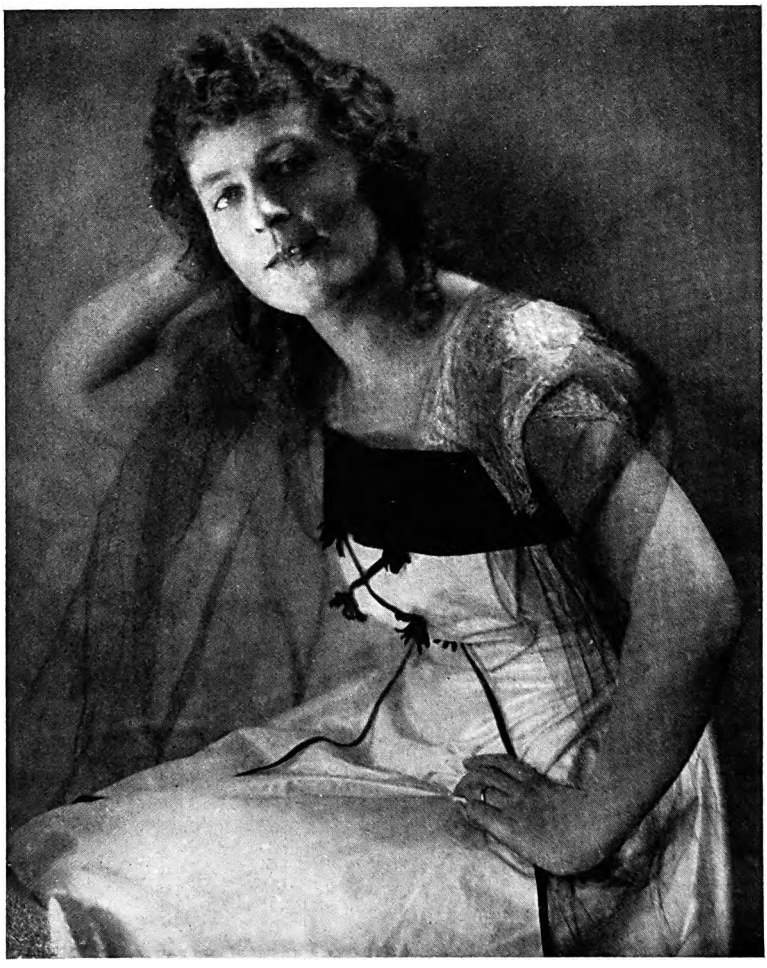

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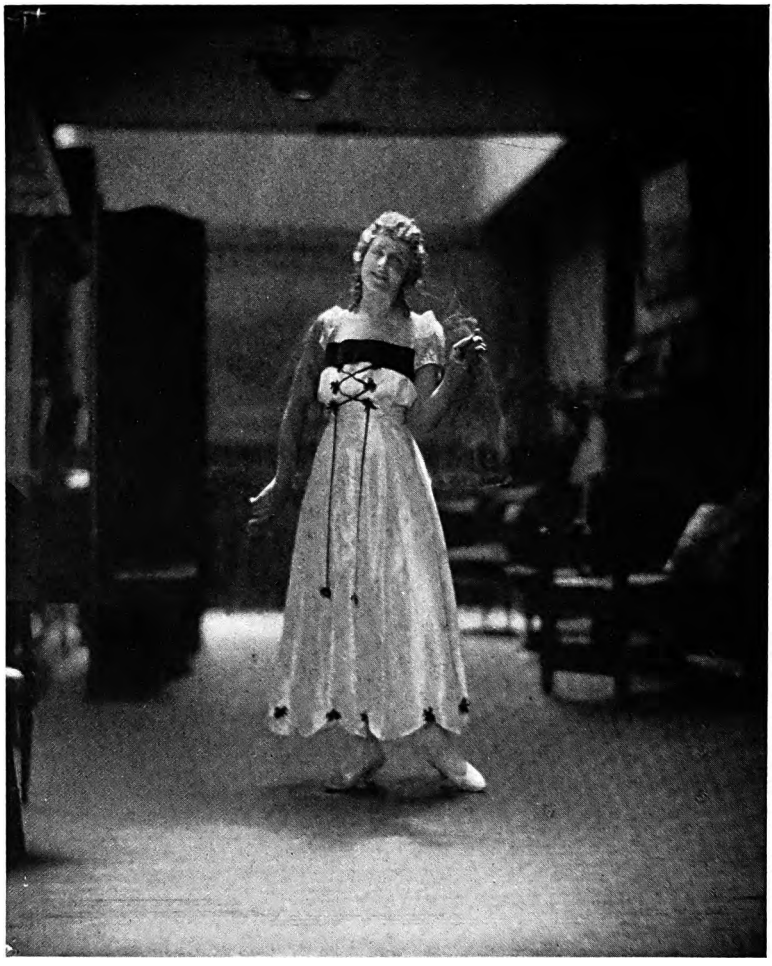

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TONING GASLIGHT PRINTS WITH THE SALTS OF COPPER

By "OPERATOR".

THE many colors that developed, or gaslight, prints may be toned does not appear to be generally known. The toning of a black developed print to brown or to a scarlet red by the use of the salts of uranium has been known and written upon many times. Some photographers have been very successful in securing beautiful tones by the use of uranium salts, while others appear to have been unsuccessful. The cause has been found upon investigation to be due to the red prussiate of potash having been kept in a white glass bottle and exposed to the action of light for a considerable time, which has brought about a chemical change in this particular salt, causing it to become inactive for toning purposes. Whatever purpose red prussiate of potash may play in photography it will become more or less inoperative if it is exposed to the action of light. This salt, which is also known as ferricyanide of potassium, should always be preserved in an amber-colored bottle; then, and only then, can this salt be depended upon for toning purposes. In the present case, namely, for toning developed prints with the salts of copper, the ferricyanide of potassium must have been kept away from the action of light; success then is assured. In the case of copper toning, the color obtained is a beautiful rose-red, differing entirely from the reds obtained with the salts of uranium; and as far as permanency goes, judging by the action of light and air upon two 8 x 10 prints the writer toned and had them pinned to the wall of a room for many months, where they are always exposed to the action of strong daylight, so far not the least change in color has taken place. No doubt that these prints, like all developed prints, would be benefited by a dip in some kind of lacquer, which would preserve them from any atmospheric influence.

There are a few points to be attended to in using the copper toning solutions, particularly during the first few minutes after the print has been inserted into the solution. The prints must always be placed into the liquid in a dry state, because they commence to tone more rapidly than when they are placed therein in a wet condition. The preparation is very inexpensive, and yields a rose-red tone that is not produced by any other red toning bath; moreover, it is suited for chloride and bromide prints alike.

Rich browns can be produced upon some gaslight prints, but not upon all; this fact being no doubt due to the composition of the emulsion. The toning bath is made up as follows:

A

Compound Bath for Copper Toning

Potassium citrate (c. p.)	370 gr.
Water	30 fl. oz.

B

Sulphate of copper	90 gr.
Water	30 fl. oz.
Ferricyanide of potassium (red prussiate)	75 gr.
Potassium citrate (c. p.)	370 gr.

The salts must be completely dissolved before attempting to mix the solutions. The sulphate of copper being more difficult to dissolve in cold water, it may be accomplished readily by crushing the crystals in a small mortar with a pestle, adding some water at the same time; then, by a grinding motion, the crystals become crushed and dissolve at the same time. As soon as the salts in the A and B solutions are dissolved, toning may be commenced by mixing equal parts of A and B, and the prints inserted at once. Be sure that the tray is a thor-

oughly clean one; failure in any line photographic may occur by using a dirty tray. In the course of about two minutes the color of the print will be sure to change. They must be kept changed by turning them over and over, to permit the toning solution free access to the sufaces of the prints. A curious thing will occur now with some gaslight prints. First they will begin to show signs of toning, and gradually change to all sorts of colors, and the print will appear as though it was going to turn into a negative. Do not let this concern you. Continue the toning, when it will be seen that the whole image will change and become eventually of a uniform rose-red tone. Some gaslight prints will tone perfectly without this variable change of color, bromide prints in particular. As soon as the red color has set in, the toning must be continued to secure a beautiful rose tint, which becomes more decided as the prints dry down.

The quantity of solution given will tone a considerable number of prints, which may be either glossy, matte, or semi-glossy. Some papers will tone with much more freedom than others. All kinds, however, will tone by giving plenty of time in the toning bath.

Some kinds of paper never reach a color beyond a very rich brown with a trace of red in them; but in any case the color obtained is both pleasing and acceptable, and gives a change in general appearance that will be sure to meet the taste of some customers.

The solution produced by the proportion of salts given will prevent any pinking that is so noticeable hitherto in prints treated with copper. In this instance the whites will be brilliant, while the more dense parts of the prints will be of a very fine rose-red.

CONTROLLING DEVELOPING

By BURTON H. ALLBEE

AFTER exposure, development, with the print to follow, is the ultimate goal of the worker. Professional photographers who work in studios, under a constant light, are envied by their amateur friends who are in an inadequately lighted building for one exposure, and outdoors in the bright sunlight for the next. That constant light, with the assurance of good negatives, appeals to them as a desirable feature of photographic work.

No matter how careful a worker may be about his exposures, unless he has a constant light they are certain to be uneven, and therefore will require more or less manipulation in development. A meter will help some, but the most careful following of its readings will not overcome deficiencies which a worker may discover when he develops his plates.

Obviously development must be relied upon to supply some of the deficiencies of exposure. Not so difficult where a plate has been over-exposed, but practically impossible in under-exposures. Expert use of developing agents cannot bring out on the underexposed plate what is not there. If the light touched it but slightly no manipulation will bring out the image. If it was over-exposed, modification of the developed will produce a passable negative. These are all trite observations, yet they require repeated emphasis, since very many workers are prone to overlook the plain teachings of the experience of those who have gone before.

In photography, as in other matters, experience appears to be the most convincing teacher, and he who assists in this experience is performing a real service. Information regarding devel-

opment ought to be welcomed for this reason, and undoubtedly it is, but in this, as in other matters, the human element presents a fresh difficulty to be overcome; that is, a developing compound which serves one person well will not serve another equally well. No reason, scientific or otherwise, can be given which will account for this, but it is a fact which every worker with photographic materials knows full well.

Development is, after all, a simple thing. The free silver imbedded in the thin coating of gelatin is touched by the light. Certain specified chemicals will turn that silver black, or reduce it to metallic silver, and fix it so that it will never change. No one can ever give a real reason for it. Scientific explanations will tell how it is done, but they can never say why. This is beyond the ken of human knowledge. Yet knowing that certain chemicals combined in stated proportions will act in a certain way upon the silver in the emulsion, it should not be impossible for one to understand the process well enough to know what will result when the proportions of the chemicals are varied. Having come to understand this, the next step is by no means hard, and any careful worker who desires can move forward with reasonable assurance of a fair degree of success.

Probably what troubles the worker more than anything else is the lack of control. That is, he is unable to so manage his developing solution as to save an overexposed plate. The expert cannot save an underexposure, if it is serious. Skilful use of the pencil and knife will help, but they can never compensate for the failure of light to act upon the sensitive salts. Keep the shutter open long enough to let the light act upon the plate, and after-manipulations will become much easier or unnecessary.

In my own experience I have had success with hydroquinone, and I use it to the exclusion of every other agent for developing plates—all brands seem to develop equally well with it. Years ago I used hydroquinone, but at the insistence of a friend I ceased and took up pyro. The camera and shutter were the same, and the plates were the same, so far as brand goes, but for three years I did not make a half dozen clean negatives, and for one whole year I did practically nothing, believing that my apparatus was out of order. The lens and shutter went to the factory and came back with the word of two manufacturers that they were both in perfect condition. And still the negatives were bad.

One day I made some exposures merely because friends were present and wanted groups. My pyro was exhausted, but there was a little hydroquinone at hand. I went back to my old formula, which is so old, by the way, that the manufacturers long since dropped it from their circulars. Each one of the three negatives was as near perfect as any amateur ever makes. They were clear. The gradation could scarcely be improved and they were of good color. This set me to experimenting. I used a good many plates before I was done, but the result was I decided upon hydroquinone and have used it ever since. The negatives it makes are as good as the average amateur makes, and better than some of them. It is slow, and if the temperature falls below 60° to 62° F. will not act at all. But amateurs are not pressed for time. They are not, or should not be, turning out negatives for the purpose of seeing how many they can make; therefore, a slow-acting developer makes no difference. Furthermore, it should not be difficult to keep the temperature up to 65° or 70°. The thermometer will help to regulate that. Only ordinary care is required to insure proper temperature.

Here is the formula:

No. 1

Water	8 ounces
Sodium sulphite (dry)	240 grains
Hydroquinone	80 grains

No. 2

Water	8 ounces
Sodium carbonate (dry)	1 ounce
Potassium bromide	40 grains

Use equal parts of No. 1 and No. 2.

For overexposed plates this developer is useful. At normal strength it is a

hard worker and will sometimes make an image so sharp and wiry that it seems to stand out in relief on the emulsion. But modification is possible, and following the well-known rule that increasing the water reduces the contrast it is not hard to manipulate it so as to produce any type of negative wanted. For example, the formula as given is sixteen ounces. When ready to use add one-fourth the quantity of water, to twenty ounces. The time of development is increased, but the contrasts in the negative are softened. Make it twenty-four ounces and the contrasts are still further reduced. Thus by changing the proportion of water any variation desired may be obtained in the negative.

The chief fault of the amateur, say the experts, is underexposure. Therefore a developer which will, so far as possible, help to overcome the ills to which an unexposed negative is heir is helpful. I have used one for portrait negatives for years and it has never failed. Perhaps it may be added that underexposure is more apparent in portrait negatives than in any other variety and a developer that will give some degree of gradation in portraits is much to be desired. Here is the formula:

Water	10 ounces
Eikonogen	125 grains
Sodium sulphite (dry)	125 grains
Sodium carbonate (dry)	125 grains
Potassium bromide	2 grains

The image appears quickly and builds up rapidly. Indeed, it is necessary to watch it closely for the high-lights appear on the back of the plate almost before the worker believes it possible. The full strength of the formula is seldom desirable. All degrees of dilution are possible, and I commonly use it up to equal the volume of water. This gives a soft negative, with excellent gradation, capable of yielding a print free from the chalkiness that seems to be almost inseparable from amateur portraits. This formula is English and it came recommended by an old gentleman who played at photography before the dry plate was invented. His recommendation was not at fault. The formula will do what he said it would.

Individual workers can modify it to suit themselves. Probably the more water is used, up to the limit of double the volume, the better, yet each one will have to work that out to his own satisfaction and in his own way. In other words, it is quite likely that each worker must take this developer and make it his own by changing the quantity of water used until it exactly suits the exposures he makes. One cannot be too insistent upon this point. These formulas must all be individual. One must keep at them until one succeeds in producing just the effect desired, and then stop with that developer; but if more knowledge is wanted, take another and do the same with that. One cannot know too much about the behavior of plates under varying conditions. And the way to learn is to experiment.

If amateurs would make experiments with different exposures with the same brand of plates and then with different plates, and again with developing solutions variously modified, they would not only learn a great deal about manipulation under different conditions, but they would get far more sport from their efforts. To be able to act with some degree of certainty under these different circumstances is worth all the effort exerted in undertaking and carrying out a series of experiments.

OPPORTUNITY knocks at every man's door at least once, but it is well to be ready for it when it appears.

WHAT about the sign outside your store? It it attractive, plain, well located? Does it possess any individuality? You may rarely notice your sign yourself, but the world at large is looking at it every day in the year.

EVERYONE can create, but few take time to create well.

IF you fear to undertake a difficult piece of work plunge into it. Remember that is the way people learn to swim.

GLYCERIN FOR PLATINUM PRINTS

By LEONARD K. HIRSHBERG, A.B., M.A., M.D.

MR. EDGAR SENIOR, whose interest in glycerin for platinum printing is now well known, has again reported much success with this method. Glycerin, he says, is of use in the development of platinum prints, for when added to the developer it so reduces its hasty action that it enables local development to be carried out without trouble, As the sensitive salts with which the paper is coated are practically not soluble in glycerin, the latter may be painted over the surface of the paper without in any way hurting the print.

If then a mixture of glycerin and developer is applied, the over-printed portions can be retarded by the application of a weaker developer, or one which contains more glycerin, until the other parts of the image are bold enough. This formula will be very helpful:

Potassium oxalate . . .	1 oz.
Pure glycerin	1 oz.
Water	3 oz.

This can be put up in a stock solution, which when about to be used may be employed in the proportion of one part mixed with an equal quantity of water. The developing salts, if desirable, can be used in lieu of the oxalate of potassium. With a little practice it is most simple to control your development of the prints with either one. After you obtain exactly the result that you wish the prints are then placed for the time required in each of the three acid baths. Finally they are washed and dried and then are under-exposed platinum prints intensified with gold.

It has been some little time back since Mr. Alfred W. Dolland announced his method of strengthening under-exposed platinum prints with his solution of chloride of gold applied in glycerin. It was used by a few imitators with great success. All that is necessary is to apply the glycerin to the finished print and then spreading a solution of the gold chloride by means of a piece of absorbent cotton or a camel's hair brush. The strength of this gold solution, according to Mr. Senior, is fifteen grains to fifteen drams—not quite two ounces—of distilled water.

Then the prints rapidly gain in strength and assume a fine bluish-black color. When the action in this method has proceeded far enough, the print is washed, and an ordinary amidol developer is applied for a few minutes in order to reduce any gold chloride that remains over into a metallic state. Then another washing completes the operation.

There are a number of prints now extant that were finished in this way and they are as fresh as when first made some years ago. Moreover the colors in them are decidedly pleasing in every way.

Another intensifying method for platinum prints was suggested by Baron Hubl. This is a process for depositing platinum upon the prints. If anyone uses this method they require these two solutions.

A

Sodium formate	48 gr.
Water	1 oz.

B

Platinum tetrachloride . .	10 gr.
Water	1 oz.

Fifteen minims of each of these are necessary for use. The entire combined thirty grains are taken and made up with water to two full ounces. The print is placed in a flat dish and the solution is poured over the dish, which meanwhile has been kept rocking to and fro until the desired effect can be seen in the print. Washing and drying then complete the process.

A PERSONAL CORRESPONDENT AT THE PANAMA-PACIFIC INTERNATIONAL EXPOSITION

II. DOING THE EXPOSITION WITH A FOUR-BY-FIVE

THERE are two rules at the Panama-Pacific Exposition which will displease the pictorialist: He cannot take inside the grounds a camera over 4 x 5, and he may not use a tripod. There is, incidentally, a tax of twenty-five cents for a license, but that is a nominal sum in California and it is

TOWER OF JEWELS

worth many times that to get a half dozen of the beauties perpetuated on film or plate. I wish I had the power to convey some just idea of how immense and how beautiful the palaces and courts really are. The perspectives are awe-inspiring and the coloring of a delicacy that defies description: The greens, pinks, blues, oranges, and browns are of that quality which pertains to the blue of the sky, subdued, faded almost, one might say, but purposely and artfully selected and blended. All the structures are designed with a view to a general unity. One may aim the camera in almost any direction and without further composing get a picture —one worth while, I mean. So one misses the tripod and ground-glass very little. Yet, when lost in the mazes of paths, nooks, and passages, in and about the Palace of Fine Arts, I longed so for my 8 x 10 and a substantial tripod, that I might revel in the inverted image, that I almost determined to break the rules and smuggle in my outfit in a suitcase when next I were to come. I think we camera fiends get to a point where we can never see the fulness of beauty except on the screen.

To learn the names of the arches and statues requires an instructor and guide. After two weeks' constant attendance I am still wandering from spot to spot, asking no information, entering no doors. In one court, that called "Universe," I think, are two crystal pillars as high as a three-story building that shine in the sun by day and are effulgent with inner light by night. These are surmounted by classic figures on the clearest of crystal globes. As a background to each is a magnificent arch. The one shown has an oriental sentiment upon its frieze and is surmounted by an oriental group. No western mind conceived this: "They who know the truth are not equal to those who love it," and, "The moon sinks yonder in the west, while in the east the glorious sun appears behind the herald, dawn. Thus rise and set in constant change those shining orbs and regulate the very life of this our world." Passing under this

FESTIVAL HALL

arch one should look up at the paintings on either side.

The most impressive sight that has ever held me was the Court of Abundance. I am very close to middle age and have travelled thousands of miles. My life has been spent in the biggest of cities. I have seen the lightning play about the wild crags of the Rockies, and have stood on the high peaks of that and other ranges overlooking what seemed the universe, the boundless ocean has presented its puzzle of illimitability and I have resigned my soul and much of my substance in the trough of waves that topped the masts. These were stupendous. But somehow one accepts the big things in Nature as a matter of course, fine phrases notwithstanding. And here in a space of a few acres the hand of man had wrought a spell that entered and gripped the soul. It is almost morbid, this sombre court, even by day. And why it should be called the Court of Abundance I cannot guess. Let me tell you of its aspect by night. In the centre of a placid lagoon is a composite allegory in what looks like old ivory. The figures are so devised as to form a ring about a great sphere of white stone. Inside this ring and about the globe slowly rise streamers of lazy steam. Every now and then the dull yellow light within the circle changes to dull red. About this lake are numerous urns, the four supports of each being serpents whose heads project over the rim and spit flames to a common centre. In each of the four corners of the court are urns so large that half a dozen men might stand comfortably in them. Seen at five minutes to seven these urns are dark and any abundance of which they might tell is of the abundance of death. At seven one of the four begins to give out fumes, like a volcano promising to revive after a long rest. Five minutes past and another urn shows life. And so till all are sending up curling banners of white steam. Suddenly the night is pierced by dazzling light. Two candelabras, perhaps forty feet high, burst into light with hundreds of high-power bulbs, and lo! the urns no longer give up white fumes but lurid flames that throw terrifying shadows on the walls and make bloody radiance on the Moorish Tower. The lagoon turns to

FOUNTAIN OF ENERGY

crimson. Turn to right or left or to your back, and you will find everything changed. The dark towers and domes now glow with soft orange, red, and yellow lights, and the firmament is riven by an aurora. Billions of candle-power go into that effect, but you are not in the mood to think of searchlights. Mountains, oceans, storms are big, but their effect is diffusive compared to the concentrated emotionality of all this. You shall see this aurora again, face to face, as you wander in the avenues of the Palace of Arts.

Aimlessly, that is the sympathetic way, you go along the curves of the Court of the Four Seasons. At each point of the compass is a niche as large as a ballroom, yet so proportioned as to look moderate. This is summer shown in a group and a living stream gushes from the sculptured rock to mingle with the lake. So each season is represented, always that great half-dome niche, the heroic figures, and water flowing. Through an open cleft the stars shine, and long, dank festoons of real moss drape downward.

So through ways that seem sometimes like the avenues of the dead, but of the glorious, blessed dead, you wander till you come to what seems a fragment of the Parthenon. These simulated ruins, which on second glance show to be intact and part of an entirety, are the outposts, literally, of the Palace of Fine Arts. The ever-present lagoon washes the edge of the path on which you tread and noble columns reflect a vibrating arabesque on the limpid water. Do not come here when the crowds foregather. You should try to have this to yourself. Some fair creature in light-cloth topped shoes and a tight little toque rearing its long feather upward and sideways straight to your eyes may say in your hearing, as one of her kind did in mine, "Isn't this the cutest ever, just!" Then your mood from the sublime might change to one for murder.

On a quiet day and a quiet hour, which is most likely Monday morning before nine, you may commune with the gods and those mortals who in the days of Praxiteles portrayed them in everlasting stone.

TOWER OF JEWELS BY NIGHT

The hours pass. Crowds profane the sacred precincts. Here and there one worthy soul moves in the noisy mob and isolates himself as much as he can, striving to gather the scattered emotions bred of the surroundings. Day passes, the tramping feet grow tired and the vulgar stomachs get hungry. The place becomes quiet again. Shadows lengthen and it is evening. The high-placed lanthorns glow out with orange lights, the lake is black and broods under the stars. Then just as you turn to walk the Arc of Achievement that aurora beats in your eyesight. Spokes of livid light defy the firmament.

Your emotions have been played upon to the end of the gamut. Your soul is full, and you are ready to call it a day.

Such are my glorious days these times. Morning finds me among the first at the gate, and when the chimes tell me I must leave I go, tired in body, sometimes overwrought in spirit, but looking forward to the morrow as another opportunity.

In telling I may seem to strain the limits of moderation. I feel moved to do so. If I could reach to the highest altar on that Olympian height and steal a spark of the divine fire glowing there, even I might fan it to a blaze, here, and give dignity of truth, no more, to a peroration.—*Sigismund Blumann.*

MOST men spend their time worrying about the talents they do not possess. A far better plan is to find out the talents you have and use them to the best advantage. If you have them, be thankful but do not be boastful of them.

IDEALS are supposed to belong to the philosopher, but they are as necessary to the business man.

IF you have doubts about yourself you certainly can not expect others to believe in you.

PRACTICAL TALKS ON STUDIO WORK

V. PRINTING-ROOM

By RYLAND W. PHILLIPS

I HAVE always held to a theory that negatives should be made to such a degree of perfection that no printer could help but produce from them the most beautiful results, and while this is still my opinion it is yet a little too ideal to be a practical fact, except possibly in the one-man establishment. If the man who makes the sitting can do all the rest of the work until the complete photograph is delivered to the customer, he undoubtedly can produce something nearer to the ideal which he saw at the time of the exposure, than if he has to allow the different stages of the work to be taken up by other people.

But there are many *ifs* between the sitting and the printing-room which complicate the process considerably—dark days, cold days, hot days, little mistakes in judgment, different emulsions of paper, and sometimes bad chemical compounds, all tend to keep the printer on the jump to produce uniform results.

One of the most difficult problems in this department is found in getting out dozens of prints all of one shade and tone. Customers want their orders filled with a set of perfect prints, one as good as the other, and they are well within their rights; but it is sometimes difficult to accomplish, especially with platinum paper. One good way for the photographer to get this result is to have a test print made the first day, compare it with the original proof, either O. K. or make suggestions for correction, and send back to the printing-room for completion of the order. If the test print is sent to the office with the finished work, you have an opportunity for comparison, and also a sample to be filed away with the original card for reference in case of duplicate orders.

In the printing-room the space should be so arranged that few steps are necessary for a printer to get from his negative bench to his window (in the use of printing-out papers). The time of year when he is busiest is the time when the days are shortest, and saving of steps means economy. Great care should be exercised in keeping platinum paper cool and free from contact with dampness. The dampness will make a print develop while it is printing, and brilliant results cannot be obtained under these conditions. This trouble mostly occurs on muggy days in summer.

A set of drawers at the end of the work-bench can be filled, early in the

morning, with paper cut to the sizes required for the day's orders; but if the day is damp, only a few pieces at a time should be cut from the rolls.

It is a difficult matter to produce uniform prints on platinum paper, and if trouble is met here a simple home-made actinometer and small strips of proof paper can be used to good purpose. The *printer can select six, eight, or ten negatives of the same density and quality, put his paper on, and place them in the window with one actinometer.* If this is carefully done there is a great saving of time and absolute uniformity of result. By using this scheme twenty or thirty frames can be kept printing in relays of ten with only three actinometers to watch.

Printing in the ordinary way it takes about ten seconds per frame to examine during the progress of printing, and this is usually done about five times before the print is ready for development; by simple multiplication you will see that the time occupied in examining thirty frames during printing will be 1500 seconds, or 25 minutes. Compare the same time for examining three actinometers, at 10 seconds each, five times, and you have 150 seconds, or 2½ minutes, or a saving of 22½ minutes. Take ten changes of thirty negatives during the day, and you have a grand total of more than four hours saved for the printer to do little things at his bench, which he would never get if he were working the system of separate examination.

I am well aware that the old, died-in-the-wool man will not be very successful in carrying out this suggestion, because it is hard for him to keep his hands off the frames while printing, and he will not often believe that he can judge the printing quality of a negative as well as he can the dim image of a platinum print. With this doubt fixed in his mind, and skeptical of the success of the scheme, he will not make it go. Nevertheless, it is and can be successfully done by men who are careful of the little economies.

Many photographers have their printing done in the open sunlight, which is not conducive to best results—first, because the printing is too rapid to allow of the best chemical action, and, secondly, because little particles of dust will accumulate on the glass and produce spots on the print, which must be touched out in the finishing-room, causing unnecessary work.

In developing platinums we have found the best results by sticking pretty close to the manufacturers' instructions, and have had to use boiled or distilled water for our stock solutions. It is necessary to add new stock every day to that used the day before, otherwise the prints will come out lifeless and one day's prints will not match up with the other. Fixing and washing must be done with conscientious care or faded platinums will be a later result. The one faded sepia platinum brought back to the studio after six months has worried many a photographer into discarding altogether this beautiful medium for his negatives, and lack of care will cause such a result. The trouble may not be discovered until many orders have been delivered. It is not a nice thought to realize that there are probably several hundred faded-out prints with one's name on them, hanging in as many houses, saying to the people, "He made me! Am I not a poor example of photography?"

Part of the work of the printing-room is the getting out of proofs, and the matter might just as well be thrashed out here.

If the proof negatives are retouched the day following the sitting, they can be placed in the frames that afternoon before closing time, put out to print the next morning, and be ready for delivery by noon of that day. This delivery in forty-eight hours is prompt enough and it gives you a whole day in which to find time for retouching, etc.

There is no doubt that people want the proofs retouched these days. The time has gone by when customers will allow for the softening influences of retouching and it is almost fatal to send a proof from a raw negative. This condition is adding daily to the running expenses of our business and I see very little opportunity for making it up unless we can work in little extra charges on our orders.

One of the vexing troubles in regard to proofs is the difference in appearance between them and the finished print. The paper we are required to use is so red in color or glazed in surface that when platinum or "gaslight" prints are made in finishing they will not match up, and often the original proof has the advantage to the eye of the buyer. How we are to get over this trouble I am not able to say, but I hope the manufacturers will take the matter up before long.

In our own studio in Philadelphia we are making every effort to present the proofs in as neat a form as possible. They are placed on pages enclosed in a folder, returned to us when the order is given, and follow the negatives through until finished; after this they are filed away with the original order for future reference. Very often we have calls for the original proofs after the finished order has been delivered, and as we can lay our hands on the folder in a moment it amounts in many cases to orders from the original discards.

The present tendency to discard all printing mediums for the so-called gaslight papers is simplifying the printers' work to a considerable extent, but it is astonishing to see so many poor examples exhibited at our conventions. One of the reasons for this is that we have been told that these quick-printing silver papers are so easy to work, whereas they are quite the reverse.

Regardless of what the wise ones tell us, our negatives must be made for the particular brand of paper we wish to use or we will be in trouble all the time. One paper will require a good solid negative for best results, while another will print well on thin, delicate films. The main fault in getting good prints seems to be a lack of judgment in time and development with relation to each other. Many prints exhibited look as though there was a hazy scum over the surface, and that the silver in the paper had not been fully acted upon, but had been fixed out and washed away, and this is generally the reason for the weak appearance of a print. This is easy to discover at conventions by a comparison of the manufacturers' prints with the general display; the manufacturers' prints are always clear and well rendered, and one feels that the best results have been obtained, while the exhibition walls are covered with a great variety of badly printed photographs. There is absolutely no excuse for such mistakes. If a man hangs out his shingle, and advertises himself as a photographer, he should at least know the technical side of his work and produce the best and only the best. I do not see any excuse for the exhibiting photographer not showing just as good chemical results as the manufacturer.

The printing of these papers is so similar to the making of negatives that rules for one will almost fit the other, as somewhat the same difficulties are encountered.

In negatives, making a short exposure on a subject not sufficiently lighted, although the light may be well balanced, will result in a thin negative, and a piece of paper insufficiently exposed over a negative will result in the development of a weak image with gray blacks and unfilled whites.

The manufacturers have recognized that the professional photographer does not produce a uniform strength of negative and they are making as many as three grades of paper—hard, soft, and medium—but the man who counts on this to help him out will always have his printer guessing and trying different papers to see what will give the best results. The printer, under such a system, will not only lose his grip on a standard for strength and color, but will also waste a lot of time on trial prints, and the proprietor will be buying three times the amount of stock in order to keep on hand a sufficient supply of the three grades.

It is possible to make the regular run of negatives so uniform that one grade can be used throughout, and the printer will only be required to modify his developer to suit the little variations in negatives. I know this is putting the case strongly, but it certainly can be done, and if successful will take an important place in the economies of the establishment.

It is very important that a printer

follow carefully the instructions of the manufacturers of the paper he is using, unless perchance he is a master chemist. Even in this case he will be careful about using a balanced developer, an acid stop (when required), and a fixer to conform to the conditions of his chemical combinations. There are a few men (very few) who are so well versed in chemistry that they produce tones not known by the manufacturers themselves, but this is dangerous ground for any man who does not know all the chemistry of his paper.

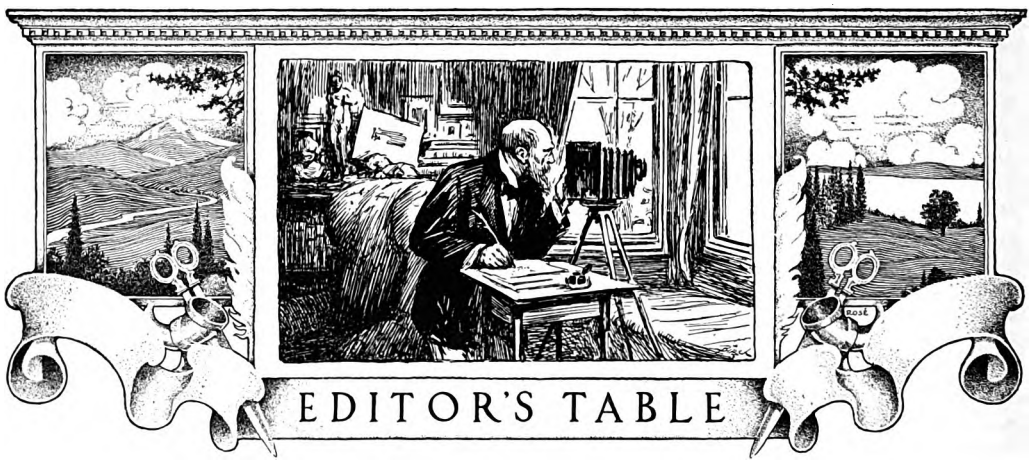
There are three important factors in printing "gaslight" papers: exposure versus development; use of the acid stop; proper fixing and washing. All exposures must be made to allow of sufficient length of development, that all the chemical action can be fully carried on, so as to take advantage of all the silver deposit in the paper. If a piece of paper is exposed too short a time the light will not have penetrated fully into the body of silver; prolonged developing will only result in flatness and often fog. If the exposure is too long, the development must be short, and full chemical action will be prevented. In every case endeavor to obtain all the silver deposit that is possible according to the negative.

When the acid stop is recommended, do not fail to use it. There is an action which takes place in the use of this bath which is necessary to the uniform brilliancy of the prints. Most papers are recommended to fix in ten minutes; but this applies to a fresh bath—therefore it should be kept fresh, not only to safeguard the durability of the print, but because every minute the print remains in the fixer, beyond the fixed point, the difficulty of washing out the hypo increases. Unlike a negative, the chemicals of a bath will penetrate through the paper back of a print, and if left in the fixer too long will absorb so much hypo that it will be very difficult to wash.

Probably, the hardest question in relation to "gaslights" is, "How do you make them lie flat and stay flat?" The shortest answer I have heard is, "Bake them in a reverse roll." This with some modification is the only good way I know. I would recommend the method which includes, first, blotting off under *dry* blotters, then rolling face out between blotters on corrugated board, then placing in a drier with a small gas-flame underneath and plenty of openings for ventilation. A number of these driers are on the market and they are all efficient if used right. All prints should be allowed to remain until they are bone dry. They will be curled back and will not lie flat until mounted in folders and when delivered will remain flat. The only thing that will make such prints curl later is subjection to dampness and dryness alternately.

The printer is often compelled to use something on the back of his negative to equalize a shadow with a highlight, and the blurring of shadows has long been in vogue, but more than this is required at times. A certain commodity on the market, called ground-glass substitute, if flowed over the glass side of the negative can be worked on with pencil or lampblack to great advantage. I have found some difficulty in the use of ground-glass substitute: uneven flowing over the plate and an absence of tooth are the two troubles most frequently encountered. The former can be remedied by cleaning the glass with a solution of one part ammonia, one part alcohol, and four parts water, which will remove all the grease from the glass and allow of smooth flowing. The absence of tooth makes it difficult to get sufficient lampblack or other powdered substances to stick, and if a few drops of benzol are added to the ground-glass substitute the lampblack will stick nicely.

Many new devices are coming out to make the manipulation of gaslight papers easier, but they will always need the greatest of care in timing, developing, fixing, and washing.



THE BUSINESS OUTLOOK

ONE of the most interesting and promising signs of the times from the viewpoint of a professional photographer is only beginning to make itself apparent. The sign of promise is to be read in all parts of the country in the increased attention that is being given to the development of what may be termed the purely business end of the photographic problem.

State associations everywhere are devoting space in their programs and time in conventions to its exploitation and discussion. The several photographic journals throughout the country have devoted considerable space to this subject during the past two or three years and it is more and more claiming and holding the individual attention of the progressive professional.

It is now coming to be very generally conceded that most of us are long on the artistic and short on the business side of photography. As the situation is becoming clear and photographers are realizing, as they never have done before, that they must adopt modern methods of business in their studio and conduct their work on the same lines that alone make other business profitable, the outlook of the professional photographer improves.

In waking up and reaching out after more business he consciously expands in every direction. The adoption of a more progressive policy in one part of his establishment leads to improvements in the other lines, until almost before he knows it he is producing work of a better technical, more artistic, and more salable quality.

The discussion and adoption of modern business methods in the photographic studio is one of the most promising signs of the future in the photographic craft.

PHOTOGRAPHIC GRAFT

IN the present-day rush of business, with its complex machinery and its close affiliation with political side lines, the word "graft" usually suggests something of an unsavory nature. The graft and the grafter of modern times are not popular in polite society, but there has lately come into the field a graft which though not new in principle has never, until very lately, received the amount of attention properly belonging to it. The graft to which we allude is that carried on under the able direction and personal supervision of a man on the western coast of this country who is devoting his life energies and his entire fortune to the development of better fruit than has ever been known before. The papers are full of the wonderful achievements of Mr. Luther Burbank, of Los Angeles, who through a long series of experiments and discouragements has succeeded in bringing to a wonderfully

high state of perfection a large variety of fruits. Starting with the wild brier or the natural product of uncultivated vine and shrub, this man has, by a careful and scientific system of grafting into the vine or wood of the parent stock cuttings from more perfect specimens of the same or even different kinds, produced fruits so far superior to any ever borne by the parent stock before, that the eyes of the whole world are being turned toward his investigations and his name is in almost every mouth. Carrying his experimental work still farther and deeper into the beginning of fruit growth, this man has succeeded in pollenizing flowers from these various fruit-bearing vines and through the pollen of a better kind, which he has skilfully transmitted into the flower of another, has contrived to make nature, through its own natural laws, produce results which are almost subject to his own will. Where such grafting as this exists, certainly no fault can be found with the results produced under the system. It is only in the baser kind that criticism finds a place.

What connection do we find between the grafting and pollenizing methods adopted by this man of genius and ability in the West and the photographic field? This question may be asked and may as readily be answered. If by pollenizing the flower of the wild berry growing by the roadside or on the rocky hill, and through the infusing into it of another plant, a higher development in fruitage may be produced, the same general plan can be adopted in the development of the photographic field of business.

Photography today produces flowers the like of which it would be difficult to find in any other branch of business in the world.

Its possibilities for the expression of sentiment, individuality and beauty are unsurpassed. It has within its scope the power to preserve for generations to come, with fidelity, with artistic expression, with truth to nature and with an ever-present charm of beautiful reality, the features of those unspeakably dear, to some at least, in every portion of the land. With the changing hand of Time these features cannot otherwise be preserved. Photography, then, should have a place in the business of the communities of this country far higher in the business and the social circles and far more profitable to its devotees than it occupies today.

There is in the flower growing on the parent stem of photography the possibility of development into a much more perfect fruit than has ever yet been grown. That possibility, however, must come from a system of pollenization similar to that so beautifully demonstrated in the work of Mr. Burbank. The new life, the new sap from some other plant of more perfect growth must be infused into this flower before it can attain its fulness of fruition. Pollenization can be effected by the combination of the sane, intelligent principles of general business that are so necessary to the growth of every other organism in the business garden of the world. The flower of photography is beautiful, but its powers of fruiting are very small unless inoculated with the pollen of this business growth so prominently seen about it. With the power that it possesses to perpetuate those things that should be of lasting value to our children and their children, every studio in the land capable of turning out work of fairly good quality should be busily employed from week to week. That such is not the case we believe to be wholly due to the inadequacy of the business methods with which photography has been exploited in the past; it might almost better be said without which photography has been allowed to exist in the past.

Photography has been called a luxury, and so it is to a very great extent, but it is something more; it is something that should command the attention and respect of every person in the land. It is not difficult for businesses which deal in other luxuries to grow and to develop until they become not only successful but immensely profitable. It is not because the products of the business are more necessary than those of photography, but it is because the man behind the business realizes and appreciates the necessity of forcing the public opinion to recognize and demand his

goods. It is because a taste has been created for them, which once created continues to grow until it becomes a habit.

The same can be done in the photographic field, and when the real value of a business administration becomes apparent in any studio, its advancement also begins, not only along the lines of artistic development, but more especially along the lines of commercial success. These two can be made to go together, and the one infused into the other will produce a fruitage the equal of which has seldom yet been seen. There are fortunately some studios, comparatively few, in this country that realize and accept this fact. They are working out the development of photography not only on artistic lines, but also on those lines of intelligent business administration which are bringing them the substantial fruitage of dollars where cents grew before. The successful fruitage of reputations for good photography and for good business methods are making them prominent even in the large business communities in which they exist—the successful fruitage of a growing business along those pleasant lines which find acceptance among cultivated people of all classes, and that while being easy and pleasant to pursue are profitable at every turn.

It may be that in drawing this comparison between the pollen of the flower and the development of photography, we may be accused of straining for effect. We believe, however, that the simile is a good one, and that the same beneficial effects may be looked for in the combination of the business and artistic development of our craft that are looked for by the man who has so ably demonstrated his faith in the development of fruit from thorn and thistle. It may be tried by any man. He needs no formula, nor any apparatus. He must simply study for himself the conditions amid which his studio is placed and apply to the working out of his photographic business those principles of business push and enterprise that have made the poor confectioner of a few years past a wealthy man today, and that have produced similar miracles in many another line of luxury-dealing business. He must infuse into himself the enthusiasm of a business spirit, the desire for growth, the ability to grasp the situation in which he finds himself, and to force recognition and respect from those about him. There is scarcely a community in which a photographer may not increase his business by seeing to these things, and he may increase the respect of his townspeople by careful attention to many details dictated by the business instinct. The successful men of this country are not all in the large cities. They grow in any climate, in any soil, under any conditions, provided the technical ability of a good photographer is found in a man who knows how to do business on business principles.

We believe that any man may for himself test the truth of this statement by passing before his mind the names of successful photographers of his own acquaintance where the highest perfection of success exists. There the highest development of the business and the technique will almost invariably be found.

ELIAS GOLDENSKY

FEW photographers, in this country or abroad, have received rarer distinction than Elias Goldensky, of Philadelphia.

The fine craftmanship of his portraits and the subtlety of characterization and lighting are singularly fine. He is one of the few photographers who, having thought deeply on all the details of his craft, has achieved results of a very high order.

We are proud to present to our readers such fine examples of Mr. Goldensky's recent work.

THE P. J. of A. PRIZE COMPETITION

PRIZE WINNERS

First prize—$100. Paul L. Anderson, East Orange, N. J. Subject—"Dr. Edward A. Reiley."

Second prize—$50. W. H. Porterfield, Buffalo, N. Y. Subject—"Dawn."

Third prize—$25. Karl Struss, New York City. Subject—"Kati Fischer."

Fourth class—$5 each (irrespective of comparative merit).

Alice Boughton, New York City:
1. Subject—"Anna Brauch."

Harry D. Williar, Baltimore, Md.:
2. Subject—"Peonies."

Adelaide W. Ehrich, New York City:
3. Subject—"Bittersweet."

Kiyoshi Esaki, Tokyo, Japan:
4. Subject—

Norman Butler, New York City:
5. Subject—"Portrait of Miss B."

Honorable Mention, with certificate:

A. A. Darbee, Brooklyn, N. Y.:
1. Subject—"Study."

G. B. Hollister, Corning, N. Y.:
2. Subject—"Mother and Child."

George L. Gilbert, Burlington, Iowa:
3. Subject—"Elysian Park."

Maximilian Toch, New York City:
4. Subject—"The Fruit Vender."

Floyd Vail, New York City:
5. Subject—"A Landscape Artist."

Frances and Mary Allen, Deerfield, Mass.:
6. Subject—"April."

C. P. Dunning, New York City:
7. Subject—"The Kodak Girl."

Jane Reece, Dayton, Ohio:
8. Subject—"Madonna."

Earle Andrews, Wilkes-Barre, Pa.:
9. Subject—"Going Out."

John H. Tarbell, New York City:
10. Subject—"Interior of Exeter Cathedral."

Pearl Grace Loehr, New York City:
11. Subject—"The 91st Psalm."

S. F. Troutman, Pittsburg, Pa.:
12. Subject—"Behind the Scenes in the Professional Studio."

Guy Spencer, New York City:
13. Subject—"When the Lights Are Low."

Wm. S. Davis, Orient, N. Y.:
14. Subject—"The Changing Waves Break into Foam."

Next month we shall publish reproductions of the winning prints, with full particulars. Over nine hundred prints were submitted, and each carefully examined by the judges.

CHARLES H. CAFFIN,
HENRY R. POORE,
THOMAS C. WATKINS,
Judges.

LEAVES FROM MY NOTE BOOK

By an Old Hand

HOW TO MIX A DEVELOPER

NO doubt most photographers would think it quite unnecessary for them to be told how to mix a developer, but there are really very few who know the right way to go to work.

In the first place, ordinary tap water should never be used; it nearly always contains lime and other salts, which are precipitated by the chemicals and they are apt to cling to the surface of the plate and may give rise to spots or markings, quite small it is true, but still there. A great deal of the lime and magnesia salts are held in solution by the air and carbonic acid, always present in tap water. Some people are, of course, more fortunate than others; my water is so full of air that negatives and films are completely covered with a layer of small air bubbles when washing. It is advisable always to boil well the water used for the stock solutions, unless one uses distilled water. It should be boiled for at least ten minutes and allowed to cool down to about 100° F. and then filtered. A stock of this boiled water can be kept on hand in one of the stoneware water crocks with a wooden tap at the bottom and can be used for diluting the developer as well as mixing it.

In order to explain how to mix a developer we must take some simple formula, such as the *British Journal* formula for pyro, which is the best I have met with. It gives negatives practically free from stain and keeps well. It is:

A

Neutral sulphite solution . .	700 c.c.	10 fl. oz.
Pyro . . .	18 gm.	126 gr.
Water to . .	1000 c.c.	16 fl. oz.

B

Sodium carbonate	100 gm.	700 gr.
Water . . .	1000 c.c.	16 fl. oz.

For use mix 1 part of A, 1 part of B, and 2 parts of water.

The neutral sulphite solution is made as follows:

Sodium sulphite	70 gm.	1 oz.
Potassium meta-bisulphite . .	17.5	¼ oz.
Water	700 c.c.	10 oz.

Dissolve and boil for five minutes.

Everyone has some little peculiarities, and the following is one of mine: Nearly all my solutions are kept in two-quart jam bottles with wide mouths, rubber rings, and a metal spring that holds the lids down tight. These cost but a few cents; as a matter of fact, a nearby soda fountain will give me all I want for nothing, as they are glad to get rid of them. Every bottle, no matter what its size, has a definite quantity of water poured into it and the level marked with a diamond and the quantity of water also marked. This saves no end of time, as one has merely to pick up a bottle and read off at once what it will hold. Further than that, any bottle can be used as a graduate.

To mix the above developer a bottle is found and the dry salts put into it and then filled up with water to the 1400 c.c. mark. It being necessary to boil the solution, an iron kettle is found that will hold plenty of water; a couple of old plate-box lids are placed on the bottom, the bottle put in, and then cold water run in till it reaches nearly to the top, care being taken by lifting the bottle once or twice that the box lids are well saturated with water. Then the gas is turned on and the water allowed to heat gently, and at the same time the contents of the bottle heat up. If the outer water is hot, and the cold bottle is put into it, one stands a very good chance of cracking the bottle and losing the solution. The box lids or a pad of thick paper are all-important, as they prevent the direct heat of the gas from striking the bottle and thus prevent it cracking. When the solution has boiled, allow to cool down to about 100° F. (a dark-room without a good thermometer is only half equipped), then filter and add the pyro and make the total bulk up to 2000 c.c. *Do not filter after adding the pyro*, as you simply expose it to the action of the air and it becomes partly oxidized and the negatives are stained.

Exactly the same method should be applied to the making of all developers. One should bear in mind that the trick to obtain clean, white stock solutions that will keep is to dissolve the preservative first, that is the sulphite, then filter, and then add the developing agent. In all cases the quantity of the latter is so small relatively that the best way is to make the sulphite solution up to the full quantity and then add the developing agent, cork and shake well.

The only exception to this procedure is in the case of metol, elon, and rhodol; this must be dissolved first and completely dissolved before the sulphite is added. This is important and as much water as possible should be used, otherwise the metol is thrown out of solution and it is not easy to dissolve it again. If one has to

make up a metol-hydroquinone developer, and but little water be used, a very insoluble precipitate, metoquinone in fact, is thrown down, and then nothing but actually boiling the solution will form a clear solution.

When one has to deal with a one-solution developer, in which the alkali and the reducing agent are combined, the latter and the preservative should be dissolved in about half the water, the graduate well washed, and then the alkali dissolved in the remainder of the water and added to the other and immediately corked up. Traces of the developing agent in the graduate immediately oxidize in the presence of an alkali and a white solution cannot be obtained.

I have seen many an assistant try to dissolve sulphite or carbonate or both by adding them to water and then stirring. This is wrong. In nine cases out of ten both will settle into a solid lump at the bottom, which is extremely difficult to get into solution. The proper way is to stir the water well with a rapid circular motion and sift the dry salts in slowly, very slowly. Then every particle of salt becomes surrounded with water and cannot form a cake. In all cases the temperature of the water should be at least 85° F.

There are two ways of making the alkaline solution for two-solution developers: The one is to use ordinary tap water, dissolve your salts and boil and cool and then filter. This removes most of the lime and magnesia salts; but it leaves your solution loaded with chlorides, which are restrainers. The correct way is to use distilled water or, as has already been pointed out, boiled water. Undoubtedly distilled water is the best and there are many cheap and economically-working gas stills on the market that it will almost pay to install.

As to the keeping of stock solutions of developers, many plans have been suggested, such as aspirator bottles, covering the surface of the solutions with films of oil, which is about the nastiest and dirtiest plan that I have ever tried. No one can say which is the best method, for the simple reason that no one but the user knows exactly how long a pint or gallon of developer will last, and the plan for one dark-room will be absurd for another. Personally, I always make up my solutions in 2000 c.c. lots, and they last me about three days, so that I never have to bother with the question. If I had to, I should make up the same quantities in bulk and then bottle off into smaller bottles, say of 500 c.c. capacity, so that constant opening of the bottles would not introduce so much air, which is the cause of stock solutions turning dark.

A photographer using a gallon of developer a week can afford to make up only that quantity, and can always spare the short time required to make up a fresh batch, after hours, at the end of the week, for with a little system and the right way of working it becomes a most simple matter to always have on tap the right developer made right.

ABSTRACTS AND TRANSLATIONS

BY E. J. WALL, F.R.P.S.

Radium in Plates

Thorne Baker, in a recent paper before the Royal Society of Arts, stated that he had been able to produce emulsions containing a suitable quantity of radium chloride or bromide which yielded much denser and more vigorous photographs under test conditions, with the important result that normal brilliance in photographs could be obtained by the use of less silver in the emulsion.—*Jour. R. Soc. Arts.* 1915, p. 490.

Too much stress must not be laid on this statement until it has been independently confirmed. The author's statement that this is "an economy of far-reaching importance" is also hardly tenable. Seven years ago I made a very careful analysis of the cost of production of plates and films, lasting over three months, in an English factory, and roughly the results were: cost of emulsion, 16 per cent.; of labor, 25 per cent.; of glass and boxes, 59 per cent. Wages and all raw material were much lower in price at that time than now, and as silver is not the only ingredient in the emulsion, one hardly sees any far-reaching reduction in price because of this wonderful discovery. And with pure radium bromide at the price of $90,000.00 per gram (15.432 grains) presumably one would have to omit all the silver or else use an extremely small proportion of radium salt. If we assume that a dozen 5 x 7 plates contain about 45 grains of metallic silver, and that this is equivalent to 70 grains of silver nitrate, and the latter costs 70 cents an ounce, how much radium bromide will cost as much as one grain of silver nitrate?

This is not the first time that radium has been stated to perform wonders in photography. Many years ago a German trade paper published an account of a wonderful process of color photography in which radium was suggested as the ingredient of the emulsion. Later someone pointed out that the account was dated April 1, Baker's paper was read on April 14—not that there is any connection between April Fool's day and the paper.

Panchromatizing Plates

Dr. Stenger has been publishing an exhaustive paper on the action of various dyes and

mixtures, and states that the following gives very good results and without the usual gap in the green:

Alcohol	100 c.c.
Water	200 c.c.
Pinachrome violet	3 c.c.
Pinaverdol	3 c.c.

The dyes are used in the form of a stock solution 1 : 1000. Clean-working plates should be bathed in the above for three minutes in the dark and dried without washing. The sensitiveness extends up to wave-length 7000 and with very little damping in the minima.—*Zeit. f. Repro.*, 1915, p. 23.

The formula and method of using is Koenig's. It has been pretty well conclusively proved that superior color-sensitiveness is obtained by omission of alcohol from all sensitizing baths and subsequent washing. The above method, however, has the advantage that the plates dry rapidly, or can be used wet.

A Lack of Celluloid

In consequence of the war there is a great dearth of celluloid in roll film thickness and it is stated that some of the smaller cut and roll films are absolutely unobtainable. This is due to the fact that so sharp has been the competition of imported films that it has not paid any German manufacturer to put them on the market, so that they have been entirely dependent on America, France, and England for the supplies. In the early days of the war some were imported through Switzerland, but two months ago the importation of any film was interdicted by the government. Considerable correspondence has appeared in the photographic journals and all sort of suggestions made as to substitutes. Early this year, too, the government prohibited the use of nitric acid for any but war purposes, but this order was relaxed on its being pointed out that it seriously threatened the photographic trade. The export of all lenses and optical glass has been also stopped.—*Phot. Ind.*, 1915, p. 163

Linoleum as a Bactericide

Bitter has placed on record that fresh-made linoleum has a very strong bactericidal action, and that for this reason it should be used in all bed-rooms and sick-rooms. It has also been recommended for the drying rooms of dry plate factories and dark-rooms. The effect is said to be due to the oxidized linseed oil, and old linoleum may be revived by rubbing it with wax dissolved in turpentine, which partially softens the oil. It is pointed out that it is not a good thing, however, to use in the drying rooms, as the vapor of the drying oil fogs the emulsion.—*Phot. Woch.*, 1915, p. 50.

Drying Negatives with Alcohol

Lueppo-Cramer points out that frequently when drying negatives with alcohol the film turns milky and opaque, this being caused by the withdrawal of the water from the cellular structure of the film and rendering the actual cells visible. This trouble can be entirely avoided if methyl alcohol be used; soaking in this for a few minutes allows the negative to be rapidly dried by heat. Methyl alcohol cannot be used for drying collodion prints, as it dissolves the film.—*Phot. Ind.*, 1915, p. 178.

Methylglycin

The Berlin Anilin Works have patented the use of this preparation as a developer, and Valenta, of Vienna, publishes a report on it. It has the formula $C_6H_4.CH_2.N.CH_3COOH.OH$ and is formed by the action of chloroacetic acid on 4-methylaminophenol. It forms a white crystalline powder, easily soluble in hot water and alcohol. It has the great advantage over ordinary glycin that it will give clear concentrated stock solutions, while the latter, as is well known, only gives thick pastes that clear only when diluted. A suitable formula, which must be diluted with an equal quantity of water before use is the following:

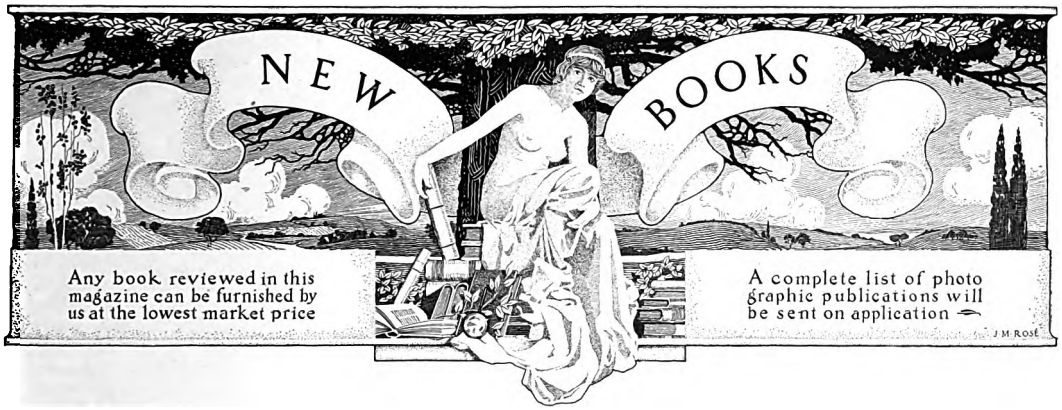
Methylglycin	50 gm.	350 gr.
Sodium sulphite (anhydrous)	125	2 oz.
Potassium carbonate	25	175 gr.
Water	1000 c.c.	16 fl. oz.

A similar developer was prepared with the ordinary glycin and comparative results proved that the new preparation gave good clean negatives in a much shorter time than the old. As regards rapidity of development Valenta places it midway between glycin and metol. The temperature coefficient, that is the sensitiveness of the developer to changes of temperature, appears to be about the same as that of glycin: this is 2.3 for 10° C.

The action of bromide appears to be about one-fourth of that with the old preparation. The new salt works well with collodion plates.—*Phot. Korr.*, 1915, p. 90.

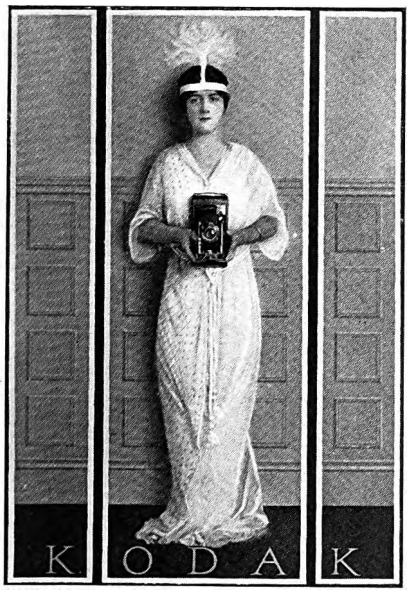
Dark-Room Hints for Panchromatic Plates and Autochrome Development

Here are two hints for dark-room when manipulating panchromatic or autochrome plates: Take a sheet of asbestos 12 inches long by 6 inches wide, saturate this with luminous paint. When paint is dry, cover it with a sheet of glass and place upon the bench where it is usual to put the measure glass and bottles of developing solution. With this arrangement there is no danger of knocking over the measure containing the mixed developer by fumbling in the dark. Also for timing the duration of development get an egg-timer—one of the swing variety—and before suspending it in the dark-room paint the panel behind the glass with luminous paint. Such an egg-timer will be found quite as good for timing development as a clock and much cheaper. Both the stand for the measure glass and bottles, as well as the panel behind the egg-timer, will require re-exciting occasionally; this can be done by exposure to daylight or by means of an inch or two of ignited magnesium ribbon.—*W. T. Wilkinson.*



Kokak 1915 Catalogue

A handsome catalogue of the 1915 Kodak and Brownie cameras has just been issued by the Eastman Kodak Company, of Rochester, N. Y. The *Autographic* back is now part of every Kodak model, even including that small but wonderfully efficient little camera—the vest-pocket Kodak. This will be welcome news to all photographers.



The trend seems to be toward the smaller camera. We note the $4\frac{1}{4}$ x $6\frac{1}{2}$ and 4 x 5 sizes have been discontinued and the $3\frac{1}{4}$ x $5\frac{1}{2}$ is now the largest camera in this catalogue. While there is addition to the high-grade equipment in these small sizes, perhaps the "classiest" Kodak in the list is the new model $2\frac{1}{4}$ x $3\frac{1}{4}$. The Vest-Pocket Kodak, with Kodak anastigmat *f*/7.7, at $10 (think of it!), is capable of truly wonderful results.

Those who desire it can secure a Kodak anastigmat lens, *f*/7.7, with any Kodak by paying a little more than charged for the regular lens.

A new model this year is the No. 1 *Autographic* Kodak, special; equipped with Zeiss-Kodak anastigmat lens, *f*/6.3, and Optimo shutter. It will appeal to the discriminating photographer.

All of the Brownie cameras as well as the regular line of Eastman photographic accessories and supplies are illustrated and described. Ask your dealer for a copy or write direct to Rochester.

Curtis's Indian Days of the Long Ago

Indian Days of the Long Ago is by Edward S. Curtis, whose photographs of Indian life have an international reputation. Mr. Curtis's twenty-five years' acquaintance with Indian tribes, among whom he has lived for months at a time, have given him the intimate knowledge of Indian life upon which he has based this story of an Indian lad's boyhood. Kukusim is of the Salish, a Rocky Mountain tribe, and grows from boyhood to adolescence in the days when the first rumors of the coming of the white man were reaching the western tribes.

The story of his experiences begins with fishing and rabbit-hunting expeditions with his playfellows, goes through the great council which hears the tales of the wanderers from the East and the West, the expedition of the whole tribe to the plains for buffalo, the exciting days of the buffalo hunt, the journey back across the mountains to the home camp in the Montana valley, and ends with the boy's vigil on the mountain of fasting, which marks the end of his childhood.

It is an adventure book for boys and girls, and at the same time a book of absorbing interest for older readers because of the picture of Indian life and ways of thought which it presents. There is in the style a combination of simplicity and dignity in keeping with the subject, and a literary value that is found only in the classics of children's literature.

The illustrations, which number 200, are either reproductions of Mr. Curtis's own photographs or drawings made from the Curtis

photographs by F. N. Wilson. The volume is notably well printed and bound.

It is published by World Book Company, Yonkers-on-Hudson, New York. The price is $1.00; postpaid and boxed, $1.20.

How to Make a Studio Pay

THE first edition of this popular, very practical manual is almost exhausted. It will help *you* to make your studio pay—and pay better. Be sure to secure a copy while the supply lasts. Send one dollar to this office.

In the Land of the Head-hunters

AFTER four centuries of contact with the American Indian the white man has but little conception of the inner spirit and emotions of his red brother. Prominent among the few intimate interpreters of the Indian is Edward S. Curtis, known internationally for his wonderful photographs of Indian life.

Mr. Curtis's latest book, *In the Land of the Head-hunters*, is based on a legend of the Indian tribes whose original habitat was the Vancouver region, where the action takes place. The tale begins with the vigil of Motana; the young chief undertakes to win supernatural power; then follow his wooing and winning of Naida, the plots of the wicked sorcerer, and war chief Yaklus, the raid on Motana's village, the capture of Naida, her rescue by Motana, and the final overthrow of Yaklus. The story is told in the style of the tribal bards and has the swiftness of movement, the elemental directness, and the stark simplicity of the true epic.

The thirty half-tone illustrations are from Mr. Curtis's motion picture film based on the same story, which is now being shown throughout the country. They are beautiful examples of the art of both photographer and engraver.

The book is published by World Book Company, Yonkers-on-Hudson, New York. The price, boxed and postpaid, is $1.20.

The New Voigtlaender Catalogue

A NEW catalogue of Voigtlaender lenses, cameras, and binoculars is now ready for mailing, and a beautiful little book it will be found by all who procure a copy. Many fine reproductions of Collinear, Heliar, Dynar, Radiar and Euryscope lens-work embellish its pages, and the text-matter will prove highly informative to any lens-purchaser, particularly that section devoted to "the judicious selection of photographic lenses." Several pages are given to the Alpine and Bergheil Tourist cameras, both notable examples of the compact high-grade quarter-plate and post-card instruments now so popular.

Fog in Development

FOG is not only one of the commonest troubles of the photographer, but also one of the most deceptive, as its cause is often something quite different from that which general observation would lead us to expect. Take, for example, a slightly underexposed plate with which an attempt has been made to force out detail by the addition of alkali to the developer. The procedure is quite wrong, but it is often adopted, and therefore it will serve as a good illustration. The almost inevitable result will be, not the appearance of more detail, but the production of fog, and nineteen photographers out of twenty will at once say that the fog is due to the excess of alkali. In the case of some developers this statement might perhaps be correct. We cannot say for certain, because the point has not been tested at all thoroughly, but in the case of some of the most commonly used developers it is known to be quite wrong, and in all probability it is wrong in all cases. In the particular case of hydroquinone the point has been tested most thoroughly, and it has been found that the addition of alkali has no tendency whatever to produce fog. The cause of the fog in the instance we have assumed must therefore be due to something quite different from what appears to be the obvious cause.

The real reason is overdevelopment, which, as all workers know, is a prolific and certain cause of fog. The addition of the alkali has hastened the action of the developer, and so in a given time a much greater effect is produced in all parts of the image than with a developer containing less alkali. If this latter developer had been used for a longer time or the modified developer with excess of alkali for a shorter time precisely the same effect could have been produced in both cases, provided, of course, the time adjustment was accurately made. Careful tests will show that the accelerating effect of the alkali has affected all parts of the image alike and is not by any means confined to the fog, but the idea that the fog alone has been affected is sometimes encouraged by the fact that development has passed the critical point at which fog first makes an obvious appearance.

One of the peculiarities of development fog is the suddenness with which it first appears.

This is most obvious with much underexposed or quite unexposed plates, which will often remain perfectly clear for two or three minutes' development, and then will fog over heavily in a few seconds. If with two developers which work at different rates we give the same time each, it is quite possible that one negative may have passed the critical point at which fog appears, while the other has not reached it, and in such a case the former negative will seem to show an excess of fog, though the difference between the two is one of time of development only.

Excess of alkali is therefore not one of the contributory causes of fog, much as appearances seem to point to its being so. In the case we have quoted overdevelopment and underexposure are the real causes, and underexposure causes fog more often than many people think, while it is at the same time a difficult condition to counteract. Slow, diluted development is the best treatment for underexposure by itself, but this treatment does favor fog, and the addition of bromide is nearly always necessary. For almost all kinds of fog bromide is the best preventive, and the production of clean negatives in developers to which no bromide has been added is due almost entirely to the bromide formed during development. With developers of ordinary strength and properly exposed negatives this bromide is generally sufficient, but when any contributory extra cause of fog, such as under- or overexposure, is present, extra bromide is required. To avoid hardness in the case of underexposure dilution is necessary, and the fact that the necessity of dilution involves that of the addition of bromide is often overlooked, with the result that many failures are produced in so-called tank development.

Another factor in the production of fog is the fogging propensity of the plate itself, and this differs considerably with different batches. Plate makers test their plates for fog, rejecting all that show more than a certain limited amount when tested under fixed normal conditions. A definite limit must be set, for no plate of any speed can be quite free from fog, but obviously in special cases it may make all the difference whether the plate is near the limit or is exceptionally clean. Therefore for special work it is advisable to ask the maker to supply an especially clean plate. To give examples, for ordinary work a plate that under certain fixed testing conditions shows a fog measuring in density 0.06 may be quite serviceable, while in exceptional circumstances it may prove almost useless on account of its propensity to give bad fog under provocative conditions. In such a case a plate showing a tested fog of not over 0.02 or 0.03 will probably work in a quite clear fashion, and in many cases such an exceptionally clean plate can be supplied if asked for.

Another deceptive factor in the production of fog is high temperature. The effect of this has not been thoroughly tested, but there is little reason to doubt that it acts in much the same way as alkali; that is, it is not a direct cause of fog so much as an accelerator of the rate of development. Possibly, in addition, high temperature does increase the fogging propensity of the plate, but this is somewhat uncertain. In any case its accelerating action is very considerable, and it should be guarded against, either by shortening the time of development or by taking measures to keep the temperature down.

It may be noted that development fog due to overdevelopment or underexposure can generally be distinguished by the fact that it extends over the rebate borders of the plate, whereas overexposure fog generally leaves clean rebates, except when overexposure has been very excessive. The form of fog known as sulphite fog is due simply to the use of an excess of sulphite in the developer, and as the average formula does not prescribe an excess the effect is not often met with. Other forms, known as oxidation fog, are due to the oxidation of the developer, and being generally colored and very irregular are easily distinguished.—*British Journal of Photography.*

Large Hands in Portraits

Many a portrait which is otherwise satisfactory is condemned on account of the disproportionate size of the hands. Sometimes the fault does not actually exist, and the hands are rendered on a proper scale with the rest, and it is only because the sitter has been accustomed to regard small hands as a beauty that their true size is objected to in the photograph. But more often than not the photograph has exaggerated them, and the photographer is very properly blamed.

The chief cause is the position of the camera. If this is too near the sitter the slightest difference between the distance of the hands and of the face from the camera causes the nearer of the two, and this is almost invariably a hand, to appear magnified. The photographer is tempted to have the camera too near because his lens is one of short focus. The lenses that are generally fitted to cameras, although best perhaps for all-round work, are much too short for use on the whole of the plate for portraiture. A twelve-inch lens is about the shortest which should be used on a half-plate, and if this is made a rule there is no fear that the standpoint will give trouble.

There are other causes for the hands appearing too large. A light object seen against a dark background has its apparent size increased. An object which is slightly out of focus also looks larger than it should do.

By endeavoring to keep the hands in much the same plane as the face, by using a lens of long focus, by taking care that they are well defined, and by avoiding the emphasis of a light hand on a dark background, which can be done by shading the light at the time, or by modifications in printing afterward, an effect which, to say the least, is very undesirable, can be successfully avoided.—*Photography.*

The Dressing-Room

The so-called dressing-room of most of the photographic studios is usually a "hole in the wall," a little spot taken off from some other room, dimly lighted and poorly furnished. Isn't

that a mistake? In the large cities, some of the studios have made a wonderful success of the photographic business, both in artistic work and in the business end of it, have their dressing-rooms the most beautifully furnished, lighted, and equipped of any of the rooms in their studio. Ninety-nine per cent. of the sitters who visit the ordinary studio cannot get a favorable impression when they step into the dressing-room of the average photographic studio. Brushes, combs, powder-boxes, puffs, etc., in the average dressing-room, are not kept in a condition which would permit the ordinary person to use them. In fact, the average dressing-room is a dressing-room in name only. We are in favor of a larger dressing-room, well ventilated, well lighted, carefully and tastefully furnished and arranged in every way; a perfect rest-room where the sitters may wait until they are wanted in the operating-room; a room furnished better in every way, and in every respect more inviting than the reception-room; a room that will impress the sitters so that when they leave the same they will leave it with a smile and a feeling of contentment. The dressing table should always have a clean cover, the mirror should always be polished, hairbrush and comb cleaned, plenty of water, towels, etc. Just look into your own dressing-room, then compare it with your own home and see if you think it is an inviting place. Of course, we know what you will say: that the rent is high, you haven't the space, etc. This may be true, but the more business you can do the more rent you can pay. The better impression you can make upon your customers the more they will advertise your studio to their friends and the oftener they will come to you for sittings. If you can only have one bright spot in your whole studio, then let your dressing-room be that one.—*Ohio Photo-News.*

Using a Fishing Rod for a Camera Tripod

To the recreationist both piscatorially and photographically inclined, the rival advantages of the jointed fishing-rod and the telescoping tripod have made appeals which often seem mutually exclusive. Weight, bulk, cost, and general bothersomeness have militated against both to such an extent that many an artistic angler contents himself with the willow pole and the snap shot. To secure the advantages of both devices with the bother of but one it is only necessary to use the jointed rod on occasion as a tripod. This does not injure the rod, and helps a good deal when one wants to use a color screen or a small diaphragm or to make stereoscopic pictures with a single-barreled camera. A tripod head which may be carried in the pocket and weighs but three ounces is all that is needed to convert a four-piece rod into a low but serviceable camera stand. It can be made thus:

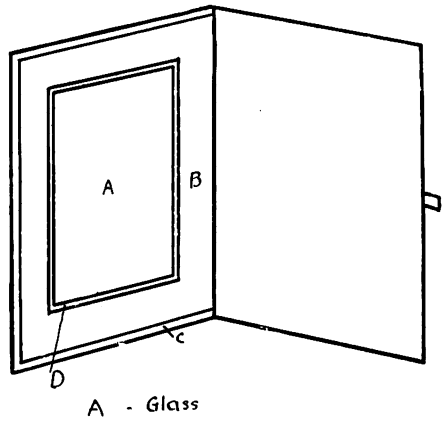
Three circles, 3½ inches in diameter, are cut with tinners' snips from $\frac{1}{32}$-inch sheet aluminum. Slots, ¾ inch square, are cut in each at three equidistant points on the rim, the metal being cut clear out of one of the sheets, but in the other two only one side and the bottom of each slot are cut, the metal then being bent at right angles along the third edge. If the proper edges have been chosen for cutting, the three circles can now be piled together, the clean-cut one between the others, and square "ears" will come down at the sides of each slot. Hardwood blocks, ⅝ by ⅝ by 1¼ inches, are to be riveted between these "ears," holes of suitable size being bored lengthwise from the lower ends for the reception of the three lower joints of the rod.

The three circles are to be riveted together and a screw to fit the tripod sockets of the camera put in the centre projecting up. A good plan is to file the head of the screw square and quite thin. A hole to fit it is cut in the middle sheet and the screw is allowed to rest on the uncut bottom sheet and project through a small hole in the top one. The tops of the blocks should be rounded and the lower ends whittled so that they fold snugly together under the aluminum when not in use.

This tripod will permit the camera to be leveled on hillsides or uneven ground. If its steadiness should be suspected, exposures can be made safely by opening the shutter with a dark object before the lens, and this removed without touching the camera when everything is still.—*Outing.*

A Simple Postcard Frame for Enlarging

In these days of the waistcoat pocket camera it becomes almost an absolute necessity to enlarge to a greater or lesser extent. Very often these tiny negatives, if taken by means of one of the more expensive cameras, will bear enlarging to fairly large sizes, but with the more



A - Glass
B - Thin card
C - Thin paper binding
D - Black paper mask

popular-priced ones the image, though it may appear extremely sharp in the negative, will be found to fall off considerably in definition when enlarged beyond about 2½ diameters, especially if the largest aperture be used in taking the photograph. For the average negative of block note size the limit may very well be postcard size; the card being subsequently filed, and at

the same time displayed (not very artistically though) in the usual postcard album. The printing-enlarging of the tiny negative is preferably done by an enlarger fitted with incandescent gas or electricity, as quite a number of negatives can be more conveniently enlarged by this means than when employing one of the many "printing" boxes sold to enlarge from $2\frac{5}{16} \times 1\frac{3}{4}$ to postcard by daylight, as in the latter case one has to pay a visit to the dark-room, or at least to a darkened room indoors, each time a print is made.

A little piece of apparatus which the writer has found eminently convenient when enlarging on postcards from small negatives and which leaves a narrow white border around the card can very easily be made. The arrangement consists of a half-plate sheet of glass upon which is gummed a mask, of same size, of very thin black paper having a rectangular opening $5\frac{1}{4} \times 3\frac{1}{4}$ inches cut out of the centre.

Upon this is seccotined a sheet of thin card (again the same size as the glass) and having a rectangular opening $5\frac{1}{2} \times 3\frac{1}{2}$ inches also cut out of the centre and fitted squarely upon the black mask, thus showing inside a uniform border of black $\frac{1}{8}$ inch wide. A back, consisting of a sheet of stiff cardboard (half-plate size), and fairly thick, is now hinged to the glass down the longer side, by means of a strip of linen tape or other strong material about an inch wide, fastened outside by means of seccotine or other very strong adhesive. On the opposite side, in the middle, may be fastened a short piece of narrow tape ($\frac{1}{2}$ inch wide) by means of which the back may be pulled open to insert or take out the card, which is kept perfectly in position owing to the natural curl or bend. If the back be opened fairly smartly, the card will be pulled from its bed by suction, and may then be quite easily picked up, thus obviating the use of the fingernail.

In use, a piece of paper or an ordinary postcard is placed in the frame, which is then held on the screen by the hand while focussing the image on to the card.

If the exposure required be short, say anything up to thirty seconds, the frame may be held in position by the hand. If, however, the negative be very dense, and the exposure inordinately long, a couple of strong drawing pins on one side and one on the other (taken out and replaced for each exposure) will be found sufficient support for the frame.

In order to give the little piece of apparatus a more finished appearance, the three free edges of the glass may be bound with passe-partout binding or any other variety of very thin paper—*H. Mills.*

Simple Blocking Out

Sometimes an assistant (generally the retoucher) is requested to block out a negative of furniture or machinery having delicate detail in the lines. To one accustomed to such work it is nothing, but to those who are not there is generally a difficulty in keeping the blocking-out mixture from encroaching on the places where it is not wanted. To such as those a good plan is to cover the whole negative with retouching medium. Then go over the lines carefully and firmly with a very soft, pointed lead-pencil, leaving a good strong line. A ruler can be used for straight lines where necessary. Then with a thicker or broader point on the pencil go round the whole thing again, keeping outside the first line. This should give a good black line of about one thirty-second part of an inch in width. The blocking-out mixture can be very quickly coated all round the rest of the negative where wanted. Home-made blocking-out mixtures are not reliable. The commercial article is best.

Delicate Color Reactions of Gold Salts

Dilute solutions of certain reducing agents added to solutions of gold salts result in the formation of colored colloidal solutions of gold. Among such agents are hydroquinone, pyrogallol, gallotannic acid, *p*-oxyphenylaminoacetic acid (glycin), salts of phenylhydrazine, *m*-phenylenediamine, etc. If one volume of a 0.1 per cent. solution of any of the above compound is added to ten volumes of a solution containing 0.002 per cent. of auric chloride a violet-colored colloidal solution of gold is produced in about two minutes. The colors vary according to the reagents and the strength of the solutions. With gallotannic acid the color is rose, while longer time is taken for it to develop. The colors yielded with metol and quinol are particularly fine. The reaction with *p*-phenylenediamine is very delicate, and it may be of use as a test for traces of gold salts; a dark yellowish-green solution results; one volume of a 0.1 per cent. solution of *p*-phenylenediamine hydrochloride added to ten volumes of a solution containing 0.0005 per cent. of gold chloride gives rise to the greenish-yellow coloration which is still visible in a solution containing only 0.0001 per cent. of the gold salt.—J. E. Saul, in the *Analyst*, from *Pharmaceutical Journal.*

Color Prints on Fabrics

Photographs are printed by projection or contact on sensitized fabric fastened on a rigid support in such a manner as to ensure that it retains its shape. Two or more monochrome prints are applied in exact register, the fabric being sensitized before each printing with a solution containing a double sulphite of sodium and an aromatic diazo compound, and also a phenol; neither the amine nor the phenol should contain a free sulphonic or carboxylic group. It is known that these solutions only produce the corresponding dyestuff under the influence of light. The sensitizing baths are made up to produce the appropriate color; for instance, the yellow may be derived from aniline and phenol, the red from p-nitraniline and B. P.-napthol, and the blue from toluidine and a-naphthol or amini-a-naphthol.

A Pinhole Camera

Many people cannot afford the money to buy a camera, but anyone can make the one described here for a few pence. All that is required is a cigar-box, some brown paper, a pin or needle (No. 10), and some paste.

In one end of the box make a round hole, about two inches in diameter, and across this hole paste, say, three thicknesses of brown paper, which must be stretched tightly. In the centre of the opening make a hole with the pin or needle. It is important that the edges of the small hole are smooth and not ragged.

About four inches from the pinhole of the box nail some pieces of wood to form a slide, into which a plate can be placed.

Then, when the top of the box is tightly closed —light tight—you have a perfectly good camera, within certain limits, of course. The exposure with a hole made by a No. 10 needle for a fast plate at a distance of about four inches would be about 18 seconds on a bright day.

If one is going to use half-plates for the camera, the distance should be about five and a quarter inches from the pinhole.

No finder need be used as long as the camera is pointed at the object to be taken.—*J. Lovel.*

Moonlight Photography

This time of the year, it is often possible to make presentable photographs by moonlight, although the exposure has to be somewhat protracted. On a clear night, with a full moon high in the sky, and an ordinary rapid rectilinear lens working at, say, stop 8, an exposure of about an hour on an ordinary landscape or house will give a fully timed negative. Some scenes, where shadows are not very deep, will be fully timed in as little as thirty minutes. It is a rather interesting experiment, and one that our readers may care to try for themselves.

A Simple Pinhole Lens

With modern rapid plates it is easy to enjoy the advantages for wide-angle or pictorial purposes of a pinhole lens, says F. N. in the *British Journal of Photography*. Suitable material is a scrap of old silver, such as is used for pipe mounts. This is always thin. A bump is raised in the centre by punching on a block of wood with a small French nail. This should be emery-papered down as thin as possible. Finally, gently prick through with a needle, about small darning size, and carefully emery the burred edge, which should be made on the outside of the small raised centre portion. The pinhole then only requires mounting between two thin-holed pieces of card with good adhesive, and blacked for finish. It can be made to size of lens panel, or be used as a circle next to iris diaphragm. Such small pinholes give very little fuzziness, and the slide can be drawn quick enough without needing a cap or shutter, as exposure outside is about a minute in a bright light. Copying a head full size in a camera with none too much extension is also feasible with the aid of a pinhole lens. It is advisable to blow gently through hole in case of a speck of dust before using.

Photographing Coins and Seals

A writer in *Photography and Focus* gives the following useful hint: "It is often very difficult to get a satisfactory photograph of a coin or seal on account of the color or the surface of the material interfering with the image of the design, and it is therefore usual, when the best results are required, to have recourse to a plaster cast. To make this, the original coin is first given the slightest possible coating of greasy matter, for which purpose a fragment of wax dissolved in an ounce of benzole may be used. This is carefully brushed into every corner of the pattern. The coin is then made the bottom of a box by binding a strip of paper round it. Into this box is poured a thin cream of the finest plaster-of-Paris, which is left to get quite dry and hard. The cream is made by putting an ounce or two of water into a cup and stirring steadily while the plaster is allowed to run into it in a thin stream. No time must be lost, as the cream soon solidifies. The cast so made is removed from the original, brushed over in its turn with the wax solution, and supplied with a paper edge. The plaster this time should be made with ink and water so that the cast has a gray color, as this makes it much easier to make a successful photograph."

Retouching Hints

When retouching very large heads I have always found it difficult to get sufficient work on the film, and so have had to varnish and rework. Recently I have made an experiment, which has proved quite a success, of obtaining a surface which will take almost an unlimited amount of lead at one working. Place a few drops of ordinary negative varnish on the film of negative to be retouched and rub with a piece of old handkerchief in a circular motion as if you were using retouching medium, dry for a few seconds before the fire, and when cool apply the ordinary retouching medium, and you will have a surface that will give a splendid grip to the pencil. Incidentally the varnish will protect the negative from silver stains. When the retouching pencils are not in use, do not leave them about to get the points broken, but reverse the leads in their holders, *i. e.*, place the point inside the holders; they will then be in good condition for the next day's work.—*R. A. L.*

Tinting in Oils on Opal

Tinting opal portraits with thin oil colors is, of course, an old practice, and a means of making borders by the same process might commend itself especially just now, when borders are so much in vogue. First, lightly sketch, in faint pencil lines, the design you intend using (some of the simpler border tints are the most effective). Then paint with strong gum water the parts where you wish the opal to remain clear. When dry rub the pure oil color on to the border portion of the opal. It may at first appear uneven, but plenty of rubbing will produce a beautifully even surface. Now plunge the opal straight into the clean water, which dissolves the gummed portion, leaving the opal perfectly clear in those parts. If the gum shows a tendency to stick a little gentle laving will expedite matters.

Cutting Down a Dry Plate

Occasionally a photographer has use for a smaller plate than any he happens to have in stock. This necessitates cutting down to the proper size one of his larger plates, which can often be done with no waste of inches. Naturally, this work must be done in the dark-room. Also, a little practice at cutting plain glass (discarded plates will do) will be necessary that proficiency with the cutting wheel or glazier's diamond may be gained.

Lay the plate, emulsion side down, on a sheet of white paper. Hold the rule or other straight-edge firmly on the glass at the point where it is desired to make the cut. Now draw the cutting wheel or diamond (a glazier's diamond is preferable to the cutting wheel) lightly across the surface of the glass, holding against the rule or straight-edge. Immediately break off the plate where it is cut by snapping it down over the edge of the dark-room table. Then, when the glass gives away, quickly snap the two parts of the plate up the opposite way to break the emulsion evenly at the same point as the glass.

In drawing the cutter across the glass, do not bear down any more than is necessary to cause it to take hold, to bite, as it is called. A professional glass-cutter uses his diamond with a touch as light as a feather, as the diamond is not supposed to cut through the glass, but merely to break the surface. Too great a pressure will result in a scratch, which will not break.

Removing Stains from D. O. P. Prints

White-bordered prints which have become stained on the margins through careless handling in the developer, or through the fixing bath becoming too warm, may often be saved. If the stains are of a pinkish color the trouble can usually be traced to the developer, and if they are of a yellowish tinge they are probably due to warm fixing bath. In either case, the stains may be removed as follows: Mix a plain hypo bath of two ounces of hypo to eight of water. Place the stained prints in this bath, allowing them to remain there for half an hour. In the meantime, prepare an ounce of saturated solution of hypo (all the hypo an ounce of water will dissolve), to which add one dram of potassium ferricyanide stock solution (one ounce of ferricyanide to two ounces of water). Have a large tray of clean water convenient for rinsing. Now take a print from the hypo bath, lay face up on a sheet of glass, and with a little tuft of absorbent cotton, tightly rolled, swab the stains with the hypo-ferricyanide solution, being careful not to get any of the chemicals on the print proper. The stains will disappear as if by magic.

Immediately rinse the print and transfer to running water, where it should be washed at least twenty minutes; thirty minutes would be better.

This will be found to be a great print-saver; especially valuable in redeeming large prints.

Print Shader.

Very often a face of some small portion of a negative needs to be slightly shaded from the printing light; it may not be of sufficient density to require the full printing time of the rest of the negative.

I find a very simple though effective printing "dodger" can be made from a strip of glass a half-inch wide and eight to twelve inches long, upon the ends of which have been pasted small circular patches of black paper—a patch one-quarter inch in diameter on one end and one of a half or three-quarter inch on the opposite end.

When printing, the face or whatever part of the negative requires shading is given the correct exposure for that part—then shielded from the light by holding the paper patch about an inch in front of that portion during the rest of the exposure. The handle of the "dodger" being clear glass casts no shadow, though of course the patch should be kept slightly in motion to prevent printing its own outline on the paper.

Horse Sense

A valuable horse was lost. To the astonishment of everyone the town fool found it. When asked how he alone succeeded where others failed, he replied, "I thought what I would do if I was a horse, and I did, and he had."

Right there is the whole secret of writing advertising that produces business. Here again the Golden Rule works: Do unto others what you would have others do unto you. Write the kind of copy that will fit the mind of the man to whom you send it.

To Cut Circular Masks

If a pair of compasses is purchased, the pen with which it is fitted can be converted into a tool for cutting circles out of paper, which will be found very suitable for circular masks (says *Photography*). One blade of the pen must be removed altogether, and the other should have its edge, just at the point, sharpened until it is as keen as a razor. Then a piece of thin black paper having been fastened down to a board or sheet of linoleum, with drawing pins at all four corners, a circle of the size desired can be cut quite easily with the compasses. It will be found necessary to fasten the paper down, or there will be a great likelihood of it tearing as the cut is made. The hole in the centre made by the compasses can be blocked up with a scrap of lantern-slide binding strip if the disk as well as the mask is to be used.

To Clean Lenses

Use an old clean cambric handkerchief to remove dust. Never rub the glass or use whiting, leather, flannel, paper, or anything likely to contain a "suspicion" of grit, but only brush it lightly with such a smooth, soft duster, as a clean old cambric pocket-handkerchief; and keep this in a clean, wide-mouthed glass bottle.—*Penrose Process Book.*

Bromide Toning

Sepia tones tending toward violet can be obtained by a modification of the sulphide toning process, the colors produced being somewhat similar to those of printing-out paper treated with the combined toning and fixing bath.

The bleaching solution should be made up as follows:

Water	4 oz.
Potassium ferricyanide (10 per cent. solution)	1 oz.
Potassium bromide (10 per cent. solution)	1 oz.
Ammonia	80 drops

Bleach the prints in this bath, then wash them well, and finally put them in the sulphuration bath as under:

Sodium sulphide	20 gr.
Water	4 oz.
Potassium oxalate (10 per cent. solution)	1 oz.

Another method is to bleach the prints in a solution as follows:

Water	4 oz.
Potassium ferricyanide	48 gr.
Potassium bromide (10 per cent. solution)	5 oz.
Potassium oxalate (10 per cent. solution)	10 oz.

The sulphuration bath is made up by adding to 4 ounces of a 1 per cent. solution of sodium sulphide 1 ounce of a solution of potassium sulphocyanide of the same strength.

The other process is reported in *Photography* as follows:

Sepia and black tones may be obtained in the following way. The print is bleached in:

Potassium bichromate (10 per cent. solution)	100 mm.
Hydrochloric acid	5 mm.
Water	1 oz.

After bleaching it was placed in a 1 per cent. solution of potassium metabisulphite until the yellow stain was eliminated and was then immersed in a 1 per cent. solution of potassium metabisulphite, to each ounce of which 10 minims of hydrochloric acid had been added, and placed in the sun until the print reached a plum color. At this stage the shadows appeared clogged. The print is then placed in a solution containing 1 grain of sodium sulphide to the ounce of water. In this it clears, a fine sepia or warm black, with much of the appearance of a carbon print, resulting.—*Amateur Photographer.*

Silver-Gray Bromides

Perhaps other assistants, like myself, have been nonplussed for a time on being told to make bromide prints of the pale, silvery-like character which is adopted with exceedingly good effect by some of our leading studios. However, there is not very much difficulty in it if you keep one or two things in mind. Of course, you want a suitable negative; that is to say, not one which is extra dense or hard. I do not find there is any advantage in the negative being specially soft. You can take it that a negative which in the ordinary way will yield a good ordinary bromide of the usual type is not at all unsuitable for these soft effects. The chief thing is the developer, which requires to be very much weaker (more water) than usual; also it is better to use one of the so-called soft-working developers. I use Azol, mixing 1 part of the solution as bought with 60 parts of water. This developer works fairly slowly, but that is what you want; if you have a stronger solution it is difficult to stop the process at the point when the print has the right effect. The 1 to 60 developer gives you plenty of time to keep half a dozen or more prints going at once, so that the actual time per print is no more than usual. Lastly, and this is as essential as a weak developer, you want a soft working paper. Of course, gaslight paper, or, at any rate, most varieties of it, is not suited for this class of effect. Bromide papers are very suitable, and especially the semi-matt papers, the very slight sheen of which further adds to the character of the result. These grayish prints are, of course, quite unfitted for many subjects, such as portraits of men, or, indeed, anything with a good deal of heavy shadow in it, but for light background portraits of ladies and children, and particularly in the small sizes, postcard and under, the dainty effects got by this simple means are very charming.—Esther E. Robinson, in *B. J. of P.*

An Occasional Cause of Failure with Self-toning Paper

The following note is given in *Photography and Focus:* "Patchy yellowness of what should be the whites of a print on self-toning paper is sometimes met with, or the borders of vignettes may have an appearance not unlike what the P.O.P. worker used to know as 'double-toning'; although in this case it is the fainter tones which are of the warmer color. As this defect makes itself visible in batches of prints where others may be without any signs of imperfection, the cause of it may puzzle some workers. It seems to be due, however, to letting prints lie one on top of another during the time that they are in the hypo. The importance of keeping the prints moving during the operation should be recognized. The only alternative is to use a dish large enough to allow all the prints to lie side by side; and even then it is well to keep them moving. The operation can only be carried out uniformly if this is done all the time. There is no need for the solution to be violently disturbed; but if a number are being done at once the bottom print should be drawn out, glanced at, and then laid on the top and submerged, the next being treated in the same way, and so on. It is advisable only to deal with small batches at a time, as there is then much less likelihood of spoiling any from this cause."

A VERY small view or a portrait bust printed in the corner of a sheet of writing paper makes an attractive novelty. It is not difficult, for the sensitising solution can be applied with a soft hair brush. Saturated solutions should be made, in separate bottles, of nitrate of silver and oxalate of iron, using distilled water. Half a fluid dram of the nitrate of silver solution, one fluid dram of oxalate of iron solution, and half a fluid ounce of distilled water make the solution for sensitising the paper. This must be allowed to dry in the dark, protected from dust. Print from the negative in the ordinary way, and fix in a hypo bath, 5 ounces of hypo to a pint of water. After rinsing in clear water, soak in a 5 per cent. solution of oxalic acid until the whites in the print are sufficiently clear.—*Amateur Photographer.*

SITTERS WEARING GLASSES

IN some studios a great difficulty is made over these quite unnecessarily. Any reflection seen in the glasses must obviously be from some light object at the camera end of the studio; therefore, if something dark—say, a portable head-ground—be placed in such a position that the sitter is looking towards it, or if the operator's end of the studio be kept dark, the glasses should appear quite clear. It should be remembered that light will be reflected at an angle from any part of the glass, and if the camera be kept inside or outside that angle the reflection will not be seen, except in case of glasses with extra deep curves, and then only at the edges. The practice of looking for the removal of reflections from the side of the camera or over the top of it must only be regarded as a very rough-and-ready method. If the operator cannot judge by the image on the ground-glass he should endeavor to place his head immediately in front of the lens and close one eye. It is not a bad plan for a budding photographer to get a friend who wears glasses to sit to him for the purpose of practice.

CLOUDS IN BROMOIL PRINTS

THE addition of clouds in pigmenting (writes Mr. C. H. Hewitt in the *Amateur Photographer and Photographic News*) may be done in various ways, which may be tabulated roughly as follows:

1. Leaving the cloud or clouds and working the sky round them.

2. Laying an even tone and removing the pigment, so as to reproduce the lights, either by hopping or by other means.

3. Laying a tone and allowing it to dry, and then removing it as required by means of rubber or other abrasive.

Obviously all three methods may be used in conjunction, and this is what most usually happens in actual work.

The first method has the advantage of leaving the light tones of a mass of sunlit cloud a purer white than it is possible to get by any method of hopping off the pigment. The blue sky can be worked up to the crisp edges of the cloud more readily and a cleaner edge obtained than by hopping. The third method is seldom satisfactory for clearly defined cloud masses, because it only provides the light portions and leaves no method of introducing the shadow side of a cloud. It is also apt to produce a different texture to that obtained by the stippling, dragging, or hopping actions of the brush. If the print is on smooth paper the rubber gives a smoother, less granular texture; and if on a rough paper, then a more granular one, because it rubs the pigment from the tops of the surface roughness of the paper.

PRINTING WITH THE ENLARGING LANTERN

BY far the most usual method of printing from a wet negative (writes Mr. H. Mallory-Pym, in *Photography and Focus*), a method used very extensively by Press photographers for urgent work, is by means of the enlarging lantern. When working in this way the glass side is wiped dry, and the plate, the film of which may be full of hypo, is placed in the lantern and its image projected of the required size on to a sheet of bromide paper. After the print has been made, the negative, if there is any necessity for doing so, may be put back into the hypo to make quite sure that it has been thoroughly fixed, and then washed and finished off with due deliberation to secure its complete permanence. All rush work is printed either on bromide or on gaslight paper. The development of such prints is a quick enough operation in any case to call for no further abbreviation, and the fixing, although in the makers' instructions it is given as requiring some ten or fifteen minutes, may be shortened to two or three minutes if permanence is not important. To do this a strength of 4 oz. of hypo to the pint should be used, and the prints should be completely and separately immersed in the fixing-bath. Some of the newer developing papers, such, for example, as the "Wellington B.B.," fix very rapidly.

ENQUIRE WITHIN

By The Sphinx

Under this heading replies to all inquiries will be made. Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given. Where specimens are sent and stamps for their return enclosed every endeavor is made to carry out querists' wishes, but the Journal must be consulted for the replies.

AMONG THE SOCIETIES

Photographers' Association of New England

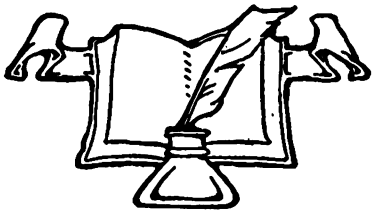
The Seventeenth Annual Convention will be held in Copley Hall, Boston, Mass., August 10, 11, 12, 1915. The Executive Board at this time cannot give a detailed program of the good things in preparation for those who will attend the convention, but they are working on plans to make it a notable one in the history of the Association. The renewed interest and enthusiasm shown at last year's convention is a prophecy of the year 1915, and the technical and practical sides of the profession will be treated by men qualified by actual experience with every detail on the subject.

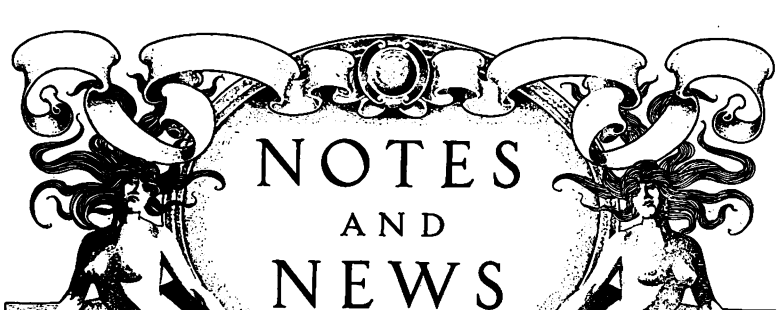
The manufacturers and dealers are alert to show the newest and best of devices by which the photographers can improve the work and make more attractive the output of the studio, as well as to reduce the labor incidental to the same. The Executive Board cannot put on a good convention without the loyalty of the craft in supporting it by becoming members and then by showing an enthusiastic interest in the proceedings of the convention.

We ought to have five hundred members at the least in order to properly carry out a good program; employees are required to pay only one dollar to become members, which gives them the same privileges accorded proprietors. We need your support—send in the dollar. Application blanks for membership can be had for the asking. The sooner you receive your certificate of membership the greater the value of the advertisement will be. Its display will also add to the prestige of the studio.

There will be future announcements regarding other attractions issued from time to time, but *now* is the time to decide that you will become a member, and we hope that you will be there. August 10, 11, 12, 1915.

Geo. H. Hastings, *Secretary*.
Newtonville, Mass.





Agent for Lumière Jougla

Mr. R. J. Fitzsimons announces that he has purchased the entire stock of the Lumière Jougla Company and also the sole United States agency for their Autochrome plates for direct color-photography, also their dry plates, papers and chemicals for several years to come. Mr. Fitzsimons is to be congratulated upon representing this well-known firm, and it is to be hoped that the supply of these sterling goods will meet the constantly increasing demand.

Clarence White Summer School

The sixth summer session of the Clarence H. White School of Photography at Siguinland, Maine, will open July 5 and continue until August 14. Mr. White's students will receive individual instruction in the use of the camera; in developing, printing, enlarging, mounting, and lantern-slide making; and will have the benefit of his personal supervision in photographing in the field and studio. Further information may be had by writing Mr. White, 230 East 11th Street, New York.

Photographic Telescope for Yale Observatory

The last annual report of the observatory of Yale University describes the new instrument for parallax investigations now being installed at that observatory to replace the 6-inch heliometer heretofore used for such observations. It consists of a photographic telescope of 15 inches aperture and 50 feet focal length, to be mounted parallel to the earth's axis of rotation. Light from the celestial bodies will be reflected upon the lens from a 30-inch silver-on-glass mirror, carried by an equatorial mounting. This mirror will also direct the rays of light to another lens of 10 inches aperture, mounted close beside the photographic lens and having the same focal length, thus serving as the objective of the guiding telescope. The star images in the field will of course revolve about the axis of the lens, and means have been provided for rotating the photographic plate-carrier at the rate of the earth's diurnal rotation.

Herbert and Huesgen Co. Move to New Quarters

This well-known and progressive company has taken the entire building at 18 East Forty-second Street, New York, and are moving their several sales branches and retail stores to concentrate all departments under one roof. For years they have specialized in the importation of photographic goods of a high type, and manufacture specialties to be obtained nowhere else. The public and all interested in a well-equipped and thoroughly efficient photographic organization is invited to visit these new headquarters.

The Perfection Developing Tank System. A New Idea

"Perfection" Developing Tanks are unlike any other tanks on the market. They present a new idea in tank development. Being circular in form and having a circular film-holding rack composed of a number of units, every inch of space in the taks is utilized—there are no useless corners where unused and, therefore, wasted developer may lodge. The racks are so constructed and hung that all possibility of scratching or otherwise injuring the films is eliminated.

The patented rack supplied with this "System" accommodates from twenty-four to forty-eight six, ten or twelve exposure films at one loading, depending upon the width of the film. It will also take any width of film up to and including five inches, insuring absolute safety from marring and scratching, minimizing the amount of time taken up in handling films on separate rods. Film packs and plates can also be handled with as much ease. Further information and quotations furnished upon request by Northern Photo Supply Co., Minneapolis, Minn.

Fluorescent Photographs of Palimpsests

For some time the study of palimpsests has been facilitated not only by ordinary photography, but by ultra-violet photography. An even greater amount of success in reclaiming ancient texts from old parchments has been obtained recently by the use of fluorescent

photography. This new method, invented by P. Raphael Kogel, was described at the meeting of the Royal Prussian Academy of Sciences, which took place at Berlin, on October 29 of last year.

The new method is based on the fact that parchment fluoresces under the influence of the ultra-violet rays, while the written characters remain almost entirely dark. Mr. Kogel states that this fluorescent photography gives on the average 50 per cent. better results in the deciphering of old texts than either ordinary photography or ultra-violet photography, both of which he had previously employed. The communication was made before the session of the *Phil.-hist. Klasse* of the Academy.

Do It Now

This Greeting to the Merchants and Manufacturers of America, by Secretary Redfield, of the Department of Commerce, Washington, should be of help and suggestion to those in kindred industries.

If you want prosperity, do your own share to bring it—and do it now! Get that addition on your shop going; it will cost you less today than six months hence. Is trade a bit dull in the works? Get those improvements begun. Prices are low and likely to rise. You've been thinking of that contract work; better start it yourself before things get the start of you. This country slows down a bit now and then, but it never stops growing, and it always moves up and not down. We don't know what it means in most of the United States to have real, general distress. Think of Belgium and Poland, O, man with a grouch, and slink into your hole and pull it in after you. There think of your sins and your blessings, and come out with your courage in working order.

There are lots of good American examples of pluck. Do you remember San Francisco and Galveston and Chicago—Boston, Charleston, Baltimore, and Dayton, and many others like them? Remember Thomas A. Edison and lots of others of your fellow-citizens who showed pluck when things were hard.

Nothing's the matter with the man with a grouch except an absentee heart and missing nerve. Cheer up, go to work, do your level best, quit talking misery. The war's over yonder—not here. Men are slaughtered yonder—they are living here. It's all clouds there—clear day here. Get out and sell some goods. Plant some more acres. Do more work than you planned. Talk cheerful talk and you'll find this country of ours a pretty good place after all.

Ralph Harris & Co.'s New Quarters in New York

This firm announces the removal of its New York salesroom to 176 Fulton Street, to occupy the entire second floor. It is conveniently located, only a few steps from Broadway, the Hudson Tube and the Subway Express Station. The capacity of their salesroom is about three times larger than the old one, accommodating a much larger stock to supply the trade of New York and vicinity. Mr. E. F. Keller, so well known to the photographic trade in NewYork, will continue as manager.

Date of the National Convention

The Annual Convention of the Photographers' Association of America will be held at Indianapolis, July 19 to 24.

A Panorama Moving-Picture Machine

The accompanying illustration, Fig. 1, and drawings, Figs. 2 and 3, show the construction of a novel moving-picture panorama machine; while photograph, Fig. 4, shows a piece of original negative film, taken with this remarkable camera, which was designed by Dr. Hans Goetz, K. Gowerbeinspektor, of München, Germany.

The usual panorama cameras are based on the rotation of an objective around a vertical axis, this objective recording on a semicircular film a panorama covering an angle of 150 degrees as a maximum. A panorama camera has also

FIG. 1

been designed to rotate around its stand while a film in its interior passes in front of the slot. The accompanying drawing shows such an apparatus, with a vertical axis around which the camera rotates. The objective comprises an adjustable slot below which a film is arranged to pass under the action of a gearing controlled by the axis, while unwinding from one drum on to another drum.

It will be seen that when this mechanism is made to rotate once around its vertical axis, the whole panorama is reproduced photographic-

ally, or unwound, on the film. It provides for a continuous rotation at the speed corresponding with the normal rate of moving-picture projection, or about fifteen revolutions per second, and produces a most unexpected conversion, and transforms the camera into an ideal panorama kinematograph.

It is pointed out that the pictures thus obtained, at first sight, do not seem to have anything in common with moving-picture films, and are nothing but a panorama continually

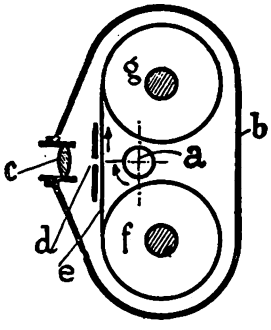


FIG. 2

unwound, comparable to a wallpaper border. Considering the panorama more closely, the pictures are seen to differ from one another, any moving objects occupying more or less different positions, as on the sections of an ordinary kinematograph film. In fact, the only distinctive feature of the panorama film is the substitution of a single continuous picture for an intermittent succession of film sections.

With these moving-picture panoramas the photographs are projected on the walls of a large circular hall, so as to cover simultaneously the whole of its circumference. In an

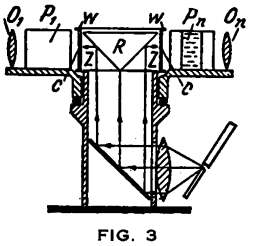


FIG. 3

ordinary kinematograph, films are, of course, projected by an intermittently operating mechanism, each section being successively illuminated, projected, and advanced in one-sixteenth of a second.

It is claimed that the projection of moving-picture panorama films is by no means more difficult, provided the camera described be supplemented by proper illuminating means. If the film is lighted intensely by an arc lamp arranged close behind it, above the axis of rotation, this converts the camera into a lantern projecting on the screen a narrow picture, in accordance with the width of the slot. When the apparatus is installed in a circular hall with white walls, and set rotating slowly, narrow pictures, corresponding with each point of the original scene appear successively at the various parts of the circumference.

In case a tree was standing one side of the scenery, in taking the kinematograph record, and a house on the other side, the tree will be projected in succession on opposite sides of the hall. Owing, however, to the persistence of visual impressions, the human eye will perceive simultaneously successive parts of the picture, provided the apparatus be turned around at a sufficient speed. There will be seen a single continuous picture covering the whole circumference of the hall like a real panorama.

Dr. Alfred Gradenwitz has pointed out that a similar principle has been embodied in the "photorama" designed by the Lumiere Brothers, where rotating objectives were arranged to project a photograph wound on a glass drum. He states that, "In actual practice it is, of course, impracticable to arrange the lamp immediately behind the film. A powerful searchlight is, therefore, installed outside of the apparatus, the light of which is thrown by mirrors through the hollow axis of rotation."

The astonishing result obtained by Dr. Goetz's apparatus may be described as follows: The Lumière "photorama" at each rotation projects an always identical picture; the picture passing before the slot of this apparatus is seen to vary continually, each turn bringing a new phase of the original motion into view. In fact, the projection thus obtained is a real moving-picture panorama, performing its natural movements, where houses and other immovable objects, of course, remain in position the same as on an ordinary kinematograph film. The apparatus, it is true, requires an intense illumination: since, however, the insertion of a glass trough containing an acidulated 1 per cent. solution of copper sulphite eliminates heat effects to 96 per cent. nearly, this does not entail any danger.

Moving-picture panoramas literally place the spectator in the midst of a given event or scenery. He sees himself transferred to the centre of traffic in a city, where vehicles and pedestrians converge from all sides; to aerodromes, where airships and areoplanes unceasingly perform their maneuvres; to horse, bicycle, and automobile races, football matches, and other sporting events, processions, popular festivals, expositions, etc. He is afforded an opportunity of watching from the "officers' hill" the strategic operations of armies, and from the conning tower of a battleship the maneuvres of a fleet. He is able, in the moving-picture theatre, to fancy himself aboard steamer or in an open carriage, traversing the most fascinating scenery. It is stated that the panorama films may as well be cut into sections and projected intermittently on a plain screen, like ordinary moving pictures in the modern moving-picture theatre.—*Frank E. Perkins.*

Sidelines for the Photographer

It is always a good thing for newspaper men and photographers to be well acquainted. Such friendship will prove quite profitable financially, if both are live wires, ambitious and competent. Often, I believe, it is simply ignorance of the possibilities of such a relationship that prevents both camera and press men from adding substantial contributions to their bank accounts.

In almost every newspaper office in the country there are some half-dozen or more bright fellows to whom great dailies all over the United States and in some portions of Canada have entrusted their local representation. When a man from Cincinnati dies in this town, for instance, many miles distant from Ohio, or when a Cincinnati woman elopes there, or when, in fact, any news of direct personal interest to Cincinnati develops, it is the duty of the correspondent of the Cincinnati *Inquirer* and the other papers there to telegraph the facts immediately. As he is paid space rates, his interest is to see that his paper gets all the news a'brewin.

Very often—and here is where the photographer's portion of the melon is sliced—there is ample material for illustration in these stories. Reverting to the former instance, a man from Cincinnati may escape in his night-clothes from a blazing hotel. To tell how anxious the managing editor of *The Inquirer* would be to get photographs of that fire would be superfluous. He wants it as bad as Sir Thomas Lipton wants the championship, and he is willing to pay good money for it.

With the cosmopolitan New York newspapers, to which the New York end of the story is not the all-essential appeal, there is an even greater field. Whenever real news develops capable of interesting illustration they will buy the pictures without quibble.

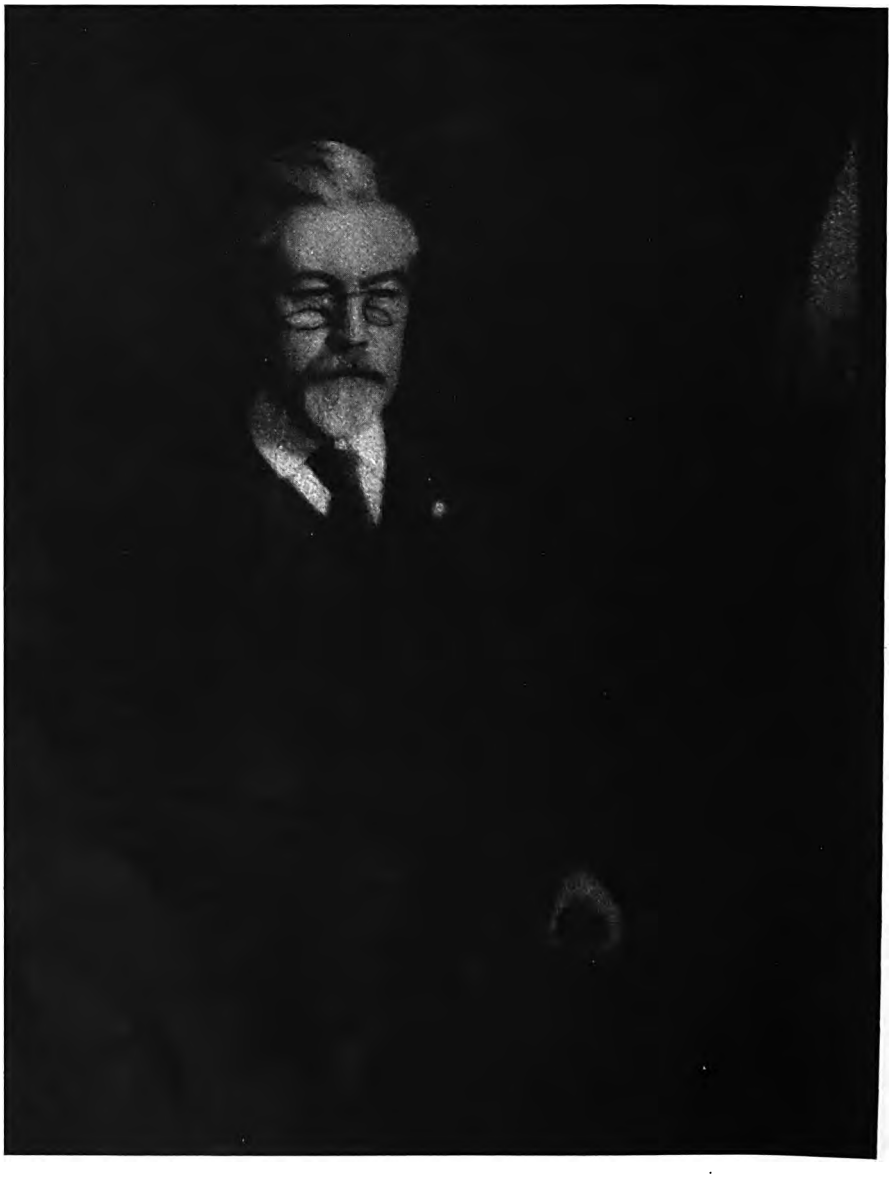
Here the objection may be raised, that while the field undoubtedly is there, waiting to be sown and harvested, the photographer hasn't the chance because he is not a trained newspaper man and, therefore, has not the experience to judge the value of news. That is true. Moreover, if the photographer were to submit the pictures personally through the mail, he would probably get nothing for his pains, because he is not known to the management. But, as I am about to explain, there is no need that he have such experience. All that he requires is a good camera, and the ability to operate it, coupled with a facility for making good prints. The rest of the business is up to the newspaper man, the correspondent, and success will only be attained when they work together in as close a fellowship as possible. Therefore, the photographer who would enter upon this fascinating and lucrative sideline should make it his business to become acquainted with all the correspondents in town. That is not hard to do. A little inquiry from the city editor, who generally is a correspondent himself, will likely furnish him a complete list, or direct him how to secure it. Then he can write the correspondents explaining his proposition and inviting them to call. They will be glad to come. I know, for I am a correspondent. And they will keep him posted as to what pictures to get.—*Charles F. Oursler.*

PATENT NEWS

Under this heading it is proposed to include each month a list of all the U. S. patents, and brief abstracts of the more important, and to include also such foreign patents as present special features.

Copies of any patent can be obtained from the Commissioner of Patents, Washington, D. C. Price, five cents each.

Camera. F. W. Calden. 1134119.
Camera Front. W. F. Folmer. 1134522.
Motion Picture Machine. R. Head. 1134611.
Motion Picture Machine. G. W. Bingham. 1134664.
Blue Print Machine. E. T. Cope. 1134589.
Printing Plates. J. A. H. Hatt. 1134381.
Color Printing Plates. J. A. H. Hatt. 1134382.
Projection Apparatus. W. L. Patterson. 1134154.
Film reel. H. J. Rickon. 1135846.
Developing Machine. Neschime & Rognlie. 1136703.
Film Winder. G. F. Hetherington. 1136335.
Enlarging Lantern. F. W. Minor. 1136677.
Motion Picture Printing. A. Wolfsohn. 1136194.
Motion Picture Projection. T. A. Killman. 1136236.
Camera. A. E. Chase & C. A. Briney. 1137185.
Etching Apparatus. L. E. & H. S. Levy. 1137339.
Photographic Prints. M. S. Lovell. 1137503.
Moving Picture Shutter. F. W. Hochstetter. 1137320.
X-ray Apparatus. H. F. Waite. 1137557.
Camera. W. Swank. 1133891.
Moving Picture Camera. T. L. Roop. 1133580.
Reflecting Camera. G. Dietz. 1133369.
Moving Picture Lantern. A. J. Stone. 1133412.
Moving Picture Machine. W. W. Newcomb. 1133311.
Moving Picture Machine. F. W. Hochstetter. 1135378.
Plate Squaring Machine. V. Royle. 1133823.
Automatic View Finder. W. W. King. 1137864.
Camera Stand. H. Rottenburg. 1138417.
Copying Device. W. Bauersfeld. 1138347.
Film Rewinding Device. C. V. Foote. 1138205.
Film Roll Holder. L. Mandel. 1137771.
Motion Pictures in Colors. T. A. Edison. 1138360.
Lens Hood and Vignetter. C. R. Howard. 1137912.
Moving Picture Reel. F. D. Sears & A. O. Sodergreen. 1137912.
Portable Projection Apparatus. C. Dupuis. 1137958.
Telephotographic Apparatus. L. J. R. Holst. 1138217.
X-ray Apparatus. S. T. Hutton. 1138113.



FIRST PRIZE, P. J. OF A. COMPETITION
"DR. EDWARD A. REILEY"
BY PAUL L. ANDERSON

The PHOTOGRAPHIC JOURNAL of AMERICA

VOLUME LII JULY, 1915 NUMBER 7

THE AESTHETIC SIDE OF MODERN PHOTOGRAPHY

By GEORGE PASEWALDT

IT is generally known that pictures, technically perfect, which do not satisfy the artistically-trained eye, gain at once in their effect if they are trimmed in a suitable way. Usually a kind of T-square, as used by draughtsmen, is cut of cardboard and shifted up and down, also sideways, to find out what parts are to be removed. This method is mostly employed with landscapes, but it will answer as well for genre scenes, portraits and the like.

We should now ask what is the reason of this increased picturesque effect Generally we may say that the distribution of the masses (lines, grades of tone and colors) pleases the eye if it is done harmoniously on the surface. And upon a smaller picture the same masses may look nice that upon a large surface would not be harmonious, as certain lines or spaces disturb the harmony. There is no fixed rule as regards distribution of the masses on a limited surface; if we want one, we should say that harmony is based upon contrast. Even the space occupied by the picture may for itself look unpleasant and experiments made in psychology prove this. For instance, rectangles that come quite close, the shape of a square do not look as pleasing as real oblong rectangles. In this case a disharmony is excited in the conception of the person looking at it, as he is not quite sure whether he beholds a square or rectangle. Thus the shape and size of a photograph is not unessential. But it is more important how a certain space is filled out.

First, we must distribute the bordering lines, viz., those encircling prominent silhouettes, in such a way that they counterbalance each other. If we have a long vertical line on the left, we should have

two short ones on the right. There should be sufficient variety in this, and this will show who is a master. Raphael's paintings are excellent examples, and their effect is mostly reached by the lines, not by the color; thus a black and white reproduction is quite pleasing. Such a picture is the Sistine Madonna. It is a good job for any photographer to make such studies of the bordering lines which will do him good services when posing a model. A good variation in the outlines gives a much better, impressive view of a standing model. In addition the right distribution of the tone masses must be carefully considered. Upon this the touching, I may say poetic, effect of a picture is based. It is not immateral where the brightest and darkest spots have to be and how they are connected by middle tones. If extremes on both sides are avoided, the onlooker will be induced to think and dream, which is mostly the case with Rembrandt paintings; while strong contrasts as done by the great Rubens put the onlooker into a lively, excited mood. The eye is mostly somewhat hurt if the strongest lights are to be found near dark shadows and we rather prefer graduated masses between them. Thus a portrait in front of a quite dark background will look harsh. It is well to make studies with the same model using various backgrounds, or to place various models in front of the same background (without really taking a photograph). This done at different times of the day and changing light trains the eye. The distribution of the lights dominating in a picture may act soothing or exciting. The impression is quiet if the lights are close together, forming one or more larger bright spots, which is not the case if the bright spots are scattered over the surface. Regarding portraits we should take in mind that all bright spots outside the figure lead the eye away from the portrait and thus weaken the impression of the figural representation. Even the hands, if they are too bright or otherwise conspicuous, will have the same unpleasant effect.

A few words may be said about the color. It lies in our hand to produce pleasing effects if choosing the right tint of paper and mount. Thus a marine view in greenish or bluish tint will gain in effect not only through the illusion of nature, but through the color itself. We should avoid everything uncertain, undistinct, as it produces feelings which disturb the aesthetic pleasure. The color of the mount depends upon the kind of picture and should be carefully studied. This applies for any subject, and it is well worth while to lay a trimmed photogram upon various kinds of mounts dry before pasting it on. Many amateurs and professionals prefer to stick a small picture near some corner of the mount unsymmetrically. To my mind this should not be encouraged, as the most simple, unsought-for way is probably always the best. How would a picture on the wall look with a frame which is twice as wide on one side as on the other? The above unsymmetrical way is only permissible if there is sufficient lettering of title (not a mere name) upon the mount, as, in this case, not the mere photographic print shall be decorative, but the whole piece, including the mount and the lettering.

Many photographers try to obtain specially impressive effects by taking pictures against the light, and at the larger exhibitions fine samples were shown. Probably the best results are obtained early in the morning or during sunset. As at that time the light is rather yellow; care must be taken not to underexpose. For the same reason a tripod is rather indispensable, and a yellow filter very useful, especially when an exact representation of the distant parts is wanted. To protect the lens from reflexes coming from any side a tapered tube of cardboard will prove useful, shifted over the objective, with the larger opening outside. Having the main subject focussed we must watch until the sun reaches the state most suitable for the exposure, and this is the most difficult and most important part of the whole procedure. If the sun is too much concealed by clouds a weak picture will be the result; if it is too strong there will be much halation, and no distinct shapes of the clouds will appear. If the foreground is moving,

viz., people or animals, a large stop, of course, has to be used and a short exposure. Still more difficult but at the same time more impressive are pictures, if water is in the foreground. This has an effect upon the time of exposure. It is best to gauge the latter after the motion of the water to get the waves sharp, and to regulate exposure by using a larger or smaller stop or more or less sensitive plates, not *vice versa*. It is also good to follow the effects of the reflexes on the screen which are constantly changing as the sun sinks down. It is extremely difficult to catch a moment where the reflexes are good and the sun is not too much hidden. Generally the best moment has come when the reflexes are 10 to 25 yards in front of us.

WINDOW-LIGHT CONTROL—DEVELOPMENT

By L. C. BISHOP

I FIND that patrons desire portraits made in the home, not especially because they desire the home surroundings, but, rather, on account of the accommodation it is to them. Of course I am sometimes sent for when the subject, on account of illness or age, is not able to come to the studio, but more often because of the great convenience it is to them. For then it is not necessary for a woman to pack and transport the gowns to be used, and she can change much more comfortably in her own dressing-room.

The call for sittings in private homes makes it necessary for nearly all portrait photographers to provide a portable camera outfit with some sort of equipment additional for manipulating the light.

When I began my work in homes, I carried the usual dark cloth for opaquing the lower part of the window, a piece of white cheese-cloth to soften the light, and a reflector. One can work fairly well with these few articles, but the lighting is of a very ordinary character, and often it is difficult to do justice to a sitter.

We should have some sort of control over the light. Otherwise, it is necessary to move the sitter about for the little alterations in lighting which mean so much to the final production.

Once in a great while a home will be found well adapted to portraiture, but not as a rule. The bits of interior which add interest to this kind of a picture cannot be too prominent. So in reality the most important things are the face, hands, and figure, just as they are at the studio, and if the photographer is also something of an artist he will add a suitable background by hand when the portrait requires it. I seldom try to include much of the interior. In fact, I find the nearer I approach the character of my studio work the more it is appreciated.

In using the window lighting I am about to describe, there is a tendency to suppress both the foreground and the background, the figure or the bust receiving the strongest light. The background is softly illuminated, so that, should there be objectionable accessories, they will not be too prominent, and if some of them have to be removed the work is much less.

My window outfit consists of a brass curtain-rod, telescopic, which may be hung over the top of the window-ledge by a stout cord. On the rod I have two soft, dark curtains hung by rings so that they slide nicely.

The opening through which light is allowed to fall upon the subject is only eighteen inches wide, and is eighteen inches above the sitter's head whether standing or sitting. Looking at a window which has been prepared for use one would think it almost impossible to work with the opening so small and

narrow, but the subject is placed close to it and receives much actinic light, while foreground and background are more or less in shadow.

To begin work, if it is a seated figure or bust, the rear curtain on the rod is pushed back and the front one pulled toward the sitter until eighteen inches from the back sash. The window-shade is pulled down until eighteen inches higher than the subject's head. About thirty inches should be cut off from the floor up should the window run lower.

This is the adjustment when the sitter faces the light and is on a line with the rear edge of the window and as near the light as is convenient and comfortable. The usual white reflector should be put in place, and, if the lighting seems a little hard, hang cheesecloth or bobinette over the window. Bobinette of a deep cream color is generally best, but if you wish to use a sunny window, hang tissue-paper over the window between the curtains.

The camera should be as near the wall as possible, but the window rigging protects the lens from light-fog if you wish to set the camera farther into the room for a profile.

Sometimes there will be a glare spot on the shadow eyeball, when the sitter's position is toward the light, so there must be a convenient provision made for this. Take a strip of dark cloth eight inches wide and about thirty inches long. Hang this cloth straight across the opening between the curtains, so the top of it is on a level with the eyebrows. The glare will be removed.

When it is desired to change the position, turning the subject away from the light, the curtains must be slightly readjusted. The rear curtain should be drawn toward the centre of the window, say six inches, and the front curtain opened, or, rather, drawn away from the centre of the window, so that the aperture between the two is eighteen inches wide in all cases. There will be no need of the strips of cloth to prevent glare spots on the eyes when in this position. By bringing the rear curtain forward the high-light side is toned down, and by pushing back the front curtain we allow more light to reach the shadow side of the face. Any operator will soon learn to adjust the curtains so as to obtain the most pleasing results.

A standing figure requires that the window shade be raised eighteen inches above the head, otherwise the adjustment of the curtains is the same as for the seated figure. The light below is needed to illuminate the lower part of the figure.

Negatives made by the above method will develop nicely in any good, clean-working developer, but should they at any time appear a little hard after fixing, add from twenty-five to fifty per cent. more sulphite to the regular developer. Do not try to correct this by shorter development than usual, nor by adding more water. Neither way is so satisfactory as the slight increase of sulphite, which keeps the high-lights from developing too rapidly. With some brands of plates additional sulphite may cause a lack of clearness, but the plate will work clean and soft if a drop or two of a ten per cent. bromide solution is added.

If the negative should come out thin, with a lack of general strength, add twenty-five per cent. more carbonate solution, and, if this should cause any trace of fog, bromide not to exceed five drops in ten ounces of developer.

I do not believe in weak developing solutions for producing soft negatives, because when the exposure has been normal the negative shows a tendency to flatness. Our negatives should have good density but with gradations running the full scale to a crisp point, avoiding spread-out, flat high-lights. For a basis, take the plate-maker's formula for tray, and, if your judgment for density has failed, simply add sulphite for softer results, and, if greater strength is necessary, increase the carbonate. Should the negative have sufficient density but seem to lack crispness, then increase the developing agent twenty-five per cent. or more, until you have the solution so compounded that you can depend on your judgment by the dark-room light.

If possible the developing should be done in a room not exceeding 75° F. in temperature and not lower than 60°. For summer, 60° to 65° would be ideal,

but 70° to 75° is best in winter. If the temperature is normal I believe in tray-development for all kinds of exposures, the time of development to be about six or eight minutes. To work in a warm room in summer, with the temperature 90° or more, the safest way is to use hard-rubber fixing boxes filled with developer at about 60°, the solution in greater bulk keeping at a fairly even temperature for about fifteen minutes. Dilute the normal working solution with water equal to about one-fourth of its bulk. Slide the plates into the grooves and occasionally move each plate up and down, reversing the ends while examining the progress of the development. Proper density will be reached in nearly the same order in which the plates were put into the developer.

In my personal experience I have found this plan of working most dependable, as it adapts itself to all conditions.

THE PHOTOGRAPHY OF FLOWERS

By EDMUND J. SPITTA, F.R.A.S.

THE photography of flowers is not distinctly easy, and some little patience is required to produce the best results; but when the final effects are correct they are of absorbing interest, particularly if positives on glass be made—such as lantern slides for projection. Besides this, if a really good negative has been obtained, the artist can color the slides and produce pictures on the screen which are unequalled in transparency, color, and brilliancy by anything obtainable by other methods at present known. Several considerations may be briefly referred to for the benefit of the beginner in the work.

The lens used should be one having as few uncemented surfaces as possible. That reflections exist in the types of lenses which are now so popular is well known, but it may surprise the reader to see the following:

A single lens gives 1 reflection, a two-lens system gives 6 reflections, a three-lens system 15 reflections, a four-lens system 28 reflections, and a five-lens system 45 reflections.

Most of these reflections can be seen by holding the lens about a couple of feet away from an electric light and turning it a little aside, but not all; and unfortunately it is just those that cannot be seen so easily that cause a general fogging of the whole negative, the image formed being sometimes of such a size that it practically covers the greater part of the photographic emulsion. The trouble due to these uncemented lenses may be well illustrated by making an attempt to photograph a white ball-chrysanthemum. One remembers the number of petals that are folded over and over to make the ball. If a lens whose components are uncemented be used it will be found next to impossible to show each little petal as a separate entity, for the most part they are all bound up in a lump, especially toward the centre of the flower; but with combinations, the lenses of which are more and more cemented together, the separation of the petals becomes more and more apparent, the best result being obtained with a lens composed of a single cemented combination; but the inherent roundness of field peculiar to and inseparable from this type precludes its constant use. A cemented doublet furnishes the next best effect and leaves little to be desired.

One is often asked what is the best focal length of lens to employ, but it is not easy to answer, as so much depends upon each individual case. Speaking generally a 7 or 8 inch meets most requirements. At the same time it cannot be denied that a 12 and a 5 inch may not very unfrequently be needed.

As to the kind of lens to select, the modern astigmat is quite the best, but the old-fashioned rectilinear will answer as well if the image on the ground-glass be limited more especially to the centre of the field of view. This is easily understood when it is borne in mind that the image in the centre of the field, in the old R.R. combination, has never been surpassed in critical rendering, but what the astigmat has so improved is the working aperture and the purity of the image towards the outer boundaries of the plate. A plain French-gray background is the most useful, although occasionally a cream can be employed with advantage. Whichever be used it should be placed as far off as possible to avoid shadows. Diffused daylight is the best illuminant, direct sunlight casts too heavy shadows.

Having arranged the flower or flowers, it is the best to focus on the ground-glass at first, replacing it finally by a piece of plain glass for use with a hand-magnifier. F/16 is the best number to work with, but it must be borne in mind that the depth of focus apparent with the eye and hand-magnifier is not realized on the plate, for the simple reason that the emulsion does not take into consideration the depth afforded by the accommodation of the eye. Further, it must be remembered that although depth of focus, obtained by closing the iris, relates for the most part to objects behind the point of focus, it affects, although to a much smaller degree, objects that are nearer to the lens. It is well, therefore, to focus with the largest aperture on a portion of the object *not absolutely the nearest to the camera*. By this means, when the diaphragm is closed, the front portions of the subject will fall into focus, thus giving a little more depth to those behind, as the lens will be in reality closer to them than if it had been adjusted for the nearest in the first instance.

Lastly, it is well known that depth varies with the focal length of the combination; a 5 inch having an inherent depth greater than that possessed by a lens of, say, double the focal length. This is sometimes of importance when as short an exposure as possible is needed, as in photographing a flower like the poppy, which droops so very rapidly. With a lens of such short focal length, less closing of the iris is required to produce a given depth than with a combination of greater focal length, and exposure is correspondingly lessened.—*Photographic Scraps.*

DOCTORING AND CLEANING OLD NEGATIVES BEFORE PRINTING

By "OPERATOR"

IN a well-conducted photographic establishment orders are repeatedly received for prints to be made from negatives that have been stored for many years. When the wet collodion process was in vogue for the production of portrait negatives, they one and all were compelled to be varnished because of the delicate collodion film. This varnishing protected the plate against almost any amount of hard usage in printing, so that if the surface became scratched it was the varnish only that became affected, which could be rectified by revarnishing. The modern gelatin dry plate, not being varnished, is more liable to injury from light scratches than was the collodion negative. The effects of sulphurization upon the modern gelatin negative has its injurious effect by causing the negative to gradually darken from the outside edges, passing over to the centre. Whenever one of these negatives is

taken in hand after long storage there is generally some repairing to be done. Very often these negatives are almost ruined because of the scratches caused by the finger-nail during examination of a print; that is generally the case where printing-out paper has been used, or in the case of platinum printing.

The first thing to do in cases of this sort is to wipe the face of the negative with a clean rag to remove all dust, then take a tuft of absorbent cotton, place it in the centre of a piece of canton flannel, twist it or tie it into a circular knob, dip it into wood alcohol (not denatured), then apply it all over the negative, with some pressure, especially at the edges. In a short time the superficial sulphuring will disappear, and should there be some scratches to be attended to, the best plan of procedure will be to brush the whole surface over with a coating of negative varnish, making the negative fairly warm before applying the varnish, then drying by heat. A negative thus treated will receive a surface that may be worked upon by either the pencil or brush, the varnish giving a fine tooth for the lead to take to, at the same time thoroughly protecting the surface from atmospheric sulphurization. Transparent spots, pinholes, etc., may be easily rectified. If the negative is a valuable one, and many prints are likely to be required, the safest plan is to make a transparency from it by contact after the doctoring has been done.

Sometimes it so happens that a great deal of work must be done upon a reproduced negative. In this case much time may be saved by working up the transparency, which lends itself to correcting many defects in a superior way compared with the working upon the negative. In many of the old negatives the high-lights have been rendered during development too hard and contrasty; this may be remedied to a considerable extent by rubbing these parts well with a piece of absorbent cotton or canton flannel, with some pressure, wetted with wood alcohol; this will abrade those parts, which must be done before the negative is varnished.

Never attempt to wet an old gelatin negative, because if there has been a trace of hypo left in the film, the latter will be certain to split, wrinkle, and leave the plate, thus ruining the negative. Should the above defect exist, the only remedy will be to wash the film well with wood alcohol, pouring this on and off at the spot affected, then when quite dry coat the surface completely with negative varnish, heat and dry.

The above hints which have been gained from actual practice will no doubt prove of service to those who are called upon at times to produce reprints from old negatives.

PHOTOGRAPHERS AND FARMERS

By EDWARD CONNER

THE indispensable role which photography plays in agriculture is not yet sufficiently appreciated by the farming community. Very few countries indeed actually recognize the sterling services rendered by photographic science as applied to the improvement of cattle. Farmers should no longer hesitate about calling in the aid of the photographer—a first-class one of course—who will prove such a good friend, too.

As usual, Germany was the first country to demonstrate this truism in a practical manner. Since that period, Great Britain, the United States, Belgium, Switzerland and several other countries have devoted more serious attention to the interesting and instructive problem. As for France, she is only

slowly rising to that intellectual level of progress; nevertheless, it is very gratifying to note that she, like other great agricultural nations, has become absolutely converted to the many advantages to be reaped from photography.

It is not too much to say that no thorough study or satisfactory comparison of races of cattle are possible nowadays without resorting to photography —the decisive test. Consequently, breeders should make it their business, not to say duty, to have all horses, oxen or sheep whom they value, photographed by a skilful photographer, before exhibiting any of these animals at shows. Copies of these photographs should be freely circulated among would-be purchasers; this is of the utmost importance as past experience has proved. By doing so, farmers dispose of their stock all the quicker and with greater advantage. An *exact* reproduction of cattle offered for sale proves of invaluable assistance to would-be purchasers in foreign countries; photos of this description act as indispensable guides from which careful selections are made.

Photography is the predominant feature at all cattle shows in Germany; all breeders in that Empire are compelled beforehand to submit to the judges a true likeness of the various animals which they intend to exhibit. This excellent idea is well worth copying. Nor is this the only condition exacted by German agricultural authorities at exhibition time; in addition to the photograph, the accurate measurement and weight of the animal or animals, as the case may be, must also be submitted simultaneously. Nothing is thus left to chance. Not until all these formalities are complied with will the permit to exhibit be granted. Such photographs are most carefully preserved by the German Board of Agriculture for future reference. This does away with all possible disputes hereafter. Such documents are most precious to all those interested in tracing the pedigree of cattle. How indispensable photography is in such cases can be judged from the fact that any mistake likely to arise in any celebrated breed can at once be detected and rectified. By resorting to photography on a large scale breeders experience fewer difficulties in following the normal progress of various first-class races. That fact alone ought to convince farmers how very important photography is to them.

Though animal photography, in the agricultural sense of the word, is but a comparatively recent idea, much progress has been made in this direction of late years. To-day there exists a growing tendency in most agronomic centres throughout the civilized world to resort to photography. That the excellent idea will become still more general, not to say universal, in the near future, with farmers, is now accepted as a foregone conclusion. The essential point is to impress upon all classes of farmers the undisputed importance of photography; the latter implies an additional source of income to both farmers and photographers, and that fact surely ought not to be overlooked. Trade organs can lend valuable assistance, too, by keeping the subject well before the eyes of their respective readers.

German farmers, both great and small, are entirely in favor of "agricultural photography." Whenever cattle shows are held in the Fatherland, photography as already explained becomes a very prominent feature. In conjunction with this important conferences are held every day while the show lasts for the express purpose of bringing out more forcibly the comparative merits of cattle from various countries. These much-sought-after lectures, delivered by the ablest authorities or experts, are greatly enhanced by being profusely illustrated. Specimens of the different races are faithfully reproduced on a screen for the benefit of all present. Here is where photography plays the leading role in spreading international agricultural knowledge.

France is very rich in certain breeds of cattle. The famous and world-sought after Charolaises, Normandies, Flamandes, Limousines, and other noted cross-breeds have become much better known still, and at very little extra cost too, since well-developed photographs of these celebrated races were

taken and copies distributed broadcast throughout the agricultural world; such parts known to be inhabited by wealthy farmers received special attention. The results were all that could be desired.

The Swiss, whose cows are held in such high repute, in addition to following all German methods, supplement these by carefully compiled tables, which are found of great assistance at exhibition time. The commerical and scientific importance of photography still needs to be more fully developed in Switzerland—a question of time.

The Belgians, a great agricultural people—not only carry out all Germany's excellent ideas, as regards the improvement of cattle, but maintain that no exhibitor in any country ought to be allowed to compete at any agricultural show unless he conforms to photography, measurement and weight. Belgium claims to be one of the warmest advocates of what has so appropriately been called "agricultural photography;" she does not hesitate to attribute the greater part of her agricultural success to *photography*.

As an advertising medium and valuable agricultural asset, photography is unquestionably the farmer's best friend. The great difficulty is to make *all* farmers and breeders believe this. A lot of convincing is required.

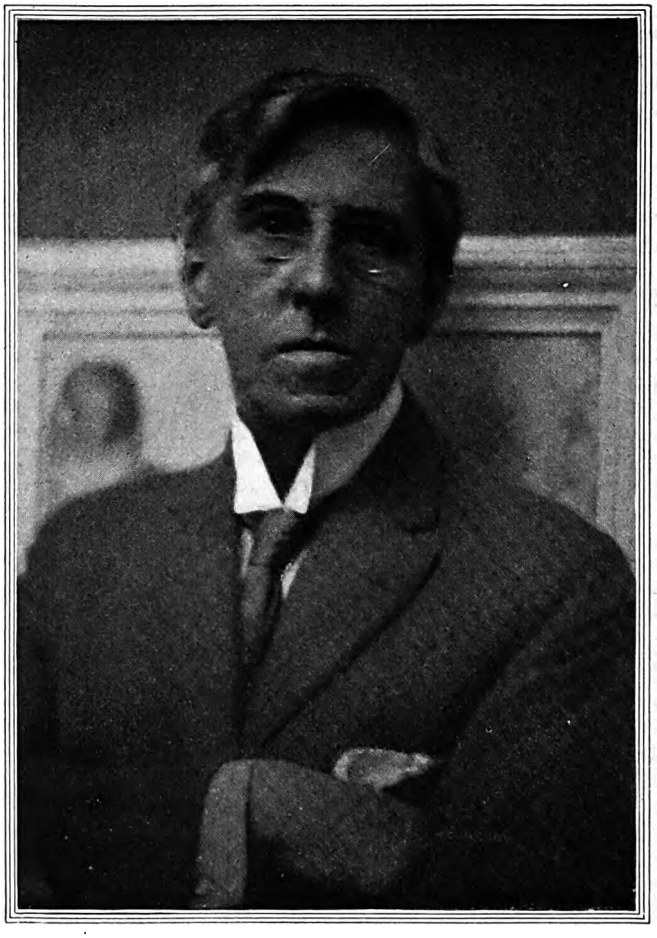
Enterprising and skilful photographers have a rich field before them; there is no need for them to wait until they are summoned. Thousands have already increased their income in different countries by acting on their own initiation. These, at their own expense or that of firms, undertake tours, and rouse farmers out of their lethargy. It is most important on the part of photographers to impress upon breeders in the course of their travels the imperative necessity of having their cattle photographed—provided they have any worth photographing. The excellent results that have accrued from same, and the large amount of satisfaction which agricultural photography has given in Germany, France, Belgium, Switzerland and other places, are other facts equally important to communicate to farmers. Let photographers ever be ready to do the work as reasonably as possible and as well as they can. Only those who have experienced it can realize the great amount of money to be made by travelling in this manner. Above all, do *not* be discouraged; bear in mind that rurals are not easily convinced (this latter remark only applies to the less-educated section of them.) All the greater the necessity for showing yourself enthusiastic. Do business in a business-like manner, and you will seldom fail.

Agricultural photography is certainly one of the things of the future; it is destined to repay those who conscientiously work on its behalf, sooner or later. All that is needed is energy and skill to ensure success. "He who never ventures never wins."

THERE is a photographer in your town, but only a few of the people know it. Whose fault is this—yours or theirs? The first business of the photographer in any city or town should be to create in the minds of the people, old and young, a desire for pictures. If this desire is once created everything else is easy. It comes to you without any further effort. Don't forget to keep the people posted, and let them know that there is a photographer in their town.—*Ohio Photo News.*

IF you expect your fellow-photographers to be interested in your business and your personal welfare, and the quality of work which you are making, you must show an inclination yourself to be solicitous, so that all things good shall come to them. Don't expect others to do for you that which they may expect you to do for them, yet which you fail to make any effort to do.—*Ohio Photo News.*

A GOOD photographer is happy within himself and independent of fortune; he is kind to his friends and his competitors, even temperate to his enemies; greets his customers with a smile, works laboriously long hours, and discharges all his duties with the best of his ability.—*Ohio Photo News.*



MR. CHARLES H. CAFFIN
AUTHOR OF "HOW TO STUDY PICTURES"
"AMERICAN MASTERS OF PAINTING," ETC.
JUDGE OF P. J. OF A. PRINT COMPETITION
PHOTOGRAPH BY ALFRED STIEGLITZ
COURTESY OF "VANITY FAIR"

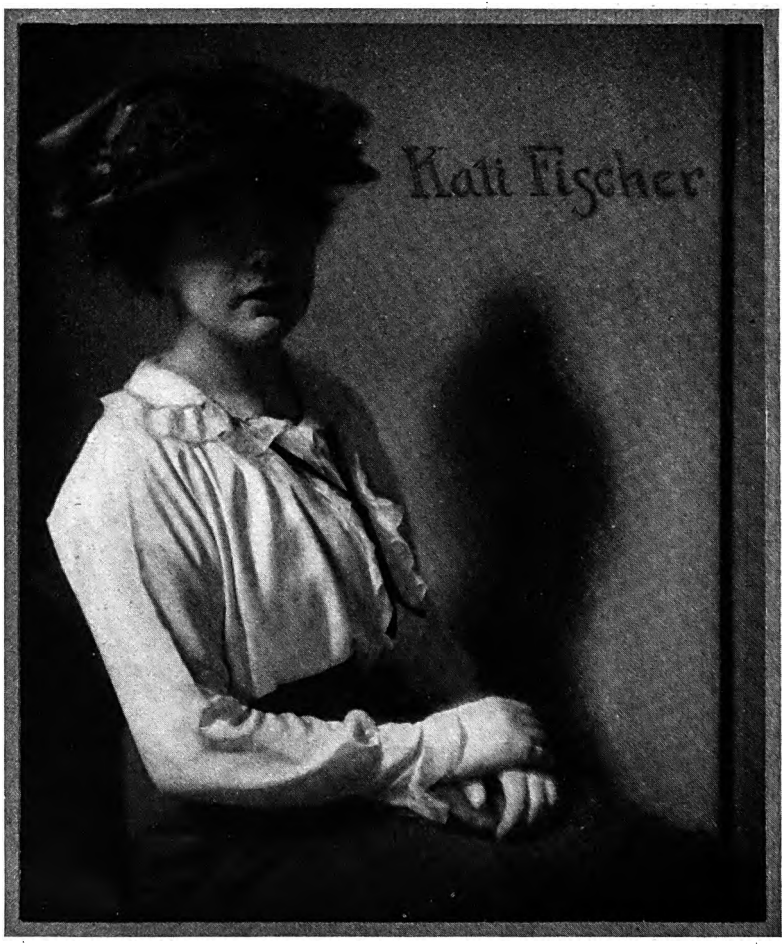
SECOND PRIZE, P. J. OF A. COMPETITION

"DAWN"

BY W. H. PORTERFIELD

NOT ELIGIBLE FOR AWARD

(SEE REVIEW OF COMPETITION, PAGE 354)



THIRD PRIZE, P. J. OF A. COMPETITION
"KATI FISCHER"
BY KARL STRUSS

FOURTH CLASS, P. J. OF A. COMPETITION

"ANNA BRAUCH"

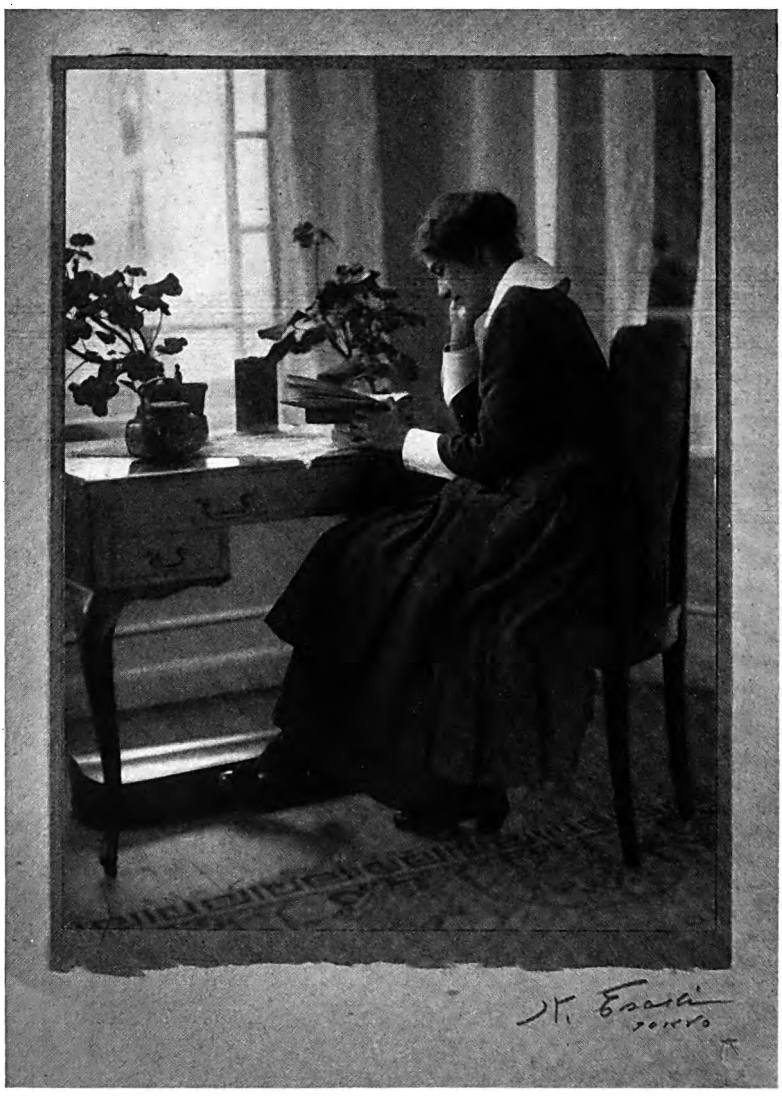
BY ALICE BOUGHTON

FOURTH CLASS, P. J. OF A. COMPETITION

"PEONIES"

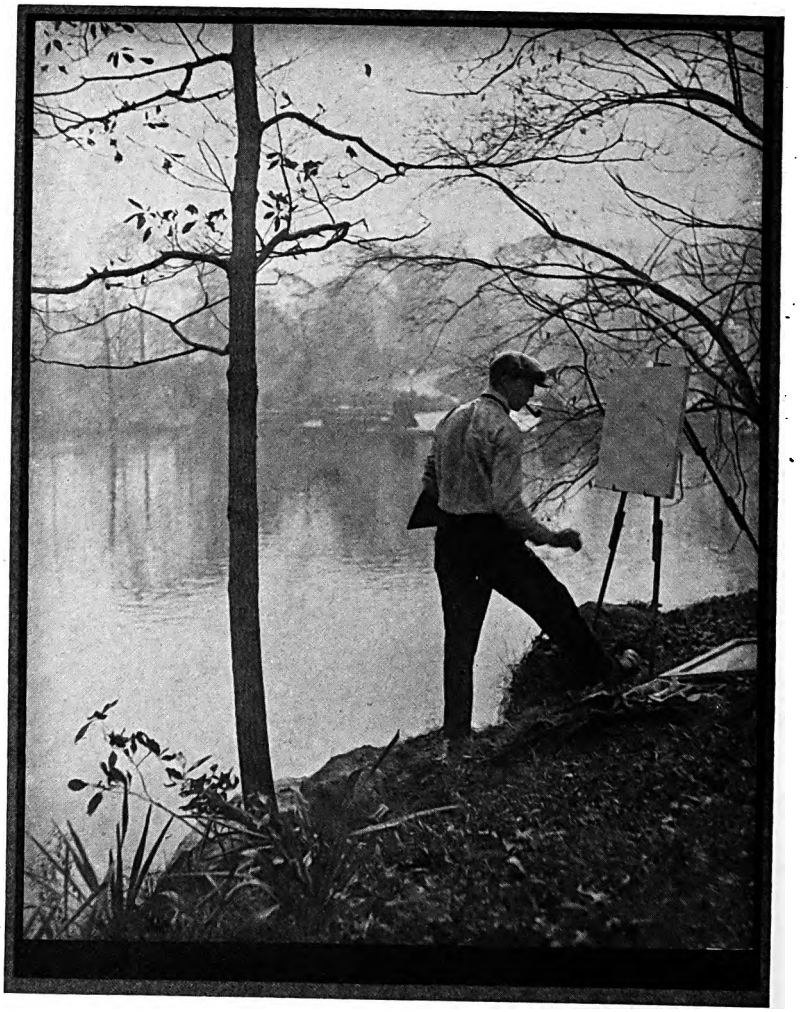
By HARRY D. WILLIAR

FOURTH CLASS, P. J. OF A. COMPETITION
"BITTERSWEET"
BY ADELAIDE W. EHRICH



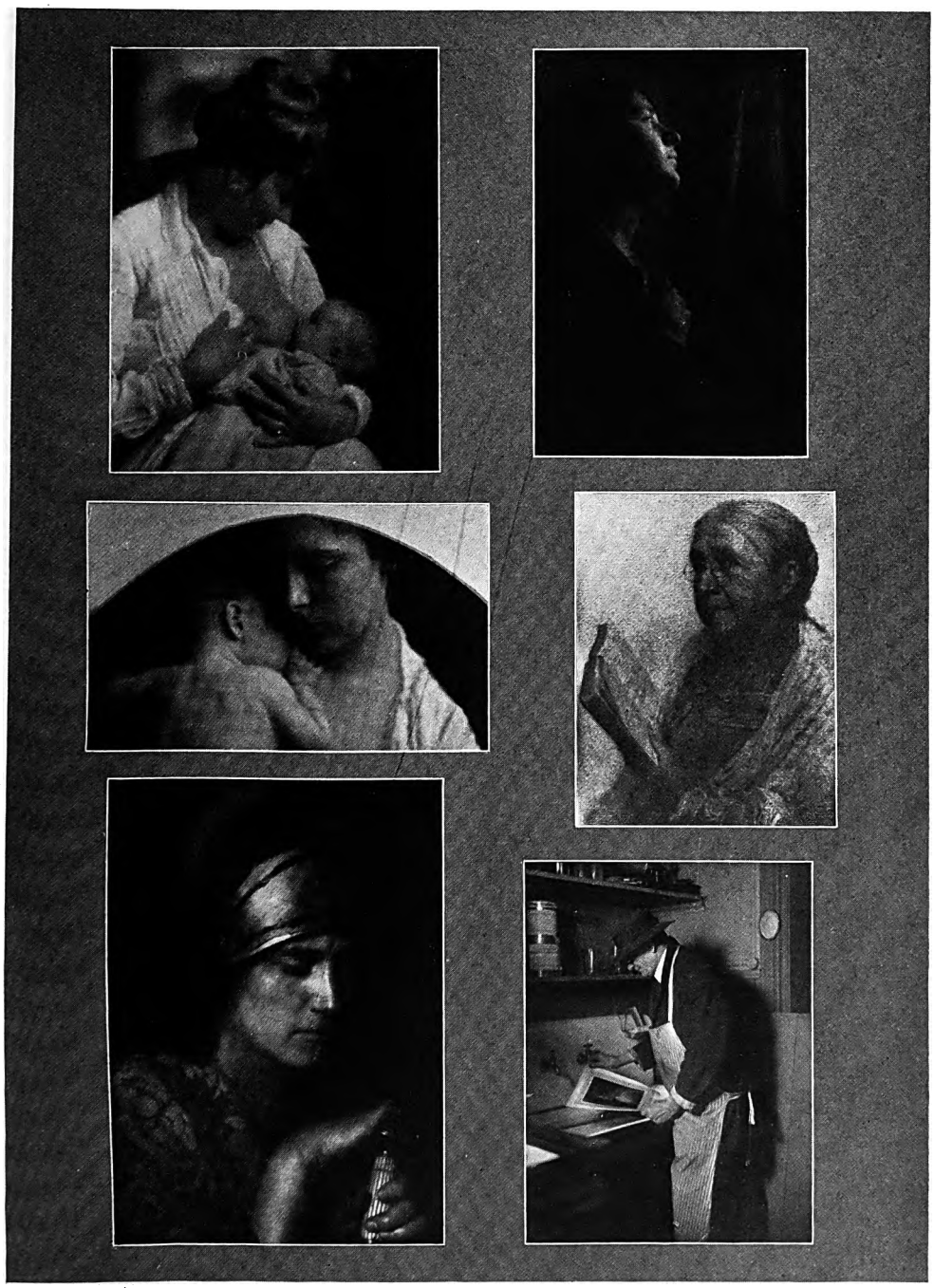
FOURTH CLASS, P. J. OF A. COMPETITION
BY KIYOSHI ESAKI
TOKYO, JAPAN

FOURTH CLASS, P. J. OF A. COMPETITION
"PORTRAIT OF MISS B"
BY NORMAN BUTLER



HONORABLE MENTION, P. J. OF A. COMPETITION
"A LANDSCAPE ARTIST"
BY FLOYD VAIL

HONORABLE MENTION, P. J. OF A. COMPETITION
"THE KODAK GIRL"
BY EDWIN GORE DUNNING



HONORABLE MENTION, P. J. OF A. COMPETITION (LEFT TO RIGHT)

"MOTHER AND CHILD," G. B. HOLLISTER
"MADONNA," JANE REECE
"STUDY," A. A. DARBEE
"WHEN THE LIGHTS ARE LOW," GUY SPENCER
"THE 91ST PSALM," PEARL GRACE LOEHR
"BEHIND THE SCENES," SARA F TROUTMAN

THE PRODUCTION OF HIGH-GRADE ENLARGEMENTS

WHAT is a high-grade enlargement? My definition is that such an enlargement is one in which the contrasts and detail very closely approach in quality those of a good contact print. In fact, some enlargements are so perfect that only a professional can tell the difference.

In the production of such enlargements there are many steps that have to be most carefully done, from the loading of the plate-holders to the trimming of the finished article. I will now take up in detail the most important steps.

In loading the holder it is best to do so in perfect darkness. Any one who has got to this stage of the game knows how the plates are packed so there is no reason for putting the plate in wrong. Be sure to load in a dustless room, and as there is no dust on the plates taken right out of the box there is no necessity of touching the film.

Taking the picture is the easiest part of the whole process, but must be done carefully. When using a rectilinear lens, stop down as far as possible, yet not so far that there will be the least movement in giving the plate a full exposure. With an anastigmat the subject can be focussed perfectly sharp wide open, but with this lens you can not get the sharpest possible definition without using a magnifying glass in focussing on the ground-glass. The best way is to use it just the same as you would a rectilinear; that is, stop down pretty far. In high-speed work you will have to use your best judgment as to the focus and let come what will. It is best to expose fully even though it takes longer to make the enlargement. Some will say that a thin negative is best, but I have always got the best results from a full exposure.

The exposed plate is now ready for development. Undoubtedly the best and safest method is the tank. I have found no better developer than the pyro-soda developer put up for the Eastman tanks. Right here is where some of the greatest care must be exercised. If possible, use distilled water; failing that, boiled water that has cooled to between 60° and 70° F. Dissolve the chemicals and let stand for at least five minutes, stirring once or twice to thoroughly mix with the water. Now comes an operation very seldom done: Filter the developer before using. After this is done put the plates in the tank, leave them in the required time, according to the temperature. When the time is up take them out, and without looking at them dip the rack into some rinse water for a few seconds. Then without delay put them into the fixer. This last solution should be just a plain one-in-four mixture of hypo and about the same temperature as the developer. It is well to filter this solution also, and the plates should be left in about three times as long as it takes to clear them. After fixing, rinse them and then put them through a 10 per cent. solution of formaldehyde for one minute. This does several things: It hardens the film and allows washing the plate in comparatively warm water—the advantage being that the warm water removes the hypo quicker and in my opinion better; it removes a good part of the hypo and in that way lessens the necessary washing. A fifteen minutes' washing in running water is all that is required. Set the plates in the rack and the rack in a dustless place, if possible in a current of air. Don't touch the plates until dry; you can look at them all you like after that. The important part is that nothing must come in contact with the film while drying.

If all these operations have been carefully carried out you should have a fine negative.

I will not describe the apparatus for enlarging, as every photographic magazine on the market prints a description

HONORABLE MENTION, P. J. OF A. COMPETITION
"APRIL"
BY FRANCES AND MARY ALLEN

of how to make a home-made enlarger every few months. My object is only to tell you how to get the best possible results from such an apparatus.

The light should be as strong as possible and not flicker. Artificial light is best. It is always the same strength and allows you to work at any time regardless of the weather.

The lens for the work should be as fast as possible. An anastigmat is best, but never use one whose focal length is less than the diagonal of the plate. The flat field of this type of lens allows using it at full aperture and still obtaining the maximum sharpness. The resulting speed shortens the exposure very materially, especially if the light is not strong. The greatest advantage, though, is that the projected image is stronger, making it easier to focus sharply—a very important consideration. Good results can be had, though, with a good rectilinear, but with this lens the focus must be not less than one and one-half times the diagonal of the plate. So much for the lens.

In considering the paper for this work it would be hard to say just what is the best. For all but thin negatives bromide paper will give perfect results. It requires a special developer, the formula for which I will give farther on. The big advantage of this paper is the great speed as compared to others made for the same purpose. The fastest and at the same time the cheapest of these papers is P. M. C. bromide. For thin negatives, and for that matter all normally exposed negatives, Cyko enlarging paper is very fine. It gives especially fine results with thin negatives, its only fault being that it is much slower than bromide.

Having considered everything necessary for the actual work, we will now take up the projection of the image. Project the image onto a piece of white paper pinned to the easel, which, by the way, must be parallel to the plane of the plate. Focus the image perfectly sharp with the aid of a magnifying glass; this being necessary because it cannot be done otherwise unless the light is very strong and few amateurs have such a light. After making sure that there is no light escaping that will fog the paper, pin up a test strip and make a test exposure. Finding the correct exposure is practically the same as for contact printing. The main thing is to focus the image perfectly sharp with the magnifying glass.

Formula after formula has been printed, and I do not like to add to it, but for those who want to use bromide paper and have not been able to get the necessary contrast the following will give it: Water, 8 ounces; amidol, 25 grains; sulphite soda ¼ ounce; carbonate soda, 20 grains; bromide potassium, 10 grains; alum, 10 grains.

With this amidol developer you can add an almost unbelievable amount of bromide without getting that green tone that comes from using too much bromide. This developer spoils fast, due to the carbonate of soda. The carbonate speeds up the process of development and gives the print brilliancy. Some will find that the carbonate is not necessary, and for Cyko enlarging paper it must be left out, except when enlarging extremely thin negatives. This is also a very fine developer for all D. O. P. papers.

All other operations are almost exactly the same as for contact printing. The secret of success is to take great pains to do everything right and not hurry. Hurrying through with the work has ruined more possibilities of good pictures than ignorance. It only takes a little more time to go carefully and get the best results.

DEVELOPERS THAT FILL THE BILL FOR GENERAL PURPOSES

By ALFRED J. JARMAN

THE development of either plates, films or paper demands a compound developer that will be suited to secure the best results.

The compounding of a developer is of importance, because the component parts may be such that will give vigorous prints or negatives, while by altering these component parts very indifferent results are likely to be obtained.

The mixing of the various chemicals in proper rotation is also important, because in some instances a compound may be obtained that has a reducing action instead of developing. It has always been the writer's experience that a film requires a much stronger developer to secure a full-bodied, snappy negative than glass plates—a weak developer giving always a weak negative while a strong developer will give a strong negative. These remarks apply equally well to pyrogallic development or to the developers made from the coal-tar compounds or derivatives. In some developers the use of carbonate of potash is found to possess a distinct advantage as an accelerator in place of carbonate of soda, producing excellent results with either plates or paper.

There are two classes of developers, classed under the heads of potential developers and actual or chemical developers. The latter class require no accelerating agent in the form of an alkali, such as carbonate of soda or carbonate of potash. Among these are eikonogen and ferrous oxalate. Pyrogallic acid, metol, satrapol, hydroquinone, etc., require an accelerator to bring about the full reducing or developing energy.

The following simple developer for paper will render prints that are excellent in every way:

Paper Print Developer, No. 1

Hot water	20 fl. oz.
Metol	50 gr.
Hydroquinone	15 gr.
Sulphite of soda (dry)	¼ oz. av.
Carbonate of soda (dry)	½ oz. av.
Potassium bromide	6 gr.

Mix in rotation; must be allowed to become cold before using.

The following is a developer that may be used for either plates, films or paper, either chloride or bromide; gives fine results; films develop well in this preparation:

Developer for Plates and Paper, No. 2

Hot water	12 fl. oz.
Metol	30 gr.
Hydroquinone	30 gr.
Sodium sulphite (dry)	2 drams
Sodium carbonate (dry)	3 drams
Potassium bromide	9 gr.

Mix in rotation; use when cold just as it is prepared; for paper prints dilute with an equal quantity of water.

Developer for Plates, Films, Bromide or Chloride Papers, No. 3

A

Metol or satrapol	½ oz. av.
Hot distilled water	32 fl. oz.

This must be shaken well until the chemicals are dissolved.

B

Hydroquinone	1 oz. av.
Hot distilled water	32 fl. oz.

This mixture must be well shaken, then add

Sulphite of soda (dry)	2½ oz.

C

Carbonate of potash	8 oz. av.
Warm distilled water	36 fl. oz.

Shake the contents of each bottle well until dissolved, when any quantity

of developer may be made for use at any time.

Developing Solution

Place into a wide-mouth bottle the following: A, 2½ oz.; B, 2½ oz.; C, 3½ oz.; and from 25 to 35 drops of a 10 per cent. solution of potassium bromide. This developer may be used for bromide papers, giving a jet-black deposit. It may also be used for glass negative tray development, for films of all kinds, also for chloride papers.

Pyrogallic Acid Developer, No. 4

For glass plates or films, *not* for paper. Negatives produced with this developer leave nothing to be desired.

A	
Distilled water	12 fl. oz.
Citric acid	1 dram
Sulphite of soda (dry)	1 oz. av.
Pyrogallic acid	1 oz. av.
Ammonium bromide	20 gr.

B	
Distilled water	12 fl. oz.
Sulphite of soda (dry)	1 oz. av.
Carbonate of potash	3 oz. av.

A developer is made from these ingredients by mixing of A, ½ fl. oz.; B, ½ fl. oz.; water, 8 fl. oz. May be used two or three times over, at the time of developing. It will not keep in good working condition beyond this.

The following developer is admirably suited for postcard work in large numbers as well as for bromide enlargements where considerable numbers are made daily, because the developer required for use may be made up quickly from the stock solution, and always gives uniform results; in fact, it is a workshop developer for all kinds of developing papers.

A Developer for General Work

Metol	½ oz. av.
Hydroquinone	2½ oz. av.
Hot water (by measure)	100 oz.

Dissolve the above and add

Sulphite of soda (dry)	10 oz. av.

Shake this mixture well until the sulphite has dissolved, then add sodium carbonate 5 oz. av.; shake this until the carbonate has dissolved, then add 100 oz. of cold water; shake this again to secure thorough admixture, allow it to become quite cold, when the working solution may be made in the following way:

Making the Developing Solution

Take of the above preparation	42 fl. oz.
Filtered water	16 fl. oz.
A 10 per cent. potassium solution	3 drams

The above developer was used by the writer in an establishment where as many as eleven hundred postcards were produced in a day, the usual number being nine hundred per day, all from portrait negatives made daily in the studio. All the other formulæ have been given from use in daily practice. No experimenting is needed; simply mix according to direction, and use right away.

ADVICE

NEVER delay undertaking something you want to do. The best time to do a thing is when it is before you.

NEVER complain of what you have to do. To want to do a thing lightens your burden considerably.

NEVER sulk. It shows a discontented mind and a bad disposition.

NEVER crush your enthusiasm. You will need it for all important endeavors.

NEVER worry about the hard things. If you accept them graciously the easy tasks will follow.

NEVER worry more than you have to. It weakens your energy and clouds your purposes.

NEVER think of your enemies. If you have any, forget that they exist.

NEVER boast of your successes. To do so is a sign of weakness.

A PERSONAL CORRESPONDENT AT THE PANAMA-PACIFIC INTERNATIONAL EXPOSITION

III. STATUARY, MURAL AND ENTABLATURE

SAN FRANCISCO has a semitropic climate. The coldest days, which are by no means in winter, seldom are below the temperature of an April in the East, and the sun in December and January has been found uncomfortably hot. At least two hundred days out of the year are bright and clear until about four in the afternoon, when in summer the dense fogs roll in and one needs a tripod for long exposures and an overcoat to avoid personal exposure of too great length. These mists are for the most part beloved by the pictorialist for the effects; but until the stranger is acclimated he had better wear woolens or the atmospheric effects will be mainly physical. To the natives the dry north wind is far less welcome than the typical "refreshing fog."

The immediate effect of so many sunny days and so many clear hours is to popularize the camera out of all proportion to the number of residents. California probably has contributed more to Mr. Eastman's prosperity than any state in the Union. Another effect is that, similar to the mildness of the Mediterranean shores, another Greece is simulated. True, the humans do not parade in draperies that conceal but to accent, but they do spend more hours outdoors than the citizens of any other city in America. And so this exposition is naturally an outdoor one. There are more statues within its boundaries than in Paris, Vienna, and Rome; such a lavish plentitude that groups of perhaps a dozen figures to the group are frequent. Long corridors are lined by statues, courts are almost surrounded by them, walls are niched for their convenience, and under the open sky great murals extol a climate that makes this possible and no less possible than appropriate.

In the telling I may give a false impression of vulgar profusion. Let me assure you that the magnitude of the vistas, the placing of the figures, the trees, columns, and all the parts of the entirety are so well conceived and carried out that one must move from place to place to see the various beauties of one court. Standing in the middle, or as near that as the lakes permit, one gets an impression as of approximation; but

as one walks from spot to spot and lingers where the fancy is most pleased, impressions give place to definite pleasures. You will know better just what this means when after wasting a day trying to take in all of this exposition, you come again, wiser, and find it best to loiter and rest where you trotted before, and content yourself with a court or two a day. The first allegory to greet

you as you enter the Scott Street gates is the Fountain of Energy. Its parts are admirable, but as a whole it is either too artistic for my half-developed taste or very faulty. The great mounted figure is fine. Then there are two others resting on the shoulders of the largest, forming a sort of Y. The contrast of sizes and the outlines, angular and violent, may express energy, but Rodin had done it less offensively. The ability of the sculptor is not to be doubted. He has combined three masterpieces to spoil them all. That my opinion is shared seems proven by the number of people who pass this fountain with a casual glance and stop at other single and grouped pieces not nearly so prominent. A friend who goes in for athletics put his criticism very forcibly when he said, "Some lofty tumbling act, that, and quite a pyramid. Only, where did the giant on horseback get those perfectly formed, full-grown pigmies?"

Just behind the Tower of Jewels, which you know like an old friend by this time, is the Court of the Universe. A newspaper writer recently said that "Beside these encircling colonnades, sunken gardens, and majestic groups of statuary the famous Arc de Triumph would be dwarfed." I hope he saw the Arc de Triumph. I never have, but I do know the dimensions and conclude this writer got his impressions from pictures. The Court of the Universe is immense in size, and no place on earth (unless there be an unknown corner where the Arabian Nights dreams are a reality) can duplicate or equal one corner of this artist's heaven. Over arches which rise to a hundred feet and spread proportionately are groups so lavish in figures, so rich in ideas, so fruitful of emotions that even the reproductions will impress you, not fully but to an unusual degree.

The Nations of the East diffuse an atmosphere of prodigality and incense. The elephant advances continuously. It is a conception full of physical motion, yet with a tropic laziness.

The Nations of the West convey a sense of more rapid motion, but add to this an unrest of spirit. The oxen are being driven, the horses are restrained; but faster than these people move, moves their spirit. It is plain they are bound for a land of promise and their hopes and ambitions make them impatient. To analyze these groups might make an article and there is so much ground to cover. Here are the pictures and of course you will see it all for yourself. In a period of several years of industrious writing I have fought on the unpopular side sometimes, on the unprofitable side often, when it was in the wrong, and have beaten about me with the Truth as with a club, caring not whose head was hit or what I might suffer in reprisal. I have had a serious contention with the Exposition administration regarding a tax on the pictorial exhibit. Men and things have been

dealt with honestly and frankly. I am not on the advertising staff of this show, it has too many in that capacity who are overzealous. My advice to those of my readers in distant parts who believe in me is: Pass up one meal a day; make your present suit of clothes last another season; cut out the candy or cigars; forego that automobile, and come West if only for one short week. Do not come to see the exhibits. If you live in a large and cosmopolitan city you can see most of the things shown at any world's fair. But this exposition will "bust" you in films or plates, for every corner, every step will tempt you to another exposure.

In the Court of Abundance is a fountain that shall live. It is called the Fountain of the Earth and is the work of Robert Aitken. To my mind it is one of the finest things on the grounds both in conception and execution. About a colossal globe are four groups, arranged panelwise. The figures are robust and real. Muscle and bone have been done into hard material with the magic of the master. But this is technic. The true greatness lies in the emotions portrayed. This shall be no analysis. Three of the subjects are given herewith. Let each reader form his own opinions. As an entirety I would offer one criticism at the risk of being hypercritical: From the circular scheme projects at one side an oblong base with another group. This is on a level with the main subjects and obstructs the view of one of the panels. To this mechanical fault add a discontent of the mind caused by a seeming distraction. It is the painter's fault of divided interest. Had this secondary group been placed almost on a level with the water it had added instead of detracting from what is inadequately expressed as charm. For all this the force and genius of the parts carry all before them.

The Court of the Universe is so rich in statuary that an article of many pages might be devoted to it. Two exquisite figures of heroic size shall have to suffice. The Rising Sun and the Setting Sun are by Adolph Weinman. Slender figures here prevail. The Rising Sun is personified in a winged girl with arms outspread to the heavens. The Setting Sun is shown as it stood in the artist's studio.

The Court of the Four Seasons offers

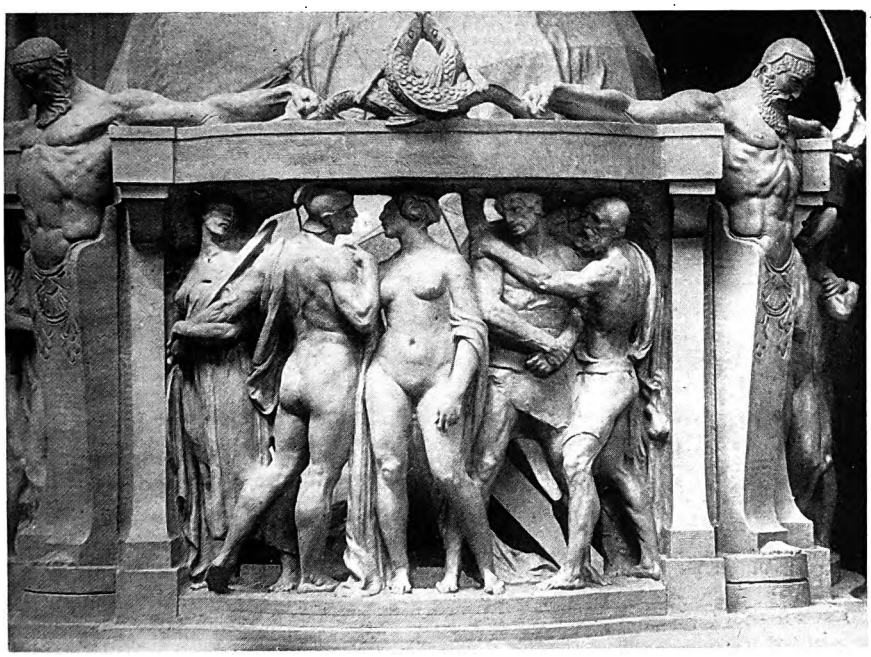
a feast at every turn, even surpassing the plentitude of other courts, which is saying much. On each of its sides is found a great niche, wide as a city lot and high as a building. Framed in a noble arch, it curves to a group, each niche fulfilling the purpose of representing a different season. The top of the recess is open to the sky and over the ledges mosses and vines drape and hang. At

the feet of the statuary are gushing springs which flow down into sunken pools. One of these groups is shown before it had been placed.

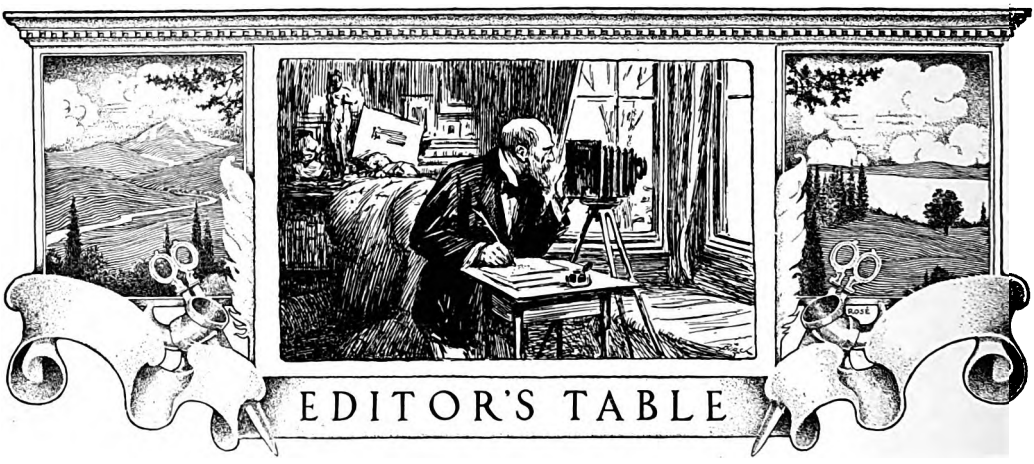
Later, if interest warrant, it shall be accorded me to take court by court and devote a chapter to each. Now I must hastily tell of the murals, which while not as abundant as the statuary are numerous and fine. I should like to tell you of and show you Earth, Fire, Air, and Water as Frank Brangwyn portrays them in the Court of Abundance. It would be worth the space to reproduce Spring, Winter, Festivity, Harvest and the other gems of the Court of the Four Seasons by Milton Bancroft. And Simmons' work in the arches of the Court of the Universe, and Dodge's under the Tower of Jewels, and Frank Du Mond's and Childe Hasson's and Charles Holloway and Robert Reid. About twenty paintings open to the elements and worthy to face the judgment of the heavens. Two are selected and these only because they lend themselves best to reproduction. Justice entitles every one to equal honor.

Of the scrolls, arabesques, banners, and entablatures, I must speak as briefly as possible. They require more time than the isolated statues and paintings. They surmount doorways, environ windows, decorate arches, surround pillar bases. Even the lighting is rendered into art. The poles are imbedded as in huge urns, and some ten feet from their tops hang Spanish banners. These are translucent and at night powerful arc lamps shine through the colors, giving soft and romantic light. The sides toward the buildings are open so that the fierce white light illuminates the walls like tropic moonlight. Reaching above these banners the poles taper to a fine point and end in a many-pointed golden star.

And now for a confession. The more I see of this show, the more I write about it, the more convinced am I of the futility of words. If pictures printed in cold blood could adequately tell all, I should send a monthly packet of some fifty photographs and write nothing. But magazines are not so conducted and readers must have something to read, and writers must strive to send forth to their patient friends something more of what is seen and felt than just pictures. So I shall do my best to tell what I see as I see it, and of what I feel as best I may.—*Sigismund Blumann.*



STATUARY AT THE PANAMA-PACIFIC INTERNATIONAL EXPOSITION



FOR RECREATION ONLY

IT is not pleasant to be bound down to some uncongenial task; but there are thousands in such a plight; clerks who would rather be mechanics, and bankers who hanker after a farm life; men who have been drafted into some line of business before they knew what they were really adapted for. In the country places a lad may dabble in many things, but in the city, unless he has some strong inclination, he is apt to drift into the first thing that offers.

It is a matter for satisfaction that the number of photographers who take no interest in their profession is very few. In fact, unless a man does take pleasure in his work he can never succeed in the fraternity, and will gradually drift into something else. The production of a print which satisfies him is to many a man as great a pleasure as receiving the payment for it. Many solid hours are spent under the skylight which are due to nothing but a pure love of the work. The man's object in endeavoring to improve is the gratification and enlarging of his own pleasure in the beautiful rather than a hunt after the money.

In the old days a photographer's delight was in the overcoming of mechanical difficulties; he made his own plates, sensitized his own paper, and was an ingenious combination of chemist and jack-of-all trades. The troubles that fretted his soul were the mechanical defects of his appliances. Now that new processes are numerous, and apparatus nearing perfection, the energy that was formerly spent in striving against adulterations in chemicals and limitations in apparatus is turned toward attaining a higher level of beauty. It is sometimes said—and not altogether without truth—that there is more rubbish written in the name of art than in any other cause, but it is certain that we are beginning to produce more beautiful pictures now than before. How rare it is in looking through an old-time album to see pictures which really please. We find them sometimes in the daguerreotypes—faces of men rendered with equal delicacy and vigor—just the head and a black stock and the slope of the shoulders.

The revival in beautiful work is due to much solid study on the part of photographers, and this study has been helped and directed by some writings in the mass of art utterances. There is no better test than time of the value of work, and there is much portrait work produced today which will fifty years hence arrest the attention of people who do not know the original.

The best feature of all in the photographic art today is the general raising of the level; there are many men doing work equal to the work done by only a few not many years ago, and there is scarcely a city between Boston and San Francisco where creditable work is not done. In some of the large cities

of the West and the South work is done equal to much work done on Fifth Avenue, and the workers are aiming higher than the present attainments.

Recreation is, to most of us, change of scene or of work, and many of us might make our recreation hours pleasanter by tackling some new branch of our work as a hobby. "What! A camera on a holiday?" Why not? Photography is not drudgery, and the man who earns his living by portraiture will find that he makes most delightful and bewildering failures if he invests ten dollars in a hand-camera and tries to get snapshots on the beach or by the river. To devote part of our recreation hours to by-paths of photographic work will enlarge our ideals and give us a greater mastery over that special line of work by which we earn our bread.

NATURALNESS

THE art of "not posing" has been much written about of late, and the plan of seizing the unconscious pose rather than of creating a graceful composition is considered as one of the discoveries of latter-day workers. But we of a younger generation sometimes receive a humiliating but wholesome shock in looking over the work of our predecessors. We are ready to grant the preëminence of their technique, but not so open to admit their careful good taste and knowledge of things beautiful. But often, fortunately, the admission is forced from us that the old days saw work as perfect as that of today, and perhaps they saw less bad work.

Some of our greatest painters have demanded for one portrait as many as fifty sittings; not, of course, for general outlines or mere manipulatory details, but for the embodiment of an expression which should most forcibly depict the very soul, as it were, of their model. The accomplishment of this lofty aim is commonly held to be the great point of superiority which the painter claims over the photographer; but why? The painter must see the expression before he can catch it; and if you secure for your camera that same expression, in less time than the draughtsman needs to impress it on his memory or transfer it to his canvas, the art which can depict a cannon-ball in motion will seize and render it permanently visible. Those photographers who are not satisfied with "a mere map of the face" may and do frequently secure expressions as beautiful and far more truthfully characteristic than any we have seen in drawings or paintings. The great point is, either by the art of your conversation or by similar means, to call to your sitter's face such an expression as may be most pleasing in the picture.

Fortunately for us, we are in an age of steady photographic improvement. The abolishing of the universal full-length has been one of the greatest forward movements. We seldom—too seldom—see a male full-length from any high-class studio, but when we do, how different from the stereotyped old timer! The head and shoulders and the half-length have proved a somewhat cowardly refuge for the photographer at a time when he began to see the faults of his old full-length and yet began to taste the difficulties of improvement. Now he is gradually finding his way back, and though the larger head will inevitably, for several reasons, hold its popularity, we yet will from time to time see full-length poses that will be altogether satisfying. In full-lengths today we are strongest in poses of women; not that we make more poses of them—that is a matter of course, consequent on their being our best customers—but because our poses are of the living, high-spirited, happy woman, and not poses of inanimity.

We are far indeed—the leaders among us—from the old regulation pose. The former exists in the cheapest galleries of our large cities, and the latter (except for occasional use) is confined to places where low-priced lenses or dim light make rapid exposures impossible. And we are getting ever further from a conventional mannerism, and if only we live true to our present progress we shall develop more and more toward a strong and pictorial individuality of work.

THE P. J. of A. PRIZE COMPETITION

WITH a view of fostering and stimulating the art side of photography, this JOURNAL issued last January a general invitation to the photographers of this country to participate in the First Print Competition — made notable by liberal cash prizes offered for the best portrait or pictorial photograph —the competition closing on April 30.

There were also awarded engraved certificates signed by the three judges—each eminent in his qualifications and field.

Mr. Henry R. Poore has not only a wide reputation as a painter and author, but is well known to the photographic fraternity by his two authoritative works, *The Conception of Art* and *Pictorial Composition*.

Mr. Charles H. Caffin, equally qualified and known as art critic and author, has written many books pertaining to art, prominent among which are *How to Study Pictures* and *American Masters of Painting*. Mr. Caffin also has a distinctive department in the *New York American*, in the Monday issue, in which he ably treats on "New and Important Things in Art."

The results of this competition were most gratifying and far beyond our expectations, the number of contesting points received being nine hundred and seventy nine, and the greater number of these were of an unusually high order and covering a wide range of subjects. Indeed, the judges had no little difficulty in arriving at their decisions, because of the large number of distinguished merit, some prints being quite equal in technique and artistic value. By the process of elimination the judges finally arrived at a unanimous decision in each instance, and made the awards as announced in our June number.

The first prize was awarded Mr. Paul L. Anderson, of East Orange, New Jersey, for his fine portrait of "Dr. Edward A. Reiley"—the frontispiece to this number. Mr. Anderson is well known as a photographer and writer and lecturer on photography. In presenting the reproduction of this gum-platinum it is difficult to give the true value and quality of the original. The composition and treatment were of the highest consideration. The data on this print are as follows: hour, 9 P.M.; light, one No. 1 Eastman flash sheet, about six feet from subject; lens, Pinkham & Smith Semi-achromatic, 16-inch focus; stop, F/8; ray-filter; Cramer Isos III; plate, Standard Orthonon, 8 x 10; developer, rodinal. An 11 x 14 negative was made on a Cramer plate (Banner), and from this the gum-platinum print made on Willis & Clements' ivory-black paper, the pigment used for the gum printing being Talens & Son's ivory black.

The second prize was awarded Mr. W. H. Porterfield, of Buffalo, N. Y., for his beautiful print "Dawn." Owing to an unfortunate mishap, which has come to our attention through Mr. Porterfield, this print, it appears, is not eligible for award.

The following letters, submitted to our readers for careful consideration, speak for themselves, and explain clearly the situation:

BUFFALO, N. Y., June 9, 1915.

MR. THOS. C. WATKINS,
New York, N. Y.

MY DEAR MR. WATKINS: Today I had occasion to refer to some old copies of photograph magazines, and in looking over a number of

American Photography, of June, 1914, I discovered, to my deep humiliation, a reproduction of the picture, "Dawn," which was awarded second prize in your recent competition.

I write you immediately to express my profound regret for this unfortunate mishap, and to assure you that I am ready to make whatever amends are necessary. When I gave you my word that it had not been reproduced before, I positively had no record or recollection to the contrary, and you may be sure I am very much disturbed by this discovery.

Please advise me at once, because I feel that I have no right to the award under the circumstances. My only wish and concern now is to impress upon you how very much embarrassed I am, and also to convince you that I am perfectly innocent of any intentional deception.

I can only say, and that truthfully, that I forgot; the picture in question is one which I would have taken an oath had never "been out" before.

I apologize and await your instructions, my only satisfaction being that I have been permitted to call *your* attention to the accident, and not to have remained in ignorance of my mistake until the prize picture appeared in print.

The thing depresses me greatly, because I realize that I have caused a most unfortunate complication. However, I hope you will believe me and let me hear from you by return mail.

I inclose you herewith my check for $50.

Sincerely yours,
W. H. PORTERFIELD.

NEW YORK, June 11, 1915.

MR. W. H. PORTERFIELD,
Buffalo, N. Y.

MY DEAR MR. PORTERFIELD: I hasten to acknowledge your letter of the ninth inst., advising me that your print "Dawn" is not eligible for the award of Second Prize in our recent competition, as this print had been previously published, and I wish to say that I fully appreciate and understand your honorable statement, and assure you that not for one moment do we doubt your integrity. Your explanation is all that is necessary.

It was our purpose and principal aim, as you know, in making this print competition worth while and as notable as possible, to call forth and present to our readers new and original work, and thus it was we stipulated in our announcement that "No prizes will be given for pictures previously exhibited or published."

In view, therefore, of this condition, we cannot do otherwise than accept the statement and restitution you make.

As our awards were made on June 1, and all prints have been returned to competitors, it is now too late to make any adjustment of award. We therefore propose to apply the amount of award ($50) to the Gustav Cramer Memorial Fund, which I feel sure will meet with your approval.

With deep regret for this unfortunate error, which I am sure, however, all our readers will readily understand, and with sincere regards, believe me, Cordially yours,

THOMAS COKE WATKINS.

The third prize, "Portrait of Kati Fischer," is by another equally well-known photographer, Mr. Karl Struss, of New York City. This portrait was made in Mr. Struss' studio with a rather strong sunlight coming through the ground-glass, which is almost horizontal in roof of studio. The light was at an angle of about 45°, and a Struss Pictorial Doublet lens was used at F/5. Exposure of three seconds, very full, with Standard Orthonon plate, 8 x 10. The print is on platinum (etching black) with no manipulation of negative or print—in other words this is a "straight" print from a "straight" negative, without retouching. The effect is obvious.

The five awards in class four were irrespective of comparative merit, and each quite distinctive. Miss Alice Boughton, of New York City, received a reward for her striking portrait of "Anna Brauch." Miss Boughton writes: "This picture was made some years ago with the only lens I ever had—a Platyscrope, on a Seed plate 26X, size $6\frac{1}{2}$ x $8\frac{1}{2}$. The print is an enlargement. As to exposure, composition, and lighting, I am like the cooks—I do it according to judgment."

"Peonies," by Mr. Harry D. Williar, of Baltimore, is an exquisite sample of flower photography. This print was made at 3 P.M., window-light, with Wallensak Vesto, focal length, 10; stop, 32; exposure, 3 minutes, on Central plate. Enlarged from 4 x 5 on Noko.

Another charming and effective bit of still-life is "Bitter Sweet," by Mrs. Adelaide W. Ehrich, of New York City. This was made with a Century view camera, 5 x 7, with Smith lens; indoor, southern exposure; camera about seventeen feet from side windows, stopped at F/11; exposure, 10 seconds; plate, Standard Orthonon; developer, rodinal, two drams to one ounce of water, with small glycerine; paper, platinum.

From Japan Mr. Kiyoshi Esaki sent an effective example of home portraiture. Printed on platinum and mounted with true Japanese taste, this print is quite charming.

Mr. Norman Butler, of New York City, deserves special commendation

for his "Portrait of Miss B." This print, Mr. Butler tells us, was made late one November afternoon on a rainy day, indoors, by window facing north; lens, Smith, S.A.; stop, F/8; plate, Stanley; on Willis & Clements' sepia platinum.

There were fourteen prints receiving honorable mention, but owing to our limited space we regret that we cannot show these to better advantage.

Miss A. A. Darbee, of Brooklyn, received an engraved certificate of award, for her "Study." This print was a bromoil enlargement from a 5 x 7 Plastic plate; lens, Pinkham & Smith 14-inch doublet; camera, new Eastman view; exposure, F/6; No. 1 Tension focal-plane shutter; developer, pyro.

"Mother and Child," by George B. Hollister, of Corning, N. Y., is a difficult subject treated with excellent judgment. This print was made with a Smith S. A. Single, F/8; exposure, four seconds; plate, Hammer red label; developer, rodinal; printed in platinum.

"The Fruit Vender," by Mr. Maximilian Toch, of New York City, is excellent in composition and treatment. This picture was taken in Paris on a 9 x 12 C. M. film-pack; the lens a Goerz Syntor F/6.8; exposure, one-fiftieth of a second.

"A Landscape Artist," by Mr. Floyd Vail, of New York City, deserves special praise and recognition. Mr. Vail's work is always careful and thorough and has received awards here and abroad. This print was made on Wellington anti-screen plate; lens, Beck anastigmat, at F/6; exposure, one-fiftieth of a second; November, dull; paper, Wellington bromide.

The work of Frances and Mary Allen, of Deerfield, Mass., carries a distinction of deserved merit. "April," by Miss Mary Allen, is charming in composition and tone. This print was made on a Cramer Medium Iso, 6½ x 8½, with Smith single lens, and enlarged on a Cramer Banner X to 11 x 14; paper, Wallace Chemical Co.'s black platinum.

Mr. Edwin Gore Dunning, of New York City, sends "The Kodak Girl," an out-of-door, breezy treatment, effective in composition (see cover). Made in August, 4 P.M., on Standard Orthonon, 6½ x 8½, with Spencer Soft Focus 11½ inches to F/6, and printed on Willis & Clements' platinum sepia, K.K.

"Madonna," by Miss Jane Reece, of Dayton, Ohio, is a charming treatment of a popular subject. This is an enlargement from a 5 x 7 Cramer plate on Cyko enlarging paper; lens, Verito; exposure, about two seconds.

"Interior of Exeter Cathedral," by Mr. John W. Tarbell, of New York City, is a fine example of interior photography. This print was made with an English reflex camera on a tripod; exposure, about twenty minutes at F/32; lens, Aldis anastigmat working at F/4-5. This is enlarged from an Eastman film-pack, 3¼ x 4¼, to 8 x 10 on Velour black in buff tone.

"Going Out," by Mr. Earle Andrews, of Wilkes-Barre, Pa., is most effective in sharp contrast. Made with an Eastman V. P. Kodak, Kodak Anastigmat, F/8, on Eastman N. C. film; exposure, one-twenty-fifth of a second; 4.30 P.M., April; artol developer. Enlargement on Azo B, hard; print waxed with Nepera waxing solution.

"The 91st Psalm," by Miss Pearl Grace Loehr, of New York City, has much strength and true meaning. We regret our reproduction cannot do this print full justice. This picture was made on 5 x 7 Seed plate; Heliar lens; one second exposure; was enlarged to 8 x 10 inches, gray tones, on Wellington extra rough cream crayon bromide.

"Behind the Scenes in the Professional Studio," by Miss Sara F. Troutman, of Pittsburgh, Pa., speaks for itself, and will appeal to most of our readers for its faithfulness. Made on Seed plate 30; lens, Wallensak, 6½ x 8½, rapid convertible; time, twelve seconds. No light except the one photo light, a nitrogen globe on stand; paper, Cyko No. 5.

"When the Lights are Low," by Miss Guy Spencer, of New York City, is a charming home portrait. Miss Spencer writes: "The original negative was made in February, about 4.30 P.M.; soft light, with 5 x 7 R. R. lens at F/8; exposure, eight seconds, on Hammer plate, special extra fast; developer, rodinal. From this I obtained several

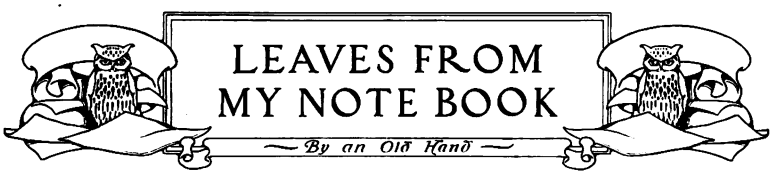
platinum prints. The negative having become defaced, I made a copy of the print with a 6½ x 8½ Verito; stop, F/5.6; exposure, twenty-five seconds; on Cramer Iso, slow plate; rodinal developer; enlargement on Velour black semi-matte paper; developed with amidol."

"The Changing Waves Break into Foam," by Mr. William S. Davis, Orient, N. Y., is an unusually fine marine, taken in October, at 4 P.M., cloudy light; exposure, one-twenty-fifth of a second; stop, F/8; lens, Ilex anastigmat, six-inch focus, on 3¼ x 4¼ Cramer Instantaneous Iso plate; enlargement, 11 x 14, on Velour black, rough.

"Elysian Park," by Mr. George L. Gilbert, of Burlington, Iowa, is an enlargement to 9 x 14 on Cyko; taken with 3*a* Ansco, with Voightländer Dynar, on Ansco film.

It will be noted that almost in every instance these prints were enlargements.

Owing to the great success of this first notable competition, others of a similar character and equally high standard will follow in due season.



THE HYPO BATH

OF course everyone knows how to make up a fixing bath, and if they do not they think they do, which comes to the same thing; all that you have to do is to dump some hypo into a dish, fill it up with water, and the job is done. Done, yes, but in the laziest and worst fashion. It is just as well for us to recognize that the fixing bath is as important as the developer; actually it requires more care.

There are all sorts of wonderful formulas given by the plate makers, which are about as inconvenient, troublesome, and unnecessarily complex as they can be. The bath I have adopted for years is simple to make and satisfactory in use.

In the first place, I always purchase pea-crystal hypo; it is cleaner and dissolves more readily than the larger crystal variety. The fixing bath is made in the dark-room, and in the vessel in which it is stored. It can be made in less than thirty minutes. I just bought a stoneware crock, labelled "ice-water." It holds fifteen litres, has a hole at the bottom in which I have placed a ten-cent wooden tap. This crock is always kept full, the solution is always clean, always of the same strength.

There is just one little tip that should be noted as to the tap, and that is to get it well soaked with water before putting it into the crock. It is not such an easy thing to soak a bit of wood, for wood floats; the only thing to do is to weight it with lead, or something heavy so that it will not float, and then immerse in a pan of boiling water; boil for a time and allow to cool. It will then be well saturated and thoroughly expanded and no trouble will be experienced as to leakage if it be well driven home by a few taps of a hammer. If the tap is not previously soaked, it must swell by absorption of the hypo solution, and the result may be that the crock will crack.

The first thing to do is to measure the capacity of the crock. This was found to be fifteen liters, and a mark was painted inside with black enamel, thus obviating any measurement at any future time. Now the best strength of the fixing bath is 40 per cent.; therefore we must use 6 kilos of hypo (approximately this is equal to 6 pounds to 4 gallons). To avoid weighing this out, I looked about for a measure of some sort, and found that an old sulphite tin just held 2 kilos.

As hypo is rarely very clean, and frequently contains bits of straw, etc. (besides that, to dump a lot of hypo to the bottom of a crock and expect it to dissolve is not the correct thing), a double thickness of cheesecloth was sewn on to a ring of cane that would fit tightly over the crock, and enough of the cloth used to form a loose bag and hang down in the water. This bag is placed in position, the hypo put into it, and some water heated up to about 150° F. poured in. The crystals rapidly dissolve, and if they do not at once they will in a few minutes, as the heavy solution sinks and its place is taken by less saturated solution. When all the crystals have dissolved the bag is removed, squeezed, and placed upside down in a big tray to wash, and then hung on the dark-room wall to dry. This method always gives us a clean solution; it takes very little time, and any dirt remains in the bag.

To the solution is now added 5 per cent. (that is, 750 c.c.) of sodium bisulphite lye. This is a commercial solution of acid-sodium sulphite—practically a 40 per cent. solution of sodium

sulphite saturated with sulphurous acid gas; it costs about five cents a pound. Addition of this makes an acid fixing bath which has a distinct hardening action on the gelatin.

It will at once be seen that this is a much easier way of making an acid fixing bath than the usual one with acid and alum. It is just as effective and there is less chance of sulphur precipitation.

Cold water is now added to bring the bulk up to the mark, and a stir or two with a stick makes the bath ready for use.

When it comes to the use of the fixing bath there are one or two points that are sometimes forgotten by photographers. All developers contain alkali, and as this is carried into the fixing bath it neutralizes the acid, and the bath then rapidly becomes dark-colored through oxidation of the developing agent. Therefore, except when using pyro, all prints and plates should be well rinsed both back and front so as to remove as much developer as possible. It does no harm to wash them for five minutes in running water, but as a rule one minute will be enough. Washing a plate when pyro is used causes the gelatin to become much more deeply stained all over than when it is immersed in the fixer direct from the developer.

I have seen questions in a journal ere now as to the number of plates and prints that can be safely fixed in a given quantity of hypo solution. Of course it can be easily figured out, in fact it has been worked out, and it was stated that 150 grammes would safely fix fifty 5x7 plates. Now 150 grammes is just one-third of a pound, so we can safely say that a pound of hypo will fix 150 plates, or 5250 square inches of plates. Personally I do not bother about the number of plates I can fix in a given quantity, but if the bath shows the slightest tinge of color I turn it out. I do not pour it down the sink, but put it into the residue tub. Hypo is so cheap that it is not worth while to economize.

When using plates it is easy enough to see when the bath is getting exhausted, for it works more slowly; but with paper no effect is visible, therefore one must either keep track of the number of prints used, or test the bath with a plate, or its acidity or alkalinity with test paper. While all papers contain far less silver than plates, area for area, the fixing bath is far more likely to become alkaline more rapidly, as the paper holds more of the developer, and for the same reason it is all the more important to see that the print is thoroughly immersed, and that the dish is rocked once or twice so as to insure absence of air bubbles, which inevitably cause yellowish spots. These are really dichroic fog due to the reduction, by traces of developer, of the partially dissolved silver salts. They are very easy to make but very difficult to get rid of.

ABSTRACTS AND TRANSLATIONS

BY E. J. WALL, F.R.P.S.

Intensification of the Latent Image

In a recent lecture before the Royal Photographic Society, Dr. Abrahams, the well-known high-speed worker, stated that the latent image intensifies if kept before development. Dr. Mees, of the Kodak Research Laboratory, states that in the course of some other work which has been done in the laboratory this point has been looked into, and it was found that during the first eight or ten hours after exposure a plate or film shows an increase in speed of about 15 per cent., the speed then remaining constant within the accuracy of measurement. The increase is rapid at first, the speed increasing about 10 per cent. in the first four hours. There is little change in the contrast, the change being entirely a shift of the inertia point of the curve.—*Photo.*, 1915, p. 338.

The Foreign Film Trade

The following report, issued from the Bureau of Domestic and Foreign Commerce, Washington, D. C., shows very plainly the effect of the war on the motion-picture film trade.

"Prior to July 1, 1911, motion-picture films were not separately listed in the official export statistics of the United States, being included in the general classification, 'Photographic goods.' In the last six months of the year named, 42,468,442 linear feet of American cinematograph films, valued at $3,277,668, were shipped to other countries. In 1912—the first complete calendar year for which figures are to be had—exports amounted to 62,240,743 feet, value $5,501,593; in 1913 these shipments rose to 146,436,783 feet, though the value dropped to $5,291,464; in 1914 they receded to 117,580,304 feet, value $4,742,620.

"In the year 1912 there were exported to France 1,019,171 linear feet of moving pictures, valued at $375,549; in 1913, there were 306,774 feet, valued at $41,688; in 1914, 316,020 feet, valued at $26,261. To the United Kingdom in 1912 we exported 51,039,463 feet, valued at $4,447,942; in 1913, 126,002,358 feet, valued at $3,900,529, and in 1914, 95,655,810 feet, valued at $3,207,981. To Canada during 1912 we exported 5,930,072 feet, valued at $460,322; in 1913, there were 12,467,488 feet, valued at $977,663, and in 1914, 10,981,146 feet, valued at $856,245. To Brazil in 1912 there were exported 423,131 feet, valued at $36,371; in 1913, 372,882 feet, valued at $21,090, and in

1914, 67,214 feet, valued at $6,570. To other foreign countries we exported in 1912, 3,828,906 feet, valued at $181,399; in 1913, 7,287,321 feet, valued at $350,494; in 1914, 10,560,114 feet, valued at $645,563. The total value of motion pictures exported for the year 1912 was $5,501,593; for 1913, $5,291,464, and for 1914, $4,742, 620.

"The extent to which the present European conflict has affected the American export trade in motion-picture films—chiefly through interposing transportation difficulties—is apparent from the following report, which gives comparative figures for the seven months ending with January, 1913, 1914, and 1915: From July, 1912, to January, 1913, inclusive, we exported to France, United Kingdom, Canada, Brazil and other foreign countries, 27,803,761 linear feet of motion pictures with an estimated value of $2,171,769; from July, 1913, to January, 1914, inclusive, 108,481,572 feet of film with a value of $3,622,252, and from July, 1914, to January, 1915, inclusive, we exported to the countries mentioned above 29,817,035 feet of film, valued at $1,606,309.

"It is interesting to note that the average value per linear foot of film exported in the last six months of 1911 was 7.72 cents; in the complete calendar year 1912, 8.84 cents; in 1913, 3.61 cents; in 1914, 4.03 cents; and in the seven-month period ending with January, 1915, 5.39 cents."

Fine Grain Matt Screens

Froehlich states that the following method gives a very fine grain matt screen, which is especially useful in photomicrography with high powers: 2 grammes of powdered bleached shellac are dissolved in about 10 c.c. of alcohol, and two parts of the solution added to three parts of 95 per cent. alcohol, the solution filtered, and a clean sheet of glass coated thinly with the solution and allowed to dry.—*Phot. f. Alle.*, 1915, p. 47.

I have tried this, and find that while a fine grain is obtained it is too coarse for high-power micro work. I have not found it feasible to use any matt surface for really high-power work, the only thing seems to be the customary plate-glass screen with a high-power magnifier. The focussing of the image, especially in bacteriological work with oil-immersion objectives, is an extremely tedious and delicate job and many of us would welcome any real aid.—E. J. W.

A New Use for Old Safety Razor Blades

Winterberger states that one of the best knives for trimming prints is an old safety razor blade, the only trouble being a suitable holder; he has found, however, that the "diamond stropper for Gillette blades" is just the ideal for the purpose.—*Apollo*, 1915, p. 71.

This is given for what it is worth; as I do not shave, I know nothing about it. Personally, I have found that the ordinary twenty-five-cent kitchen-knife is the best thing. I use this, as purchased, until the point becomes blunt; then I take a pair of pliers and grip the blade firmly, and with a hammer smash off the extreme end. This gives me a new cutting point that lasts for some time, and the operation can be repeated as often as required. I learned this tip from some of the paper-cutters in the largest photographic paper factory in Belgium, where things were then (I am talking of nine years ago) very cheap, including wages. All the hands provided themselves with the cheap (10 cent) pocket-knives with folding blades, and as soon as the point got blunt they never troubled to sharpen, but just broke the point off and thus obtained a perfect cutting edge.—E. J. W.

Eder's Mercuric Oxalate Actinometer

It has already been recorded in these columns that Winther has found that the addition of ferric chloride to Eder's ammonium-ferric-oxalate actinometer materially increased the sensitiveness. Eder now publishes a complete investigation of the action of the addition of ferric salts to his actionmeter fluid, and conclusively proves that the sole action of the same is to increase the photochemical action of the visible spectral rays. Winther came to the conclusion that a solution of pure mercuric oxalate was practically insensible to light. Eder proves that with the pure mercuric solution that 93 per cent. of the action is due to the ultra-violet rays, and only 7 per cent. to the visible spectrum of sunlight. With the mercury arc lamp, the total action of the visible rays is limited to only 0.3 per cent. The addition of a ferric salt increases the action of the visible spectrum about 50 per cent. with sunlight; but if a light such as the mercury arc be used, then the action of the visible spectrum may be increased as much as 700 per cent.—*Phot. Korr.*, 1915, p. 104.

The Daguerreotype Process

Some interesting experiments have been described by the *Deutsche Physikalische Gesellschaft*, by which it has been proved that mercury vapor is not the only developer for daguerreotype plates, and that cadmium vapor has exactly the same effect.—*Photo. Ind.*, 2915, p. 250.

A New Element

Dr. Goehring, of the Physicochemical Institute of Karlsruhe, has isolated a new element as one of the decomposition products of uranium, which he has called brevium. It is a so-called pleiade, a complex element of two atomic weights.—*Phot. Woch.*, 1915, p. 79.

NOTES AND NEWS

Death of Dr. Lohse

It is with regret that we have to announce the death of Dr. Oswald Lohse, who since 1882 has been connected with the Astrophysical Observatory at Potsdam. His principal work was with spectroanalysis of the stars and the production of the International Star Chart. He died May 14, aged seventy-one years.

U. S. Government Photographers Organize

The photographers in the U. S. Government Service at Washington assembled on the evening of April 10, in answer to the call of Dr. Thos. Smilie, of the Smithsonian Institute, and Prof. L. W. Beeson, of the Department of Agriculture. The meeting was convened for the purpose of giving effect to a much desired, but heretofore somewhat indefinite plan to perfect an organization which can speak with authority on matters of importance to the profession such as have not until now received the organized consideration which they merit.

The purpose of the association is distinctly divorced from that of financial aggrandizement, or of furthering the material interests of its members. It is a new step in the right direction designed to elevate the photographic profession to the artistic and scientific plane to which its right is coming more and more to be recognized by the general public. By a well-conducted series of lectures, careful and organized research along scientific lines, and through coöperation with the highest class of investigators in commercial circles, the association should fulfil the purpose for which it is being created by the voluntary action of its members.

At the meeting, Mr. H. T. Cowling, Chief Photographer, U. S. Reclamation Service, was selected as permanent chairman, and appropriate committees looking toward the formation of a permanent organization were named. The association hopes to complete all preliminary steps and put itself on a substantial working basis at a very early date.

The leading spirits in this movement are much to be commended for the high motives actuating them in the formation of this association, of which we hope to hear much and to good advantage.

The 1915 Graflex Catalog

We are glad to bring our readers' attention to this standard catalog. We note the price of Auto Graflex Cameras has been materially reduced, and that the autographic feature to our 1A and 3A Cameras has been added without advancing the price.

Four new cameras are introduced: The Compack Graflex, $3\frac{1}{4} \times 5\frac{1}{2}$, the $3\frac{1}{4} \times 4\frac{1}{4}$ Telescopic Revolving Back Graflex, the Revolving Back Graflex, Jr., $2\frac{1}{4} \times 3\frac{1}{4}$, and the Graflex Enlarging Camera. A new Graflex Roll Holder is made which will interchange with plate-holders on Graflex cameras. This roll-holder is very compact, and takes the new Eastman Graflex speed film. In order to insure perfect register of focus, the Graflex roll-holder is provided with retarding ratchet which permits the film to be drawn taut after it is in position for exposure. This is an invaluable feature when working lenses at large apertures.

Send to Folmer & Schwing Division, Rochester, New York, for a copy.

Death of Joseph H. Weaver

Mr. Joseph H. Weaver, one of the best-known photographers in Philadelphia, and for many years a demonstrator for the M. A. Seed Dry Plate Company, of St. Louis, also for the Standard Dry Plate Company, of Lewiston, Maine, and in the last ten years a demonstrator representing the photographic plates manufactured by the Eastman Kodak Company, died May 15th, age sixty years. Mr. Weaver was not only a fine photographer as regards the development and details of handling photographic dry plates, but was a positionist and splendid skylight photographer. He held leading positions in the trade, but at the introduction of dry plates he was one of the pioneer demonstrators, starting as an instructor in the handling of dry plates, represented Mr. John Carbutt throughout the Eastern, Middle and Southern States. Later on he became one of the leading demonstrators of the M. A. Seed Dry Plate Company, and later he represented the Eastman Kodak Company. Not only was Mr. Weaver highly respected for his professional ability, his genial manners, but he was loved by

all for the many endearing qualities that he possessed as a gentleman, and the large number of his friends throughout the trade will be grieved to learn that a good man has passed away.

New Bargain List

We have just received one of the new or No. 19 Photographic Bargain Lists issued by the New York Camera Exchange, 109 Fulton Street, New York City, and would advise our readers looking for bargains in second-hand cameras, lenses, and other photographic goods, to send for a copy of this very complete thirty-two page list.

$3,000.00 in Cash Prizes

This amount is being offered by the Eastman Kodak Company for the best photograph illustrating any one of five slogans. Ask for circular giving full details of the 1915 Kodak Advertising Competition. The Eastman Kodak Co., or ourselves, will gladly mail you one on request.

Northwestern and Iowa Associations in Joint Convention, Minneapolis, September 1, 2, 3

As decided by the executive board of the Northwestern Photographers' Association, the next convention of the association will be held in Minneapolis, Minn., on September 1, 2, and 3, 1915.

This will be a convention of instruction along such practical lines that the members who attend will return home not only with a remembrance of a good time and with new incentives to do good work, but also with what is of still more benefit, new methods of working and new ways of getting business that can be used by every photographer so as to increase his business and his income.

Since the convention dates were set one of the strongest associations in the country, the Photographers' Association of Iowa, has voted to amalgamate with us to form a bigger, better, and more beneficial association, and this will be the first big "booster" convention. A mammoth convention with new blood, new life, and a new purpose.

The purpose of the amalgamation and the purpose of this convention is more benefit and greater good to every photographer. There will be more lectures, more demonstrations, more exhibits, more new ideas, and more good fellowship than ever before. So begin now to make preparations to attend and don't let anything keep you away.

Clarence Stearns, President.
J. I. Van Vranken, Secretary.

The Berkshire Photographic Society

The officers elected for the year 1915–1916 are as follows:

Honorary Chairman—Edwin Hale Lincoln, Pittsfield, Mass. Executive Board—F. D. Burt, Pittsfield, Mass., Chairman; Rupert Bridge, North Adams, Mass.; Miss Fredrika Cronyn, Pittsfield, Mass.; J. G. Eddy, Pittsfield, Mass.; Dr. J. D. Howe, Pittsfield, Mass. Annual dues, $3.00. Information regarding meetings and membership may be obtained by writing to any of the above.

The Illumination at the Panama–Pacific Exposition

It will interest our readers to know that the illumination at the Panama-Pacific Exposition in San Francisco, over which so many visitors have gone into ecstacies, was made in Rochester. The striking beauty of the Tower of Jewels, the dome of the Palace of Horticulture, the Aurora Borealis, and other spectacular effects depend to a great extent upon powerful searchlights and reflectors. These were made by the Bausch & Lomb Optical Company of Rochester.

The exhibit of this company in the Palace of Liberal Arts is of interest to professional men of all classes and to the public generally for the variety of scientific instruments on display. The exhibit includes microscopes, engineering instruments, balopticons (or projecting lanterns), photographic lenses, photomicrographic apparatus, equatorial telescopes, stereo prism binoculars, and laboratory equipment. The walls are hung with a collection of photographs which are shown as examples of the work done with Bausch & Lomb-Zeiss photographic lenses.

In the centre of the exhibit is a ball nearly 15 feet in circumference. This ball is decorated with thousands of ophthalmic lenses of different colors which are used in eyeglasses and spectacles. The ball is made to revolve by means of an electric motor in the base. Passing around the middle of the ball is a strip carrying the inscription "Bausch & Lomb Optical Company, Rochester, N. Y.," set in silvered lenses, not one of which is more than one-quarter inch in diameter. A large circular design made in similar fashion and carrying the company trade-mark hangs on the wall.

Instruments which are exciting much interest at the present time are range finders, used for determining the distance of any object from the observer. The range finders are made for the army and navy to determine the distance of a hostile ship or land force, in order that the men at the guns can get the range. A periscope which is on exhibition is also attracting special attention.

In addition to these instruments, a four-inch equatorial telescope and a set of parabolic mirrors are examined with much interest by Exposition visitors. The parabolic mirrors are used as searchlight reflectors; those shown at the Exposition vary in size from 9 inches to 60 inches in diameter.

The 1915 Ansco Catalog

The Ansco 1915 catalog of amateur cameras is ready and we desire to call attention to the new features it contains.

The Ansco Film Pack. To satisfy an insistent demand on the part of film-pack camera enthusiasts, The Ansco Company announces in the 1915 catalog a film pack which is essentially

different in principle from other packs and which marks a distinct advance in film-pack photography. The characteristic features of the Ansco Film Pack are: The single tab, which prevents errors of manipulation in the camera and perfect focal plane, so necessary especially when using an Anastigmat lens, which allows no leeway in focal distance.

The Ansco film pack may be used in any film-pack camera, or, with a suitable adaptor, in any plate or film camera, and is loaded with Ansco Speedex color-value film.

Ansco Speedex extra-fast film, in addition to speed, has stereoscopic qualities found in no other film or plate emulsion.

Cyko paper in the three regular amateur grades, Enlarging Cyko, and Ansco standard *chemicals* are described and listed in the catalog.

The New Professional Rexo

This new paper is made in three surfaces—matt, semi-matt, and buff—the first two being supplied in both single and double weights, while the last is supplied in the latter weight only. In speed it is six times slower than normal Rexo, owing to the difference in the composition of its emulsion, the result of much study and painstaking research work by the manufacturers in their efforts to produce a paper suitable for professional portrait work of the finest quality. It has been placed on the market only after the most rigid tests by the manufacturers and by a number of the highest-grade studies in Chicago. We ourselves have recently used some of the semi-matt in single weight and the matt in double weight, and can unhesitatingly recommend it as a developing paper that possesses remarkable latitude, and one that gives the finest gradation, either developed for warm blacks or toned to sepia, which last is easily achieved by the most simple methods. We would advise all our readers interested in a paper of this kind to give it a trial, and should it not be obtainable of their dealer, a letter addressed to the manufacturers, Burke & James, Incorporated, 240–246 East Ontario Street, Chicago, will bring particulars and information covering the full line of Rexo papers.

Hot Weather Troubles

A sudden spell of hot weather will often upset the dark room arrangements, and blisters and half-melted plates will be met with. Some plates coated with soft gelatine, and plenty of it will take an unconscionable time to dry, especially if the weather happens to be dull and moist as well as hot, and small pits or depressions will appear in the negative, which print with a dark spot and a light ring. They are due, I believe, to a micro-organism which lives on the moist gelatine and causes the gelatine to shrink away into little holes with a raised or thickened edge. They are a very great nuisance, and cause a great deal of work in spotting both negatives and prints, especially in portraits. In some cases they even completely spoil a negative. They may be prevented by putting the negatives to dry in the room which has the smallest amount of moisture in its atmosphere; this, of course, is not the dark room, which is always damp and usually exposed to all the changes of temperature of the outside air. I suppose the ideal dark room would be in a deep basement, which would be cool in summer and warm in winter; it must be well ventilated and have hot-water pipes for drying in winter; but, of course, we never shall get our ideal, and must make the best of what we can get. There is no doubt the temperature below ground is very uniform.

One of the best remedies for hot weather troubles such as blisters and pits is ordinary potash alum, which hardens gelatine very quickly. Chrome alum is perhaps more effectual and will make gelatine quite insoluble, but it can seldom be used for prints, as it is liable to stain them a faint green; and although I have used it for years for plates I find potash alum quite as effective and easier to dissolve. I think the best stage at which to use alum is in the fixing bath, although some plate and paper manufacturers always deprecate its use, but I have used it for a good many years and have never discovered any bad effects. For prints the fixing bath recommended for gaslight papers is excellent, and I use it regularly; but it does not answer for negatives, as it frequently produces blisters. These are caused, I imagine, through a gelatine film saturated with an alkali, usually sodium carbonate, being plunged into a strongly acid solution, and carbonic acid gas is formed beneath the film. This can be demonstrated when fixing prints, as streams of minute bubbles of gas can be seen coming from the back of prints just taken from the developer and put into an acid fixing bath. For negatives I prefer to add a few crystals of metabisulphite of potassium to the hypo, and as soon as dissolved about half an ounce of powdered alum is added; after some use a white deposit may be thrown down, but it does not appear to do any harm.

All negatives should be wiped over with a tuft of cotton wool and flooded with water before placing them up to dry; but it is quite imperative that this should be done after fixation in an acid bath, especially if there is any deposit in it. If this precaution is not taken a fine, white, powdery deposit will be found on the negative, which is extremely difficult, if not impossible, to remove when dry. A piece of wash leather is even better than cotton wool.

I have used alum in the fixing bath for a long time, and am quite convinced that it is a great advantage to harden the film of all negatives by its use, whether in winter or summer. I believe it greatly hastens drying, and it certainly prevents drying marks of various kinds. One unsuspected cause of blisters in hot weather is difference of temperature of solutions and tap water. Some dark rooms are built on the south side of the studio, and in summer heat become almost unbearable, and developing solutions become quite hot, while the water supply may be at times almost icy cold if it comes from deeply laid mains. Negatives are often fixed in solutions that have been standing in a hot dark room for hours or even days, and then put into a stream of cold water from the tap. Freshly dissolved hypo is extremely cold, and plates are often taken from a tepid developer and plunged into a kind of ice bath, so that hardening the film is a good safeguard against blisters from such causes. Solutions may be cooled by wrapping a wet cloth round the bottle and standing it in a good current of air, or with a driblet of water from the tap falling on the wet cloth; evaporation from the wet cloth soon reduces the temperature of the solution.

In hot weather negatives and prints should be handled as little as possible when the film appears to be soft. Washing must be done with greater care, and it may often be curtailed with safety, as tepid water in summer will dissolve out hypo much more quickly than the icy water of winter; but, on the other hand, gelatine hardened with alum will yield up the chemicals it contains less quickly than if it were soft. So one has to steer a middle course between too short a washing, leaving hypo in the film, and too long, making it dangerously soft. Negatives should never be left washing all night during hot weather. If it is not possible to give a sufficient time before leaving to wash them completely it is better to put them up to dry and complete washing next day; but this should not be done if it can be avoided, as a negative once dried never goes back quite to the same condition as before. Some workers argue that a negative will wash as quickly as it fixes. I do not venture to say it will not, but I should not trust to it doing so. I think about an hour in running water is quite sufficient, and I prefer not to give less.

If it is found that a negative is dangerously soft when removed from the washing tank or shows signs of "frilling" at the edges it is advisable either to flood it with methylated spirit or soak it in a mixture of half spirit and half water. If a negative has been scratched so that a piece of film is hanging loose it will not go back into its place and fit because it has expanded, but soaking in the mixture of half spirit and water will shrink it down to the right size, and a little delicate "tickling" with a spotting brush should replace it almost without showing what has happened. Spirit of full strength should not be used, because it will contract the piece of gelatine until it is too small and may also increase the density of the negative on drying.

Some alterations of the developer will be necessary, not only because the brilliant light of summer will bring about fuller exposures, but the developer will be more active, so that a small amount of extra bromide may be necessary, and of water also, otherwise negatives may be too dense, a serious matter if they are portraits. Heat always accelerates chemical action, and, of course, development is chemical action.

Plates vary enormously in the softness of the film, and I have just had some of unknown make to develop which proved extremely soft even in quite cool weather. They were so soft after fixing even with alum in the solution that the film was a soft jelly and washing had to be curtailed and a bath of methylated spirit used. Very few modern plates are as soft as these; they must be almost impossible to use in really hot weather. Blisters in prints may also come in hot weather, especially when toning with sodium sulphide. If they should appear they may be prevented in the next batch by using toning solutions rather more dilute and keeping the prints in as short a time as will suffice to convert the bromide image to sulphide, and then removing to a dish containing only a small quantity of water, and when all are toned adding water slowly with constant turning of prints, so that the sulphide is washed out gradually. If this does not stop blistering the prints may be removed from the toning dish to a dilute solution of alum; but they should be kept face downward to prevent as far as possible a white deposit on the film, which is difficult to remove when dry. To minimize the trouble each print should be wiped over with cotton wool after washing before laying out to dry. Of course, the prints must be washed as usual after the alum bath. A pure sample of potash alum must be used, as some kinds seem to contain iron, which produces pale blue stains in the paper of the print. Methylated spirit may take the place of the alum bath after sulphiding to stop blisters, but this is more costly and appears to cause a darkening of the print on drying, similar no doubt to the slight increase of density produced when negatives are dried in spirit.—PRACTICUS in *British Journal of Photography.*

HOT-WEATHER DEVELOPER

THE problem of development in the tropics has been largely solved. Thanks to the labors of Messrs. Lumiére and Leyewitz, the whole subject has received systematic investigation and the following formula can be used at a temperature of 104° F. without fogging:

Amidol	44 grains
Ammonium sulphate . . .	5 ounces
Sodium sulphite (desiccated) .	260 grains
Potassium bromide	27 grains
Water	20 ounces

Development time, three minutes.

Recovery of Silver from Photographers' Solution

The largest use of silver at the present day is in photography. It is natural that a considerable amount should find its way into silver refining and sweeps trade. It may be said, however, that a smaller percentage is obtained from photographers than should be produced for the reason that many photographers make no attempt to save their solutions, but throw them away regularly. This fact is quite true of a large percentage of those who work with dry plates and films, and especially those who do developing for the amateur trade, as they are not familiar with the method of saving the silver or disposing of it after saving it. With the old wet-plate process, photographers were compelled to save their silver wastes, for the reason that it amounted to a very large quantity and was of a character that could readily be reclaimed. The wet-plate process is now used only to a limited extent and is almost confined to the photo-engravers' trade; practically every professional photographer now employs the dry plates which have, as every one knows, been the cause of the present popularity and enormous growth of both professional and amateur photography. Had it not been for the advent of dry plates the art of photography would never have been what it is today.

The methods for recovering the silver from photographers' solutions herein given apply only to dry-plate work, as the wet-plate process is used so rarely that it is unnecessary to consider it as a factor in the matter of silver saving when carried out according to the method herewith described.

"Hypo" Solutions the Only Ones Worth Saving

The modern photographer, who uses dry plates, has quite a number of solutions, but the principal ones are the two following:

1. The developer.
2. The fixing solutions.

The other solutions are of little importance as they are seldom used and contain no silver. These solutions are generally employed for reduction or intensification of the silver image on the plate and cannot be considered.

The developer is the solution used to bring up the image on the exposed dry plate and contains no silver when fresh and unused. After using, it contains traces of silver, but not of sufficient quantity to warrant saving. The developer, therefore, is of no value and should not be saved.

After the developer has brought out the image on the dry plate there still remains the bromide of silver that has not been acted upon by the light during the exposure of the plate through the lens in the camera. The portions of the plate that have been acted upon by the light are reduced by the developer and are converted into metallic silver, which constitutes the image. The portions unacted upon by the light are not reduced by the developer and thus remain as bromide of silver.

When the developing process is completed the dry plate must be "fixed," and this consists of soaking it in a solution of hyposulphite of soda, as it is usually called "hypo." This material has the property of dissolving the bromide of silver, but does not dissolve the black metallic silver formed as the image by the developer. In this manner, therefore, all the silver unacted upon by the light, and which is in the form of bromide of silver is dissolved from the plate, leaving untouched the black reduced silver comprising the image. (The plate, of course, is coated with gelatin remains on the surface of the glass.) A glass negative, therefore, that has been developed and fixed, as well as washed and dried, contains the image in the form of silver imbedded in the gelatin.

The "fixing solution" or that used to dissolve the unacted-upon bromide of silver from the plate, is the only one that contains sufficient silver to be worth saving. This fact should be impressed upon photographers, many of whom save all solutions, so that only the fixing bath will be retained. If this is done the operations are somewhat simplified.

What the "Hypo" Solution Is

The so-called "hypo" solution, used for dissolving the bromide of silver on the dry plate that has been unacted upon by the light, consists of a nearly saturated solution of hyposulphite of soda (sodium thiosulphate) in water. It is frequently used alone, but more often contains alum. The alum is used in connection with it to harden the gelatin on the glass and prevent it frilling at the edges. The use of alum is now extensive and nearly all photographers employ it. In addition to the alum (either ordinary alum or chrome alum may be used) small quantities of acetic acid, sulphuric acid, sulphate of soda, oxalic acid or other weak acids are employed to render the solution slightly acid. The principal ingredient, however, is the hyposulphite of soda, and it is this substance which dissolves the bromide of silver.

It is customary for photographers to use their hypo solutions until nearly "exhausted," so to speak, or until they work slowly. They are then discarded and new ones made up.

Recovering the Silver from the "Hypo" Solution

As the hypo solution is the only one used by photographers which contains sufficient silver to pay for treatment, it is upon this, therefore that we must concentrate our attention. The removal of the silver is simple.

The first thing to do is to render the hypo solution slightly alkaline by the addition of a little carbonate of soda solution. Add just enough to make slightly alkaline. In other words, red litmus paper should turn blue when wet with it.

Now add a little solution of liver of sulphur in water to this hypo solution and allow it to stand in a warm place for a short time. The liver of sulphur will precipitate immediately, but takes a few minutes to form, and if warmed the formation takes place more rapidly. Its formation can be seen by the presence of black flocks of sulphide of silver, which settle down to the bottom of the vessel. When the top of the

solution is clear, add some more of liver of sulphur solution and see if a sufficient quantity has been added to precipitate all the silver. If not, add more. The idea is to avoid adding too large an excess of the liver of sulphur, although a moderate excess is not harmful.

When enough liver of sulphur has been added to precipitate, or "throw down," all of the silver in the hypo solution the whole should be allowed to stand in a warm place for about an hour to give it an opportunity to settle. At the end of this time the black sulphide of silver will be found on the bottom of the vessel. The clear solution at the top should be tested with liver of sulphur to make sure there is no silver left, and if this is the case it may be siphoned off and thrown away.

The sulphide of silver on the bottom should be washed off with water, by stirring up with clear water and then allowed to settle. The clear liquid is again siphoned or poured off and the washing operation repeated. This may be carried on several times, and the whole poured onto a filter paper in a large glass funnel and the silver sulphide filtered out. While on the filter it should be washed several times with clean water.

If everything has been done well there is obtained a mass of fairly pure sulphide of silver in the moist state. This should be dried. Pure sulphide of silver contains 87.09 per cent. of metallic silver.

If one desires to reduce this to metallic silver, the best way is to dissolve it in diluted nitric acid, filter off the sulphur that separates, and precipitate the metallic silver by means of copper, sheet or wire. Such a procedure, however, is not advisable, as the sulphide of silver is always salable and is readily purchased by silver smelters and refiners. They do not, however, as a rule, like to purchase the hypo solution, for the reason that it usually does not contain sufficient silver in the manner described, therefore, the silver sulphide obtained, even when wet, is so rich that it will pay transportation to a long distance. The operation of precipitating is so simple that photographers can do it at frequent intervals and gradually accumulate the sulphide of silver, so that when it has reached a sufficient amount it can be sold to silver smelters. Or, if it is not desired to sell it, the silver can be reduced as previously mentioned. It will, it is believed, be found preferable to sell the sulphide of silver, for the reason that there is no use for either metallic silver or nitrate of silver in the photographic studio when dry plates are employed.—Samuel Wein in *The Photographic Times.*

Natural Backgrounds

Operators who do a considerable amount of outdoor photography of the better class are often confronted with the background difficulty. Many people want to have their portraits taken showing a certain background, it may be the front of their house or an ingle nook in the hall, and many such places where the light is not the least bit suitable for portraiture. Many, to please a good customer, make an attempt, and often produce results which do them no credit, to say the least of it. In such cases it is best to take the portrait somewhere where a good result can be made certain, and then expose a plate on the background alone. The portrait plate, if not taken against a plain ground, can be blocked out, then laid under the background negative, and that blocked out where the figure is. By double printing the two can be made one, and if a neat job is made no one can detect the joint. The line on the background negative should not be hard, but slightly vignetted. I have known cases where the portrait was taken against a dark background, and the negative of the background was rubbed down until bare glass in the place to be occupied by the sitter. The two negatives were then both placed in the frame at the same time and both printed at one exposure. The thickness of the glass threw the background out of focus.—J. P. M. in *British Journal of Photography.*

Home-made Dishes

Recently a dish was required in a hurry for the development of prints 40 by 25 inches, so a length of wood 1 by 1½ inches was procured, cut up into lengths, and a frame made with ends halved together and screwed up, this frame constituting the sides of dish, 1½ inches deep. The bottom was made from a sheet of three-ply wood; nailed to frame, small nails were used, and placed about half an inch apart all around, so as to guard against any buckling of the three-ply. The outside of the dish, after smoothing up with glass-paper, was given a coating of Brunswick black, thinned with petrol, which dried quickly and without any objectionable stickiness. The inside of the dish was painted over with hot melted oilshop beeswax, and as this stuff sets too rapidly to leave a smooth surface, a generous coating was given, and then when set it was scraped level and smooth. The total cost was under two shillings, and the dish has given perfect satisfaction.

When such a dish can be made with a day or two in hand before being required for use, instead of the beeswax two or three coats of white hard varnish will make a much better job, and will be nicer looking.—W. T. Wilkinson in *British Journal of Photography.*

To Carry Wet Negatives

If wet negatives are to be taken for any distance, or sent through the post, they can be protected from all damage by being packed in pairs (or, if singly, with a plain glass), face to face, the films separated by means of the little slips of card used by the plate makers. The inner wrapper should be of wet paper to prevent drying from beginning, as this might lead to drying marks. As soon as possible, they should be unpacked and dried in the usual way. It would be a wise precaution to use a bath of formalin one part, water nine parts, the last thing before packing them, as this would minimize the chance of decomposition of the gelatine commencing.

Glazing Prints Without Failure

The only requisite (says the *Amateur Photographer*) is a bottle of 40 per cent. formaldehyde. A pint of this can be obtained through any chemist for about 1s., and for use one part of it is diluted with nine parts of water, and it can be used over and over again as long as it is kept well corked when not in use. If the prints are wet, as much water as possible should be removed before they are placed in the formaldehyde, where they are left for a few minutes. If dry, they are immersed in it and left until limp. From this bath they are put straight on to the glazing material without any washing and squeegeed down—a flat squeegee being preferable for the purpose. Ordinary newspaper is as good as anything for placing above the prints when applying the squeegee, a second piece being finally used to remove as much of the water as possible.

Very rapid drying can be secured by placing the ferrotype boards or glasses on the airing rack round above most kitchen grates, and providing, of course, the fire is alight, the prints should commence to pop off in a quarter of an hour. It is a mistake to leave them in a moist dark room, even all night, and expect them to come off readily. If they are to be left during the night, put them high up, on a cupboard or shelf in the living room, and they will probably be found all off in the morning.

Brightening Bromide Prints

The following notes apply equally to contact or enlarged bromide or gaslight prints on non-shiny-surface papers. Undesirable flatness and heaviness in the lower tones is a frequent trouble with matt-surface bromides. This comes home to us when we have made what seems to be a satisfactory enlargement or contact print of a simple subject while the print is viewed in its wet condition; but the same print when dry may appear woefully dead, dull, tame, and uninteresting. It is not only due to the dry print being a shade darker all over, but to a loss of gradation and luminosity in the darker shadows portion.

Suppose we call our white paper 20, the delicate next lower tone 19, and so on, down to 1, *i. e.*, the just perceptible shadow detail as seen in the wet print. Then suppose the print "dries down" one step in this scale; our highest light, which was 20, is now 19, and 19 is 18, and so on, *i.e.*, 2 is 1 and 1 is lost in detail-less darkness. So that we may say that our detail-*less* dark regions have been doubled.

Clearly, then, our line of work will be in the direction of giving the dry print the appearance it had while wet. This can be done in quite a large number of ways. It will be convenient for reference to bring these together, so that if the need arises we can make our convenient choice.

1. Gum arabic 2 to 3 oz., cold water 10 oz.
2. Spermaceti 20 to 30 gr., benzol 1 oz.
3. Terebene 1 oz., salad oil 1 oz.
4. Beeswax 30 gr., turpentine 1 oz.
5. Water 1 oz., borax 1 dram. Boil gently and add *white* lac 1½ drm., when cold add 2 drm. methylated spirit. Filter.
6. Waxing solution as used in carbon process for polishing temporary support.
7. Encaustic paste.
8. Vanguard Lustraline.
9. Beeswax, turpentine, oil of lavender. Equal parts.
10. White wax 1 oz., gum elemi 1 drm. Melt together, and then add oil of lavender or oil of spike, ¾ oz.
11. Paraffin wax 20 gr., benzine 1 oz.
12. Megilp.
13. Brown boot polish.
14. Celluloid dissolved in amyl acetate to a thin, creamy consistency.
15. Japan gold size 4 to 5 parts, and linseed oil 1 part, *e. g.*, 10 drops of size, 2 drops of oil.

Nos. 1 and 14 apply with a camel's hair paintbrush. Nos. 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, apply by rubbing with a piece of old fluffless flannel. No. 5, immerse the print for a minute or two, drain and pin up to dry.

In applying the mixture No. 15 a special process is involved. First the print is hardened in chrome alum or formalin in the usual way, and dried. It is then soaked for, say, five minutes in cold water, drained, and laid on two or three sheets of wet blotting paper supported on any flat surface such as a drawing board covered with American cloth, or a sheet of thick glass. The face of the print is rapidly surface dried by pressing it with fluffless blotting paper. The size and oil mixture is spread out on to an earthenware tile, and a soft, square-ended brush dabbed first in the mixture and then lightly over the print. In fact the treatment is precisely the bromoil pigmenting process, except that in place of oil pigment the oil varnish is used. This—if all goes well—only "takes" in the shadows, *i. e.*, where it is wanted.

Surely it goes without saying, that the present writer is not advocating the glazing or brightening, polishing, or varnishing process as something to be done to every bromide print. On the contrary, the cases where the treatment is advisable are comparatively few in number. Like the surgeon's knife, it is for special cases only. But at times it is the saving of the print.

Although most of these brightening mixtures can be applied all over the print, it by no means follows that this must always be done. Again, on the contrary, local application may often be preferable to general application. Furthermore, it is highly advisable that any prints to which such polishing mixtures have been applied should only be seen by our friends when they—the prints, not the friends—are under glass.—*Amateur Photographer.*

Retouching and Orthochromatic Plates

From time to time the old questions crop up as to how far the use of orthochromatic or even panchromatic plates will obviate the necessity for retouching portrait negatives. In our opinion the work of the retoucher consists to a great extent in removing tbe skin roughnesses and the freckles. Whatever plates are used the skin roughnesses will remain—more or less—for they

are due to light and shade and not to inaccuracies of color-rendering. It has been shown that freckles are not removed by the use of panchromatic plates and filters until practically the whole of the blue rays are cut out, and this condition is not entirely satisfactory for everyday portraiture. There is without doubt often a great gain when color-sensitive plates are used, but it lies more particularly in the direction of an improved tone rendering of draperies and hair. We are of opinion, however, that just as the expert picture copyist selects his screen, and possibly his plate also, for each individual subject so the portraitist cannot always employ the same filter and plate with success. Sometimes much more may be done to produce a satisfactory rendering by careful choice of background than by the employment of color-sensitive plates. Yellowish hair will inevitably appear too dark against a very light background especially if inadequately lighted, while stronger lighting of the hair, together with the contrast of a darker background may given an excellent suggestion of the proper tone and color.—*British Journal of Photography.*

Copying a Faded Print

Assistants are at times asked to copy a card which is very much faded, the image having become a dirty yellow. A slow ordinary plate should be used, and the exposure given should be on the verge of under. A good strong developer containing double quantities of the reducing agent and a little extra bromide should be used, and development carried as far as it will go. The plate may remain in the developer three or four times as long as for an ordinary negative. After being fixed it should be placed in a good strong clearing bath, well washed, and then intensified. With a little judicious retouching the plate will give a print much stronger and a great improvement on the original. The whole thing is to avoid flatness and secure as much contrast and printing density as possible.—J. P. M. in *British Journal of Photography.*

Taking Care of Lenses

There is a good deal of misconception as to the best way of taking care of a lens; indeed, many photographers seem to consider that a lens needs no special care at all. When it is remembered that we often handle cameras in which four-fifths of the cost is in the lens it will be seen that the lens is, after all, worth thinking about. We get our notions about lenses from what we see of glass. We are used to window cleaning, and to drinking from glasses, and so we get a disregard for glass in general, and a comforting belief that unless it is broken glass it is all right. Some optical glass is much softer than ordinary window glass, which is made specially with a view to hardness. The glass of a lens is softer than much of the dust that settles on it. The dust is fine grit, some of it hard sand which is quite able to cut tiny scratches into the glass.

Fortunately a lens is very easily cared for. All lenses should have some safe wrapper. This may either be a lined case, specially made to fit them, or it may be a little bag of wash leather. I always use a simple bag like a coin bag, with a running tape to draw the mouth tight, but a very serviceable one may be made rather more elaborately. Cut two disks of cardboard just a trifle bigger than your lens mount, and cover these with wash leather. These make the ends of your case. Suppose the barrel of your lens is four inches. Cut a strip of wash leather about four and one-half inches broad and long enough to rather more than go round the lens. Sew this strip by the edge to each of the cardboard disks. Sew firmly just half way round the disks, and you have a little box or pocket into which the lens can be dropped. The rest of the strip folds over the lens, forming a cover to the box, and it can be tied by a piece of tape.

It may be that the cement between the elements of the lens (that is, between the different glasses) has got started. If so, I would say send it to your lens man to be fixed. But many do their own fixing, and this is the way: Remove the mount by unscrewing until you have nothing but the glass. Heat this *very* gently, and when it is quite hot the cement will melt and the glasses can be separated. After they have been cleaned and dried, warm again, and when quite warm put a drop of Canada balsam onto the concave lens. Press the other firmly in contact and when cool the lens is ready for remounting. Remember to use care. Be sure you know exactly how your lens fits together. Don't get the parts turned around, and don't try to mount it the wrong way. To clean the glass use an old handkerchief of fine linen, clean and soft. It may be that it is necessary to wash the glass. If so use good soapsuds. Dry with a soft cloth and then rinse in clean cold water, and again dry carefully with a well-washed, clean cotton or linen cloth.

For properly cleaning optical glass, it is very important that the material used should be free from dust and possessed of other needed qualities, first of which should be the capacity for removing grease. Wash leather, which is sometimes recommended for this purpose, is not adapted to the removal of grease, sometimes even depositing it. Well-washed cotton cloths are by far the best suited to the purpose, linen especially having the property of removing dirt and grease without scratching. It is, however, in all cases difficult to clean close up to the mount with any such material as above, and for this purpose pith, which is obtained from rushes, elder trees, and sunflowers, is especially well adapted. Short lengths of this pith may easily be obtained, which may be pointed if necessary to reach the smaller crevices. Chalk and rouge are both condemned, as are also alkaline solutions, such as ammonia, caustic soda, caustic potash, and soda or potash, as in the case of the latter they are apt to attack the glass, and repeated use will destroy its surface entirely. The fluids recommended for this purpose are rectified turpentine, absolute alcohol, and ether. The surface should be moistened with the turpentine, rubbed dry with a linen rag, and then polished with ether. Inasmuch, however, as Canada balsam with which the lenses are cemented is dissolved in turpentine, care must be taken to keep an excess of the fluid from the edges of the lenses.

Portraiture

Bear in mind that a reflector throws light in a direction more or less opposite to that of the chief light, so that strong reflected light is apt to give an eye-confusing effect and falsify both form and light and shade or modelling. For soft portrait negatives light up the shadow side with diffused and scattered light, and subdue the chief incident light. To obtain soft negatives from strong contrast subject three courses are open to us:

1. Flash out the negative with a strong, quick-acting developer, and then transfer straight to a dish of plain water only.
2. Begin development with a minimum quantity of alkali, and add more from time to time in very small quantities.
3. Bath the plate first in the pyro solution without any alkali. Then apply the normal developer, plus an equal quantity of water.—*Amateur Photographer.*

Trimming Board

For something to cut on one cannot have anything better than a sheet of hard millboard. Next comes the somewhat softer millboard. The drawback to both these is that with use they become line-scored, and so the cut may be a little bit "jaggy." There is a good deal to be said for a sheet of zinc—say ⅛ inch thick. The knife scoring on this can be rubbed down by firm pressure with a laundry flat iron, so that a zinc plate practically lasts forever. On the other hand, it blunts the knife quicker than does card. —*Amateur Photographer.*

Testing Distilled Water for Photographic Purposes

Distilled water is used for preparing photographic solutions because ordinary tap water contains a number of impurities. A simple test may be made by adding a single drop of a clear solution of nitrate of silver to a wineglassful of water. If the latter is impure a milky turbidity will at once become apparent, while distilled water remains quite clear. A few drops of a solution of barium nitrate produce a white tubidity or a slight white precipitate in the presence of soluble sulphates and carbonates, which are always found in natural water.—*Amateur Photographer.*

Mildew in Paper

If the sheet is wetted the mildew spots show as more or less clear patches due to a change brought about in the size of the paper by the attacking fungus. It is well known that damp favors its growth. Ordinary drawing-paper contains from 6 to 10 per cent. of its weight of water when hanging up in a picture frame in an ordinary living room; but in decidedly damp rooms the percentage may rise to 20 or even 25. Mildew may be prevented by bathing the paper in some antiseptic preservative. Perhaps the best and cheapest is borax or boracic acid. But the following substances have their advocates, viz.: Formalin, mercuric chloride, carbolic acid, thymol, zinc sulphate, salicylic acid.

To renovate mildewed paper soak, then dissolve 1 oz. of gelatin in ½ pint of water, add 1 oz. pure white soap. Dissolve 60 gr. of alum in ½ pint of water and add this to the gelatine solution. Brush this over the paper with a soft brush or brad feather.—*Amateur Photographer.*

Local Reduction of Large Prints

The following solution is suggested as the best for the local reduction of large prints:

Water	1000 c.c.	16 fl. oz.
Ammoniocupric chloride sol. .	40 c.c.	280 min.
Hypo sol., 50 per cent. . . .	40 c.c.	280 min.

The ammoniocupric chloride solution is made by saturating a 10 per cent. solution of hydrocoloric acid with cupric carbonate and then adding sufficient solution ammonia solution to form a deep blue solution.—*Phot. Welt.*, 1915, p. 107.

What particular virtue lies in the roundabout method of making the cupric chloride solution is beyond me. Cupric chloride is a commercial article and can be easily made by adding any alkaline chloride to cupric sulphate solution.—E. J. W.

PATENT NEWS

Under this heading it is proposed to include each month a list of all the U. S. patents, and brief abstracts of the more important, and to include also such foreign patents as present special features.

Copies of any patent can be obtained from the Commissioner of Patents, Washington, D. C. Price, five cents each.

Camera. W. F. Folmer. 1130922.

Opticopictorial Apparatus. F. von Madaler. 1139241.

Exposing Mechanism. W. F. Folmer. 1139023.

Automatic Picture Machine Control. B. Garros. 1138744.

Flat Film Holder. H. C. Siever. 1139079.

Picture Machine Guard. Werner & Dennis. 1139245.

Direct View Finder. S. Brown. 1140108.

Photographic Oscillograph. A. E. Blondel. 1139476.

Roll Holder. H. B. Barrier. 1140099.

Color Photography Film. Bradshaw & Lyell. 1139633.

Picture Film Restorative. F. W. Hochstetter. 1139679, 1139680, 1139681, 1139682, 1139683.

Camera. James & Peters. 1141091.

Sensitive Film. S. Coanari. 1140877.

Film Developing Apparatus. H. A. R. Corey. 1140500.

Color-photography Camera. Conrady & Hamburgher. 1140576.

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PRACTICAL LENS TESTING

By PAUL S. HELMICK

THE purpose of this contribution is to assist the photographer in finding the focal length and the focal aperture of his lens, and the speed of his shutter. There are numerous other constants which might also be included under the above title—as "flare," "transmitting power," "coma," "covering power," and the various "aberrations"—but the ordinary photographer is usually little concerned with these properties except as mere curiosities.

An accurate knowledge of the focal length and the stop number of his lens will tell the camerist how long a bellows extension is necessary to photograph an object natural size; it will show the accommodating power of his lens when focussed upon a given point, and the distance from the negative to the bromide paper in his enlarger, for any degree of enlargement; also the exposure for that ratio. In short, working with his lens in any way whatsoever, the photographer is aided in having at hand accurate figures and data concerning his lens and shutter. Usually each lens has quite accurate stop values and its focal length engraved upon the mount, but occasionally some error creeps in, so that it is never inadvisable for one to find out these facts for himself. But as to shutter speeds: The photographic press has only too frequently shown the poetic license with which the speeds of most shutters are marked, so that any further comment is unnecessary. However, if the indicator is always set at the same, though incorrect, marking, the ordinary shutter will usually give dependable exposures; so that a knowledge of true shutter speeds is also invaluable.

Focal Lengths

Now as to the matter of finding focal lengths. The difficulty here consists in

not knowing the exact location of the optical centre of the lens. If its position could be accurately established, infinity need only be focussed upon, and the distance from the optical centre to the ground-glass measured; but with a multiplicity of glasses, variously cemented and separated, this would become a formidable task.

Grubb's Method. A method due to Grubb affords a very simple way of avoiding the difficulty, especially where extreme accuracy is not required. Two upright and parallel lines are ruled upon the focussing screen any convenient number of inches apart; one a short distance from the right, and the other a little distance from the left edge of the screen. Then the camera is placed upon a solid, level table, and focussed for infinity, *i. e.*, upon some conspicuous object a few hundred yards distant. A piece of paper as large as the bed of the camera is slipped beneath the instrument, and after the camera has been turned so that the edge of the image of the object focussed upon falls exactly upon one of the marks upon the screen, a pencil mark is traced upon the paper, next to the edge of the camera bed, thus showing in what direction the camera pointed. Then the camera is turned upon the paper, the latter remaining undisturbed, and when the image of the object has fallen upon the other mark a similar line is drawn upon the paper along the same edge of the camera bed, as before. The lines will be at an angle to each other, and if care is taken in turning the camera before accurately making the object and the mark come into juxtaposition, they can be made to intersect.

Suppose W and X, and Y and Z are the two lines intersecting at A. As in Fig. I, lay off an arc BC from A with any radius, as AB. Then from B and C as centres, with any radius, construct two arcs intersecting at O. Connect A and O, and you have bisected the angle A. Now upon the edge of a piece of paper lay off a distance equal to the distance between the lines on the ground-glass, and bisect that distance by folding the paper with the points coincident. Now slide the unfolded piece of paper up and down the bisected angle until the three marks lie respectively upon one side of the angle, the bisector, and the other side of the angle, as at R, S, T. The distance AS is the focal length of the lens.

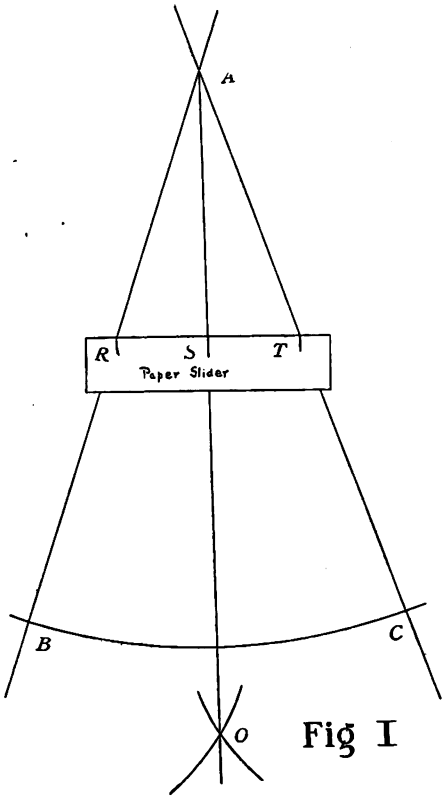


Fig I

Perhaps a specific example may be more intelligible. The writer owns a "three-foci rapid convertible rectilinear lens" from a well-known maker. The complete lens, according to the manufacturer, has a focal length of 8 inches, the rear component of the lens a focal length of 14 inches, and the front component 18 inches. The writer ruled upon his focussing screen the two parallel lines, which happened to be $3\frac{2}{6}\frac{9}{4}$ inches apart—the width of a chance post-card. The point of a distant island was focussed upon, and intersecting lines were drawn along the bed of his camera, when the image and the respective lines were in coincidence, These different angles were then bisected, as above, and, with the aid of a hair-

spring divider, it was found that the $3\frac{29}{64}$ inches would just fit into the angle, and be at right angles to the perpendicular bisector, at perpendicular distances of 8.4 inches, 13.3 inches, and 17.6 inches, respectively, in the cases of the three focal lengths. There is, then, an average difference of 4 per cent. between the actual experimental and the manufacturer's data, although the writer's constructions were probably inaccurate to at least 1 per cent. The discrepancies are large enough to be at least interesting, and warrant care in the further use of the engraved data.

Focal Length by Formulæ. Some photographers may complain that it is inconvenient to focus their instruments upon infinity, or that they object to the laying off of lines upon paper, and basing their calculations upon these constructions. A method which is, perhaps, more exact than the preceding, is to make use of suitable formulæ relating to conjugate focal lengths and relative sizes of object and image.

Let "d" equal the distance from two parallel lines upon a suitable screen to the ground-glass, and "q" equal the quotient obtained by dividing the distance between the lines on the screen by their distance of separation upon the ground-glass, *i. e.*, the ratio of object to image.

Then the focal length of the lens, or the distance at which an infinitely distant object, *i. e.*, parallel rays of light, will be focussed, will equal $\frac{d\ q}{(q+1)^2}$.

This formula, if not already familiar, is very easily evolved, for if "F" and "f" are the greater and the lesser conjugate foci, respectively, q equals $\frac{F}{f}$, and d equals f plus F. Then F equals qf, and so d equals f plus qf. Therefore, f equals $\frac{d}{q+1}$, and F, which equals qf, is equal to $\frac{d\ q}{q+1}$. Now from the well-known rule, which we will not stop to prove, that the reciprocal of the focal length of a lens is equal to the sum of the reciprocals of the conjugate distances, and so, calling "p" the focal length, $\frac{1}{p} = \frac{1}{F} + \frac{1}{f}$, or, $p = \frac{F\ f}{F+f}$. Substituting the values of F and f in this last equation, $p = \frac{\frac{d^2\ q}{(q+1)^2}}{\frac{d\ (q+1)}{(q+1)}}$ or, $\frac{d\ q}{(q+1)^2}$.

Two different paths are now open: "d" may be predetermined, and the other variable, "q" found, or *vice versa.* If the camera is mounted upon a tripod, it is usually much easier to arbitrarily fix "d" once for all, and focus in the usual manner; while if the instrument is free to slide upon the table, or on castors, the mathematical calculation becomes greatly simplified, if, as suggested by Lambert, "q" is made equal to 9, which procedure will, of course, necessitate much shifting of the camera, backward, forward, and sidewise, to get the required ratio between the lines upon the screen, and the image of the same upon the ground-glass.

Using the first method, for lenses of ordinary focal lengths, two parallel lines, separated by a distance of 10 inches, for ease in calculation, are ruled upon a suitable screen, which is placed against the wall. The camera is then placed so that the distance from the rough side of the ground-glass to the screen is—also to facilitate multiplication—100 inches. Some difficulty is likely to be encountered in this last measurement, for the focussing screen is usually set in a sort of rebate; but this depth can be measured, and a mark made upon the outside of the camera, this distance from the edge of the instrument, so that the length of the 100 inches may end at this point. A long strip of wood, cut to this length, may aid in placing the camera the proper distance from the screen, if one end is held against the latter, and the camera moved until the mark upon it comes even with the edge of the strip. As an aid to focussing, a page of printed matter in large-sized type may be pasted upside down between the two lines, or a number of additional lines may be ruled promiscuously between the two on the screen. After the paper, and therefore the lines, are in accurate focus, the

distance which separates the lines upon the ground-glass must be measured. This may be done directly, by placing a ruler against the glass, opening a pair of dividers to the observed length upon the glass; or making two marks on the glass where the image is seen, and measuring between these later with dividers against a diagonal scale, or with a steel rule. Substitution of the observed values in the above formulæ will give the focal length. In the writer's case, with his complete lens, the ten inch lines were separated by a distance of 1.00 inches. This makes "q" equal 0.100 $(q + 1)^2$ equals 1.210, and so the focal length equals $\frac{100 \times 0.100}{1.210}$, or 8.3 inches—a difference of 4 per cent. from the manufacturer's value. Altogether, the two components, and the combined lens show a mean difference of 3 per cent. from the maker's figures.

By the second method, "q" must equal 9, so, for an object, a dark yardstick was hung vertically against a light background, and upon the ground-glass two lines were ruled 4 inches apart. When the camera was finally adjusted with the combined lens in place, so that the lines just seemed to touch the two edges of the stick, "d" equaled $92\frac{7}{64}$ inches, so that the focal length was given by $\frac{92.11 \times 9}{100}$, or 8.3 inches.

Effective and Focal Aperture

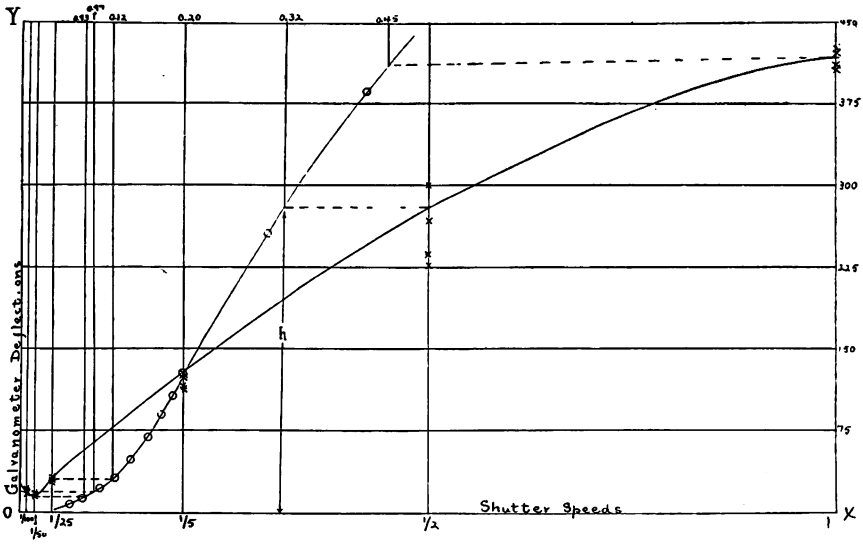
Now for the effective diameter of the lens. An approximate method, of course, would be to measure the actual diameter of the diaphragm, but, owing to its magnification by the front lens of the combination, the effective aperture is really greater. A convenient method to employ is to focus the lens on infinity, place a sheet of cardboard with a large pinhole in its centre against the ground-glass, and then, turning the camera so that the pinhole is in the direction of some bright source of light, which may, for convenience, be the sky, cover the head with a focussing cloth and examine the front of the lens. A faint circle of light should be visible. If it cannot be discerned, breathing upon the lens will probably enable it to be seen. The diameter of this circle is measured with dividers, and the effective diameter of the lens is found. To prove to the reader that the diameter above measured is really different from the actual diameter of the stop, it may be interesting to have an assistant alternately remove and replace the cardboard, while the reader notes how the circle of light suddenly increases in size when the light from the pinhole is refracted into a parallel pencil by the lens.

Having found both the focal length of the lens, and the effective diameter of the same, we can now calculate the focal aperture, by dividing the first mentioned by the second. This gives us the "ratio aperture" or "F. value." If we wish to obtain the "Uniform Standard" of the "Royal Photographic Society" we must square the F. value and then divide by 16.

To consider the writer's lens once more: the actual physical diameter of the diaphragm is $\frac{27}{82}$ inches. The effective aperture of the combination by the preceding method is $\frac{29.3}{32}$ inches; of the front combination, $\frac{28.9}{32}$, and of the rear combination, $\frac{28.8}{32}$. This makes the F. value of the combined lens equal $\frac{8.3 \times 32}{29.3}$, or 9.1, instead of 8.0, a difference of 14 per cent. from the advertised. The U. S. value would equal $\frac{(9.1)^2}{16}$, or 5.2 instead of 4.0. Altogether, the three different F. values of the various components of the lens were in an average error of 11 per cent., certainly a most curious state of affairs.

Shutter Speeds

In the discussion of shutter speeds, as in the case of the focal length of the lens, we will consider more than one way to obtain the desired result, both as a guard against inaccuracies and to allow a choice of method by the reader. We will take up the various plans in an order inversely as they appealed in merit to the writer.



All the following methods can be manipulated by one person only, who requires the aid of no corps of assistants.

Pendulum. We will first consider the experiment of using a vibrating pendulum to determine the speed of the shutter. In pursuing this method, a pendulum having a long period of vibration is allowed to swing through a few degrees of arc in front of a background of squared paper. Knowing the point where the bob was released, the period of the pendulum, and the displacement of the latter during the time of the opening and the closing of the shutter, the time of this latter may be calculated, from the formula $d = 1 \text{ cosine } \frac{(360° t)}{P}$, where d is the horizontal displacement from the position of rest, 1 is the length of the pendulum to the point considered, and P is the period of time for a complete to and fro vibration. It is also quite possible, though tiresome and exacting, to rule parallel lines so separated that the swinging pendulum will traverse the same number of lines in equal times, as in Fig. II, where each space represents $\frac{1}{72}$ of the time required for a complete to and fro vibration of the pendulum, when the latter is released at the first line.

Falling Body. A falling body affords quite a convenient means of measuring both the long and the short speeds of a shutter. Through a vertical distance of 20 feet, shutter tests extending from one to less than one-thousandth of a second can be made with certainty. The method is simplicity itself. Paste strips of black paper, say an inch in width,

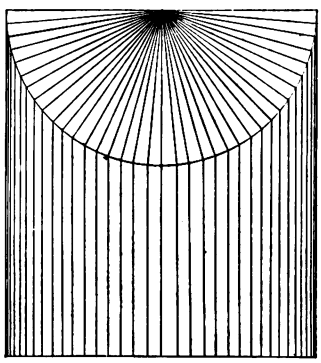


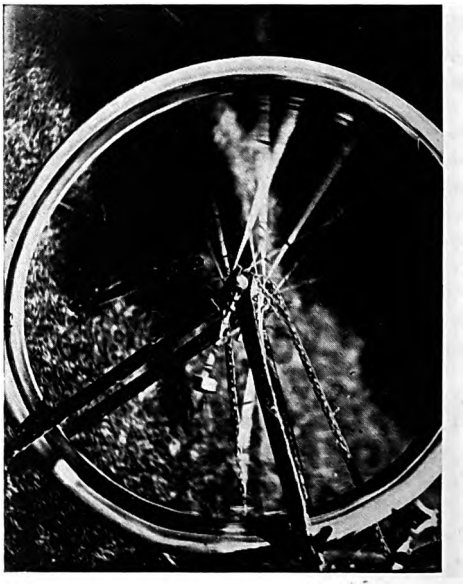
Fig II

upon a long board, and stand the same against some solid object. For the falling body, procure a light sash-weight, a long plumb-bob, or some other similar device weighing a few pounds. Tie a cord-string to the top of the weight, glue a small bit of white paper to the bottom that the image may show up better upon the plate, and uspend from an eye in the top of the board, so placed that when the

FALLING BODY

bottom of the weight is even with the first or zero foot-mark the upper end will be pulled tightly against the eye. A sudden jerk upon the string will break it, releasing the weight, and, if the shutter is worked at the same time, the result will be a blur upon the plate, the length and position of the same enabling the speed of the shutter to be found. The camera is set up and focussed upon the board, the weight pulled up closely against the eye, and the operator, holding the end of the string, walks to the camera, pulling the cord sharply with one hand, and actuating the shutter at the speed which is to be tested with the other. After the plate has been developed, fixed, and washed, the distances in feet from the zero mark to the beginning of the blurred image and from the zero mark to the end of the blur are measured, using the foot-marks upon the board as a rule. These distances will give the position of the weight with reference to the board at the time of the opening and of the closing of the shutter respectively. If these respective distances are substituted in the equation: *Time equals* $\frac{1}{4}$ *the square root of the distance*, and the respective quotients subtracted one from another, one-fourth of the arithmetical remainder will be the shutter time, or speed. The above equation is based on a value of the acceleration due to gravity of 32.15 feet per second. This value varies one-half per cent. from the equator to the pole, and, as the formula is almost precisely exact for the former latitude, the greatest error possible—neglecting that due to the friction with the air and variation in elevation—is less than one-half per cent.

The shutter of the writer has engraved speeds of "1," "$\frac{1}{2}$," "$\frac{1}{5}$," "$\frac{1}{25}$," "$\frac{1}{50}$," and "$\frac{1}{100}$" seconds. Testing the "$\frac{1}{50}$" second, the motion of the weight had apparently started at 2.17, and ended at 2.50 feet from the zero upon the board. The difference between the respective square roots is 0.045, which divided by 4 gives 0.011, the speed of the shutter.



This method is quite easy to manipulate, and gives the operator a permanent record. It is not expensive, for several tests can be made using only one plate, when it is cut into two or three long sections, in the dark-room, with a glass-cutter. Calculations are not tedious—the only difficulty which perplexed the writer was the question of measuring the length of the image whose edges, because of the peculiar movement of the shutter wings, had no well-defined beginning or ending. He wished to obtain the average period of effective illumination of the plate, and therefore omitted

the faint light action at the edges of the image in his measurements.

Circular Motion. For those who have access to the required apparatus, the method of photographing a rotating object may prove quite satisfactory. The revolving body may be the rear wheel of a bicycle, a grindstone, or the slowly moving gearing of some machine. The test should preferably take place *in full* sunlight. Some bright object is affixed to the wheel—this latter revolved at a constant rate, usually one revolution per second for ordinary shutter speeds—and the shutter released at the required speed. The writer has used the bicycle quite advantageously. If the spokes are in a fair state of polish and the machine is set in the sun, with the camera pointing toward the wheel but away from the sun, some of the spokes will reflect a good deal of light, and for short intervals of time no auxillary object will be needed. For longer intervals, a small polished metal ball—which will reflect light along the full circumference of the wheel—or even a strip of paper may be affixed to the rim of the wheel. A bit of wire may also be fastened upon the wheel, so that it will mark each revolution of the latter with a "click." This device will help the operator to regulate the speed of the wheel. A pendulum beating seconds is hung near, and the wheel turned so that the beats of the pendulum will just coincide with the clicks made by the wire. The dark-slide having been withdrawn, the bulb is pressed and a record obtained upon the plate. Then the "angle of blur," as it might be called, is measured with a protractor, this value divided by 360, the number of degrees in a circle, and the quotient divided by the angular velocity of the wheel or the number of revolutions per second. The result is the period of the shutter in seconds. The writer tested his marked shutter speed of "$\frac{1}{25}$" in this way. The angular velocity of the wheel was 1 revolution per second; the "angle of blur" was 2° 21′, making the speed 0.015 second.

Simple Harmonic Motion. The method of time measurement by simple harmonic motion has also been used by the writer with most satisfactory results. The apparatus is comparatively simple, the records are permenent, and require no laborious mathematical calculations, after they have once been made, in reducing them to time units. The method is based upon the principle that a simple harmonic motion compounded with a uniform motion in a straight line produces a "sine curve." If a photograph is taken of a body vibrating in

this peculiar motion, while the camera is moved at right angles to the plane of vibration, the result will be the above-mentioned curve, the number of loops in the curve being equal to the number of vibrations made by the body while the shutter was open. The number of loops divided by the number of vibrations made by the body per second will give the shutter time.

In the experiments of the writer, a tuning fork was used as the source of

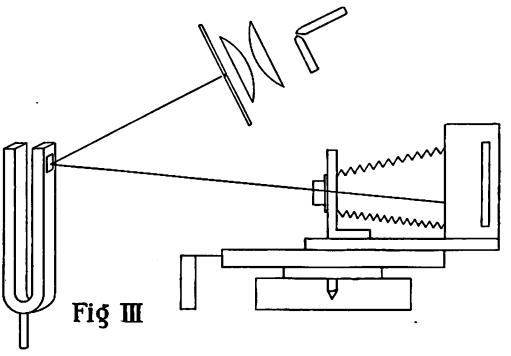


Fig III

the vibration, for simplicity and for ease in obtaining the period, although a vibration galvanometer or a vibrating spring would probably have answered equally well. The period of the fork to be used depends, of course, upon the shutter speed it is intended to measure: other things being equal, it should be as short as possible for the sake of accuracy, in order to include the maximum number of loops which the length of the

plate employed in the camera will permit. Now the number of loops which can be included depends also upon the size of the image of the curve upon the plate, and the velocity of rotation of the camera, matters which, at least to the writer, turned out more formidable in theory than in actual practice. He used a fork which, when two small mirrors were cemented to either side of the vibrating prongs, had a frequency of 43 vibrations per second, as afterward determined. This meant that if the record upon the plate consisted of $21\frac{1}{2}$ loops, the shutter speed was $\frac{1}{2}$ second. One-fourth of a loop could be estimated with accuracy, so with the particular fork results should have been accurate to the one-hundred-and-fiftieth of a second.

He thought it both advisable and convenient to project a pencil of sensibly parallel light upon one of the mirrors of the fork, from whence it would be focussed by the lens, upon the plate, after reflection by the mirror. Accordingly (Fig. III) the objective was removed from a projection lantern, and in the lantern-slide carrier was inserted a piece of cardboard containing a pinhole. The tuning fork, mounted vertically upon an adjustable stand, was placed some ten feet from the perforated cardboard, and the camera, clamped to the stand, was set a few feet from the fork, the latter subtending an angle of about 45° between the camera and the lantern. The stand was provided with a revolving head, free to rotate about a vertical axis. The camera was so adjusted upon it that the optical centre of the lens was in the axis of rotation, *i. e.*, the lens was exactly above the pivot upon which the head turned. In this position the lens could always intercept the ray of light from the pinhole, no matter how the camera was turned. The relative positions of the fork and the camera were then adjusted until the image of the pinhole appeared equally distinct and unobstructed upon any portion of the ground-glass. The stand was then turned so that the image of the pinhole was located at the very edge of the focussing-screen, a pointer was arranged at the periphery of the stand, and a mark made upon the stand opposite it. Next the stand was revolved so that the image fell at the other extreme of the ground-glass, and a similar mark made opposite the pointer. These marks, then, prescribed the limits through which the camera might turn, without obstructing the vibrating image of the pinhole. The next step, before actually conducting the test, was to practise turning the head of the stand with one hand, while working the shutter with the other. The shutter was set for the longest exposure, "1"(?) second, the turn-table slowly set in motion, and the bulb pressed. The closing of the shutter leaves could be recognized by their final "click." After a few trials, it was not difficult to revolve the head so that the exposure would end just before the pointer indicated the second mark upon the stand. This insured that the beam of light would act along the full length of the plate, making a curve containing the maximum distance between wavelengths, and consequently the most easy to read.

The preliminaries being over, the actual tests were made. The arc of the lantern was turned on (the room being darkened), a loaded plate-holder placed in the camera, the dark-slide drawn, the tuning fork set in vibration, the stand rotated, and the exposure made. Normal development of the plate showed that the tuning-fork chosen was suitable for the work, so a series of tests were made on each indicated shutter speed. Finally the frequency of the fork was determined by the "Chronograph Method," familiar to all who would possibly have access to the required apparatus. If the frequency is not marked upon the fork, which happened to be the case with the above, it might possibly be found with sufficient accuracy to meet ordinary requirements from an ordinary piano, by finding a note upon it which is of the same pitch with that which the fork emits. Suppose that the note happened to be "*D*" in the second octave below middle "*C*." The frequency of the "*C*" in that octave equals 64 vibrations per second, assuming that the instrument is normally tuned, so that of "*D*" would equal 64 times the

square of the twelfth root of 2 ("*D*" is two tones above "*C*," there are twelve steps from one octave to another, and each succeeding octave has half the frequency of the next higher one), or 64 times the square of 1.059, or 71.8 vibrations per second. The averages of these preceding tests showed that the "1 second" was really 0.425 seconds, "$\frac{1}{2}$" was 0.255, "$\frac{1}{5}$" was 0.15, "$\frac{1}{25}$" was 0.017, "$\frac{1}{50}$" was 0.011, and "$\frac{1}{100}$" was 0.017 second. The writer takes pleasure in acknowledging invaluable advice and instruction regarding some of the manipulations in this, and especially in the following experiment, from Professor F. C. Brown, of the Physical Laboratory of Iowa University, where these two last investigations have been carried out.

Selenium Cell. The use of light-sensitive cells for shutter-testing is more fascinating and probably more accurate and practical than any method which the writer has yet used or devised. The general public has known very little about such cells or their uses until Professor Korn made use of them in the telegraphic transmission of photographs. The writer has used three various types of light-sensitive cells, and, at least for shutter-testing, he much prefers the "Giltay" form. Such a cell consists of a small insulating frame, about 1 x $\frac{3}{8}$ x $\frac{3}{32}$ inches, around which are wrapped side by side, but not touching, two parallel wires. A mixture of selenium is spread in the hollows between the wires, and after a certain amount of baking the cell is ready for use. Electrical connections can be made at either pair of the free wires. The use of the wires is to increase the conductivity of the cell, for light-positive selenium has an abnormally high electrical resistance, except when exposed to the action of a beam of strong light. In the tests which the writer carried on, the cell was exposed to a constant light with the different shutter speeds, certain readings being meanwhile observed with suitable instruments. Then with the shutter wings open, the light was flashed on and off for various lengths of time, and a calibration, or comparison curve secured. The cell was firmly attached inside a thin glass bath filled with kerosene, for such an environment cuts down all chance fluctuations in the cell. The tests were to be made with the shutter and lenses undisturbed in the camera, so bath and cell were fitted inside of a plate-holder from which the septum had been removed. Rubber-covered wires led out from the cell, and through a hole in the edge of the holder. The exact location of the cell in the holder was ascertained by direct measurement, and, the position being relocated on the ground-glass of the camera, suitable marks were made upon it, so that the beam of light could be projected exactly upon the spot occupied by the cell. A tantalum lamp of about 64 candle-power, connected to a storage-cell—to secure an unvarying source of electromotive force, and consequently a constant light—was placed a short distance behind a sheet of ground-glass, the camera set up a few feet away, and the bellows extended until there was a large circle of light covering the spot to be occupied by the cell. The apparatus must be clamped firmly in place, in order that no change in position can take place during consecutive days. The plate-holder was slipped into the camera, and the electrical connections to the cell were made. In order to measure the rapid fluctuation in resistance, a ballistic galvanometer was used in a "Wheatstone Bridge" circuit. The cell "*X*" in the diagram, Fig. IV, is connected in series with the three resistance boxes, "R_1," "R_2," and "R_3." The ballistic galvanometer, in series with the switch "*S*", is connected between "R_1" and "R_3," and "*X*" and "R_2." The resistances to be used in the three boxes will depend upon the resistance of the cell.

In the writer's case, the average resistance of the cell in the dark was 2,500,000 ohms, or $\frac{R_2 \times R_3}{R_1}$, for "$R_1$" was 100 ohms, "$R_2$," 20,000 ohms, and "$R_3$," 12,500 ohms. For small transient variations in the resistance of the cell, "R_3" was varied, and the resistances in the other boxes were kept constant. The dry cell was kept connected in the circuit continually, as changes in the

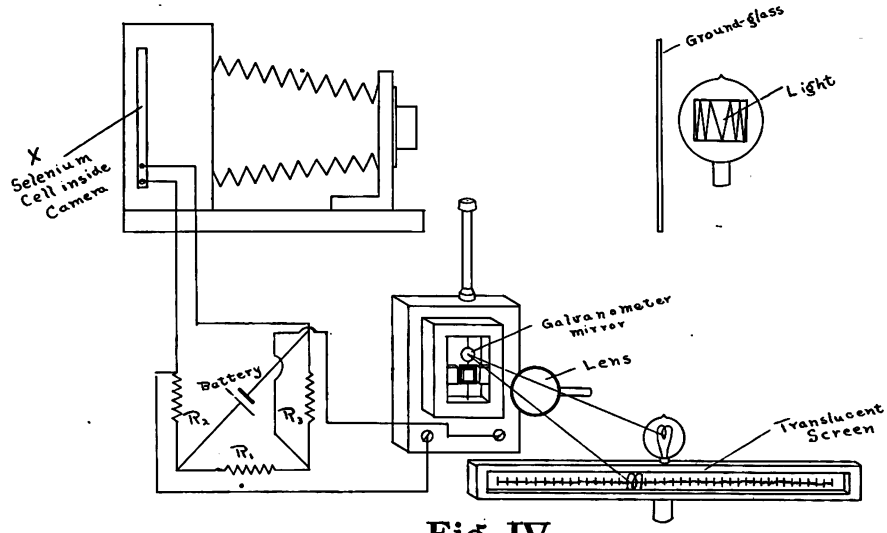


Fig IV

current which flows through the cell tend to disturb the dynamic equilibrium of the latter, altering its resistance and invalidating the readings for the present purpose. The ballistic galvanometer must have a fairly high sensibility and a comparatively long period of vibration, say 15 or 20 seconds. The galvanometer used in these tests was of the usual wall type, and, instead of the ordinary telescope and scale, was equipped with a lens of long focus in front of the swinging mirror, and in front of the instrument at a distance of about five feet a lamp and a transparent graduated scale. The swinging mirror reflected the image of one of the lamp filaments upon the transparent scale, the resistance of the cell decreased under the action of the tantalum light, sending a minute current through the galvanometer, turning the mirror slightly, and throwing the image of the filament to one side of the scale. This procedure necessitates a dimly lighted room to work in, but the method is not as trying upon the eyes during long periods of observation as is the telescope and scale method.

For the actual test, the shutter being closed, and the light and battery on, the galvanometer is thrown into the circuit, and the resistance in the boxes changed until the instrument comes to its original position, *i. e.*, no current is passing through it. The position of the filament upon the scale is noted, and the bulb of the shutter is pressed for the longest exposure. If this throws the galvanometer entirely off the scale the light may be diminished in intensity—as far as the cell is concerned—by stopping down the lens. After the galvanometer has come to rest again at approximately its original position—which may take about seven minutes for an actual time of exposure of one-half second—the bulb is pressed, and the deflection of the instrument noted, *i. e.*, the distance on the scale from the position of rest to the furthermost point of swing. After working with the cell for some time its resistance gradually decreases, and it is necessary to lower slightly the resistance in the box "R_3." In the observations made with the shutter of the writer, the various shutter times were quite constant, though, in general, very erroneous; the highest marked speed, $\frac{1}{100}$ second varied only 2 per cent. between different readings. Perhaps some data obtained upon one certain day, selected at random, may be interesting (see Table opposite).

A number of sets of observations taken, preferably upon different days, to insure a close approximation to the

Resistance of cell ohms. × 10-3.	Zero reading, mm.	Final reading, mm.	Deflection, mm.	Relative error.	Marked shutter speed seconds.
2480	492	14.0	478 0	2.0	1/100
2380	486	33.0	453.0		
	488	13.0	475.0		
	486	—8.0	494.0		
	491	35.0	456.0		
	482	—20.0	502.0		
	465	438.0	27.0	2.0	1/100
	475	448.5	26.5		
2360	480	456.0	24.0	2.0	1/50
	480	456.5	23.5		
	484	450.0	34.0	3.0	1/25
	485	452.0	33.0		
	486	350.0	136.0	0.5	1/5
	489	373.0	116.0		
	488	355.0	133.0		
	487	357.0	130.0		
	480	189.0	291.0	0.2	0.5
2340	482	172.0	310.0		
	484	177.0	307.0		

actual speeds of the shutter, and prove that the apparatus is in reliable working order, the next step is to reduce the various deflections to seconds by means of a calibration curve. With the apparatus at the writer's disposal, it was most convenient to do this by flashing the tantalum light on and off for known intervals of time, in front of the shutter, which was left open, of course. A pendulum, swinging over a graduated arc, was arranged to throw over two keys. The first key was adjusted to light the lamp, and the next one to extinguish it. The distance between the keys was adjustable, so any desired interval of time could be obtained. The writer had previously calibrated the pendulums in fractions of a second, using a method described by Professor Brown in *Physical Review*, No. 6, 452: "An Electrical Method of Measuring Small Intervals of Time." With the apparatus left unchanged, except for the introduction of the pendulum and keys, the cell was illuminated with the same light for nine different known intervals of time, and various readings secured in the same manner as when the shutter wings were opened and closed. The results are plotted together as shown. The crosses represent the average shutter readings secured on four different days, covering the period of a week, and the line represents the mean galvanometer deflection for the given shutter speed. The dots in the circles constitute the calibration which translates galvanometer deflections into seconds. Suppose, referring to the plotted curves, we wish to find the true speed of the shutter when the indicator is set at the point marked "$\frac{1}{2}$ second." We look along the shutter test curve until we come to the point marked "0.50" second. The ordinate, or the height "h" of this point from the line OX, represents the mean distance which the galvanometer deflected when the shutter bulb was pressed for this speed, *i. e.*, 261 mm. Now we look at the calibration curve, and find that the same height on this curve intersects the absissæ marked 0.315 seconds, *i. e.*, if the lamp were turned on for that time the galvanometer would deflect just 261 mm. Therefore the speed given by the "$\frac{1}{2}$" is really but 0.32 seconds. In the same manner, "1 second" gives but 0.45; "$\frac{1}{5}$," 0.20; "$\frac{1}{25}$," 0.12; "$\frac{1}{50}$," 0.093, and "$\frac{1}{100}$," 0.097.

It will be noted that these results with the higher speeds do not agree with the results previously obtained with the other methods. This can be accounted for by an inaccuracy in the experiment. It is well known that the brilliancy of a tantalum or tungsten lamp decreases immediately after the current is turned on—that of a carbon one increasing, of course, so that none of the three types will give a constant light. If the lamp were at its brightest during the time when the deflections for the small time values were being obtained for the calibration curve, it would naturally act more upon the cell, and give larger deflections for the higher speeds. This fault could probably be remedied by replacing the single lamp with a number of them, mounted upon a revolving disk, and connected electrically so that each one would be lighted, one after the other, for a small fraction of a second.

Altogether, the writer believes that this method deserves thoughtful attention by photographers. Although the apparatus could hardly be found outside of a physical laboratory, tests can be easily, cheaply, rapidly, and, in general, accurately conducted.

SOME CONSIDERATIONS ON PORTRAIT WORK

By JAMES F. GORDON

IT is hard to answer the question whether it is more difficult to make a good portrait or a landscape. Anyway, in the latter case, the criticism is left to us mostly, while that about the portrait is made not only by us and others but especially by the sitter; and it is a fact that the latter is hard to please even if the picture can be called artistic in every respect.

Our mental picture of a person is a composite one made up of records of many fleeting impressions, the principal of which give the character which we unconsciously look for in the portrait. Usually they are of value only to relations and acquaintances; they very seldom create more than local interest. What we should try to aim at is to produce pictures which possess universal elements and appeal to human nature and to all lovers of beauty.

This power to attract other circles does not depend on the technical mastering of the photographic process, but it is a question of character and power and to some extent technique. Fortunately the art of the camera as practised by capable and progressive workers has much advanced, and today it is a true medium of artistic expression similar to those employed by the painter. At least it has ceased to be wholly a mechanical art, and although a photograph cannot compete with a painting in the way of colors it certainly is capable of expressing human character and nature's moods just as well. The art museums of the cultured countries contain many such proofs, and pictures made by the camera are purchased sometimes at rather high prices for which you can buy a good painting. Especially on the Continent of Europe such purchases, and the exhibition of photograms in museums formerly reserved for paintings and statues only, are quite frequent.

As in photography, excellence and mediocrity mark the activities in poetry, music, and painting; but photography as a means of geniune and effective art expression is rather young. Although there are limitations, it is astonishing how varied is the creative power of the photographic artist. Carefully analyzed, we find in the products those elements of art principles, design, form, harmony, balance, and unity. In a greater sense, art is that which makes visible to others the exalted imaginations of the inspired mind. A work of art can transcend the bounds of reality and can portray that which has never had an existence. Perhaps the greatest of the arts are those which appeal solely to the ear—that is music and poetry. The appeal to the eye must come second. Of course there are some limitations if we compare the camera with the brush, as mostly all the faults and imperfections inherent to humanity are ruthlessly reproduced by the lens. It is true that a photographer cannot represent very well every thought or emotion which a painter is able to; but does this make the camera less worthy of a work of art? Certainly not. All modes of expression have their limits and this is not a peculiarity of the photographic art alone.

The power of the latter lies in its forceful presentation of a universal truth. And so it is with every real work of art, for it stimulates the imagination and recreates within us as it were the very emotions that actuated the artist when executing it. A picture must have more than technique. In addition, a picture tells us something about the personality of the artist, as his ideals are more or less revealed in the work he presents to us. Of course here again the painter has the advantage on account of the elasticity of the material he uses. Although the painter is not

bound to copy the model before him, he mostly chooses a model as much as possible coming near his ideals. The art photographer, on the other hand, is often satisfied with what he can obtain in the way of a sitter without much trouble, whereas he should really exercise even greater discrimination than the painter in order to get a still closer approximation to the ideal.

Probably a common fault of the photographer is too much hurry—and this is encouraged in our age of haste and machinery by the materials being at his disposal. If the camera friends would make only very limited attempts each week they would be forced more or less to spend considerable time in regarding a subject from every point of view, and they would decide upon some definite presentation of the same before the action. It is clear to make a few really good pictures—apart from saving time, plates, and chemicals—is better than to turn out a number of only half-artistic pictures. The common way of professionals, and amateurs too, of exposing one plate after the other, hoping one or two at least will produce good results, cannot be recommended. Besides wasting money, the camera user will never learn the tricks of the business and never quite know why picture "one" was a failure and picture "two" proved excellent. It is kind of game or lottery, a speculation on luck. In such cases the photographer can only take credit for being able to recognize his picture as a work of art—which implies, of course, a knowledge of what constitutes art—but cannot conscientiously claim the honor of being its deliberate creator.

We must, therefore, raise the standard of excellence in the portrayal of the human form, and indeed in all branches of the photographic art. This is done not so much by exercise in the technical handling, but applying more thought and endeavoring to give expression to our ideals, so that each picture must have a reason for its existence apart from the other good features. This can especially be done not in the ordinary glass-covered studio, but in the home, and indeed this kind of sport is becoming rather popular, not only for amateurs but also professionals, who either own one or more real sitting rooms for their patrons or go to their homes.

To attain the highest possibilities a portrait must be more than a perfect delineation of features. It must convey the living personality. Success in this respect is much depending upon atmosphere. In the home there is no false environment; there are no mechanical effects to stimulate an idealism that does not exist; the familiar home surroundings create an atmosphere which never makes one feel ill at ease. The result is that expression and pose are perfectly natural.

When one enters many homes an infinite variety of background is presented, which is important. It simplifies the problem of posing to avoid repetition in effect. It is less a job in lighting than of putting the subject at perfect ease and timing the exposure to catch the desired expression. This is especially true with children and old people. Both feel somewhat uneasy in the strange environment of the glass-covered studio. Their natural ease is disturbed by the operations of the assistant, which catch their attention, while at home they will seldom be other than natural.

CHARITY means the giving of encouragement and assistance as well as alms.

THE only way to win the confidence of your customers is to make them believe that you are anxious to give them the most possible for the least money.

DOUBTERS are failures because they tear down instead of build up.

NEVER let little things annoy you. Life is too short to worry over trifles.

NEVER show when you are discouraged. A weak heart never wins customers.

NEVER plan about tomorrow and expect today to take care of itself.

NEVER laugh at anyone's failures. It may be an experience you will have in the near future.

PRACTICAL USE OF THE INVISIBLE IMAGE

By GEORGE SMEE

TURNING to practical account a photographic image that is invisible would appear upon first thought to be impossible. This, however, is not the case. The use of an invisible or obliterated photograph is a daily occurrence. Draughtsmen, engravers, and artists employ the process in a number of instances in their trade.

To give an example: A piece of machinery or the mechanism of an automobile may be required enlarged from a small halftone print. An enlarged negative is made, and a print is made upon plain salted paper that has been sensitized with an acid solution of nitrate of silver, by merely swabbing the surface of a piece of paper the size required, drying the same, and making the print fairly well rendered. It is then fixed in a solution of plain hyposulphite of soda, washed, and dried.

Now upon this weak image the draughtsman makes a drawing in line with waterproof ink, not taking into account the dots and cross-lines of the enlarged halftone. As soon as the drawing is completed and well dried all the rest of the photographic image is made invisible by placing the print into a solution of bichloride of mercury. Under this treatment the whole of the photographic image disappears. It in reality has been bleached, leaving nothing visible but the line drawing by the draughtsman.

This drawing in line may then be rephotographed and the negative used for the production of an etched photo-engraving upon either zinc or copper, without showing in the least that it had been produced from a halftone engraving.

The following is the agent used for bleaching:

Bromide of potassium	120 gr.
Bichloride of mercury	120 gr.
Boiling water	30 fl. oz

As soon as the salts have dissolved, allow the solution to become quite cold; the bleach is then ready for use.

Another use for the invisible photographic image is in the making of what was termed by Herschel the magic photograph. The bleaching of the photographic image is not confined to the use of plain salted paper, any gelatin printing-out paper may be used or printing-out collodion paper. To produce these so-called magic prints, make a number of prints upon Solio or similar paper; print them somewhat deep; then wash them well for half an hour, until no milkiness is visible in the water; then place them into the bleaching solution, turning them over and over until the inage has entirely disappeared; then wash them well for a quarter of an hour and suspend them to dry. As soon as they are dry, take one and dip it into a solution of hyposulphite of soda, one ounce of hypo dissolved in sixteen ounces of water. Upon immersion the invisible image will make its appearance instantly and develop to full strength in the course of half a minute. The color of the redeveloped image will be of a dark brown. Now the print must be well washed and dried, when it will present a still darker brown color. Prints produced by this means will stand well.

A curious thing about these magic photographs is their development by tobacco smoke. If one of these bleached prints be taken and a well-lighted cigar used, with a short paper tube placed over the lighted end, then placed into the mouth and the breath blown through to the lighted end, as soon as the smoke strikes the invisible print the image develops at once, in color very much like those developed with hyposulphite of soda.

Either of these applications causes a pleasant surprise at any time.

(c) By IRA L. HILL, NEW YORK CITY

A NOVEL AND BEAUTIFUL PHOTOGRAPH STUDIO

ONE of the most interesting and unique sights in charming Berkeley, the beautiful university town that snuggles among the hills across the bay from San Francisco, is a photographic studio in the heart of the residence district run by two enterprising and engaging young women.

You would never suspect that the quaint plastered building contains one of the most fascinating and delightful studios for portraiture imaginable. At first glance you would think that it could be nothing other than a cozy home, nestling as it does among the trees and flowers; but a second look at the high plate-glass windows arouses your suspicions, while a furtive peep into the artistic reception room only further baffles the imagination, for there is no visible sign of the traditionally unattractive reception hall of the ordinary photograph studio. Instead there is an atmosphere of elegance mingled with simplicity. Indeed you have to search diligently to discover a green burlap screen in one corner, with a few tastily arranged portraits mounted upon it. This and a large, flat basket filled with pictures are the only clews to the real nature of this peculiar studio. The beautiful paintings and art objects in the room make you doubt its being a photographic institution, so prone are most photographers to despise any kind of art but their own and to refuse to have paintings on their walls. In the centre of the room hangs a magnificent censer of white and gold, and in the corner near the mahogany desk a

curious leather chest, elaborately ornamented with fantastic designs of rich coloring and securely bound with metal, hints of Aztec treasures. Later you compliment yourself when pretty Miss Partridge, one of the "partners," confirms your surmise by telling of its Mexican origin.

After you have had your curiosity piqued almost to the point of despair, the heavy draperies part at the foot of the stairs leading down into the next room, and a smiling face invites you to further exploration. At the same time a glimpse into the big, sunny room below finally solves the problem. There is the camera, not one of those frightful, appalling pieces of paraphernalia which scare children so readily, but a neat, modern affair that does the work without the scaring.

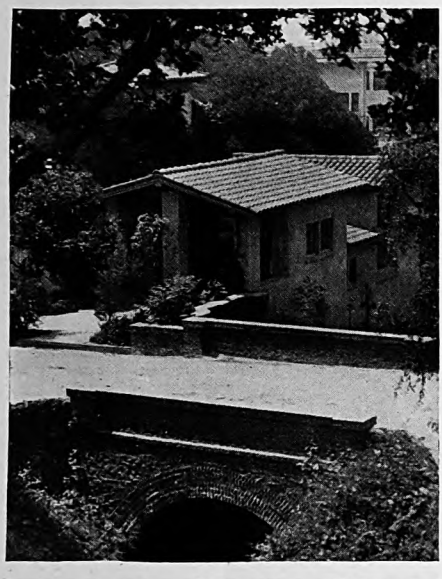
But where is the usual assortment of "junk" which is supposed to encumber the portrait room of a photographer? Over there in one corner are two screens to aid in the lighting effects, but that is all. Only an immense window of astonishing height which occupies one side of the room bespeaks the studio of the photographer, and even this is of artistic and effective design, with a fleur-de-lis beaded upon each of the two huge panes, instead of being the usual dingy, ugly side-light which the old-fashioned photographer has always regarded as a necessary part of his business.

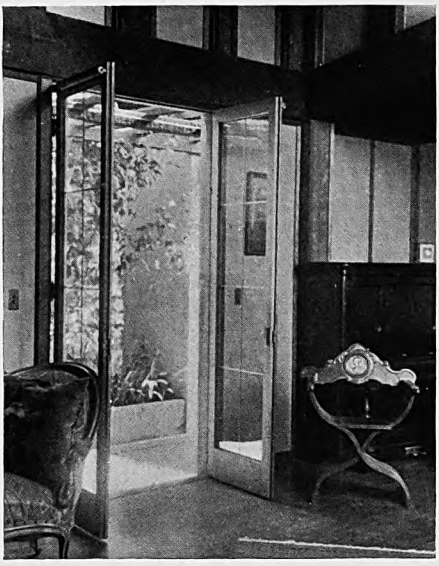
The whole atmosphere of this lower room is one of quiet restfulness with its simple, yet ample, furnishings, and its outlook, through double doors of glass, into the garden adjoining. As Miss Stimson, the other partner in this "women's enterprise," comes forward to make you welcome, you are more than ever convinced that women, much better than men, can successfully run any business where tact and personality have such a large share of importance.

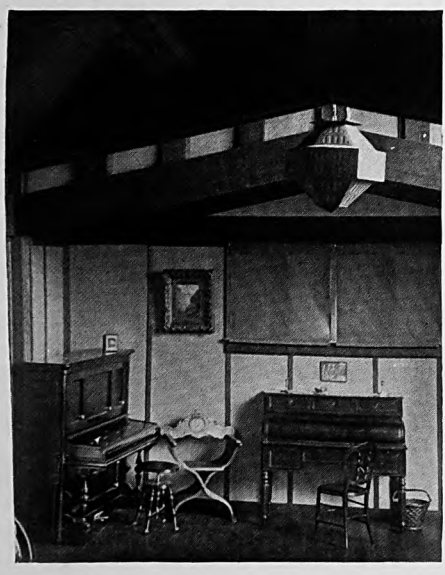
The cool sea-breezes waft in the fragrance of the roses and trailing vines and myriads of other flowers that only a Californian can give the names of; and the anxious sitter actually takes on an altogether different and more naturally relaxed expression than when seated in a down-town studio with its noisy proximity to the thoroughfare and traffic.

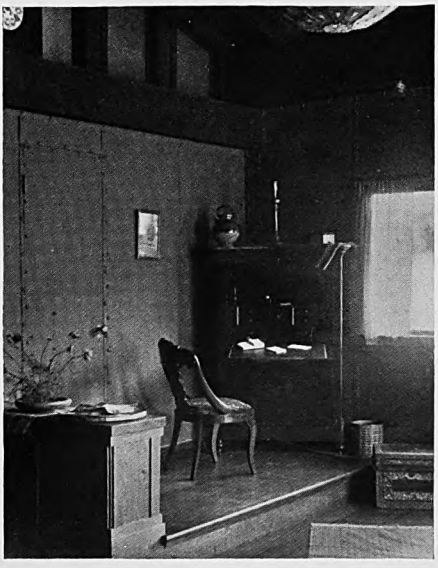
It is the little touches of artistic skill revealed here and there which disclose the feminine management of the institution: the repetition of the censer idea noticed in the reception hall, an octagonal creation in brown this time; the beamed ceiling with its vaulted effect; the arrangement of the furniture; all this tells of the woman.

While my purpose in describing this unique photograph studio is to share with you the delights of such a bewitching, home-like "place of business," it is equally my desire to show what can be done by those who really make up their minds to accomplish something, and to give you the benefit of this successful experiment in offering the public something new and different in the studio line. It has been my pleasure to see many studios, built, furnished, and decorated by men, but this product of the woman's natural instinct for creating the original and beautiful has convinced me that woman's spirit of idealism is *not*, as has been fondly imagined by some great men, a drawback to her, but a genuine practical aid in a material way. What could be a more complete and concrete proof than this example? Two young women decide to have a photograph studio. They lay aside precedent, advice, and a few other hindrances, and open it in the midst of homes of culture and refinement, instead of in a down-town office building. Then they see to it that it is built and furnished to suit *them*, in accordance with their ideas of what a studio *should* be, not what it always *has* been, and in thus expressing their highest ideal of art, they have succeeded in giving to their patrons a something intangible and inexplicable, but nevertheless real and appreciated, something which makes the neighbors drop in often for a characteristic birthday picture or a surprise for the family.









A NOVEL AND BEAUTIFUL PHOTOGRAPH STUDIO

1. THE STUDIO
2. THE ENTRANCE
3. A CORNER IN THE STUDIO
4. CORNER OF RECEPTION ROOM

LOOK AFTER THE OUTDOOR GROUPS

NOT many photographers have established themselves so firmly in studio portraiture that they can afford to neglect outdoor groups. Although its profit-making possibilities are well known, this branch of photography, from an artistic point of view, lags a long way behind the regular professional portraiture. There is certainly plenty of room for improvement in the pictorial quality of group work. Judging by the groups one sees, it appears to be accepted as the right method to place the figures in even rows one behind another, and to pack them as closely as sardines in a tin. There are times, of course, when nothing better can be done—such as when a large group must be taken in a very small space. On occasions of this kind the photographer has to make the best of circumstances, but there is no reason in the world why nine groups out of ten should look as if the figures had been stuck together and pressed into the smallest possible space.

In addition to this bad arrangement the figures usually have expressions of depressing solemnity. Sometimes there is evidence of an attempt having been made to get rid of the gloom, but the result has usually been that the sitters have either assumed an air of forced indifference, or they have carried their efforts too far and suggested nothing but buffoonery. Furthermore, if you look through the sporting and athletic groups in the illustrated magazines, you will see that over 90 per cent. of the figures which make up those groups have been taken staring right into the lens.

Because these defects in groups are pointed out it need not be taken for granted that they are all easy to overcome. They are not. There are difficulties in group photography that the man who only does ordinary studio portraiture knows nothing about. It is well worth a little trouble and patience to become an expert, because there is a big demand for groups.

In arranging a group the first principle to consider is simplicity. This means avoiding awkward lines, abrupt angles, overcrowded parts, and distracting, meaningless accessories. Putting a sitter on a lower chair will often break an awkward straight line of heads, or get rid of an abrupt angle caused by the legs of another figure. Asking one member of the group to stand and lean against the back of his chair will sometimes break up a crowded part and give variety to the composition. Removing the pot plants, which some member who wants to help has kindly placed at either side of the group, will often get rid of meaningless accessories.

The next point to consider is unity. If a group is to have any pictorial value at all, there must be a theme that connects the component parts; there must be a central idea that is common to every member of the group. This theme should be emphasized by the arrangement of the figures or by the concentration of interest. For instance, in football or cricket groups, the captain can be doing something—describing a point in the game, or reading a score card—in which all the members are obviously interested. In a family group the mother can be reading a letter or explaining a toy to a child. It is seldom wise to place the chief figure of a group in the centre of the picture. The effect is much more pleasing and the emphasis is far stronger if a point somewhere between the centre and the edge of the picture is chosen. When the line of heads rises towards the middle the pictorial effect is much better than when it curves down. The heads should never be placed at equal distances from one another.

The placing of light and dark dresses is a point of great importance in group making. It seems to be the desire of some operators to produce a chessboard pattern in their pictures. They do this by arranging the figures in such a way that light and dark dresses

alternate throughout the group. The effect is always spotty and irritating. The lights and shades should not be scattered; they should be collected and arranged in masses. It is a good plan to put the figures in light clothes together near the centre and arrange the other figures so that they form a border round the mass of light. Very rarely indeed should those wearing dark clothes be placed in the middle of the group, and those wearing light at the edges. Another good method is to have the principal group in the picture made up of those wearing dark clothes placed near the side, with a group of figures in light near it, then a smaller dark group again to give balance at the other side.

With regard to backgrounds, the operator generally has to make the best of what is provided for him; but where a choice can be made, appropriate surroundings with as little obtrusive detail as possible should be selected. For example, a house party at some country mansion should be shown with part of the building as a background, rather than in an unimportant corner of the garden, where flowers and shrubs obtrude and cause distracting white spots.

Above everything else, do not allow the sitters to stare at the camera. Nothing tends so much to give a frozen, stiff, and lifeless appearance to a group as this cold, blank staring of every pair of eyes in the picture.

Self-consciousness is often difficult to deal with in an individual portrait, but when a number of persons get together for a group, the difficulty is increased out of all proportion to their number. Everybody wants to look his or her best, but dare not make any visible effort to do so, lest it calls forth a volume of good-natured chaff from the other members of the group. This is where the personal influence of the operator is most valuable. He must go about his work cheerfully, and with a joke here, a serious word there, quickly, but without blustering, get his group composed.

Of course, there is the "funny man" to contend with—the man, generally a young one, who will persist in trying to make the others giggle just when the exposure is going to be made. This man needs careful handling; polite severity, plain speaking, and a dignified manner, combined with patience, will generally make him keep quiet.

There is more money left in group photography than has ever been taken out of it—but the man who makes himself an expert is the only one who will get hold of it.—*The Professional Photographer.*

PREPARING VARNISHES FOR NEGATIVES, PAPER PRINTS, AND RETOUCHING MEDIUMS

By "OPERATOR"

UPON examination of gelatin negatives after being stored for some time it will be found that they are becoming sulphurized to a great extent, commencing at the outside edges and advancing over the plate. It is only a matter of time when this sulphurizing will completely alter the printing quality of a negative and eventually ruin it. This injurious effect could have been prevented had the negative been varnished in the first place, because this would have prevented the atmosphere from acting upon the exposed reduced silver contained within the film.

In the year 1878, when the writer first made and used in the studio the rapid gelatin plate, all the negatives produced were varnished in the same way as the collodion negatives. These plates, several of which are still in existence, are in as good a condition as when they were first produced,

there being no signs whatever of any sulphurization.

It is generally spoken of as the atmosphere effecting the negative. It is not the atmosphere proper, but the sulphur fumes carried by the atmosphere that affect the reduced silver that mainly constitutes the photograph—sulphur dioxide, produced by coal fires, gas jets, and burners of every description as well as the sulphocyanogen produced by the ordinary gas stove. It is these gases that cause the sulphuring of the negatives, corresponding identically with the tarnishing of a bright silver surface.

Now if these surfaces had been protected by a good quality varnish the damaging effect of the sulphur would have been avoided. The formula for the varnish which has withstood the test of time, from 1878 until now, is given here from the writer's note-book of that period. That this varnish has stood the test of *thirty-seven years* is sufficient reason for publishing it in the PHOTOGRAPHIC JOURNAL OF AMERICA.

Wood alcohol	20 fl. oz.
Orange shellac	1 oz. av.
Gum sandarac	2 oz. av.
Gum benzoin	½ oz.
Venice turpentine	½ oz.
Castor oil	10 drops
Oil of lavender	10 drops

This mixture must be kept in a warm place and shaken occasionally in a thirty-ounce glass bottle. The gums will be dissolved in the course of twenty-four hours, when it must be filtered through a plug of absorbent cotton pressed moderately into the neck of a glass funnel, taking care to cover this funnel with a piece of glass plate to prevent the evaporating of the alcohol, as well as keeping the atmosphere as much as possible from the liquid, thus preventing the moisture contained therein from becoming absorbed by the alcohol. After filtering the varnish will be ready for use. The negative must be made warm; the varnish applied by pouring upon the surface, drawing the excess into the bottle, thus heating the plate some distance above the flame of a gas-stove. This varnish when set and cold will give an exceptionally hard and resistant surface. Amyl acetate collodion will also give a good protective surface to gelatin negatives. Time alone is the only test to prove whether it is as lasting a protection as the varnish given alone.

The universal bronzing of the modern developed print is another proof that the reduced silver in the gelatin film ought to be protected, otherwise it is only a question of time when the black and blue-black developed prints will become sulphurized to such an extent that will bring about disfigurement and eventual destruction. A good varnish (non-ignitable) for prints may be made from the following formula:

Tetrachloride of carbon	4 fl. oz.
Benzine or gasoline	4 fl. oz.
Gum dammar	160 gr.

First dissolve the dammar in the benzine; then add the tetrachloride of carbon; shake the mixture well; it will assume a slight opalescent appearance, which will prove to be no defect. Simply coat the surface with the varnish or dip the print into it, then suspend to dry. Prints coated thus will resist the sulphurizing action of the air, and surface is protected against damp.

The varnishes, or *dopes*, as they are called in trade circles, for retouching purposes upon gelatin negatives vary considerably. The following formula will be found to answer and give a good tooth for the lead-pencil.

No. 1

Alcohol	10 fl. oz.
Gum mastic	¼ oz. av.
Venice turpentine	¼ oz. av.
Camphor	10 gr.
Spirit of turpentine	1 fl. oz.

Apply with a piece of cotton, rub down to a biting surface.

No. 2

Clear, pale rosin	120 gr.
Spirit of turpentine	4 fl. oz.

Dissolve the rosin, filter the liquid, and use as described above.

No. 3

Gum dammar	40 gr.
Spirit of turpentine	4 fl. oz.
Canada balsam	½ dram

Any of these mediums may be made by the user at a small cost and prove to be effective.

ON NET PROFITS

HERE is a question that every man might well ask of himself: "Are my net profits what they should be on the amount of business I am doing?" If they are not, *it is your own fault*, because you are not aware of the cost of doing business.

Profit has been defined as that part of the selling price which is left after all expenses of material, making, and selling have been paid.

Now most photographers claim that all is profit that comes into the studio, after the cost of material, the salaries of the help, and the rent and taxes have been paid (the rent, in this instance, including heating and lighting expense). This is all very well, if the owner of the studio does his own operating and never expects to do much in the way of repairs or additions to his place. Likewise, this claim, false as it is, is responsible for the fact that so many photographers come to be old men and have nothing to show for their years of hard work but a worn-out studio and a very small bank account.

It is a fact, and one that is not generally known, but true, nevertheless, that a man can go on for years and years selling his goods at a price ten per cent. less then the actual cost of production and still discount his bills, make a good living for himself, and close his books each year without showing a dollar of loss and yet, under the strict meaning of the word, that man may be a bankrupt all the time and probably is.

The trouble lies in this, that very few of our photographers have the slightest idea *what it costs them to do business.*

They do not even know their *total costs* for a month or a year, whether they are doing much or little business.

Some cannot even tell what their fixed expenses are.

All is profit to them except that small part that goes for material, rent, and wages of help.

It is for this reason that photographers stand so low in the scale of commercial credit. This is the reason why photographers are looked upon as irresponsible and why people shrug their shoulders when *you* tell them that you are a photographer.

A business built upon the supposition that all is profit except the bare cost of material and wages and help is founded on a bed of sand and cannot have stability, though the sands may not shift this year or even next. But eventually they do under continued pressure.

Profit, as said at the start, is that part of the selling price which is left after *all* expenses of material, making, and selling have been met.

And the salary of the proprietor, if he gives any part of his time to the studio, or that of any of his relatives who may work for him, must be included as part of the expense. Also the cost of depreciation, and the interest on the original investment, which you would have to pay if you had borrowed the money to start, and which naturally you should pay to yourself if it was your own money; also the interest on the money it takes to run the business; also a proper charge to cover deductions and bad accounts—all of these things *must* be included in the expense of making and selling before the item of profits can begin to be figured.

If you, for instance, who are reading this, should now begin to figure your business with all these items charged up against the cost of production of your pictures, would you be able to say that you are making a profit? Very few of you, indeed, could say it. And yet if you cannot, you are really doing business at a loss and when the time comes for renewals of apparatus or replacements or additions you will find that you are not prepared to meet the requirements, and gradually your business declines and you wonder why you have lost out.

The *amount* of profit a man makes

out of his business is, of course, dependent on a number of things not always entirely under his control. But the *percentage* of profit is entirely optional with *him*.

Most people believe that to increase profits they should increase the amount of business. In truth, in the majority of cases, you can make more profit by doing less business. That sounds contradictory, but is not so in reality. There is scarcely a studio in the country —talking of the average studio—that does not deliver some work at less than actual cost of production. Cut out the work done at a loss and the percentage of profit made on the profitable work will naturally be greater.

Unfortunately, owing to the facts given above, very few photographers know what their costs of production are; consequently they are not in a position to know which work is being done at a loss and which at a profit. The consequence is that an almost unbelievable amount of work is done at a loss. The work done at a loss in the studios is the chief factor in keeping down at so low a figure the number of profitable studios in the country.

Place your studio on a cost-knowing basis, cut out the work done at a loss, and you will find that not only have you placed your studio on a profit-producing basis, but have at the same time enhanced your standing in your own estimation and in that of your fellow business men.

Then too, if, with a knowledge of your costs, you find that your percentage of net profit is too low, you can safely add a small percentage to your present selling price and reach a net profit which is more in relation to the amount of business you do.

For instance, you may find that your true profit is now only 10 per cent. You are entirely justified in asking and expecting a net profit of at least 20 per cent. Most of your neighboring business competitors get that and they won't begrudge it to you. To get that 20 per cent. profit it will only require that you add, say, 50 cents on each $5 order, asking $5.50 where you have asked but $5 before. That is only a small increase and will be easy to get. That rule applied throughout your business will make you independent in old age, in a position to make replacements whenever needed—not out of your own profits, but out of the proper depreciation fund—and otherwise put you on easy street.

Knowing where you are in business, knowing what it costs you to do business, is not such a difficult proposition after all. More than half the battle for business success is won when you have learned that one lesson.

And the other way, while it may not always spell disaster, at least means permanent worry over conditions and but small return for a life of work.

Which looks best to you—real known net profits, or the eternal guessing game and its attendant everlasting worries?—*Photographic Progress.*

NEVER excite envy by boasting what you have and can do.

NEVER push yourself forward. Remember that great men are sought and do not seek.

NEVER cry out when you are hurt in life's game. That is only worthy of an infant.

NEVER think that you will get to the top by shoving others out of the way.

NEVER be afraid to get knowledge. It will always answer you in some good stead.

NEVER be elated by your successes nor be discouraged by your failures.

NEVER crawl. If you are in the wrong admit it and get it out of your system.

NEVER give up the game until the end. Remember, in a game of checkers you often win with a few men.

NEVER begrudge the favors your competitors get. The fact that you can fight on alone proves your strength.

LABOR has done more to civilize man than all the riches and luxury put together.

PRACTICAL TALKS ON STUDIO WORK

VI. FINISHING AND DELIVERY DEPARTMENT

By RYLAND W. PHILLIPS

THIS being the last stage, the one in which the finishing touches are put on the photographs, I will endeavor to suggest many things pertaining to systems, and may hark back to other stages of the work where they have a bearing on the economy of the establishment.

In the last decade persistent care and attention to details in negative making and printing and the great improvement in retouching and etching have almost eliminated the old-time spotter who used to spot out blemishes and model up faces by the hour. So now we find that the "studio," the dark-room, the retoucher, and the printer have done their work so efficiently that there is little or no work of this character left to be done in the finishing room. But this does not mean that the finishing room has lost its importance in the scheme of photography; in fact, it has been necessary to find people for this department who possess a higher order of intelligence than those of the old days.

A persistent demand for individual treatment has crept into all our work, and the up-to-date photographer must have a person in the finishing room who has a keen eye for trimming prints just right, choosing the tone of mount that will suit, and a number of other qualities that require judgment and skill. No matter how you plan certain mounts for certain priced prints, and no matter how systematically this is all worked out, you will be doing something different every so often that will require judgment on the part of your finisher to give it the individual touch which will bring a complete harmony of finish.

Here as well as in the other departments the time and step-saving schemes are all-important. Mounts should be easy to get at; clean mounting and finishing tables should be provided, and a systematic scheme arranged for keeping separated all orders in the course of completion.

An ordinary wooden table covered with white, smooth oilcloth will fill the bill for a mounting space. Have plenty of hot and cold water handy; a few bricks covered with white oilcloth; very thick plate glasses to place freshly mounted prints under; plenty of fresh blotters; a trimmer at the end of the table, and with mounting materials to hand you will be well equipped for this

department of the work. The white oilcloth shows the dust and the dirt; therefore the finisher will be more apt to keep it clean at all times; a damp cloth and a couple of minutes' rubbing after the mouting is done will keep it spotless. The blotters serve best for protecting platinum prints while touching the backs with glue or paste in mounting. The heavy bricks and glasses serve as weights to hold the prints in place after mounting. An old letterpress is also good for this purpose but not as convenient.

A good trimmer at the end of the table is a time saver well worth the price. Often during the day a print or insert willl need a little clipping to make a perfect job and the trimmer close at hand will insure against loss of time and careless mounting. Do not try to save money by purchasing cheap trimmers. They are time and stock wasters and are more expensive in the end than the old-time knife and a glass edge. They will not stay true and your employees, knowing the defect, will either throw away badly cut cardstock and paper or blame an uneven margin on the trimmer. Cheap appliances are poor economy and this applies to any department in the establishment.

All prints should be spotted and finished *before* mounting. The majority of photographs of today are placed in individual folders, and if your system requires complete mounting before spotting a great deal of time will be lost in opening each folder before starting to work on the print. On the other hand, if the prints are unmounted they can be handled much faster by the spotter. Very recently we have been using a spotting pencil for all prints. There are many of these on the market but the most efficient is a crayon lead manufactured by Wolff & Company, of London. They work faster than the spotting brush and when used too strong the spot is easily removed by a soft rubber.

Give the finishers all the advantages of good, steady light and ventilation. Remember that these people do not have the opportunity for exercise as do those in other departments and they need good air for their health's sake, and good light for their eyes' sake, all of which is for your sake. Retouching is very hard on the eyes, and many workrooms are arranged without regard for this fact, but the retoucher does not complain for fear of losing his or her job, and all the time you are losing their best results, because the conditions are not right. Not long ago I was passing through a studio and stopped to speak to one of the retouchers. The day was partly cloudy, but as we talked the sun came out bright, threw its rays into the window back of the negative stand, illuminating the space for retouching with a brilliant light. The employee told me that this happened many times a day and sometimes it nearly drove him wild. I mentioned this circumstance to the proprieter and he immediately took steps to change the stand to another window where the light would be the same all day. An electric bulb with an opal glass for diffusion is the steadiest method of lighting the retouching space; the power of lamp should be determined by the retoucher. In retouching for proofs use a dope that does not have to be removed from the negative when the order comes in. This will save many hours of work in a year's time and will often prevent your customer from claiming that the finished work does not correspond with the proofs.

In a former article of this series I suggested that all orders should be finished in ten days. This is sometimes a difficult thing to do, if the establishment handles a big business which necessitates the presence of a number of employees, but if the work in each department is based on a time limit it can easily be systematized to accomplish the desired result.

It is best to divide the work into three stages—retouching, printing, finishing and delivery, and consider the last two as one stage. The retouchers should receive the negative early in the morning of the day after the order is given; allow them two days in which to complete their work; this will put them in the hands of the printer at the end of the third day from date of order.

Allow the printer four days, which will bring the prints to the finishing room in the evening of the seventh or the morning of the eighth day. The finishers, then, have two days to finish and mount, and the complete order is ready for delivery on the eleventh day, or ten days from date of order. This division of time is only suggestive and can be varied to suit the conditions of the studio force; but the main point is that by running the orders through on a system it is easy to trace each one at any time and always keep a promise to your customer to deliver on a certain date.

By carrying out this idea you are doing two things—building up efficiency and advertising prompt delivery. Everything a studio does to please the customer is in the nature of good advertising.

The efficiency of the studio is helped whenever you systematize the work. As soon as you place a time limit on the retoucher, printer, or finisher, you introduce a moral stimulant calculated to produce results satisfactory to you. If there is a good reason, and all your working force recognize that it is good, they will go at it in the right spirit.

This leads to another thought in studio efficiency: Every individual in your establishment should know why you plan to do thus and so in a given time. If you explain to them that the more efficient your studio becomes the better will be the reputation of those working in the establishment, they will soon see your logic and you will see results. The nearer you get to real coöperation the more solid will be the foundation on which you build the business.

Experience meetings of employees and employers are very beneficial to the welfare of the establishment, and if such meetings are held once a week many little adjustments can be made in the system to correct mistakes that might assume large proportions for trouble later on. The man or woman at the job is often able to point out a better and easier way of accomplishing results than the employer who is not right there all the time, and if these weekly meetings are held with the idea of free discussion good results are bound to follow.

At one time the large cities did business on a basis of hours from seven in the morning to six at night. Modern ideas of efficiency and coöperation have cut this time down by about two hours a day and at the same time more and better work is being done than under the old methods. It is all wrong for photographers to work longer hours than other people in the same class of business, and many of us are only doing it because we have not studied out the problems of efficiency in our studios.

There is another point in systematizing the work of a photographic establishment which helps the man who is at the head, especially if he is making or overseeing his own sittings: He should visit each department at a given time every day. He can go over the negatives of yesterday; can examine the finished work before it is delivered, and still have time to consult with his sales department, answer letters, and give advice where it is needed. These things are necessary for the man at the head. He should be the man of supreme ability in all departments, and being such should employ others to do the actual work. He should establish the machinery, and being familiar with all its parts should only demand results. But if he attempts to run each part himself he can expect only the results that come from a *one-man* power machine.

The young college man today, who wishes to succeed his father in managing his big mills, takes his apprenticeship in every department of those mills. He has studied the science and chemistry pertaining to his father's business, but to know the game he must get the finishing touches that only actual contact with the different departments will give him. So the photographer, who knows how, should not try to be the whole machine, if he can get someone else to do the mechanical side of the work while he occupies at least part of his time in the business getting and efficiency planning.

Many photographic helps have been introduced in these articles and they

apply sometimes to the small and sometimes to the larger establishments, and often those used in the small can be of use to the large. But the points have been scattered through several articles and may not have been noticed. I am therefore going to take up a sample business transaction as it should go through to completion in a modern photographic studio employing at least one person in each separate department.

On the first day of May a woman entered the studio of Mr. Service and asked to see him personally. The receptionist, or saleswoman, explained that Mr. Service was just then making a sitting and could not be disturbed until he was through.

"Oh! Mr. Service makes the pictures, does he?" said the prospect.

"Yes, indeed!" the receptionist replied; "and while you are waiting, sit here; I may be able to show you some photographs of people you know."

The talk went on in this manner until an arrangement was made to make some photographs of a daughter who would come in the next day at a given time.

When the sitting slip came to Mr. Service, in the "studio room," the following day, it had on it, in addition to the name and size, this notation: "Engagement announced; graduated at same college as your daughter, 19—; same fraternity; mother likes number four color work; good speck." All of which information was used to advantage. A set of negatives was made for the regular style and two extra of another size for possible color work.

In the afternoon of May 4, an order was given for one dozen, to be finished in the original style, and one color picture. The proofs were marked to fill in hair on the shadow side, cut down the bad line of shoulder, and print in panel form. The negatives and proofs were received by the retoucher at 10 A.M., on May 5; at 5 P.M. on May 6 the negatives and proofs were delivered to the printer. On the corner of the order-slip was marked "5th mo., 6th" and the retoucher's initials.

On the morning of May 8, Mr. Service received a first print of each style along with the proofs and order. Some corrections were ordered, where the shoulder had not been fixed as marked on the original proof. The proofs, order-slip, and first prints were sent back to the printer, who then proceeded with the printing.

On May 12 all the prints were delivered to the finishing department, with the date and printer's initial on the order-slip. A day had been lost in necessary changes and cloudy weather.

The evening of May 13 all the prints, finished and mounted, were sent to the office for inspection and delivery the next day, May 14, ten days from the time of order.

The print for color was sent to the artist on May 8 and was ready for delivery on May 14; but as the receptionist wanted to show it in a frame, she notified the mother of the girl to call and see it at the studio. Of course the frame went at a moderate extra cost.

This is just an ordinary transaction, one of many in such a studio as described, and if it is gone over carefully it will be easily seen that there is enough leeway to admit of a rush order in less time than the prescribed ten days.

EFFICIENT work hits the goal, expending only the energy needed to reach the end.

HOPE is more potent when expressed by doing than by wishing.

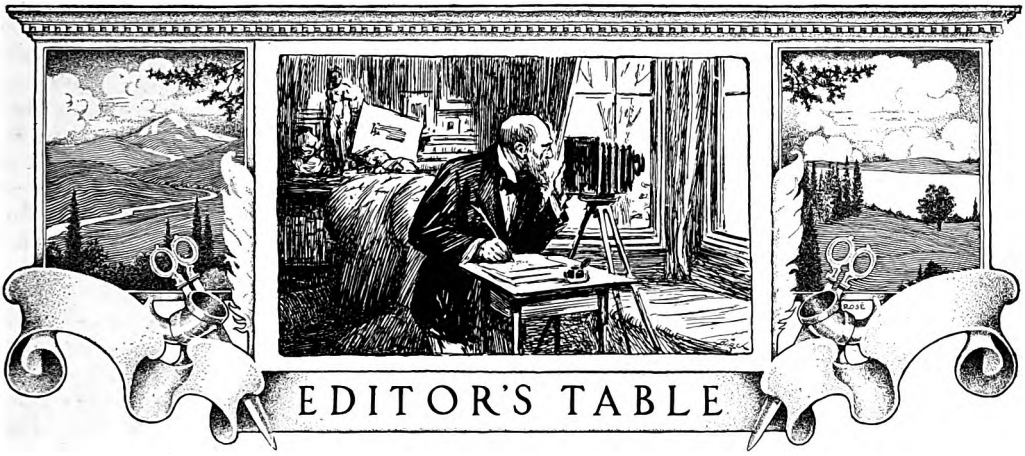
LITTLE things make big things, and one omitted link often mars the whole.

BE willing to give advice, but keep your counsel to yourself.

EVERY man aspires to do things. It is only the patient few who can do little things well.

IF we counted our successes with our failures most of us would be happy and many more contented.

THE man who is constantly talking about the many things he has to do finds little time for the actual doing of them.



THE ETHICS OF PHOTOGRAPHY

WITH many who practice photography, and possibly with all who do not, the art is looked upon simply as a "fad" and an amusement, and the best that is generally said of it is that the occupation is an innocent one. This opinion, it must be admitted, contains in it a certain amount of truth, although it does not express the whole truth, for the influence of the art upon its devotees is far greater and more valuable than is generally supposed, even by themselves.

Captivated with the capabilities of the art and charmed from the first with results which are obtained with such apparent ease, we are all more or less apt to be content with remaining upon the threshold of the art, and have no aim beyond accumulating pictures as rapidly as possible. Of the higher capabilities of photography we have absolutely at first no conception, being perfectly satisfied with ourselves if, after firing away indiscriminately at everything we see, we manage to secure a certain proportion of results that we presume to consider passable. Bear in mind that at this stage of our acquaintance with photography our standard of excellence is necessarily not a very exalted one, and our capability of judging of the relative merit of results can scarcely be said to have been born.

This opinion, it must be confessed, does not appear to support the idea suggested by our subject, which is to endeavor to show that there is a distinctly beneficial influence resulting from the practice of photography. On the contrary, it rather indicates the acquirement of an unenviable self-complacency which does not usually find a place among the moral virtues, and which is undoubtedly the product of a merely superficial knowledge of photography. As the student progresses, however, and the scientific principles upon which photography is based become better known, a more just estimate is formed of the value of the technical training upon the character of the operator.

What are the qualities most persistently insisted upon as essential to good photography? Every hand-book or guide, whether elementary or advanced, points out the necessity for cleanliness, carefulness, patience, and discrimination.

Scrupulous *cleanliness* is needed at every stage of the photographer's work, and although in religious ethics it is proverbially placed second in the list of virtues, it rightly occupies the first place in photographic ethics. The absence of this virtue has been the parent of numberless disappointments resulting from stains in negatives and on paper prints, and has marred many a photograph that might otherwise have been a creditable picture.

Carefulness is exemplified in fulfilling the recommendation often enforced of taking a brief note of the particulars of

work done. A record of the hour of the day, of the character of the light, and the duration of exposure of every plate that is used, will be of the utmost value as a reference for future guidance. In the selection and preparation of the various chemicals necessary for development, or for toning or intensification, abundant opportunity is afforded for the practice of the virtue of carefulness.

In the development generally the necessity for *patience* is manifest, and the temptation to hurry the work must be resisted. In this, as in other matters, persuasion is better than force. If a good negative is desired, you must play with your plate—coax it to yield its beauties—and when detail has been patiently brought out, then the addition of a little accelerator will complete the work.

All the photographic virtues which are mentioned are equally essential in taking the pictures, as they are in the subsequent work of development. Take the precaution to ascertain that the working parts of your camera are in good order, and the dark slides charged with virgin plates, before starting for your field operations. The selection of the best point of view for your picture, the discrimination of the effect of the light which should determine the length of exposure, are some of the opportunities offered for the exercise of the photographic virtues.

CHEERFULNESS IN THE STUDIO

IT is an undeniable fact that the human mind is largely influenced by conditions and surroundings. The atmosphere itself affects many people, a dull day depressing, or a bright cheery day raising the spirits materially. It is a further fact that the expression of the human countenance varies with the conditions of the mind. Expression responds to every fluctuation of health and spirit. If, therefore, the business of a photographic studio depends upon perpetuating expressions that shall be not only likenesses of the people photographed, but pleasing representations of them to their friends and intimates, it must follow that every possible effort be made to bring about conditions in the studio that shall be cheery, bright, and attractive.

Is it not a fact that the average person, on entering a photographic studio or gallery, steps from an elevator or upper landing into an atmosphere of solemn hush and stillness? Does not every surrounding impress the visitor with a sense of gloom and oppression? In nine out of ten studios that we know, the very light itself seems darkened and softened to a degree that is far from cheerful. If the reception-room attendant appears, it is usually only after a sufficient time has elapsed for the visitor to become somewhat familiar with the light and quiet colors of the room, when he or she may be discovered somewhere in a far corner, effectually covered in by desk, retouching stand, or what-not. When finally unearthed, it almost seems as if she would impress you with the gravity of the situation by her every manner, tone, and gesture. Is it because so much of the gallery work is done on Sundays that the religious atmosphere that it produces lasts through the balance of the week and spreads itself out over all the patrons who may venture within the precincts during the interim? Or is it, perhaps, because the average studio help, having no opportunity for Sunday leisure and the reasonable enjoyment of religious service, take this opportunity to even up by spreading the religious atmosphere about them throughout the week? This is not a conundrum, but simply a query that suggests itself in seeking for a reason.

The spirit which pervades the reception-room should be the spirit which governs the entire studio, and on entering the skylight, which is nothing more nor less than a large reception-room or parlor lighted from above, the same homelike atmosphere should be found. Tables covered with books and magazines, easy chairs, and a concert grand piano with open sheets of music upon the instrument, emphasize this feeling of at-homeness. The proprietor of the ideal studio should have that easy, taking grace of manner, unhappily not too frequently found in the photographic ranks. A

few words with a patron very quickly serves to give him the key with which he at once proceeds to unlock the reserve that ordinarily surrounds a person sitting for a portrait under a new light. A word or two upon some topic of local or more general interest, some reference to a new novel or a recent dramatic or musical presentation will almost always find a responsive chord, and once that chord is struck a feeling of interest and of confidence begins to assert itself. There is no question in the photographer's mind when this chord is found. The whole expression of the subject responds to it, and if he is a man of average perception he knows that he is on the right track.

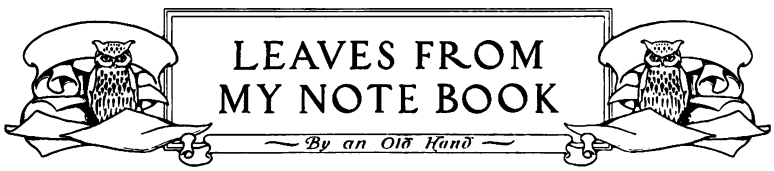
Does all this pay? is often asked. It does if the photographer is in the business for anything but his health, for the time and effort invested in becoming acquainted with things that interest sitters repay the photographer a hundred times in the characteristic likenesses he produces of them.

We are often told that the successful photographer must draw out of his sitter that easy, natural expression which most becomes him, but we do not for a moment believe that the process of drawing out this expression is to be performed with a monkey-wrench or a dentist's forceps. It is only when we use some such instrument as either of these that the expression will be forced and painful. The process of drawing out must be one of spontaneous response to the bright and cheery spirit of the photographer himself. *It must be a reflection.* The cultivation of the spirit of cheerfulness by the photographic worker is the one theme. It is the basic principle in the lives of many of our successful men today, and a further increase of this same genial spirit will go far to improve the quality of our work in the future. Like begets like, and the cheery man meets cheery men and women because, on meeting him, they are unconsciously influenced by his own cheery spirit.

The concert grand is not a necessity for every studio, but the sooner something can be found to take the place of the dim, religious stillness that pervades so many studios, the quicker will business revive.

Let us get out of the old conventional rut.

That the world loves a cheerful photographer has been demonstrated many times. If any doubt exists on this point, view the successes of Strauss, Hollinger, Core, MacDonald, and a score of others, or better still, try it for yourself.



COPYING BLACK AND WHITE

THE copying of line diagrams, type matter, or illustrations in books would naturally strike one as very easy, and yet many will fall down on such a job, though when set about the right way there is very little chance of failure.

In the first place, we have only two tones, black and white; there are no intermediate or gray tones. It is obvious, therefore, that we have extreme contrasts which must be preserved, and so we must choose a plate that will give us as great contrasts as possible. This means a slow plate—a really, truly slow plate, as Kipling would say—and there are a lot of them on the market like the Wratten Process, Hammer Slow, Cramer Contrast, and Defender Process. They are made for this work and will give extreme contrasts when properly used.

The first essential is correct exposure. Naturally, this means either a long experience in estimating exposures or an exposure meter. In any case the full aperture of the lens should be used, or as large an aperture as will give satisfactory definition over the whole of the plate. If a small stop be used, the definition is

too fine, if I may say so; that is to say, with a small stop inequalities in the ink and the grain of the paper show up too much. Of course, even lighting is essential, for the plate is far more sensitive to this defect than the human eye. If an error must be made in exposure, it should be on the side of underexposure rather than overexposure, as the former tends to keep the blacks of the subject clear glass in the negative, and this is the main point to strive for. If clear glass is obtained, the actual density in the whites of the subject is quite of minor importance.

Every platemaker recommends his own pet formula for the developer, and probably most workers have their own ideas on the subject. The one I use is recommended by the Defender Co. It is rapid and clean in action and gives extreme contrasts, not only on their plates but on others as well. The formula is:

A

Sodium sulphite, dry .	50 grams.
Hydroquinone. . . .	14 grams.
Hot water to	1000 c.c.

B

Caustic soda	10 grams.
Potass. bromide . . .	5 grams.
Water to	1000 c.c.

For use, mix in equal parts. Temperature, 65° F. This is important. I find that, with a correctly-exposed Defender plate, very satisfactory negatives, with full density and clear glass for the blacks, are obtained in two minutes' development with the above.

One can determine the correct exposure by a system of trial and error; exposing a plate in strips for various times, then developing for say two minutes, and noting which exposure gives the greatest density for the whites with the clearest glass for the blacks. Or if one makes a mistake in exposure, then one can only develop as long as the white lines on the negative appear free from any gray veil. At the slightest sign of this the plate should be rapidly rinsed and fixed in an acid fixing bath.

With correct exposure there is no difficulty in obtaining a maximum density with clear lines, but the all-important point in developing is to watch for the first sign of a veil or fog on the white lines of the negative. If fog appears here, then after-treatment of the negative is a nightmare; no amount of reduction or intensification seems to put things right. On the other hand, if clear-glass lines are obtained, then the actual density of the blacks appears to be of very little importance, as one can reduce the exposure of the print or positive and with a contrasty developer obtain an excellent clean reproduction. It is said to be possible to clean up the lines with a strong ferricyanide reducer—that is, one strong in ferricyanide as regards the hypo—but it is an uncertain job at its best. To intensify a negative with clear lines and thin blacks, however, is a pretty easy job, though actually rarely necessary. If one does but use a contrast paper or plate for the positive, and gives a correspondingly short exposure, a good result can be obtained without any intensification of the negative. Even with an extremely thin negative, with clear lines, a good print can be obtained on a contrast paper if the printing-frame is placed sufficiently far from the light source, and I have found that for the making of a lantern slide an exposure of one second at a distance of six feet from a 16 candle power incandescent lamp is about right. For prints, using a hard-working paper, then about one second is right in an ordinary printing machine.

As for the developer for the slide or print, I use the above developer, and again here development is carried on till the first sign of veil in the whites appears, when it is instantly stopped.

When one has to deal with a half-tone illustration in a book or magazine, we have a different state of affairs. Some may consider this a black-and-white object. Actually it is so, for, strictly speaking, we have half-tones that are formed by the varying size of the dots; but if we treat such an subject as a black-and-white object we shall reproduce the black dots and the white interspaces, which is not what is to be desired. What we really want to do is to translate the dot system into a continuous tone, and this can be done by using a rapid plate, giving a rather full exposure and using an ordinary negative developer without bromide. This procedure practically fills up the interstices between the dots and a continuous tone is obtained. In some cases it is even permissible to throw the image very slightly out of focus, but this is rather a risky trick.

Summing up, one may say that the whole secret of success in the reproduction of black-and-white work is the avoidance of overexposure and the production of clear lines, and the greater the reduction in size the greater the danger of filling up of the finer lines, for it must not be forgotten that in reducing in general size we are also reducing the width of every line, and there is therefore a very great tendency for the action of light and development to spread sideways and thus block the finer lines.

Out in the Sun

Where are you standing?

Come out in the sun!

Into the sun of Cheerfulness, out of the shadows that Bad Business have tried so industriously to create.

You won't grow in the dark—unless you are a toadstool.

And who wants to be a toadstool?

Talk good business—think it—believe it—and you'll get it. Maybe your competitors will, too; but there's bound to be enough good business to go around, just the same.

Of course, we are living in parlous times, and the ice is mighty thin in some places. But it's the man who skates slowly and keeps fearing it who breaks through.

You may laugh at psychology; yet it's none the less true that the more you insist on standing out in the sun in a business way, the more you will get sunburned by Prosperity!—*Paragraphs.*

ABSTRACTS AND TRANSLATIONS

BY E. J. WALL, F.R.P.S.

A Pioneer in Motion-Picture Work

It has long been known that Ducos du Hauron, famous for his early work in color photography, applied for a French patent for motion pictures in 1864. In consequence of want of funds this was not commercially exploited. The patent was never published, and only now F. P. Liesegang has obtained from du Hauron data for publication. The French patent is No. 61976, March 1, 1864, and its title, "Appareil destiné á reproduire photographiquement une scène quelconque, avec toutes les transformations qu'elle a subies pendant un temps déterminé," which we can translate: "by an apparatus destined to photographically reproduce any scene, with all the changes that may have occurred in any given time." There was also an additional patent of December 3, 1864.

The taking apparatus consisted of two cameras, side by side. Each camera was provided with a battery of small lenses horizontally one above the other. Plates were used, and a changing system was automatically worked. In front of the lenses was a roller-blind shutter with apertures so that the lenses were uncovered in turn, and any number of plates could be used. A similar arrangement was used for projection. For direct observation an apparatus on the principle of the zoetrope was employed: the pictures were printed on a long band, on the edges of which were slits through which the images were viewed in a mirror.

The additional patent was a big advance, as the large battery of lenses was cut down, a smaller number of movable lenses used, both for taking the negatives and viewing the positives, and the plates were replaced by a sensitive band. This band moved at an even rate in the camera, but the lenses moved one after the other across the aperture and in such a manner that they moved parallel to the direction of the negative band and at an equal speed. In this way any number of exposures could be made and the images were sharp, as the lenses and band moved at equal speeds. For direct viewing of the positive, a long band was also used and a similar apparatus was used as for taking the negatives, with the result that far more brilliant pictures were obtained.—*Phot. Ind.*, 1915, p. 330.

It will be seen from the above note that du Hauron was as far ahead of his times in motion-picture work as he was in color photography, and to those familiar with the later patents it will be at once clear that he anticipated many inventors.

The Hardening Action of Chrome Alum

Hans Schmidt states that a solution of chrome alum, or a fixing bath containing the same, rapidly loses its hardening properties. He has found that the age of the bath has nothing to do with this, as some solution eight years old still retained its hardening property. The solution of plain chrome alum has a violet color when dissolved in cold water; but on heating this color changes into a green, and this has far less hardening action than the former. As a fixing bath containing chrome alum is always green, it is clear that it has also less hardening effect and more rapidly loses this altogether than a violet solution. The practical lesson is that the alum fixing bath must be made with cold water and frequently renewed.—*Phot. Ind.*, 1915, p. 332.

This statement is directly opposed to the researches of Lumière and Seyewetz, Namias, and others. The green solution is a basic chrome alum while the violet is an acid alum. The basic has a much greater hardening action. I cannot accept Schmidt's statement that the use of hot water to dissolve the chrome alum gives a green solution. For years I have made chrome alum solution with hot water and have never yet seen a green solution. The possible solution of the difficulty is that Schmidt uses ordinary water containing much alkaline earthy salts.

The Influence of Temperature on the Sensitiveness of Plates

Hans Schmidt has placed a plate in a Lippmann plate-holder in contact with a Warnerke sensitometer and the space filled with alcohol cooled down to minus 42° C. After exposure the other half of the plate was also placed in the plate-holder and the space filled with water heated to 60° C. and exposed. On development it was found that there was practically no difference in the speeds of the two plates.—*Phot. Ind.*, 1915, p. 332.

This is confirmatory of much work that has been done by Lumière, Abney, Kaiserling, and others.

Printing from Wet Negatives

Mente suggests that for very rapid work it is advisable to soak a development paper in water till it has expanded as much as possible and then to squeegee it gently but firmly to the wet negative and place in contact with a sheet of plate-glass and in a dish filled with water and then expose. The use of the water obviates any chance of air bubbles and the use of the plate-glass does away with any troubles from the back of the negative glass.—*Atel. d. Phot.*, 1915, p. 43.

The Use of Potassium Ferrocyanide as a Desensitizer

N. Sulzberger has applied for a German patent for the use of potassium ferrocyanide as a desensitizer for printing-out and development (gaslight) papers. If silver chloride paper is im-

mersed in a 15 per cent. solution of potassium ferrocyanide for one or two minutes it is apparently quite insensitive to light and an actual fixation with hypo appears to be superfluous. As to the exact chemical action that takes place, it is not clear; apparently the ferrocyanide does not dissolve the silver salts, as subsequent treatment with hypo dissolves out a silver salt. It is possible that ferrocyanide of silver or a complex is formed; for if a faster paper, such as ordinary bromide, be used, then the action of the ferrocyanide does not seem to come into operation. The practical application of this fact would seem to lie in the making of prints very rapidly from negatives, as for press work. For instance, assuming that one has a negative and has printed from the same on any gaslight paper, it would be sufficient to use an acid stop bath, then immerse the print in a 15 per cent. solution of ferrocyanide, wash and dry, so that a print could be ready for drying in four or five minutes.

If a printed-out image treated with ferrocyanide of potassium be immersed in a solution of ammonium ferrocyanide solution, the image will absolutely disappear but it may be redeveloped with rodinal without the use of a dark-room. This second developed image is black and is perfectly stable to light. Obviously an increase of the stability to light is accompanied with an oxidation action produced by the oxygen of the air, as an exactly similar result occurs when the ferrocyanide solution is mixed with an oxidizing agent such as potassium persulphate. Potassium ferricyanide and ferric chloride also show the same bleaching action but on redevelopment in light the whole film turns black, in contradistinction to ammonium ferrocyanide with which an image is obtained.—*Atel. d. Phot.*, 1915, p. 47.

This is an extremely interesting fact, for treatment of a chloride film with ferrocyanide before exposure increases the sensitiveness to light. In fact, ferrocyanide is one of the chemical sensitizers used by Vogel in his early researches.

Sulphide Toning

J. Conway states that good deep-brown tones are obtained by first treating the fixed and well washed prints for five minutes with a 2.5 per cent solution of commercial ammonium sulphydrate solution, then rinsing and bleaching and sulphiding in the ordinary way.—*P. J.*, 1915, p. 371.

A Stripping Solution

Cyvo recommends the following as an excellent method for stripping the films of glass negatives: Immerse the plate for at least half an hour in

Potass. carbonate, 50 per cent. solution	40 c.c.
Glycerin	20 c.c.
Formalin	20 c.c.
Water	1000 c.c.

then allow to drain for a few minutes, wipe off the superfluous moisture and dry slowly. When quite dry, cut through the film all-round one-eighth of an inch from the edges of the plate and lift the film from the glass.—*B. J.*, 1915, p. 385.

A New Method of Ascertaining the Focal Length of a Lens

A. Lockett suggests the following method of finding the focal length of a lens: First, draw two short vertical lines at about the centre of the focussing screen, exactly one inch apart and parallel with each other; focus sharply with the full aperture of the lens on a far-distant object, such as a church spire or factory chimney, and mark carefully on the camera baseboard the exact position of any part of the moving lens front, or, if a pointer is fitted, mark the position of that; measure off one inch in advance of the infinity mark so obtained; make a second mark, and rack out the camera till the front or pointer is against it; lastly, fix up a foot-rule horizontally at about the height of the lens, with the figures upside down, and move the whole camera to and fro, without any other adjustment, until the rule is in the sharpest possible focus at full aperture and with the commencement or zero of the graduations coinciding with the left-hand pencil line. Then the number of inches of the rule seen between the two pencil-lines will be equal to the focal length of the lens.—*B. J.*, 1915, p. 411.

Sepia and Red Tones Direct

The Hoechst Dye Works, formerly Meister, Lucius & Bruening, have just received a German patent for obtaining sepia and red tones on papers by development with oxyisocarbostyryl in alkaline solution. On fixation a sepia tone is obtained, but if the image is treated with a solvent of silver, or such be added to the fixing bath, a red tone is obtained.—*Ger. Pat.*, 283,085.

Probably an oxidation product of the developing agent is deposited *in situ* with the silver image, and this product is red; for dissolving out the silver leaves the red oxidized substance, and red mixed with black silver would give the sepia of the primary image.

Motion Pictures in Colors

In an English patent just published and granted to P. D. Brewster, of East Orange, N. J., a distinctly novel procedure is suggested, differing considerably from kinemacolor, though utilizing the two-color principle. In the latter process, as is well known, alternate pictures were taken and projected through red and green filters in succession, the effect of color being obtained not on the screen but in the brain of the observer, this being the cause of the irritating color fringes in very rapidly moving objects and the intense eye-strain that was to some people so extremely distressing. In the new patent the two images are taken simultaneously by one lens and recorded on opposite sides of the film, and the positive film also bears the two images on opposite sides in colors. This is an important point, for it at once obviates any blending of color sensations in the brain, and each picture must in itself be complete in all colors. Apparently the division of the spectrum by the filters is into two regions, red and blue-green or green.—*E. P.*, 2465, 1915. *B. J.*, 1915, p. 385.

I have had an opportunity of seeing some results obtained by this process and they are very satisfactory. Considerable advances have been made since the above patent was applied for, which stamp the process as novel and of considerable importance from a commercial standpoint. I hope to be able to give more details in succeeding issues.

Another Color Patent

Frey & Sohne, of Zürich, claim as distinct advance in color photography the elimination of filters between the subject and plate by illuminating the subject itself by colored light.—*E. P.*, 22771, 1914; *B. J.*, 1915, p. 386.

The possibility of eliminating filters was suggested by Charles Cros, in 1869, when he advised colored lights. The principle is easily applicable to the copying of pictures or still life, but the inventors omit to state how they would illuminate a landscape. Possibly they know how to put a filter in front of the sun!

A White Image Developer

Ethelbert Henry recommends the following developer for giving white images on dry and ferrotype plates:

	A		
Sodium sulphite dry . . .	12.5	gm.	3½ oz. av.
Hot water to .	1000	c.c.	16 fl. oz.
While hot add			
Hydroquinone .	1.11	gm.	120 gr.
	B		
Ammoniumchloride . . .	12.5	gm.	3½ oz. av.
Ammonium bromide . . .	37	gm.	40 gr.
Hot water to .	1000	c.c.	16 fl. oz.
	C		
Strongest ammonia water .	118	c.c.	2 fl. oz.

Add B to A, and then add C; filter when cold. The plate must have a full exposure and the developer be used without any water addition. The used developer can be returned to the stock bottle and repeatedly used.—*B. J.*, 1915, p. 259.

VIEWS AND REVIEWS

Photographers' Association of New England

The Seventeenth Annual Convention will be held in Copley Hall, Boston, Mass., August 10, 11, 12, 1915.

Every photographer in New England and the Maritime Provinces is invited to become a member of the P. A. of N. E., and by their ability and numbers help to make this Association strong and pronounced in the advancement of our beautiful and prominent art. It requires a large membership to meet the necessary expenses, to allow the executive board to engage talent to disseminate the knowledge necessary for our advancement.

This year we have secured for your benefit, President Will H. Towles and Secretary Jno. I. Hoffman, of the National Association, to give addresses on subjects for the improvement of your business, artistically and financially.

Mr. J. H. Garo and Mr. Orrin Champlain will give demonstrations on the platform of their way of posing subjects, which has won them such high praise for the skill displayed. There are other very prominent artists in our work under consideration, and probably at least three others will be in attendance to help make this convention a memorable one.

The display of artistic work by the Clan Oil Club of Boston will be worth the cost of the trip, in giving you an opportunity to study the possibilities in our chosen profession of making productions which savor of the painters' skill in their use of the brush.

Many examples of artistic skill by leaders of photography in America will be displayed on our walls, and truly such work ought to bear fruit if carefully studied with a view toward emulating their talent. We are promised the pick of the exhibits from the National Convention. These should awaken a desire to improve upon your present work, and thereby add to your advantage.

The manufacturers and dealers will be on hand with a large number of new appliances by which the photographer can, with advantage and profit to himself and satisfaction to his patrons, make better and finer pictures. It is for your pleasure as well as profit that we invite you to spend as much time as you can with the manufacturers and dealers, as they are on hand to interest you in what they have to show. They can demonstrate and explain matters to the satisfaction of all. Give them your patronage, they deserve it.

It will help the Board if you will become a member at once, as a knowledge of the number

expecting to attend assists the committee in arranging for talent for your benefit.

The buttons for 1915 are ready for delivery, and upon receipt of two dollars the certificate of membership and the button will be mailed to your address.

GEO. H. HASTINGS, *Secretary.*

NUMBER 138 of *The Photo Miniature Series*, just issued, is of considerable interest and is also a conspicuously practical number, which should be widely appreciated. It deals with "Travel and the Camera," and forms a guide for the tourist away from home with his camera. A copy of this valuable little hand-book may be had for twenty-five cents by writing TENNANT & WARD, 103 Park Avenue, New York City.

YOUNG photographers, who have had some professional experience and who wish to gain an education at a military school, should communicate with the President of St. John's School at Manlius, N. Y., as he is contemplating giving a scholarship in return for photographic work at the school.

ON PHOTOGRAPHY

IN *Art and Progress*, C. H. Claudy writes on "The Modern Idea in Photographic Portraiture" with a refreshing disinclination to lift photography above its natural level. In conclusion he says:

"Softness of focus, to prevent masses being bounded by hard lines, complete control of light and shade, a trained wit to conjure that expression and arrange that pose most suggestive of the person as a whole, simplicity, sincerity, absence of dramatic, striking, and bold use of too great contrast, restraint both in pose and expression, and correct rendition of color in monotone—these, and a greater and greater appreciation of the value of the camera's power for telling the truth, are the factors which have raised the modern idea in photographic portraiture, if not yet among the arts, at least to a highly honored place among the crafts."

THREE-COLOR PHOTOGRAPHY BY VON HUEBL

TRANSLATED by H. O. Klein. Published by Percy Lund Humphries & Co., London.

Klein's translation of the first edition of von Huebl's work was published in 1904; the present work is the third edition of the original German, and may be considered as an entirely new book. The translator is to be congratulated on presenting us with a work that is singularly free from anglicized German, though possibly exception may be taken to the use of the word "diapositive" for transparency. The only serious mistake that Klein has made is giving in two or three places a reference to the *Yearbook of Photography*, when actually Eder's *Jahrbuch* is meant; this is regrettable, as there was an *English Yearbook*.

In the introduction a brief sketch of the various processes is given, and we here meet with a curious mistake, for in talking of the photochromoscope we are told that red, yellow, and blue glasses are used, whereas everyone knows that red, green, and blue-violet are required.

Part I deals in a very clear yet concise method with "Light and Color," and the only omission that I have found is that of the whole of Gruenberg's formula for finding the complementary colors, which might well have been included, even although it was not given in the said *Jahrbuch*. This section includes many diagrams which will be familiar to those cognizant of von Huebl's writings in the technical journals and it is an advantage to have his writings thus condensed.

Part II deals with the theory and practice of three-color photography, and here the Young-Helmholtz and the Maxwell color sensations are, once for all, knocked on the head, and the author still adheres to the use of a color chart for determining his filter cuts rather than the spectroscope. Full instructions are given for making the filters and for sensitizing the plates and the various printing processes are dealt with.

The book can be thoroughly recommended as a safe practical guide, though possibly to the beginner it is somewhat advanced. It is well printed and the colored supplements excellent. —E. J. W.

THE Wollensak Optical Company, Rochester, N. Y., has made a reputation for originality in its catalogs and booklets, and the 1915 Velostigmat booklet fully lives up to the reputation of the series. It is indeed a beautiful booklet, and contains a number of useful articles as well as the price listings of their lenses. Do not fail to get a copy from your dealer.

THE Folmer & Schwing Division of the Eastman Kodak Co. would like you to write them for their new Cirkut Book. It describes all the Cirkuts, from their little 5″ film to the big 16″ width; tells you about their Cirkut outfits for making panoramic pictures. You can make big money with panoramic pictures.

DURING the midsummer months you will find the Hammer plates excellent, as they develop and dry quickly with thin, firm films without tendency to frill. Send to the manufacturers, for Hammer's little book, *A Short Talk on Negative Making*. Read advt. in this number.

GOLD MEDAL AT PANAMA-PACIFIC EXPOSITION

WE are pleased to learn that Messrs. SCHWING & GLATZ have been awarded a Gold Medal for their "Assur Colors," at the Panama-Pacific Exposition in San Francisco, where they have a large exhibit of colored photographs.

This is a deserving recognition for this well-known firm. The high standard of their photographic chemicals and the value of "Assur Colors" cannot be too highly commended.

THE WORKROOM

By the Head Operator

Heat Waves and Photography

There is perhaps no branch of science in which sudden heat produces more marked effects than in photography. Light rays and heat rays are both due to disturbances in the ether, and the deepest red rays of the spectrum are practically the beginning of the heat rays—hence the specially vigorous effects of very hot weather on color-sensitive plates.

The average amateur in the presence of a sudden wave of heat is apt to make mistakes, which spoil his results, until he modifies his methods of working to suit the new conditions. Heat accelerates all chemical actions, while cold retards them; this is the reason why we are told in winter to warm the developing solution to about 60° F., and in summer to cool it to about the same temperature.

In hot sunshine an increased quantity of the ultra-violet rays—rays which are not appreciated by the eye—will be reflected from the surfaces of objects together with the visible rays; the result being that exposure should be shortened rather more than one would at first sight suppose.

When we come to development, signs of over-exposure will probably be apparent, due either to actual over-exposure or to very rapid action of the developing solution. With plates of extreme speed, development should be carried out very cautiously. During the very hot and bright weather it is doubtful whether we are ever justified in using such plates, except for indoor portraiture, where it is often necessary to screen the light more than usual in order to prevent harsh contrasts, or for such work as aeroplane photography, sports, snapshots, and so on.

Cooling developing solutions and dishes is perhaps scientific, but not many amateurs will care to be troubled with it; it is easier to take other precautions, and where the work is not critical there is little to choose between the results obtained either way.

Much can be done with the developer itself, in order to avoid (1) such rapid action that control is difficult, and (2) the production of an abnormal scale of gradation.

Control in development is the last thing we want to lose, and it is therefore advisable to choose a slowly working developer. Many pyro-metol formulæ, and metol-hydroquinone also, are very rapid in action, while pyro-soda is generally more manageable. The single-solution developer admits of so little control that it is hardly worth discussing. There are many points in favor of pyro-metol, and those who elect to use it can always employ dilute solutions, beginning development with an excess of the *developer*, that is a minimum of soda or alkali. If we usually work with equal parts of A and B (A being the pyro-metol solution, B the soda solution), and we are suddenly overtaken by very hot weather, we should take two mixtures for development—one consisting of 3 parts of A with 1 of B, the other of 1 part of A with 3 of B.

Bromide does very little good in counteracting over-exposure, unless it is added at the very beginning; to prevent *fog* caused by a warm developer, however, it can be usefully added subsequently.

Not every photographer is disposed to work with time factors, but they are very useful and may be easily found by observation—the ratio of the time taken, with one's own developer, for complete development, to the time taken for the first appearance of the image. Suppose, for example, that a pyro-soda formula shows the image in a properly exposed plate in 20 seconds, and 4 minutes gives normal development; if a plate then shows no sign of image in 40 seconds or a minute, it will obviously be under-exposed, and if it flashes up in a few seconds it will be over-exposed. In warm weather, however, this ratio of 1 to 12 may still hold good and yet the image flash up in five or six seconds. This is what we ought to avoid, and I suggest using the "too much A" solution above referred to to begin with, adding the "too much B" when the image has fairly well appeared, and noting this factor, that is the time for the image to appear with the "3 to 1" mixture and its ratio to the time taken for complete development, when, exposure being correct, we at once add the equal amount of "1 to 3" mixture. After developing a plate or two we shall know approximately how to tell whether a plate is over-exposed, and if not, just how long to leave it in the developer.

It may be found well to slightly modify the developing formula in hot weather, particularly with fast plates. A small increase, say 10 per cent., in the amount of metabisulphite or sulphite used, and a still larger increase in the bromide will slow the action of the developer, slightly increase contrast in cases of under-exposure, and keep the "whites" clear and sparkling.

Abnormal contrasts need a word or two. Direct sunlight is apt to give very hard results, increased, with some plates, by a warm solution. Softer negatives can always be obtained by using a weak solution containing more alkali or carbonate, that is, an excess of B solution. One can still begin development with the 3 parts of A to 1 part of B, with water added, and follow on after the appearance of the full image with a mixture of about 6 parts of B to 1 part

of A, a little bromide being added to prevent fog due to the higher temperature of the solution.

A point to bear in mind is that finger-marks are very easily produced in hot weather; in fact, the film may be so soft as to partially melt if touched much with the fingers. A 5 x 4 dish will be found far more practicable for ¼-plates than a quarter-plate, a 7 x 5 dish for half-plates, and so on.

Finger-marks are especially apt to be formed when working with printing-out paper, and giving separate toning and fixing; the use of several quick changes of water at first in the preliminary washing, to remove the excess of silver nitrate, is a safeguard, and it is often claimed as an advantage to give a preliminary wash in a weak salt bath, say 1 ounce to 20 of water. Crude kitchen-salt should be adopted by the photographer, as many table-salts in these days of ultra-hygiene contain added chemicals which may be detrimental to the printing paper.

In hot weather there is an accelerated deposition of gold on the image in toning baths, so that we are apt to get very beautiful and pronounced tones, but wonder why the bath is so quickly exhausted. This is particularly noticeable with sulphocyanide baths.—T. THORNE BAKER, in *Photographic Scraps*.

THE tripod user in the open is often greatly inconvenienced by the wind blowing his focussing cloth over his lens, or out of his hand, or causing the camera to vibrate. A good plan is to make a round hole in the cloth (which is of thin water-proof material) large enough to pass the lens. This end of the cloth is fastened below the camera with a small safety pin. In one corner of the other end is a button-hole, and in the opposite corner is a button on a short piece of wide elastic. These enable this end to be brought round the face and fastened under the chin. Another plan is to have the button at the front end, and to hold the opposite ends in the teeth. Yet another plan is to put the cloth over the head, and then put on a very tight-fitting cap over the cloth. Unless it is raining, or there is risk of the camera getting injured by spray, dashing waves, etc., it is not advisable to have the cloth over the camera when there is much wind, as it flaps about and greatly adds to the risk of vibration.

A very useful piece of apparatus in windy weather is a "camera foot-holder." Obtain from any rubber shop a piece of solid round rubber, about as thick as a cedar pencil, and, say, four feet long or so. Loop up one end of the rubber in a loop large enough to admit the foot, and then tie this end with strong twine. To the other end attach a small strong metal hook, and in the head of the camera screw drill a hole large enough to admit the hook easily. The foot loop should now hang down, and be about six inches from the ground. On placing the foot in the loop, and then pressing it to the ground, the rubber is made taut, and so holds the camera firmly down, while both hands are free to insert the dark slide and make the exposure.

Another constant source of trouble to the tourist photographer at this season is dust. The inside of the camera and plate-holders should frequently be dusted. But this is by no means enough. In many cases the worker loads up his plate-holders before leaving home. Then follows a train or cycle journey, during which the rough cut edges of the glass are vibrating in the wooden rebates of the slides, and generating a quantity of very fine wood dust, which flies about, and finds its way on to the coated side of the plate. If the slides cannot be opened to dust them in a safe light, the next best thing is to take a slide in one hand, and holding it edgeways, give it a sharp bang on the palm of the other hand, so as to dislodge the fine particles of dust loosely adhering to the edge of the plate.

It is the exception rather than the rule to find a negative which does not show one or more so-called "pinholes." These minute, clear spots in the film have nothing whatever to do with pins, but are due to one of several causes. The chief of these is dust particles clinging to the film at the moment of exposure, and so preventing the light reaching those parts of the plate. The developer here has no action, so they fix out as clear gelatin. Again, the plate may be dust free, but the developer, being made up with tap-water, coming from the main at a considerable pressure, contains innumerable minute air-bells, which cling to the plate, and so prevent the access of the developer. These air-bell markings may be any size from a pin-point to a small pea. It is sometimes supposed that these pinholes occur only or chiefly on the sky part of the picture. The fact is they are equally likely to occur at any part, but naturally they show up most where they are in strongest contrast, viz., the densest parts of the negative.

SPOTS ON SQUEEGEED PRINTS

WHEN prints which have been squeegeed to glass or ferrotype (says *Photography and Focus*) have a number of little spots upon their surface of a shiny but duller character, the cause is to be found in air-bells between the print and the surface on which it was squeegeed. They can be prevented by taking care to have plenty of water present when the print is put down, putting it down so as to exclude air-bells, and by careful squeegeeing. To put down a print as mentioned, it is held by two opposite corners, so as to form a loop; the bottom of the loop, which will be a diagonal of the print, is brought into contact with the water on the ferrotype, and the hands are then lowered so as to bring the different parts of the print in contact in succession. If any air-bells were on the print this would drive them toward the edges, and so out. Glass has the advantage when squeegeeing that one can look at the print from the other side and make sure that there are no air-bells.

TECHNICAL HINTS.

IT is surprising what a number of photographers apparently fail to recognize the importance of keeping and using a thermometer

in the dark room. An error in its reading of two or three degrees in either direction is of no serious importance. We need this instrument for two special reasons: First, to keep us within certain safe and convenient ranges. If we limit our developing, fixing, toning, and washing operations to 60° to 70° F., any inherent error in the scale will still be within the range of safety. Our second use is to avoid great or sudden changes of temperature. Thus we may advisedly keep the developer about 65° F. The fixing bath should not differ by more than 5°, say 60°, and the first wash water should not be lower than 55° F. But we can gradually lower this to, say, 40°, without inducing blisters or frilling.

It is now pretty well known that to get the hypo-alum bromide toning bath to act in a reasonably short time one has to heat it up to a temperature of, say, 160° F., which is unpleasantly hot for most people's fingers. If the bath be used at such cool temperatures as, say, 60°, toning is so slow that it is a matter of many hours. On the other hand, the present day popular two-bath process of bleaching and sulphiding is very prone to result in pasty yellowish, foxy browns. Thus most camera handlers will gladly welcome the helping hands of Lumière and Seyewetz who, in the *British Journal of Photography*, explain how to get what one may call hot hypo-alum tones in a cold toning bath, noting, however, that while alum may be used, its presence is not essential, though desirable in hot climates or in exceptionally warm workrooms.

The toning bath consists of hypo, 2½ ounces; dextrin solution, 50 per cent., 5 ounces, water, 20 ounces. Shortly before toning 1 ounce of hydrochloric acid is added. The addition of the acid to the hypo brings about the liberation of free sulphur. But the presence of the dextrin appears to act as an emulsion, so that the sulphur particles do not fall even after some hours. The prints are placed in this toning bath for some twenty to twenty-five minutes, where they show little or no change; but on being subjected to washing in plain water for about half an hour the print becomes brown without any yellow tendency. The authors say that if one print overlays another in the washing, markings may arise, but such markings are dismissed by subjecting the print to further washing without the interference of an overlapping print. Alum may be added to the bath when working in hot weather.

A Bromide Suggestion

It is a fact that nowadays success does not always come from the mere supplying of a want, but rather in the creation, and it cannot be gainsaid that this creating of a want is often difficult.

However, the fact remains that if the photographer wishes to soar, and not merely stick in the rut of smug and fairly comfortable procedure, he must rouse himself and endeavor to find ways and means whereby custom may be drawn to his business.

The first essential is to get himself talked about (not adversely), and one of the best mediums is that of his window or showcase.

In giving the following I wish to be of help to my brother photographers to whom this article may appeal:

Select a few decent negatives, some with dark backgrounds and others with light ones, suitable for sketchy effects.

Print, develop, and wash bromide prints from these, as usual; but the results should not be quite so dark as in the general case. Matt or glossy paper may be used, and if a cream surface be utilized a better effect may be gained.

Lay one of the prints, wet, in a roomy dish, and remove all surplus moisture with the aid of cotton wool.

Have made up the usual ferricyanide bleaching bath, and place some in a jug or measure near to hand.

A paint brush is the only accessory needed, and this should be fine; one used for spotting prints may be used.

Now carefully paint on the bleacher over the face and hand and on any little article of jewelry, taking great care not to overlap the edges. Now and again wash off with water.

Each time the water is applied to the print it should be removed, as in the first case, with cotton wool, otherwise the bleacher intermingling with the water will cause the former to run where it is not wanted, and probably spoil the print.

The procedure is somewhat slow, but as one gains experience greater skill and speed will be acquired.

When all the prints have been treated in this manner, and those parts painted which, according to individual taste, is deemed most likely to give a distinctive effect, they may be washed as usual and transferred to the sulphide bath. A good wash should be given.

If the operation is properly done it is surprising how effective the result will be, and when artistically mounted and bound up by the *passe-partout* method they should make a worthy window display.

In closing, I may urge that too extensive painting should not be indulged in: it tends to destroy the effect aimed at and becomes crude.

Art mounting papers are more suitable, for more latitude may be given than is possible when using ordinary stock mounts.—Walter Bunnet in *British Journal of Photography*.

Timing Development

Some of your readers may be interested (says *Photography and Focus*) in a little arrangement which I have made for timing the development of color plates, the solution I use being arranged to complete development in three and a half minutes, which is the time taken for the sand in the ordinary "egg boiler" to pass from the upper to the lower bulb. The wooden part of the "boiler" is removed, and the glass part has a piece of cork fitted round the middle of it so that it can be mounted on a pin, on which it turns rather stiffly. The pin itself is attached to a little piece of wood which is cemented to the center of the safelight of the lamp. The con-

sequence is the boiler is just in front of the safe light and, however feeble the illumination, the passage of the sand can be seen clearly.

Keeping Prints Under the Hypo

Some papers, and especially postcards (says *Photography and Focus*), tend to curl up in the fixing bath, and expose their edges to the air, from which circumstance staining is apt to result. Several contrivances have been suggested for keeping them beneath the surface, as floating a small dish above them, placing an inverted glass funnel on top, or the like. Whatever contrivance is used it must not be left in contact with the topmost print for more than half a minute from the time of immersion, without being moved, otherwise staining is sure to result. The writer has found the simplest way is to use a small block of wood, 3 in. by 2 in., for postcards, with four glass-headed pins stuck in at the corners like legs. This commonly stands ready at hand in a spare dish with a little water in it, and immediately the print is put in the hypo the block is placed upon it, glass heads downward. It is most advantageous to have two fixing baths in use at the same time, and when half a dozen prints have been taken to move them one by one to the second bath. When another half dozen prints have been put into the first bath, the first lot is taken out one by one from the second and put into a basin of water. This method, which really gives no extra trouble, ensures proper fixing.

Vanadium Green Toning

The *British Journal of Photography* gives the following directions for two methods of vanadium toning, one in which the prints are bleached in ferricyanide solution made alkaline with ammonia and then green-toned in a mixture of vanadium chloride and ferric chloride; in the second method these two actions are combined into a single operation. The iron and vanadium stock solutions required for both methods are the same, namely:

A. Vanadium chloride solution: 16 grs. by weight of 50 per cent. solution vanadium chloride (bought as a heavy, very dark, greenish-blue liquid) are diluted with water to make 1 oz. fluid. The best way to make this solution is to counterpose a clean-stoppered bottle, to put 16 grs. weight on the scale pan and to add the vanadium solution, drop by drop, into the bottle to restore the balance.

B. Ferric chloride solution: Iron perchloride (solid), 8 grs.; water, 1 oz.

For the separate bleaching and toning method, prints are bleached in a solution of potassium ferricyanide (20 to 25 grs. per oz.) with just enough ammonia added to make the solution smell of ammonia. After well washing the prints are transferred to the toning bath, viz.: Water, 6 drs.; *A* solution 1 dr.; *B* solution, 1 dr. In this the print very slowly takes on the green tone, being blue in the early stages. When sufficiently toned it is quickly rinsed; long washing in ordinary tap water will gradually remove the color.

For the combined method a solution is made up as follows: In a mixture of 1 dr. *A*, 1 dr. *B*, and 6 drs. water, 12 grs. of powdered oxalic acid are dissolved. Potass. ferricyanide, 2 grs., is separately dissolved in 1 dr. water, and the solution added to the mixture already made.

Of the two methods the separate bleaching is preferred.

The Removal and Working-in of Negative Backgrounds

In appending the following I do so knowing how often it is necessary to arrive at a satisfactory result with a quick, inexpensive, and reliable method. In the negative outline the subject with a darning needle to depth of film—this giving a far truer result, especially around hair, than a knife—and after moistening the removal part with water, scrape clean with a knife. When dry, matt varnish the glass side and, with a pointed penknife, cut the matted part covering the subject within one-sixteenth of outline of subject—the latter giving a softer edge to subject in printing. Any tone of background can be obtained by first tinting the varnish with varying proportions of iodine flakes. Should a graduated background be required, stump the matted part with charcoal, varying the work according to the graduation, remembering the heaviest work gives the lightest result in the print. If, of course, a black background be required, then the negative would not be matted.—C. A. W. in *British Journal of Photography*.

The Importance of the Fixing Bath

The hypo fixing bath and the work it does are subjects to which average amateurs, and possibly some professional workers, pay but little attention. The placing of hypo crystals in water, using the solution when they have dissolved, and removing the negative the moment the creamy color has disappeared, are the simple operations which must of necessity follow development, and these are often carried out without any thought being given to their real meaning. Even more carelessness is noticeable when prints are being fixed, as is shown by the very unsatisfactory quality of many printed-out and developed prints, both new and old.

Temperature is an important point, and as hypo interferes with temperature, this calls for special attention. The best results are obtained when the temperature of developers, toners, fixers, and washing waters are of the same degree; any difference may cause blisters to appear, particularly on bromide and gaslight papers. The most satisfactory temperature is anything between 65° and 70° F.

When developers are made up immediately before use, the addition of the necessary chemicals makes little difference in the temperature of the water, if cold water is used. Hypo, however, acts differently, and equal parts of hypo and water form a sort of freezing solution. The solutions for fixing negatives and prints are not as strong as this. A normal fixing bath, as soon

as mixed, drops only about ten degrees, but this is enough to cause trouble if the amateur is not prepared for it.

In summer weather the chilling of the fixing bath may be advantageous, but in colder weather hypo should never be dissolved in cold water, but in hot or warm water, and the bath should be used as soon as the temperature has dropped sufficiently. Cold fixers work very slowly, and this matters little in negative-making, because the dissolving out of the unacted-upon silver can be seen distinctly. When prints are fixed, however, the disappearance of the silver is not a visible operation, and guesswork comes more or less into play. Should the fixer be very cold there will be a danger of imperfect fixing, because the work takes so much longer than the average worker expects.

The time for fixing depends upon the strength of the bath as well as upon its temperature. There is no advantage in using a fixing bath too strong. I prefer 6 ounces of hypo to the pint of water for negatives, and half that strength for P.O.P. It is a good plan to make up a strong stock solution of hypo and dilute for use, as in this way the hypo itself is not only dissolved but there is no excessive coldness, assuming that the solution has been made up some days before use. A standard stock solution is made by placing one pound of hypo in a bottle and adding water—hot preferred—to make 32 ounces. For plates 6 ounces of the stock solution are taken and 4 ounces of water added, while for P.O.P. 3 ounces of stock and 7 ounces of water are mixed to make 10 ounces of fixer ready for use.

Negatives should remain in the fixer as long again as it takes for the cream color to disappear, or be placed in a fresh bath for a like period. This is necessary if permanency is desired, because at the time the unacted-upon silver disappears an invisible compound is present in the film, which only an excess of hypo will remove, water being practically useless until the hypo has acted thoroughly and dissolved the compound it first forms.

P.O.P. prints are, as already said, more difficult to judge, because the work the hypo does cannot be seen, and one should make doubly sure of thorough fixation, since it is imperfect fixing and not improper washing that causes the fading of prints or the appearance of yellowish-brown patches in them. Fresh and clean alkaline fixing solutions should always be used for prints, and the time of fixing never be cut short.

A solution of hypo in water is, or should be, alkaline, that is, not acid, but very cheap hypo is sometimes acid, and in order to make sure that a bath is alkaline, it is the custom of some workers to add a few drops of liquor ammonia to the bath. The ammonia does no harm to P.O.P. prints, but rather improves the tone, which an acid fixing bath does not. A still better plan is to add a few grains of carbonate of soda to the bath.

If a really acid bath is wanted for use with negatives, bromide, or gaslight prints, the way to make it is to add a little potassium metabisulphite to the hypo and water, the proper quantity being one-quarter that of the hypo crystals. The acid fixing bath keeps clear in use and prevents stains, but there are still many workers who prefer solutions of hypo and water only, for both negatives and prints. A fact in connection with acid fixers, and one not generally known, is that negatives and prints need washing for a longer time than is necessary after an alkaline bath, because it is more difficult to get rid of the hypo.—P. R. SALMON, F.R.P.S., in *Photographic Scraps*.

THOMAS BUEHLE. The slight blistering or filling of the plates during fixing is due to the fact that you have made the fixing bath wrong, and have not taken the precaution to keep it cool.

The following proportions for a chrome-alum fixing bath will surmount your difficulties:

ACID FIXING BATH FOR NEGATIVES

No. 1.

Water (filtered)	50 oz.
Hyposulphite of soda	16 oz.
Dry sulphite of soda	1 oz.

No. 2

Water (filtered)	16 oz.
Chrome alum	1 oz.
Sulphuric acid	1 dram.

As soon as the salts are dissolved, add No. 2 to No. 1, stir well, let the mixture stand for several hours, pour off the clear liquid (which will be of a pale-green color) and use this for fixing. Stand the fixing box in a stoneware crock, with ice packed around it. You will have no trouble with filling them.

G. HENSON. That your negatives have the appearance of not being fixed, after they have been removed from the fixing bath, is due to the fact, that the fixing solution has become exhausted. Pour this away in the waste-crock or tub, and make up a new fixing bath as described in reply to Thomas Buehle. Your difficulties will then cease.

A. JANSEN. The bronzing of your black platinum prints is due mainly to the hot, damp weather. The following developer will meet your requirements:

Potassium oxalate	4 oz.
Sodium phosphate	1 oz.
Potassium bichromate	20 gr.
Hot water	32 oz.
Glycerin	2 oz.
Potassium chloride	1 oz.

Use when cold; keep in a cool place in an amber-colored bottle.

WET-PLATE NEGATIVES FOR PORTRAITS AND LANDSCAPES

FEW photographers know of the beautiful portraits, landscapes, copies, and other photographic purposes, besides half-tone negatives, to which the wet-plate system of photography is adapted. The *British Journal of Photography*, devoted to dry-plate photography, says: "Where fine detail is required, a good wet-plate continuous-tone negative will give excellent results, and prove a cheap method provided the process is used continually as in a process shop. An

ordinary 8 per cent. silver bath is used in conjunction with any good make of collodion. A full exposure is given with a large stop, development being carried out with the following iron developer: Iron sulphate, 30 ounces; acetic acid, 3½ ounces; water, 100 ounces; and alcohol sufficient to make the developer flow easily. Overdevelopment is to be avoided, but if the negative appears weak it can be redeveloped after fixing with the following: pyrogallic acid, 48 grains; water, 8 ounces; citric acid, 60 grains. For use, a few drops of a 5 per cent. solution of nitrate of silver are added to the above solution. Flow this mixture over the plate, moving it about until the required density is obtained. Should the mixture become thick a fresh solution must be taken. Any scum that appears can be reduced away with a weak solution of ferricyanid of potash and hypo. The following intensifier can replace the redevelopment: Mercuric chlorid, 160 grains; ammonium chlorid, 80 grains; water, 10 ounces; hydrochloric acid, ¼ ounce. The plate, when first placed in this solution, will darken and then assume a gray appearance, when it is well washed and flowed over with a 5 per cent. ammonia solution. After again washing, the plate is flowed over with a 5 per cent. gum arabic solution as a preservative, and dried.

Soft P.O.P. Prints from Harsh Negatives

A very soft print can be made on P.O.P. (says *Photography and Focus*) from a negative that is very strong in its contrasts by washing out the soluble salts before exposure. Three or four changes of water, lasting about two minutes each, should be given, and the paper squeezed down on to the glass and dried in the dark. Printing on such paper is very slow, but the contrasts are greatly reduced. The subsequent operations are the same as in ordinary printing, except that there is no need to wash the prints before toning.

PATENT NEWS

Under this heading it is proposed to include each month a list of all the U. S. patents, and brief abstracts of the more important, and to include also such foreign patents as present special features.

Copies of any patent can be obtained from the Commissioner of Patents, Washington, D. C. Price, five cents each.

Photographic dark slide. H. C. Andrews. 1141750.

Cine film developing apparatus. R. Javault. 1141464.

Easel. E. S. French and W. H. Carson. 1141704.

Developing apparatus. E. W. Caldwell. 1141314.

Shutter. E. H. R. Barton. 1141681.

Image transformer for distance Photography. C. Stille. 1141850.

Moving picture machine. E. H. Sperberg. 1141588.

Optical device for viewing moving pictures. H. F. Stowell. 1141432.

Projecting apparatus. G. L. W. Palmer. 1141885.

Slide controller for stereopticons. V. Frederiksen. 1141456.

Automatic focussing camera. J. Becker. 1142295.

Camera focussing hood. R. Matsuda. 1141970.

Lantern slide. A. V. Cauger. 1142143.

Printing machine. E. E. Wood. 1142653.

Safety shutter for cine projection. F. R. Klink. 1142103.

Stereopticon. W. M. Fischbach. 1142158.

Camera. I. V. Morrell. 1142904.

Camera focussing hood. J. Freud. 1143045.

Lighting system for cinematographs. A. Koehler. 1143287.

Making motion picture films. F. M. Faber 1143521, 1143522.

Producing moving pictures. E. Hurd. 1143542.

Automatic plateholder indicator. O. R. Teige and A. L. Hart. 1143462.

Camera. K. J. van Sickle and F. G. Trulan. 1144267.

Camera back. R. Kroedel and C. F. Speidel 1144140.

Automatic camera release. H. Furukawa. 1144301.

Lens carriage. W. A. Riddell and R. Kroedel. 1143782.

Cine lighting system. R. Straubel. 1143663.

Cine intermittent motion. S. Kucharski. 1143977.

Film-developing apparatus. V. C. De Ybarrondo. 1143892.

Flash-light. H. T. Hipwell. 1143966.

Portable flash-light. H. H. and H. T. Hipwell. 1144201.

Producing illustrations. A. L. Ormay. 1143991.

X-ray apparatus. H. V. Palmer. 1143722.

Exposure meter. B. M. Lupton Jr. 1144142.

Plate developing tank. F. A. Strawsine. 1144008.

Shutter. A. Wollensak. 1143926.

Moving picture machine. B. A. Brigden. 1143607.

Multicolor moving picture machine. B. A. Brigden. 1143608.

Dissolver for moving picture machine. Buttner and Merklein. 1144108.

Synchronous picture and sound machine. L. Gaumont. 1144339.

Reproducing pictures. H. Peters. 1143860.

Printing frame. W. Westman. 1144014.

Projection apparatus. H. N. Ott and C. W. Barton. 1143993.

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STUDIO BONAVENTURA, ROME, ITALY

By SIDNEY ALLAN

IN the beginning of the year, Rudolf Dührkoop mentioned to me, in a letter, that he had given two lectures on Hoppé and Bonaventura, "sehr feine Koenner" (exceptional craftsmen), as he expressed himself. Hoppé's work is slightly known to us, but the name of Bonaventura was entirely new to me. So I thought I would investigate the matter.

After a short correspondence I was the recipient of the accompanying pictures. As I opened the package I did not expect anything unusual, but the first glance at these prints convinced me that it was the work of a master craftsman who could interpret character with a force and keen insight which permitted no gainsaying, and who combined with this gift the art of graceful arrangement and well-balanced composition.

An individual temperament, no doubt, but strangely influenced by our tendency toward extreme tonalism. Here we have, indeed, American advance pictorialism reädapted and flourishing in classic Rome. There is the same chiaroscural arrangement: the forced highlights; the shadowy faces; the decorative relation of the figure to the background, and those tonal lacunæ, dismal when opaque, but vibratory and full of mystery and suggestion when rendered translucent, a task which requires the greatest tact and skill in the man who strives for this singleness of impression.

But Bonaventura has done something else within these very limitations. His enactment of the part of a tonalist is the most simple and natural I have ever seen in photographic portraiture. He somehow transposed the key of the traditional performance and made it seem more human and real. In pre-

paring his style of interpretation he has omitted much that seems too whimsical and bizarre in others, and he has understood to make a fairly reasonable compromise between the demands of the sitter and the vision of the artist. These emendations were well advised, in deference to the alterations in photographic portrait fashions which have been adopted in recent years. His highlights seem less chalky and aggressive, and his tonal passages are never dead matter, but alive with subtle gradations.

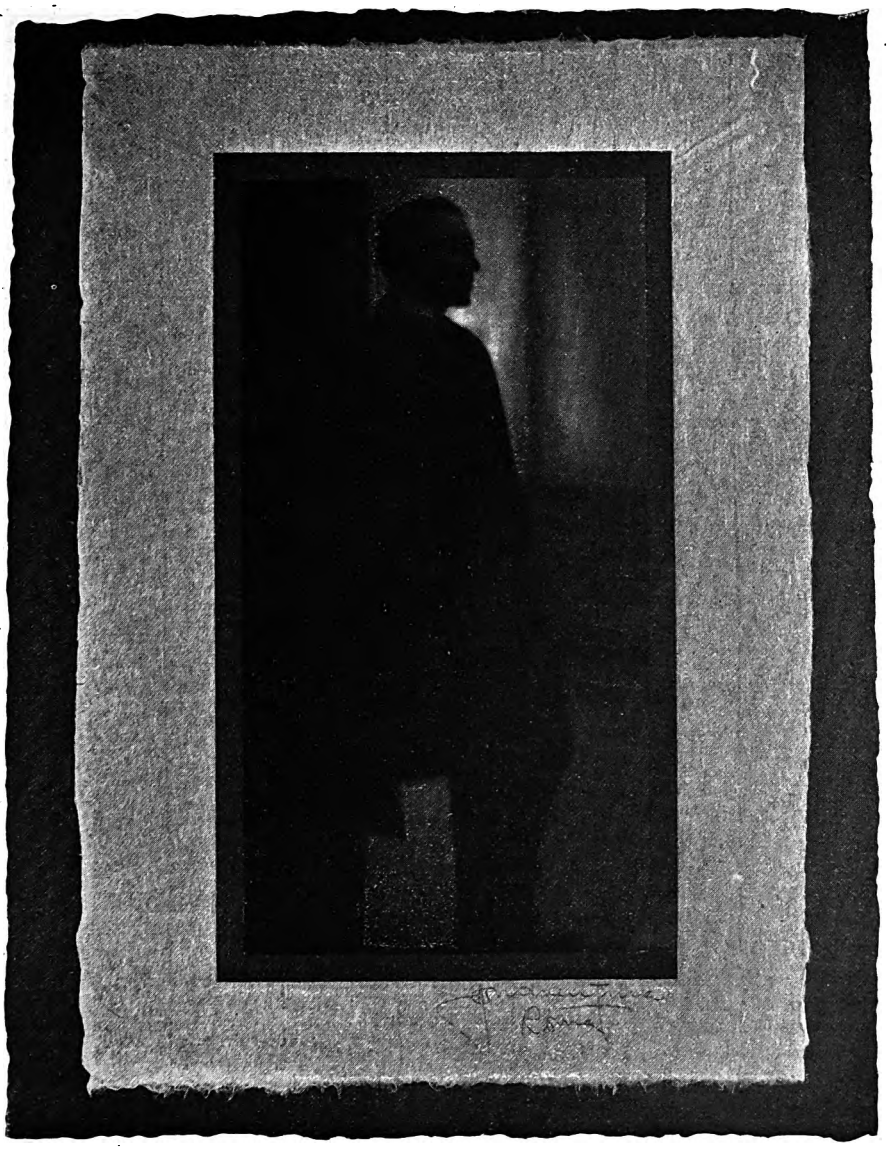
Bonaventura is what we specify by a semi-professional; that is, he is a good deal of a home portraitist and hails from the ranks of the amateurs. The via Tomacelli, his studio address, is not one of the big thoroughfares of modern Rome. His mounting is secession and not professional, and his print of Isadora Duncan is merely the enlargement of a snapshot and rather ordinary at that. It shows that he still practises the method of the experimentalist, who takes many "possibilities" before he strikes the attitude and expression and those conditions that permit artistic expansion and elaboration.

In all of Bonaventura's work we notice a peculiar scarcity of light, and yet it is this minimum of light with which he produces his most telling effects, as, for instance, in the profile of the young girl against the window and the profile standing figure. In both instances it beautifully accentuates the dark silhouette. In the picture of the young girl the light effect resembles sunset and is still a trifle restless, or what amounts to the same thing, there are too many window lines that cut into it. In the figures of the man the outlines are extremely simple and their angularity produces those curious shapes that bring about an harmonious effect to the eye of the spectator. Of course both of these interpretations have to be regarded strictly as silhouette portraits, but they are so skilfully handled that they convey a good deal of what we consider essential in a portrait.

The other three illustrations present true character interpretations. The lady with the shadow of her face reflected in the mirror is an expression of personality in unusual contrasts. The upper part of the picture is full of pictorial interests, but the figure is heavy and the three touches of light in the lower part do not explain themselves. The big area of darkness needed some accents but it might have been more effectively accomplished by a vague separation of the gown and its bulky shadow.

The two portraits of Tratto, a young Italian author, and of the cellist, Livio Boni, achieve high decorative quality without losing character and vitality, and they are perfect as tonal arrangements. The facial expression is intense yet rendered with a refinement and dignity that is quite out of the ordinary. Bonaventura, when at his best, uses a technique so simple, an elimination of detail so absolute, that his prints have the quality of a brilliant sketch; yet so satisfying to the eye are the shadowy tones which veil the absence of detail, and so interesting is the variation obtained by the use of subtly differentiated tonal planes, that there is no sense of incompleteness in the work. The light is soft, the tone pleasing, and the characterization vivacious yet indicative of artistic reserve. His technique is sound and sure, and the brilliancy of performance covers no carelessness in modeling and construction.

Tone is more dependent on feeling than any other technical device. Bonaventura handles tone like an organ virtuoso his thoroughbass: It furnishes the background to his passages of light, the general harmony to his accents and emphasis. Each master of the advanced school of photographic portraiture obtains his unique effects by some particular quality. Bonaventura considers tone the great harmonizer, and makes it the basis of all his work, so that his portraits, like those of the Old Masters, bear the stamp of traditional merit. No trouble or time is spared in this most exacting style of interpretation, and a sitter comes through the ordeal with the feeling that the visit was no mechanical transaction and that a camera, in the right hands, has eyes, a soul, and even a heart to reveal character.



By STUDIO BONAVENTURA
ROME, ITALY

BROMIDE ENLARGING DIFFICULTIES

By C. WINTHROPE SOMERVILLE, F.R.P.S.

ENLARGING onto bromide paper is one of the simplest of photographic processes, involving no complex manipulation of apparatus or materials once they are in proper working order.

Until some experience has been acquired by actual practice, points or incidents may arise and cause trouble or delay if the explanation is not forthcoming. It is with the view of elucidating the cause of some of the more probable difficulties which may occur that we propose to consider them here in some detail.

Excepting the question of illumination, practically all the points raised will apply equally to both daylight and artificial light work.

With regard to daylight enlarging, it might be as well to point out here the essential difference between it and the artificial light method.

Generally speaking, daylight work is not nearly so convenient and simple, owing, in the first place, to the inconstancy of the light, and, secondly, to the impossibility of recording exposure for duplicating purposes.

It is quite possible that the trial exposure for an enlargement and the actual exposure will be vastly different owing to an alteration in the value of the light between the two periods, and this has been the cause of many disappointments.

For this reason the printing-in of clouds and other forms of combination printing are attended by much uncertainty in daylight work.

It has been stated that richer results are to be obtained by daylight illumination than by artificial light. *This is not a fact.* The whole question is entirely dependent on the quality of the negative, and the elucidation of this important point has, in our experience, been the means of dispelling much disappointment.

The Negative. It will be readily admitted that the quality of the print is highest with the most perfect negative for the effect desired; it follows that the particular quality of negative required is a preordained accomplishment or intent. In other words, the best results are obtained from a negative made for the process, as is the case with all printing processes.

Much difficulty has arisen through that ancient and thoughtless axiom that a negative for bromide enlarging purposes should be thin and full of detail.

That it should be full of detail is very obvious, unless for any special purpose it is required otherwise. But thin! What is thin? Did the writers of that ancient saw enclose a sample negative for every form of illuminant?

For anyone to attempt to describe the quality of negative required for enlarging is absurd, since it is dependent on the illuminant and subject.

On the other hand, those who have had an all-round experience may be able to suggest a guiding principle.

At one time the author had occasion to make some rough experiments to ascertain the comparative densities required in the negative for the various forms of illuminants, and they were based on the penetrative power through the highest light on the assumption that visible gradation will always be required through that part of the negative. The comparative values were as follows, the figures indicating the number of seconds required to penetrate a given opacity:

Daylight, 10; incandescent gas, 22; electric arc, 40; acetylene, 43; flat-flame gas, 65; oil, 70.

It must be understood that the figures are approximate, and will vary with different densities and different colors of deposit.

The main point is that with a certain

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form of illuminant a certain quality of negative may be secured to give equally good results as any other negative which happens to be suitable for daylight.

Scientifically it depends on the fact that by the time a visible image is produced through the highest light in the negative, the exposure has been sufficient to produce the best result (or otherwise) in the shadow depth; the print, of course, being developed to infinity, a question we shall deal with presently.

The color of the negative is a frequent cause of trouble. Negatives developed with all sorts and conditions of developers will give varying qualities of prints.

It cannot be stated definitely that any one developer will produce a more suitable negative than another, as so much depends on the subject, but a few instances may serve as a general guide.

A non-staining developer, such as metol-quinol or rodinal, will produce the most rapid printing type of negative, owing to the absence of stain in the shadows; a pyro-stained negative is the very reverse.

Now, if we develop an interior subject with pyro and get a considerable amount of stain in the shadows, a softer effect is obtained, since there is the greatest proportion of light obstructing stain in the shadow than in the high lights. On the other hand, if we have a seascape and want as much contrast as possible in our print, we should develop the negative with a restrained and non-staining developer to keep the shadows as clear as possible in order to get as much shadow depth as possible by the time the highest light was printed through.

But the quality of the print will vary with different developers and different illuminants, and our advice to beginners, at least, is to keep to the one form of developer generally, and change if desirable only for special subjects.

To return for a moment to the density or strength of a negative for enlarging purposes.

There will be a difference in the gradation between a contact print and an enlargement from the same negative. The gradation of a contact print may be altered by varying the printing distance, but this cannot be done with an enlargement as the position of the light is governed and fixed by the focal length of the condenser and lens.

The light from an enlarging apparatus is generally much more concentrated than that used for contact printing, thus having a tendency to give a harsher result. With too thin a negative the high lights will be penetrated too rapidly to allow of sufficient silver being acted upon in the shadows, resulting in a weak print; on the other hand, if the negative is too dense or plucky to print through the highest light by the time the shadows have received the necessary exposure, we can always overexpose sufficiently to print the highest light and intensify the print by redevelopment.

Our advice, then, is to have no hesitation in making a plucky negative for enlarging, governed, of course, by the subject. Too rapid exposures when using very thin negatives are a mistake, as one has no control over the printing manipulations.

Uneven illumination is governed by three factors: The illuminant, the condenser, and the lens.

With a daylight apparatus we have only the lens to consider, as the negative will be evenly illuminated. The longer the focal length of the lens the better the illumination of the screen, for the following reason: If the focal length of the lens be very short, it is so close to the negative that the difference in the distances between the lens and the centre and extreme margins of the negative is so great as to produce less illumination at the margins of the image than the centre.

In an artificial light apparatus the same holds good, and in addition we have the focal length of the condenser to consider. The condenser has a definite focal distance for its rays according to the position of the light.

Thus for the most perfect illumination the focus of the condenser through the negative should coincide with the diaphragm of the lens. With an ad-

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justable apparatus this is a simple enough operation. First focus the image to the size required, thus fixing the position of the lens, then, removing the negative, adjust the light until no shadows of patches show on the circle of light on the screen.

If after this the screen is still unevenly illuminated it will be due either to the use of a lens of too short focal length (in which case the lens is unable to pick up the whole of the rays emanating from the condenser), or that the light is not central with the axis of condenser and lens.

It is essential that an imaginary line drawn through the centres of the lens and condenser should coincide with the centre of the illuminant.

It is convenient to remember that the greater the enlargement the nearer will be the lens to the negative, and the farther will be the light from the condenser.

Stops. The value of the lens diaphragms will vary according to the distance of the lens from the screen, so that in stopping down the *f* values will have to be calculated for each size of enlargement.

Thus, if a quarter-plate negative is used with a lens of 5 in. focal length for a 12 x 9, or threefold enlargement, the distance from the screen to the lens will be 20 in., or four times the focal length; therefore a stop marked *f*/6 would really be working at about *f*/24. This is an important point to remember if the trial exposures are made with one stop and the actual exposure with another. The larger the stop the bolder will be the image, too small a stop having a flattening effect.

Sensitive Side of Paper. A word of warning on the subject will not be amiss. Some manufacturers pack their paper by laying or rolling the fifth or eleventh sheet of emulsion in contact with the plain side and the sixth or twelfth emulsion to emulsion, so as not to have a sensitive surface on the outside of the roll or packet. Others put emulsion side to emulsion side. It is a common mistake to expose on the wrong side of the paper through forgetfulness or ignorance of the above fact; therefore, we always make it a rule when using large sheets to test for the sensitive side by nipping a very small corner of each sheet between the front teeth for a period of five seconds, when the sensitive side will stick to a tooth.

Distortion of image after exposure is due either to the paper cockling during exposure or not being optically flat on the screen, or to the use of glass pressed against the paper to keep it flat.

Paper is generally packed in a dry atmosphere, and as dark rooms usually contain a large amount of moisture the paper rapidly absorbs it and expands in consequence. In the case of paper pinned on a screen, the only remedy is to use it wet by soaking it previous to putting on the screen.

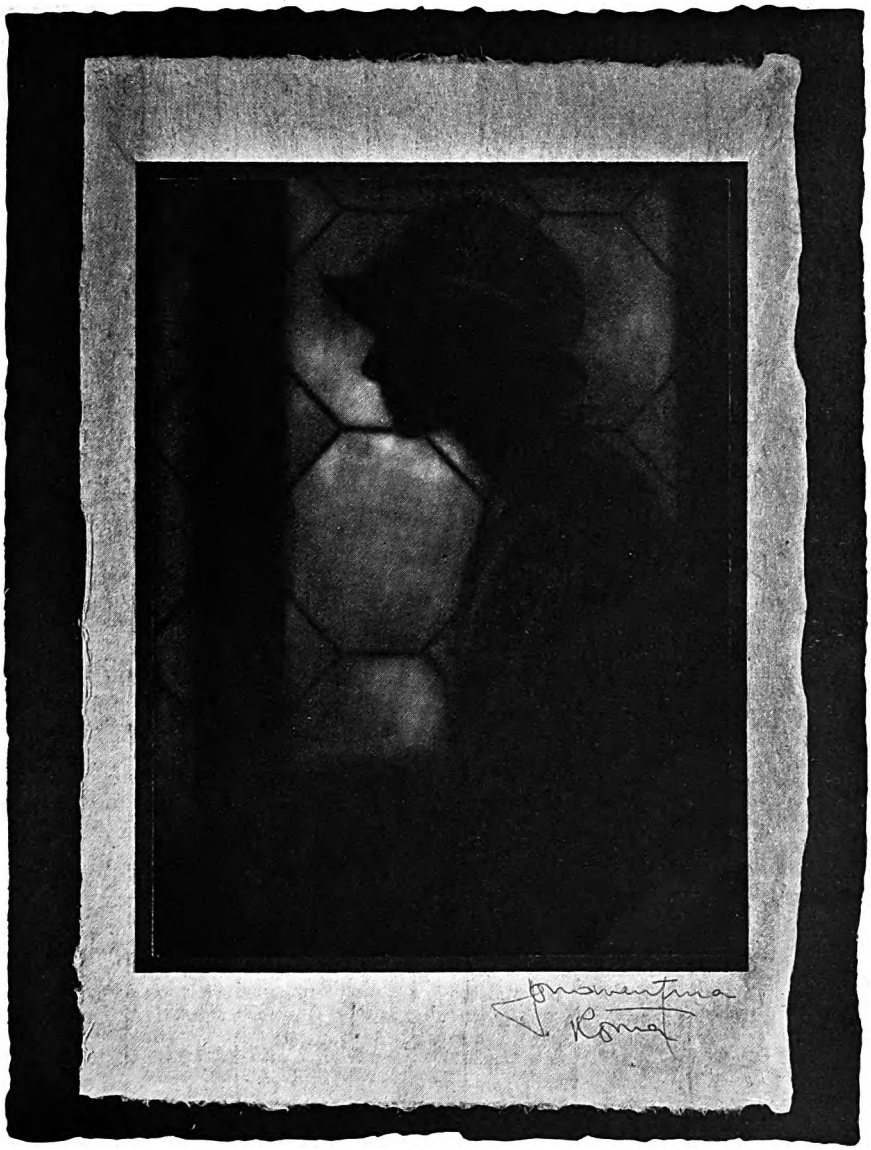
For architectural subjects, or those requiring the sharpest definition, this is the best method of exposing, inasmuch as when the paper is dry the individual lines composing the image contract, thereby reducing the diffusion. With regard to the glass in front of the paper, we do not like the practice as it renders the paper so inaccessible, but where it must be used the thinnest plate should be employed.

Ordinary glass placed at any distance between the lens and screen will produce distortion.

Insensitive or undevelopable spots are produced by air bells or bubbles on the face of the print by careless soaking of the print before development. The following method of soaking the print whereby their formation is impossible is very simple:

It is essential to use plenty of water in the dish. With a flat piece of paper take one edge and push it under; then, putting the finger and thumb under the water, lightly grasp the edge and gently pull the whole sheet under. In this way the water is made to creep evenly up the paper. Once the surface has been wetted you will not get a bubble.

With a rolled sheet, let it curl up and, taking the two corners of one edge between finger and thumb, put it under water at the farthest end of the dish, allowing the rest of the roll to lie on the water. Now hold the middle of the edge down with a finger, and with



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the other hand gently unroll the sheet and follow it up with the hand under water, pressing the paper to the bottom the while. When it is all unrolled the paper will probably float to the top, but gentle rocking of the dish will swirl the water all over it.

Dark-room Light. Oh, fruitful cause of mistaken density! Do not, under any consideration or persuasion, use a red light.

If we take a finished print and examine its intensity by the dark-room light and then by day or gaslight, we shall observe that it looks much lighter by day or gaslight. It is obvious, then, that the brighter the light we can use for developing the nearer we get to the white-light conditions of view. One thickness of canary fabric for an oil or flat gas-flame, and two for a brighter form of light, such as incandescent gas, is quite sufficient.

The larger the area of light-emitting surface the better, for a print should never be developed close under the light but as far away as possible, and only occasionally examined closer to the light.

For final inspection the print should be viewed by transmitted light, otherwise if judged by reflected light it will be found too light after fixing, and for the following reason:

During development the image is covered with a surface veil (the nature of this we need not discuss here); on fixing, this is dissolved away leaving the tones clearer. If the print be viewed by transmitted light this veil interferes only very slightly with the estimation of the density, which will be that of the fixed print at the stage it is examined.

Development to Infinity. This may be truly said to be the foundation of successful bromide printing. A brief outline of cause and effect will suffice to show how many mistakes and failures are due to ignorance of a simple law in bromide printing.

Such an exposure may be given through a negative to bromide paper that it is possible to develop the print to a limited extent, and, however, much development may be prolonged, no further reduction will occur.

The ideal negative for any printing process is one from which by the time the highest light (required) is printed through, the shadows have acquired the desired density.

The trial exposures should first be made on the highest light of the projected image and developed to infinity. Having secured the required amount of visible image in the highest light in this way you will know that if the actual print receives the same exposure whatever the strength of the developer, and for however long it may be developed, over-development cannot result. Thus with an ideal negative there is no such thing as snatching a print out of the developer because it may be developed too far.

With a negative which departs from the ideal either way we will still have to print through the highest light, but the shadows will have to be manipulated, and as this means over-exposure in both cases the amount can be ascertained by trial, and weak development employed with modification by bromide as the case may require.

The main point is to find the exposure required for development to infinity (without bromide) which will give the desired amount of reduction in the highest light through which it is required to print, thereby forming a stop or limit to reduction in the actual print; and when over-exposure is given it is done with a definite intention, and its extent and effect previously measured with a normal developer, so that it cannot be exceeded by one of dilute or modified composition.

If the negative is too thin but fully exposed the highest light will be printed through before the shadows have accumulated sufficient density, simply because sufficient exposure has not been given to the shadows to overcome the inertia of enough silver in the emulsion to render it amenable to development and provide the required density.

In this case the shadows control the exposure and the highest light will be over-exposed, an effect easily remedied by using a comparatively heavy dose of bromide from the beginning of develop-

ment which will keep the least-exposed parts (high lights) back while the shadows attain the required density, and, since the exposure for these is known, they cannot be over-developed; development of the high lights is then continued to the required extent.

But in the case of a negative in which the shadows are over-exposed before the high lights are printed, it means a weak print with muddy shadows (no bromide in developer) and by subsequent intensification by redevelopment, a simple procedure by which a perfectly satisfactory print can be obtained, and similar in chemical composition to an ordinarily developed print.

As this method of intensification is essentially a part of the process, I will give the formula:

Bleach the fixed and washed prints in copper sulphate, 10 grains; potassium bromide, 10 grains; water, 1 ounce. Wash five to ten minutes and apply a 3 per cent. solution of nitric acid for three or four minutes. Again wash for five minutes and redevelop with a normal developer until the shadows are of the required intensity. Development should be continued some five minutes after it is apparently complete to ensure the under silver being completely converted. The print is now washed free from the developer.

It will be seen that the high lights develop first, the shadow following later, so that if the development be stopped at any particular stage and the print put in the fixing bath the silver bromide formed by the bleacher will be dissolved out, leaving a softened or reduced print. This is the best method of reducing a bromide print, but the developer should be used considerably diluted.—*Practical and Pictorial Photographer.*

ADVERTISING AND PICTORIAL PHOTOGRAPHY THE KEY TO HIGHER PRICES

By C. P. M.

THE question that confronts the photographer of today is this, "How shall I hold my trade and how shall I secure more business?' The answer is summed up in the one word, ADVERTISING!

When we speak of advertising we include its two branches, direct and indirect advertising. By the former we refer to printer's ink; by the latter we mean the goods themselves. Now, good authority states that it takes between $500,000,000 and $600,000,000 each year in direct advertising to move the world's business. Quite a snug sum to go into the printer's purse; but merchants believe in it, practice it, and prosper under it; else they would not make those great appropriations year after year. This enormous amount includes bad as well as good advertising. And of the former there is not a little, for like any other line there are charlatans as well as honest ones within the advertising ranks. But the fact that ninety-nine out of a hundred successful merchants *do* advertise is conclusive proof that there is power in printer's ink if written right, spread right, and issued right.

Have you not noticed that the successful merchant who understands advertising pays no more for his newspaper space and other business literature (generally less, because he buys a year's supply at one time) than the unsuccessful merchant who is a novice at advertising and who constantly shocks his community by wholesale statements and fabrications over questionable goods? In sheer ignorance and greed, he helps to swell the bank account of the printer and at the same time depletes his own purse. No wonder such merchants cry, "Advertising doesn't pay." No wonder an outraged public declares that advertising is a swindle, savors of blackmail,

and is beneath the dignity of all solid concerns. It is a lamentable fact that there are a great many schemes in advertising. But because much of the present advertising is miserable and misleading, it does not follow that all advertising is devoid of dignity.

Look along the line a moment and see whether falsehood and foolishness or dignity and truth had a hand in the very first advertising. Let us read, for it is on record in the greatest piece of literature the world ever knew, if *He* who planned the first publicity was not worthy to establish the custom.

You remember that it happened in this wise. It was only a small audience; in fact, one family, cruising in a huge houseboat made of gopher wood, that read the first advertisement mentioned in history. There before their wondering eyes was displayed the grandest poster ever issued. It outrivalled, outshone, and belittled all subsequent efforts of man. Its color scheme was in beautiful tints of overlapping bands —a semicircle of radiant beauty against the blue of heaven. In unmistakable language, it read: "*There—will—never —be—another—flood!*" Thus the Almighty Himself was the first to proclaim intentions to humanity, literally engraving upon the sky a promise, an *advertisement*, unto the world. This is the first chapter in the history of advertising. The other chapters, of course, you are familiar with—how, as man's dawning taste required more than enough for mere existence, he exchanged the articles which he liked to make for the articles which his neighbors liked to make. Thus, through trade and barter and word-of-mouth, began the practice of advertising. On down through the ages, from the advent of the printing press until now, advertising is the lever that lifts the wheels of trade—is the warp upon which the woof of business is woven, from the soliciting of an order to the delivery of the finished product.

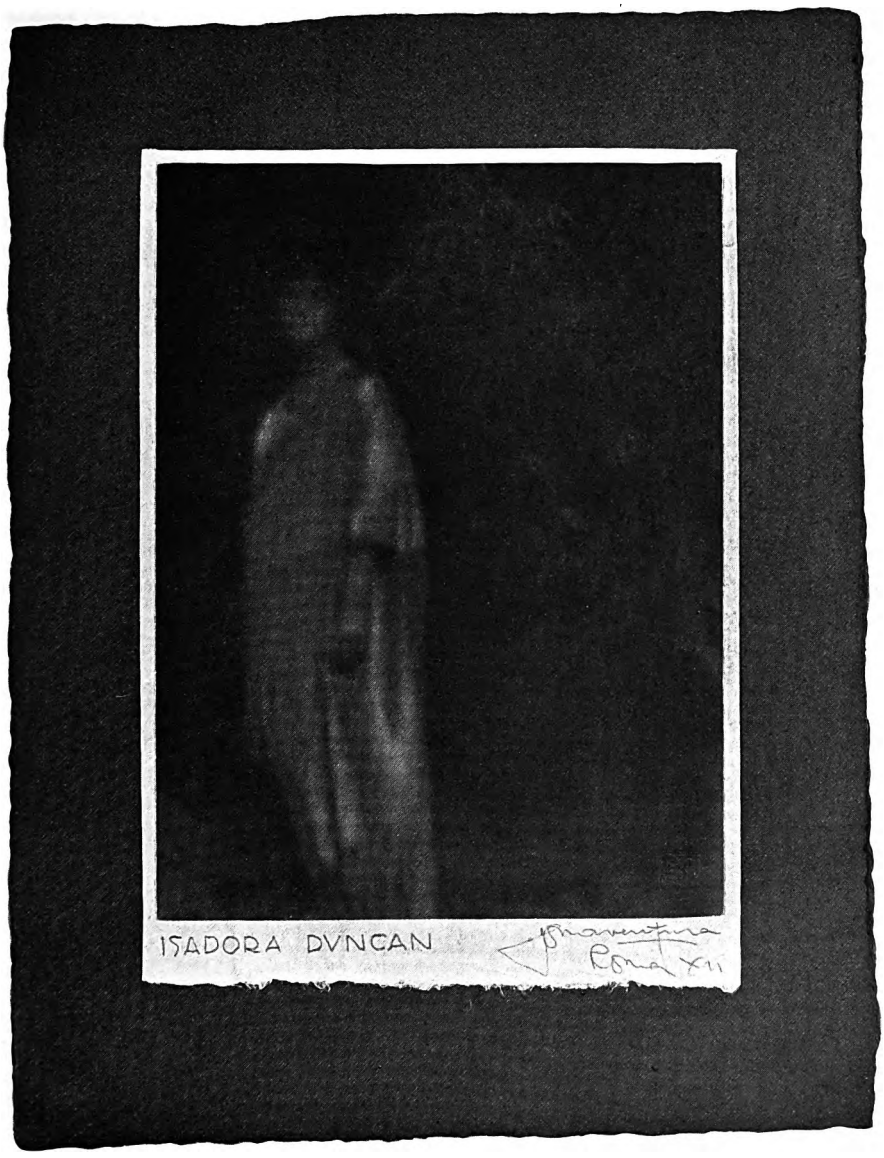
And now we stand at your studio door. How are you going to advertise? How are you going to spread printer's ink? How are you going to hold trade, and how are you going to build more business?

First, I will tell you some of the mediums you want to steer clear of. Make it a practice to avoid cheap, free mediums. *Cheap* mediums give the impression of *cheap* goods, and *free* mediums suggest that the firm is *too poor* to employ good paper and attractive printing. Prominent on the list are circulars or dodgers. You know they are usually distributed by some ragged little urchin, with a cigarette cocked in the corner of his mouth, who puts half the edition down the gutter; the remainder is wadded into little balls and squeezed behind door-knobs or scattered across the porch-floor. You know what contempt you hold for such an undignified distribution. You gather them up, rarely reading, and carry them in to feed the waste-basket.

Next on the list is theatre programs, a very much overestimated medium. The affable agent approaches you, and in a confidential tone announces that he "has a special space for your special benefit at a special price." He further says, "Now this will be seen by thousands of cultured and refined people night after night, etc." But wait a minute before you close the contract. Follow down the aisle after the usher has issued the programs and cast your eye on this side, then on that. About the first move every recipient makes is to fold back a slice from one side of the program. Next, they fold over a strip from the bottom. Then back goes a slice from the other side. Lastly, they take a little bit off from the top. Now, what have they left? Simply a nice little square—the synopsis and the caste. The agent told the truth when he said, "The ads. would be out of sight." People go to the theatre and opera to be entertained, not to read business literature.

Now you begin to wonder what mediums are thoroughly suitable for photographic advertising. Certainly every photographer should have some kind of an advertisement in the newspapers, either a modest display ad. or a short reading notice, changed at every issue.

Souvenirs? If you have an opening or a reopening, and wish to present a souvenir to your friends, give them something



BY STUDIO BONAVENTURA
ROME, ITALY

useful, however trifling; but do not attach any reading matter suggesting an advertisement. Remember that the opening is in itself sufficient advertisement for the time being. Reserve such literature as you have in mind for the near future, when it will have more force and give more lasting impression.

And now we come to booklets, the very best direct medium the photographer can use. Some merchants issue thousands of booklets and expect a harvest within three weeks—quite impossible. You never see a wise farmer, who wishes to raise a crop of wheat, rip up the whole landscape and sow all the seed grain he can buy or borrow. No, he tills a few choice acres, and sows no more seed than he can take care of by cultivating and weeding; then after several months he begins to receive returns. Just so with the booklets. The wise merchant issues only a few hundred, according to the size of his town; then follows up with a courteous letter to each recipient, calling attention to the same. Later, if no returns come, send another booklet, even a third, if necessary, for it is better to secure fifty customers from 500 booklets, by carefully following up, than to issue 2000 booklets with no attention paid to their welfare, and secure only two dozen customers.

Before issuing booklets carefully prepare a mailing list from the blue book or the directory. Next send each booklet, carefully sealed and directed, to Mrs. ———. When a woman opens her mail and discovers your booklet neatly addressed to her, personally, her name correctly spelled, she gives it some consideration; and if the stamp be put on straight she gives it more consideration. Bear in mind that a crooked stamp or an inverted one is just a little discourteous to any woman; also is a slur upon the memory of the dead President whose miniature image graces the same.

Now you have all the printer's ink or direct advertising necessary. But how about the *indirect*, the most potent of all advertising? I refer to *pictures*, they are your best advertisement; they will make or unmake you despite the most alluring ads. and the most beautiful booklets ever built.

How often we speak of the present as the age of the specialists. Photography is certainly included as well as medicine and mechanics. We have the artist who makes none but women's portraits; the artist who makes none but men's portraits; the artist who attends to the children's pictorial wants, and he who caters to pets. It is the trend of every trade to specialize, but the patrons of *good portraiture* demand INDIVIDUALITY and PERSONALITY as well as specialty.

Has it ever occurred to you that there are too many pictures just alike? That there is a plethora of photographs and a *dearth* of pictures, due to a lack of art education?

Take, if you will, a hundred photographs from as many studios of good, fair reputation. Remove the names, shuffle them, lay them out, and you cannot tell one man's work from another, only as you personally knew that he made such and such pictures. *Lack of individuality* is the reason. *Lack of pictorial qualities* is the reason. *Lack of sound composition* is the reason. All the prints are pretty and pleasing, but lack that distinguishing quality we call pictorialness. In plain English, there is but little genuine pictorial photography done in this country.

For years photographers have worked for tonal effects, which are pleasing, and are purchased by many customers. But the effect is not pictorial—does not attract the stranger, does not exhibit more than mere likeness, does not appeal to good judges and wealthy patrons, who will cavil at no reasonably high price if their portraits proclaim the *artist* as well as the artisan. This is the power of pictorial photography, is the *key to higher prices*.

The first step toward pictorial photography is to secure *tonal values*, which means truth of distance; or, in other words, atmospheric perspective. You have observed that an object which at four feet from the eye is sharp and clear becomes dimmer in outline and color at fourteen feet; still dimmer at forty feet. (By the term color we do not mean the red, blue, or yellow quality, but its *force* of light and shade.) To make this

point plainer, an object that is black or white at close range grows less black or white a few feet distant; still dimmer if removed to a greater distance, and finally at an extreme distance loses all force of color and becomes a neutral gray. Now, what is true of a long range is true of a short range, like a portrait of a head where the planes are only a few inches apart. (But this leads us into deep discussion, which time forbids, and which must be led up by preliminary instruction. Hence this is just the quality, *tonal values*, that you must incorporate in your pictures. It is the first step toward pictorialness.)

Composition is the next step to secure pictorial effects. It is to picture-making what architecture is to carpentry—what authorship is to the reportorial. It is the all-important point in picture-making, and the least understood by photographers.

The average photographer considers composition an arrangement of *pleasing lines, lights, and shades*. Quite to the contrary. It is a *pleasing arrangement* of lines, lights, and shades. And when the photographer is familiar with these qualities—tonal values, composition, etc.—and can produce a portrait that will enlist praise and admiration from the stranger he may rightfully claim the title of *artist*.

There is no doubt as to the wide appreciation of the masterly criticism photographers have received for several years from able men; but instantly you ask yourself how are we to apply these excellent ideas to our everyday work? Your case has been thoroughly diagnosed, now you need careful doses of *pictorial* medicine. Art, you know, is a good deal like religion—you may catch the fever and have the power in a multitude, but your own salvation you must work out by yourself with a pastor and a master.

Higher prices for your products and *higher social standing* are the fruits of such labor when the artist in you leads the artisan in you; when your INDIVIDUALITY rules your craftsmanship.

Isn't this noticeable in all vocations? Why does Vanderbilt's *chef* command a higher salary than the country hotel cook? Very true, Molly O'Foggerty can whack a boiled dinner together that will tease the tongue of the bucolic justice; but Monsieur de Bouillon can take the same materials and build a salad that will uncork the best wit! Why? Because he put art in his dish, while Molly mixed ardor with hers.

You ask, "Does it pay to spend several months or a year to perfect yourself in art principles?" In other words, is photography a fine art? Before I answer this question I will ask three others. Is painting a fine art? Yes, if a fine artist mixes the colors and applies them to the canvas. Is sculpture a fine art? Yes, if a fine artist chips the marble. Is music a fine art? Yes if a Paderewski animates the ivories, or a Paganini draws a beguiling bow, or a matchless Patti vocalizes the notes. Is *p-h-o-t-o-g-r-a-p-h-y* a fine art? YES, if a fine *artist* controls the lens; if a *fine artist* develops the plate; if a *fine artist* prepares the plate, and a *fine artist* prints the same. Then photography is a fine art; otherwise, a craft taking years of hard study to master.

We know it is an excellent practice to meet in convention each year to exchange ideas on technique and manipulation. Beware, however, how you copy each other's ideas of lighting, attitudes, and composition; it only keeps you farther from the artist's goal. Constant copying hides only the deeper individuality. Certainly, "one must imitate before he can originate;" but is that any reason why we should forever creep on our hands and knees?

Arise—and see the shining horizon! Read more good books; hear more good music; study true picture-making, but don't, *don't imitate*—the rut grows deeper and your creative sense dimmer. Walk with me down one of the side streets where cheap gravestones and architectural images are cut. There sits a greasy little fellow pecking away a piece of porphyry. He is making a cherub. What! that ugly little image an angel? One look is sufficient. Now march with me over to your magnificent museum. There, in an alcove, is a plaster replica of the head of Zeus, one of the greatest, if not the greatest,

pieces of statuary ever made. One look is not sufficient. Neither was it sufficient for the ancient Greeks; for history says, "This statue had the power of dispelling grief and sorrow. That those who approached it heart-sick and mind-laden, left its presence with sunshine on their countenances and a new hope for the morrow."

What a contrast! The miserable little effigy in the side street is a mechanical piece. The magnificent head of Jupiter is a *masterpiece*. The difference is this: One is by PHIDEAS—the other is *perfidious!*

Again, so many photographers seem completely carried away with the fact that a negative can produce innumerable copies. "Oh," they say, "if I can only get the negative in such and such a condition I can turn off thousands of duplicates."

Alas! what folly! What a leading away from the coveted goal! It were better a negative be limited to five or ten copies, and the plate destroyed; for then would *better* pictures be made, *higher* prices be paid, and *more respect* given to the profession of photography.

Let me sketch two other scenes.

Off down there on the coast, where they are squeezing cod into boxes, stands a burly son of Erin, with a stencil. With muscle and a few strokes of the blacking-brush he has made a very credible outline picture on the end of a box. He glories in the fact that he can duplicate the same every moment. Over here in college, where they are arranging drawing-boards and easels, stands an eager student with every fiber of brain and brush alert to catch some of the matchless beauty of a celebrated cartoon that hangs upon the wall. The coast picture represents a scene in a packing-house—men putting down fish. The college picture represents a scene in Palestine—men also putting down fish, but at the feet of the only true and perfect Man that ever lived; beyond the astonished Apostles is the hungry multitude; on the ground, the five loaves. The coast picture is simply a mechanical piece, forgotten the day it was made; the college picture is an immortal *masterpiece*, and will never grow dim in the memory of man. The difference is in the men who made them. One—is by Michael—Delano; the other —by MICHAEL ANGELO!

PLATITUDES

THE intelligent worker is one who tries to find his own shortcomings. The ignorant worker is the one who tries to hide his shortcomings from the eyes of his associates.

ANIMALS are born with an intellect sufficiently alive for their needs; but the human animal is born without intellect—only with the potentials.

A LIGHT head is about as conspicuous as a headlight; but disaster always overtakes the former, while safety follows in the wake of the latter.

AN employer's assistants are, to a great extent, his capital.

BE big enough to go alone. Individuality is not developed in groups.

THERE are many who cannot enjoy the sunshine of today for fear it will rain tomorrow.

IT is easy to laugh at others, but the strong man is he who can laugh at himself.

THE real secret of leadership is to find out what the people need—and then lead them to it.

YOU cannot put a time clock on brain work. If you're a tail ender, get a wiggle on yourself.

THE purpose of a union is not to hire a paid official and place him in control, but to effect an organization in which men can meet together and arrange their own affairs.

OUR distinctions do not lie in the positions we occupy, but in the grace and dignity with which we fill them.

THE man who is looking for the money is not worth the job. The man who is looking for the job is worth the money.

By J. R. BRINKLEY
GLASGOW, SCOTLAND

PRINTS IN VARIED TONES BY DEVELOPMENT

By RENÉ SALMON

THE attainment of varied colors in photographic prints has hitherto been limited to the pigment processes of carbon, gum, oil, etc., and to toned bromide prints. Obtaining pure colors, such as red, green, brown, etc., on emulsion papers by direct development has been the desire of workers and experimenters for a number of years.

Many attempts have already been made in this direction, and a few years ago the slow chloro-bromide papers were put upon the market, with which a scale of color tones ranging from sepia to green could be obtained, according to the exposure given and the degree of dilution of the developer. Unfortunately, these papers could not stand comparison with carbon papers, more especially with reference to the regularity and vigor of the tones, so that their success was only a partial one, and most amateurs returned to the toning of their prints, in spite of the inconveniences accompanying this process.

Photo-chemistry has, however, made great progress within recent years, and photographic emulsions have been more thoroughly investigated. On the top of the scale of sensitiveness bromo-iodide emulsions have been introduced as the basis of the modern ultra-rapid plates, and at the bottom of the scale a new category of emulsions has been introduced which may be considered as a medium between the citrate or chloro-citrate emulsions (for printing-out) and the chloro-bromide emulsions (for development). These emulsions, after a short appearance some years ago, have quite recently made a reappearance in the practice of photography, and have been placed on the market much improved—one might say totally transformed and thoroughly perfected. Ixi paper, which was brought out a few weeks ago by the Société Anonyme Utocolor, La Garenné Colombes, near Paris, belongs to this latter category, and fulfils the most sanguine expectations placed upon such a paper.

This paper may be classified between the printing-out papers and the slow chloro-bromide papers for development (gaslight papers, etc.). This new paper is manipulated in subdued daylight, the exposure is made to daylight or strong artificial light (arc light, etc.), and one obtains by simple development prints with tones ranging from black to deep violet (green, sepia, brown, terra-cotta, yellow, red). All these tones are just as vigorous as those of carbon prints. There is not the slightest difficulty in obtaining these tones; the only points which must never be forgotten in order to obtain the desired tones correctly is that the *baths must be measured off properly and the time of development must be adhered to exactly.* It is on this account necessary that the time of exposure, which alone is variable, should be exactly adjusted to the source of light, the transparency of the negative, and the desired tone of the print.

The exposure can be made best toward diffused daylight by holding the frame against the window of a room darkened by a curtain, or artificial light may also be employed.

The stock developers are made up as follows:

A

Water	1000 c.c.
Metol	11 gm.
Sodium sulphite, *anhydrous*	80 gm.
Tartaric acid	20 gm.

B

Water	1000 c.c.
Hydroquinone	25 gm.
Sodium sulphite, *anhydrous*	60 gm.
Sodium carbonate cryst	250 gm.
Potassium bromide	1 gm.
Potassium ferrocyanide	200 gm.

Additional solutions:

C

20 grams of citric acid dissolved in 100 c.c. water.

D

1 gram of sodium hyposulphite in 100 c.c. water.

The following table gives the composition of the finished developers and the exact times of development.

After development the prints are rinsed for a few seconds and fixed for 10 to 15 minutes, then washed for half an hour, and dried and mounted as ordinary gelatin prints.

As Ixi paper is similar to all the other slow emulsion or gaslight papers yielding a variety of tones, the resulting tone can only be judged correctly after the prints are thoroughly dry. The tones, as has already been mentioned, are of remarkable vigor and purity.

DESIRED TONE.	EXPOSURE for negatives of average density.		COMPOSITION of the DEVELOPER in cubic centimeters.	TIME OF DEVELOPMENT. Temperature of developer 15 deg. C.	
	With arc light of 1500 candles and 50 cm. distance.	With good diffused daylight.		When one print is developed alone.	When three prints are developed together.
Black	2 seconds	4 seconds	60 water, 10 A, 50 B	50 seconds	50 seconds
Green	12 "	24 "	80 " 40 B, 3 C	2⅓ minutes	2⅓ minutes
Sepia	25 "	50 "	100 " 27 B, 4 C	7 minutes	7 minutes
Brown	20 "	40 "	90 " 30 A	3½ minutes	3½ minutes
Terra-cotta	25 "	50 "	40 " 80 A	1½ minutes	1½ minutes
Yellow	15 "	30 "	100 " 20 B, 10 D	2¼ minutes	2¼ minutes
Red	45 "	1½ minutes	100 " 20 A, 1 C, 12 D	10 minutes	12 minutes[1]
Violet	30 "	1 minute	100 " 20 A, 2 C, 8 D	16 minutes	18 minutes[1]

[1] When *three prints are developed together*, only the half quantity of D must be added in the case of the red tone, and only the fourth part of D in the case of the violet tone proportionately. For red and violet it is best to develop *three prints together*. The quantities of developer given in the above table are intended for one to three half-plate prints. When smaller or larger prints are to be developed, the quantities must be taken proportionately. The temperature of the developer (15° C. or 60° F.) should be strictly observed.—*The Amateur Photographer.*

JOHN RUSKIN ON PURITY OF TASTE

CONSIDER this subject well, and you will find that custom has indeed no real influence upon our feelings of the beautiful, except in dulling and checking them; that is to say, it will and does, as we advance in years, deaden in some degree our enjoyment of all beauty, but it in no wise influences our determination of what is beautiful and what is not.

The keenness of the sympathy which we feel in the happiness, real or apparent, of all organic beings invariably prompts us, from the joy we have in it, to look upon those as most lovely which are most happy.

It does not at first appear easy to prove that men ought to like one thing rather than another; and although this is granted generally by men's speaking of bad or good taste, yet the right of individual opinion sometimes claimed even in moral matters, though then palpably without foundation, does not appear altogether irrational in matters esthetic, wherein little operation of voluntary choice is supposed possible. It would appear strange, for instance, to assert, respecting a particular person who preferred the scent of violets to that of roses, that he had no right to do so. And yet, while I have said that the sensation of beauty is intuitive and necessary, as men derive pleasure from the scent of a rose, I have assumed that there are

some sources from which it is rightly derived and others from which it is wrongly derived; in other words, that men have no right to think some things beautiful and no right to remain apathetic with regard to others.

Hence then arise two questions, according to the sense in which the word "right" is taken: the first, in what way an impression of sense may be deceptive, and therefore a conclusion respecting it untrue; and the second, in what way an impression of sense, or the preference of one, may be a subject of will, and therefore of moral duty or delinquency.

To the first of these questions I answer, that we cannot speak of the immediate impression of sense as false, nor of its preference to others as mistaken; for no one can be deceived respecting the actual sensation he perceives or prefers. But falsity may attach to his assertion or supposition, that what he himself perceives is from the same object perceived by others, or is always to be by himself perceived, or is always to be by himself preferred; and when we speak of a man as wrong in his impressions of sense, we either mean that he feels differently from all, or from a majority, respecting a certain object, or that he prefers at present those of his impressions which ultimately he will not prefer.

To the second I answer, that over immediate impressions and immediate preferences we have no power, but over ultimate impressions, and especially ultimate preferences, we have; and that, though we can neither at once choose whether we shall see an object red, green, or blue, nor determine to like the red better than the blue, or the blue better than the red, yet we can, if we choose, make ourselves ultimately susceptible of such impressions in other degrees, and capable of pleasure in them in different measure; and, seeing that wherever power of any kind is given there is responsibility attached, it is the duty of men to prefer certain impressions of sense to others, *because* they have the power of doing so.

The power we have over the preference of impressions of taste is not actual nor immediate, but only a power of testing and comparing them frequently and carefully, until that which is the more permanent, the more consistently agreeable, be determined. But when the instrument of taste is thus in some degree perfected and rendered subtle, by its being practised upon a single object, its conclusions will be more rapid with respect to others, and it will be able to distinguish more quickly in other things, and even to prefer at once those qualities which are calculated finally to give it most pleasure, though more capable with respect to those on which it is more frequently exercised; whence people are called judges with respect to this or that particular object of taste.

Now, that verdicts of this kind are received as authoritative by others, proves another and more important fact; namely, that not only changes of opinion take place in consequence of experience, but that those changes are from variation of opinion to unity of opinion, and that whatever may be the differences of estimate among unpractised or uncultivated tastes, there will be unity of taste among the experienced; and that, therefore, the result of repeated trial and experience is to arrive at principles of preference in some sort common to all, and which are a part of our nature.

Our purity of taste is best tested by its universality; for if we can only admire this thing or that, we may be sure that our cause for liking is of a finite and false nature. But if we can perceive beauty in everything of God's doing, we may argue that we have reached the true perception of its universal laws. Hence, false taste may be known by its fastidiousness; by its demands of pomp, splendor, and unusual combination; by its enjoyment only of particular styles and modes of things, and by its pride also: for it is forever meddling, mending, accumulating, and self-exulting; its eye is always upon itself, and it tests all things round it by the way they fit it. But true taste is forever growing, learning, reading, worshipping, laying its hand upon its mouth because it is astonished, lamenting over

itself, and testing itself by the way that it fits things. And it finds whereof to feed, and whereby to grow, in all things.

It will be our own fault if we do not discover something in the most limited range of mind which is different from, and in its way better than, anything presented to us by the more grasping intellect. We all know that the nightingale sings more nobly than the lark; but who, therefore, would wish the lark not to sing, or would deny that it had a character of its own, which bore a part among the melodies of creation no less essential than that of the more richly-gifted bird?

BACKING TRANSPARENCIES WITH MAGNESIUM OXIDE

By "OPERATOR"

TRANSPARENCIES can be used as finished and framed portraits, possessing exceptional qualities, and should form a very profitable sideline for any photographer who possesses the necessary goaheaditiveness for introducing a novelty and a reliable class of photographers' product that needs only to be shown to the public to create a demand. The method of production is extremely simple, and small in cost, and the material obtainable in every town. In the first place, a good transparency must be made either in the camera or by contact with the negative. The class or kind of transparency that is best suited for the purpose is one that possesses clear glass in the highlights and is entirely free from stain. It must also be well washed after fixing, because it will have to be passed through a formalin bath to secure a hard and non-absorbing film. Take a good transparency, and, as soon as the fixing is complete, wash it well in a stream of running water, and carefully wipe it with a lump of absorbent cotton, also wetted; then after a thorough washing pass it into a formalin bath made up of

Formaldehyde	1 fl. oz.
Water	20 fl. oz.

allow it to remain in this solution for five minutes, rocking the tray occasionally; then place it in a rack to dry. When this has been accomplished, the following mixtures must be made and strained through muslin. Several transparencies may be prepared, and held ready for backing with the oxide of magnesium preparation. The transparencies must *not* be washed after they have been removed from the formalin bath, but simply removed from the bath and placed directly in the rack, the object being to secure a very hard and impervious film. The magnesium preparation is made as follows:

Magnesium Oxide Backing

Heinrich's gelatin . .	2½ oz. av.
Water	10 fl. oz.

Let this soak for an hour and a half, then place the vessel into boiling water, and stir this well. In the next operation, which must be carried out with a small wedgewood mortar and pestle, place in the mortar the following ingredients:

Glycerin . . .	½ oz. by measure
Magnesium oxide (not the carbonate) .	½ oz. by weight
Water	½ oz. by measure

Grind this mixture thoroughly for about five minutes, then add it to the gelatin; mix this with considerable stirring, and again pass the mixture through muslin, which may be done by tying the muslin over the top of a large-size tumbler and rubbing it through

with a small bristle brush, such as a small sash tool.

Now place the transparency upon a level surface, and pour the white magnesium preparation upon the hardened film, in the form of a pool in the centre; it will readily flow to the edges. Should there be any difficulty experienced, the flowing of the mixture may be aided by means of a small camelhair brush. Do not permit the magnesium mixture to overflow; all that is required in just ordinary care.

As soon as the mixture has become firmly set, the transparency may be placed aside to become dry, which may take forty-eight hours, depending upon the temperature and the hygroscopic condition of the atmosphere. As soon as the mixture has become perfectly dry, a careful examination will reveal a picture of surpassing beauty, which, when framed in a suitable frame will quickly prove to be a real trade winner. If any spotting is to be done it must be done with oil color, and allowed to become set before pouring on the magnesium preparation.

SOME HINTS ON PROFITABLE COMMERCIAL PHOTOGRAPHY

By R. R. SALLOWS

PHOTOGRAPHY is one of the modern arts from which the professional and amateur should derive a large measure of pleasure and profit. I add the word "profit" with a mental reservation, because I venture to say that 99 per cent. of the professional photographers are not receiving proper financial remuneration for the capital invested and the time they spend in their studios. I do not think that I am exaggerating conditions when I say, that during the dull season, while ninety-nine men of the craft, "Micawber-like," are sitting around waiting for something to turn up, the other lone man is wandering far afield utilizing his energies and genius in an effort "to turn things up." This is the policy of the successful commercial photographer, and the success which has been mine in this field I attribute largely to adherence to this principle. Until almost eleven years ago I too was one of the ninety and nine who strayed not away; but the fulness of time had come. I saw and recognized the guiding light. I embraced the opportunities which led me into a wider and more profitable field of service.

The Editor of this magazine has asked me for some facts dealing with the events which led me to commence commercial work, and to advance some ideas which appeal to me as profit-makers in the photographic profession. It is with great pleasure that I comply with his request.

My home is on Lake Huron's shore, in Goderich, Ontario, a town of nearly five thousand inhabitants. The place is a summer resort of some note and the market town for a thriving farming community of an eight-mile radius to the north, east, and south. On the west is Lake Huron, which is not a dividend producer for me at least. In reality the area from which I derive my business in portrait work is half a circle. My readers will not fail to notice how limited is my field from the standpoint of the professional. From it I have turned, and now, in the words of the noted theologian of old, I can say, "The world is my parish."

It was civic holiday in Goderich in August, 1897. I had planned to spend the day in a neighboring town, but another appointment at home prevented me from carrying out my intentions. However, I was free in the afternoon, so accompanied by my daughter and one of her lady friends, I drove out to a summer resort, six miles north of

Goderich. There, with my two companions, posing on a rocky ledge on Lake Huron's shore, I made the negative which marked the commencement of my career as a landscape photographer. I sent a print of it to a manufacturing firm in Rochester, who used it in their catalogue as representing a product of one of their outfits. The picture also appeared in *The Buffalo Express*, *The Toronto Globe*, *The Inland Printer*, and other publications.

During the next six years I added gradually to my collection of outdoor studies. In 1903 I received a letter from a Philadelphia firm asking me to send them a collection of photographs. I sent them twenty prints. Ten of them were accepted; the others were returned, along with a check for $50. Five dollars for each accepted print! Sixty dollars per dozen! while for the same work at home my regular customers were paying me $6 per dozen. Can you grasp the significance of it to me at the time? This was the first money I had ever received for any commercial work, and, naturally, it started me thinking. I concluded that if the picture-loving public valued my work so highly that they were willing to pay me $60 per dozen I would be foolish to confine myself to portrait work alone with cabinets averaging $4 per dozen.

The following year I closed my studio every Wednesday afternoon during the summer months in order that I might have the opportunity to secure the studies demanded by my customers, which were rapidly increasing in number. This plan proved very unsatisfactory, as weather conditions often prevented me from obtaining that which I sought. Next year, having no assistant, and the demands for outdoor work becoming more numerous, I was forced to frequently close my studio. In this way I lost control, in some measure at least, of my share of the portrait work in Goderich and vicinity; but while I was a loser in this respect my efforts in the commercial sphere were being liberally rewarded. The popular approval with which my work was received urged me to use all my efforts to place in my productions a mark of distinctive quality. This continues to be my ambition, and as the fruit of my labors I have on hand a stock of nearly six thousand 6 x 8 backed prints, and to this number I keep adding year by year. I am still using the old reliable Aristo-Platino and it gives me results that as yet I have been unable to get with any other.

I secure pictures for the publicity folders of the Grand Trunk Railway Company. I supply views to farming publications and agricultural colleges in Canada and the United States; and last year the Department of Immigration at Ottawa engaged me to make two trips into the prairie provinces of Western Canada to secure views to be used in illustrating immigration literature. I had no political "pull" and the offer came to me through the quality of my work alone. Frequently, too, I am called upon to illustrate serial stories in magazines and periodicals.

Included in my collection of prints are domestic scenes, pictures of rural life, views of nature in her wildest and loveliest moods, hunting, fishing, boating, camping scenes, and all outdoor pastimes. My stock increases year by year just as do my number of customers.

My sales are not confined to America alone. Everything I make goes to the United Kingdom and all European countries. I also send work to Australia and my latest customer is the Editor of the *Hindoo Patriot*, of Calcutta, India.

In aiming for the best possible results I endeavor to throw into my pictures all the human interest possible, so that all my studies will be self-explanatory.

In concluding my reference to commercial work, let me offer an illustration which, to me, proves conclusively how much more lucrative is the field of landscape photography as compared with that of the professional in a small town. I have already stated that the territory surrounding Goderich, from which portrait business should come, is of eight-mile radius and only "half a wagon wheel" at that. The estimated population of this territory, including the inhabitants of the town, is about 7,500. By each of this number

of people I am prepared to say that the amount expended in photographs will not average more than fifty cents per year, and this applies to any small town in Ontario. Now in commercial work my business is growing year by year as the result of the constantly expanding territory from which I receive business, a condition which the professional does not enjoy. It is obvious that the portrait business is limited in Goderich, as in any small town; but, as for me, I am forever hustling to keep pace with the commercial orders. It is a work in which I take great delight, but I am aware that there are many of the craft who take no interest in outdoor work at all. This is to be regretted because they would derive from their profession much more pleasure and profit if they did not voluntarily restrict their trade.

Although the greatest part of my time is taken up catering to the commercial trade, I still keep in touch with the portrait business. I firmly believe in the maxim: "Never dictate to a customer." When a prospective patron enters to arrange for some work, what he wants is what I want to make.

Throughout the studio the virtue of cleanliness should be in evidence. Dust in the reception-room and filth in the dark-room have influences which are decidedly against the production of good work. I have been in studios where filth reigned supreme, and I wondered how the photographer ever obtained results. In many cases I have found the floor coated with hypo. How did it get there? Simply by the persistent habit of the operator taking the plates from the fixing bath and allowing the drippings to drop profusely on the floor without ever washing the plates under the tap. The liquid dries and as a result the powder fills the atmosphere of the rooms. Coming in contact with the toning dishes it causes endless trouble.

As to the dressing of the showcase my policy is to exhibit only a few pictures and change frequently. In one window I know is the picture of a man who was drowned three years ago. This is, no doubt, an extreme case; but I maintain, nevertheless, that frequent change is the policy worth considering. Passersby will acquire the habit of watching your work and will pay more attention to your style than if the window were filled with an extravagant collection and seldom changed.

It is good business to be the amateur's friend. Don't turn him down. Where one quits three take his place. Depend upon it, the amateur is here to stay and there is no use "kicking against the pricks." I exercise as much care in the work of an amateur as in my own. Treat him properly, help him out of difficulties, and when he is after professional work he is still your customer.

SIMPLICITY

THE KEYNOTE OF PHOTOGRAPHIC SUCCESS

By R. M. FANSTONE

IF you asked a photographer of twenty years' standing what, in his opinion, was the most remarkable feature of photographic progress during that period, he would probably reply that it was the simplification of detail. That is the keynote of the popularity of photography today. It is hoped in this short article to show how essential simplicity is to the success of the photographic craftsman. I can remember in my own beginner days, now quite ten years ago, being told by a very old photographer that he could remember, in the early days of the art, how the photographer of the old wet-plate days sallied forth with his camera and complete dark-room equipment, and a man to carry it. Compare this for one moment with the vest-pocket apparatus

of today, or even with the ordinary pocket camera, and do not wonder for another moment at the popularity of our delightful hobby.

The first great point in the simplification of photography lies in the reduction of bulk. My own photographic outfit, with the exception of a telescopic tripod, is kept in a small wooden box about one foot by nine inches, and seven inches deep. This includes a folding pocket quarter-plate camera and four slides in a case, a dark-room lamp, three dishes fitting one into the other, plates, tabloid universal developer, self-toning and gaslight papers, and hypo.

It will be noted that in the above outfit everything necessary has been included. I use a universal developer for saving bulk, which will develop both plates and films, and bromide or gaslight paper. Self-toning papers I use because there is no bother with gold toning baths. I know that many photographers who have the room enjoy the use of a more elaborate outfit, but as I have not the space to devote to it, I find it better to use the one I have. The advantages of such a compact outfit are obvious; it is extremely portable, and well suited, on account of its compactness, to those living in apartments or boarding-houses. Another reason is that it can be kept in its box, the worker being quite sure that he is not out of stock of any particular materials wanted for the evening's work. With such an outfit it is impossible to overlook anything, an advantage that the elaborate outfit certainly does not possess. My own experience is that with a more varied stock, the particular thing wanted at the time is sometimes conspicuous by its absence.

One more hint to those who wish to reduce bulk: Never have in hand any more plates or paper than you can use at one time. One packet of plates at a time is quite sufficient for the ordinary worker, and it certainly makes for economy, as many a plate has been wasted simply because the worker thinks he has plenty more, and fires it off on some worthless subject.

Compare such an outfit as described with the weighty, bulky outfit of twenty years ago. Try working on the lines laid down, and you will find that with the simplification of technical details comes the opportunity to give greater attention to pictorial work, or other branch the worker may be interested in.

From the simplification of the technical side there comes in turn the consideration of simplicity with regard to the pictorial aspect. Perhaps your pictures have not given you the greatest amount of satisfaction, then a certain remedy for jaded artistic ideals is to simplify your aims. Think of the glorious pictures you thought to make, and when the result was finished in cold and seemingly spiritless monochrome you saw too late that the scene came in for your admiration on account of its color.

Don't bewail the fact that color photography is too hard for you or too expensive for your pocket. Simplify your ideals and try to see beauty in another subject. If the pet phase of your hobby is landscape photography, don't mourn over the fact that you cannot go and photograph the rolling mountains of Switzerland or the beauty of the Italian lakes. Simplify your ideal, bring it down to the level of the English country lane or moorland that is within reach, and set out with your camera to immortalize that which must on consideration appeal to you. And even if at present the country lane or moorland don't appeal to you, remember that they have a beauty that only requires seeing. Emerson said that we were born blind, and we must educate ourselves to see, and it is only seeing that will enable you to find beauty within a few minutes' walk of your own home. It has been said that photographic subjects can be found within a hundred yards of the photographer's front door. This may be a misstatement or exaggeration, or it may not; but one thing is certain, that within walking distance of any point, name it where you will, subjects are to be found.

Simplify your ideals, and bring them, if need be, from the mountains to the city slum; go there without your camera

and educate your eye to see, and then seeing, you will find that beauty—or perhaps it would be more correct to say pathos—can be rendered by the photographic camera as well or better than by the pen or brush.

One word more as to your subject: You may find it at any time or any hour, with your camera or without it, as the case may be. Ask yourself the reason for its appeal. It may be a mere play of light on a woodland glade, or something looming through the fog on the river, or through the gloom of the city street. Find your ideal and get to the kernel of it. Don't photograph it haphazard, don't necessarily photograph it all; get to the very root of the mental inspiration that prompted you to admire it, and regard it as a good photographic subject. Don't have it with a crowd of meaningless details surrounding the artistic gem. Photograph the gem and such of the surrounding detail as may accelerate its value, and no more. Strive for an artistic and simple ideal, and tell your story in a simple manner. Don't pad it up with the unnecessary, for ideals don't want padding, and you will find your picture gives pleasure to yourself and, it may be, to others. This world abounds in beauty, but you will often find it veiled by the commonplace. You will find a new wealth of artistic ideals in looking for beauty, even in the commonplace. For when we look for beauty we find that it has perhaps been there for a very long time unobserved, and it is our eyes that are at fault, blinded by familiarity, until we have educated them to see.—*The Amateur Photographer.*

THE SITTER AND HIS PHOTOGRAPH

By VANCE ARMSTRONG

THAT the successful photograph depends quite as much on the "subject" as on the photographer is a point that everyone should intelligently grasp before he or she decides to give a sitting. The reason that so many photographs are unsatisfactory is because not enough thought has been given to the matter beforehand either by the photographer or his client. Very successful photographers, who have built up a reputation on the work they have done in an earlier and less strenuous period, are apt to become hurried under the strain of popularity and increased business, and their work in consequence soon becomes uninteresting and uninspired, because it has been impossible for them to give their best thought and concentration to their sitters. Often the photographer sees the sitter for the first time at the moment the photograph is to be taken, and as he has probably many other appointments following close, one on the other, he cannot easily find out the possibilities of his client in the few minutes at his disposal. Of course a photographer who is doing a large business *does* do good work at times—it would be surprising, considering the size of his output, if he did not—but his satisfactory work must often be attributed to chance, or to those days when he was not quite so busy.

The last decade has seen the debut of another type of photographer, the craftsman who carries on his work in a different and, it should be said, certainly a better way. In the first place he or she does not attempt to do a great deal of work, realizing that if he does the quality is sure to suffer. He proceeds more or less as a painter, in first talking over the matter with his client, when he finds out just what is to be worn, noting at the same time expressions and gestures characteristic or the person. He generally makes it understood that if the results of the first sitting are not satisfactory to him, the client is to return again for another trial. Why is it that people who think nothing of making repeated visits to a painter or sculptor, regard it something in the light of an imposition if the

photographer asks them to give up a little more of their time? It is difficult to understand because the photograph of today, as interpreted by our more advanced camera artists, is surely worth as much sacrifice of time and concentration as the painted portrait, which rarely succeeds in portraying a satisfactory likeness. Let the person who has despaired of getting a good photograph of himself, look up one of these men or women who are working at their art in the only rational and satisfactory way.

A good plan is to make two appointments for the first sitting, as one may be decidedly out of the mood when the time comes round and no good will come from putting oneself or the photographer at a disadvantage. If the photographer is an artist he or she is probably very sensitive to the sitter's mood, and the result of a constrained and unsympathetic manner will often prevent him from doing his best.

Many people find it difficult to assume a natural expression for a number of seconds. It would be well for them to practice keeping perfectly still for ten seconds at a time before they go to the studio. Often the most exquisite light effects can only be gained by the use of a slow lens and slow plates, so that it is vitally important at times for the subject to remain quiet for a few seconds at least.

Clothes require a good deal of thinking over in this matter. The thing that prompts most women to have their photograph taken is a new gown. This often proves a mistake, as a woman is hardly ever at ease in a frock that she has only worn once or twice. Often too, the gown she selects is a very modish one of which she is likely to tire in less than a year. The gown should be first considered as to lines. Often a dress that has been laid away, because it is too old or because it is slightly soiled, will prove most succesful in a picture. Soft woolen and silk stuffs "take" very well, but everything depends upon the way they are cut. Try to study the gown for its possibilities for pleasing when a few years have rolled by and Fashion has dictated quite another style. Some dresses in every period are so simply cut that they never seem ridiculous to the point of view of the following generations. This is the type of gown to choose! Beware of the elaborate gown, the gown that is heavily embroidered, the dress that is high in the neck, and the tailor-made frock. The latter is too stiff and severe in line for a picture, and as each year brings out a new cut in them, the photograph is sure to look old-fashioned in a comparatively short space of time.

The afternoon gown, made of soft, clinging materials, with its rather short neck and its long sleeves, is usually most satisfactory. Evening dresses are sometimes difficult for the photographer to manage, as the long expanse of arm, especially when it is against a dark gown, is not pleasing in a picture unless it is partially covered by a scarf or some piece of drapery. Few jewels should be worn, although a bracelet and a necklace are most useful at times to break the long line from the elbow to the wrist, and the too great expanse of neck. A good plan is for the woman to bring with her many accessories such as scarfs, necklaces, bracelets, fans, opera cloaks, etc., as often the photographer will be able to work out the most charming study with their aid. Do not wash the hair before going to the photographer, as it will be difficult to manage and prove a vexation, perhaps. The hair should be dressed as compactly as possible in a simple style. Avoid powdering the face or rouging the lips, as the effect in the finished portrait is pretty sure to be bad and difficult for the photographer to remedy.

Do not bring anyone into the room where the photograph is being taken, without the permission of the photographer, as often the artist is ill at ease under the scrutiny of another person (who often as not makes suggestions that are entirely impracticable) and cannot do his best work. Sometimes he would welcome the presence of some one to keep the sitter interested in conversation until the moment came for the exposure to be made, but at all events it is best to ascertain beforehand.

The average business man appears

to best advantage in his own environment, and if possible the photographer should give him a sitting either at his office, his home, or—if he is a sportsman—out-of-doors in tennis, golf, shooting costume, and so on. The ordinary business suit is unsatisfactory from a pictorial stand-point, because of its uncompromising stiffness, and should be discarded for the more picturesque garbs dedicated to open-air games. The starched collar is an abomination from the artist's point of view and should give way to the more negligeé variety. Many very satisfactory pictures have been taken of men in their shirt-sleeves, and indeed without their collars, too.

When one is being photographed at home, have the photographer call at least once before the time, to study the effect in lighting, and on the day that the picture is taken see to it that there is no possibility of interruption. The sitter is often more at ease when taken in her own environment, but she should remember that the photographer is probably not as serene as he would be in his own surroundings, and therefore should be kept free from the annoyance of any unexpected disturbance.

PHOTOGRAPHY

By EVA LAWRENCE WATSON

THERE are probably no words less understood and more misused than *art* and *artistic*. It is the common use, when a thing is vague, unintelligible, affected, or in some way false, to call it artistic. Much that is ingenious and skilful craft is called art. It would be difficult if not needless to make a new definition of art. Tolstoi has rehearsed in his book on the subject all the varying opinions and definitions, and his own expression is the simplest and most comprehensive that I know. So that whether art is intellectual or spiritual, beautiful and ugly both, immoral as well as moral, one element in us it must appeal to—the imagination. And it is for this reason that photography has had to develop methods of avoiding the weakness and monotony of its mechanical reproduction of everything within range of the lens—of concentrating the interest in order to provide a new means for making pictures which could rightly be called artistic. The question has never been, what is or what is not artistic, but whether photography was plastic enough to produce artistic results, and that has been sufficiently proven to discount the prophecies of failure from the unhopeful and the amusing condemnations of the ignorant.

There is no authority on art to whom to refer for judgment. If through a picture you can give to one other person the feeling which impelled you to make it, you have done well, you have found recognition, and if one understands, another will, and another, in the course of time. The best things do not meet with general instant recognition.

Photography bears a resemblance to nature in this—the enormous amount of material thrown broadcast on the world, very little of which is fit or expected to survive. An immense lot of energy and stuff are apparently wasted in order that there may be a very special choice as the evolution of the creature goes on. It has been very easy to make numberless photographs without thought, but what now is required is special skill, endless patience, and more knowledge and study than most of us have been able to obtain. Then perhaps a master would be able to make two or three pictures and several portraits in a year which would be worthy to live as works of art. I am speaking very seriously of great works. Sketches and studies are part of the daily exercise of picture-makers, and much material, interesting and profitable to look at, can be shown which need not be mistaken for masterpieces nor shown as such.

We are suffering just now—we always have been—from influences, and, though the influences are better than they used to be, the disposition to imitate proclaims that photography still is young. Perhaps in its youth it could not do better than to imitate good things, but I think it could. It could do better by studying them. The painters enjoy some of our "paint" effects, and misunderstand others. They recognize our imitations, but hurt us by identifying our small resemblances with schools of painting, ignoring our identity, calling a strongly-lighted subject a Rembrandt a hand and glove means Titian; a long, sweeping line indicates Alexander. Prints are classified as Corots or Constables, Whistlers or Holbeins, and we have been feeling flattered—in one sense we should—but it is a false compliment. In spite of all this the individuality of the man is claiming recognition. This is acknowledged on every side. The personality of the photographer is felt in the trivial French character of Puyo's prints; in the strong, awkward compositions of the Hoffmeisters'; and, above all, the supreme evidence of personality is seen by reflection, for instance, Mr. White's influence so unmistakably stamped on many *charming* prints. This personality is not to be worked for; it is the inevitable sign of life, the unconscious expression of the man in his work.

Any means that is photographic should be used; the skill of the hand in manipulating plates and prints is not illegitimate. Foreign methods, such as working up in water color, are destructive of the purity of the art, as the introduction of gems and tinsel into painting and sculpture, and foreign phrases into a piece of English literature, are acknowledgments of unskilfulness or the disinclination to work.

There is an idea about that we see as the lens does. It is a very great mistake; we do not, either mentally or physically. The eye cannot focus on more than one spot. The lens focuses on one entire plane, and with persuasion can be forced to give equal sharpness to everything within its range, from the distant horizon to the near foreground. The difficulty of avoiding this stupid and uninteresting aspect of things is probably the reason why there has been more successful indoor than outdoor work, although that is due partly to the fact that the light at least can be concentrated in an enclosure. A feeble admission of this difficulty in mechanical photographs is the usual habit of dragging into a landscape a figure which has no sympathy with it, with the firm conviction that it "introduces life," as they say, into something thus acknowledged to be dead. The only reason the figure introduced draws attention from the general monotony is that it is an intrusion, usually a self-conscious one.

I do not mean to say that the indoor work is better than the outdoor work—that is, pure landscape—but there is more good work in which figures are used. I am compelled to say that the worst things done in photography have been with figures, deliberately planned, posed, and exhibited as "artistic." The deadly self-consciousness of models, the unfitness of objects and clothes used, and the poverty of imagination on the part of the man behind the camera, give one a sense that one sees a straight photograph of a tableau, a living-picture arrangement, or the misfits of the grand opera choruses with calcium lights. A painter said to his pupils: "Art is an animal not to be caught by detail." The idea is good enough to be remembered by photographic students. Perhaps the commonplaceness of many photographs is mainly due to the absence of any definite intention at the start. We soak our plates and our paper, but we do not soak ourselves enough in our subject. We should follow up a picture, visit it often in many lights and seasons, carrying it about in our memory to its final completion. We may over-expose our plates, but we cannot get too strong a mental impression. It is good practice to *sketch* with the camera, using no plates, but studying on the ground-glass; becoming familiar with the disposition of our lens so that it may not surprise us; finding out and avoiding what is impossible while it is impossible; studying how to work the camera to get our point of view, as

well as to adjust our eyes to the lens as to new spectacles.

A photographer needs a special training for quickness of perception. It is his advantage to be able to retain by instant exposure of a plate some things which could not or would not enter his mind to conceive, and to do this his judgment and keenness must be constantly under his control. We cannot afford to lose the suggestions of the *happenings* which, like the conjunctions of some planets, a man may be able to see only once in his life, and in instances where it is some line of beauty, or some expression or sentiment, or intense feeling, there is no way of repeating the effect. But the camera can catch it if the man recognizes what he wants, and by his memory he can work the material into rare pictures. Such material is, like nuggets of gold, likely to contain much dross, because stuff is there which also happens and is not by choice, and the royal right of elimination must be used to dispose of whatever detracts from the value of the thing. Good judgment and a sense of abstract beauty, the realization of the embodiment of ideas in forms and lines, in light and sound, make that quality called "feeling," which is the personality, the "temperament" of an artist, a painter, photographer, writer, or musician.

When it becomes better understood that many false effects got photographically can be controlled by the skill of the photographer, more people will gladly turn to it as a worthy means of expressing their ideas and impressions, and we shall have schools of photography to teach composition and the relation of tone to color as well as the use of the camera and chemicals and manipulation of prints.

There is one important open field yet for the camera—that is illustration—and I look for great things in that direction in the future. Some good work has been already done. At present there is something like reciprocity between the picture-maker and the poets and in getting titles for pictures it is a question whether the Greek poet conveniently conceived characters which we recognize in our reincarnations, or whether he is the inspiration of our creations.

The opposition through which this new art is pushing itself—the traditions, like the earth which lies above the bursting seed through which it has to force its way—is a great and beneficial discipline, developing strength and brushing off whatever is superfluous or weak. So much the better if progress is slow. For a last word I would like to quote Mr. Steichen in a "brave" and refreshing criticism: "The goal for which we are working is still far, far away, and it seems that each and every man needs contribute toward the element which is to reach it and which each and every worker believes eventually will, or at least should, be reached.

THOUGHTS

KNOWLEDGE is not what you happen to remember, but ability to apply it when needed.

HASTE is all right sometimes; but more often it costs people their jobs.

INVESTIGATION of the new sweeps away the rubbish of outworn methods and opens the way to progress.

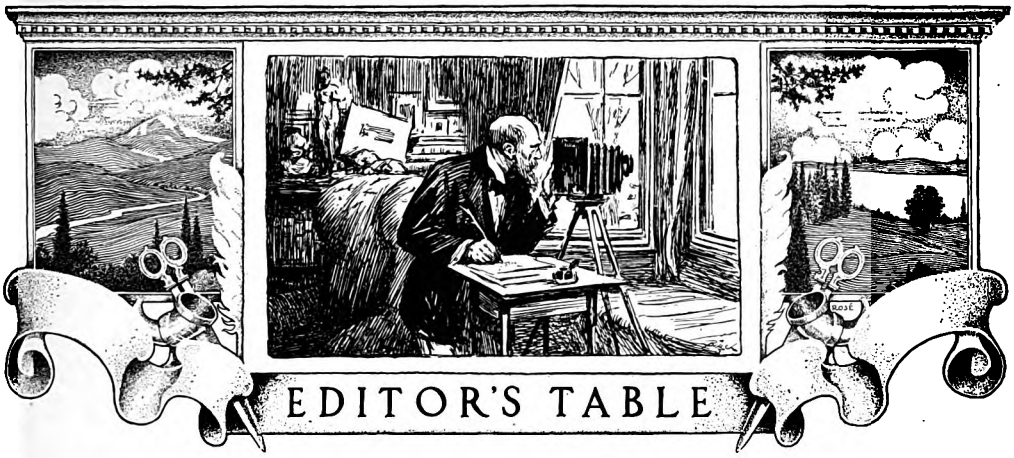
ALTHOUGH the old is vigorously defended against the new, the new always supplants the old.

DON'T look at your neighbor with that "Did God make you too?" expression in your face.

COÖPERATION means learning how to get along with your fellow-man.

NEVER envy success of others, for they do not make your successes or your failures.

THE best work is done by hitting slowly and clearly, making every stroke tell.



PLAIN VERSUS PICTORIAL PORTRAITURE

AFTER several years of change and experiment the intelligent photographer begins to appreciate the fact that, however successful it may be in special circumstances, the pictorial method of portraiture so widely advocated of late is not a system which can be indiscriminately applied in every-day work. This has, naturally, caused some workers to pause and ask themselves the question: Shall I return to the good plain portraiture of past years, or will I gain more by making a field for myself by further pursuit of the pictorial ideal in my work?

Let us look at it broadly, and see whether it is possible to reach any definite conclusion. Theoretically, the perfect portrait should be one which gives us the most faithful likeness of the person portrayed. For many reasons which are well understood in the profession, the public prefers the portrait which embodies its conception of the person rather than one which depicts the actuality of the subject. Thus, in the majority of instances, if a portrait pleases the sitter or the sitter's friends, it matters little whether it is a correct likeness or has pictorial quality. Where the photographer works among people of education and culture the qualities of likeness and pictorial attractiveness give additional pleasure; but even here the personal or public conception of the subject must be satisfied if the photographer's work is to be successful. When art is more generally appreciated there can be no doubt but that the portrait possessing the qualities of art will win most favor. At present, however, the personal equation decides the question; and attempts to force upon the public something which it does not fully appreciate or want can only end in disaster, or, at least, discouragement.

There is another point to be considered. A few photographers, aided by special gifts, training, or circumstances, have achieved success with work which may, for convenience, be called pictorial rather than photographic in character. The work of these men and women and their methods or opinions have been put before the fraternity for its following, and have been applied without discrimination which had so much to do with the success they had gained when properly handled. Under such conditions discouragement was not surprising; in striving for something he admired but did not thoroughly understand, the photographer abandoned methods in which he was fairly sure of success. The result in one case, which is cited as an instance among many others, was that the few people who wanted "fancy portraits" went to the studio of the photographer who had taken up the "new" methods, while the bulk of the public simply migrated to less progressive galleries, where the "old" plain portrait was obtainable.

This resulted, not because the "new" method was a mistake in itself, but chiefly because it was applied in a mistaken way.

Again, it must not be overlooked that a large majority of the leaders in the fraternity still cling to good portraiture as the best basis for success in photography as a business.

On the other hand, many workers have taken up the "pictorial" idea, and by careful discrimination have utilized it to complete advantage, securing, by skill in their specialty, prices and fame which they apparently could not win under the conditions which they abandoned.

The lesson, then, is this: That however strongly a photographer may incline toward "pictorial" portraiture, he should very carefully consider the circumstances before quite committing his business success to his personal inclination. It may be that the change is one which is suited to his trade or locality; it may be that the change would necessitate the establishment of a new business in another locality. He may find, on considering the question, that he can judiciously blend the old and new methods with advantage, or it may be made plain that his safety depends on developing his skill according to the traditions of the good plain portraiture of earlier days. *So much depends upon the man himself and upon his public.* In fact, when all is said and done, success will be found to depend most largely on these factors. For our own part there is, we believe, ample room for both "schools;" what we would like to point out is that a radical change from one method to the other, based simply on the personal feeling of the photographer, is as likely to turn into a failure as toward success.

CAN I AFFORD TO ADVERTISE?

THIS is a question that a great many photographers today are asking themselves, and in far too many cases for their own good are answering it in the negative without investigation. No matter how small the gallery may be, if it is doing a business that supports its proprietor without advertising, with the right kind of advertising it can be made to bring in a very considerable increase of business during the next twelve months.

The word "advertising" seems to scare a great many men who would profit greatly by looking into the matter before dismissing it. Advertising in its true sense does not mean, of necessity, an expensive campaign of literature, newspaper space, periodical publications, or matter of that kind, but properly embraces all efforts by which a knowledge of the existence of the studio may be brought to the attention of the people of a community, their interest focussed upon it, and the thought created in their minds that its products are more necessary to their welfare and happiness than they had believed to be the case.

In many of the larger towns and cities, with a large population to draw from, photographers have long realized the value of publicity matter and the advantage of working along some definite line of advertising, without which they would hardly deem it possible to carry on the business today. In the smaller towns, where the population is limited and where the buying interest of the community has never been aroused to the purchase of goods other than those deemed necessary for the comforts of life, the case is different, and the photographer located in a community of this kind naturally shies at a proposition which involves the expenditure of any considerable amount of money without a definite and absolute certainty of proper returns. It is nevertheless a fact, that even in such communities as these the photographer can inaugurate some sort of a publicity method by which, in the course of time, his business should profit materially.

It is, however, in most cases, a fatal mistake to imagine that the expenditure of a few dollars for leaflets, folders, follow-up letters, or anything of that kind, even including newspaper advertising, will be of any material value in adding to the business of the studio, unless the campaign be carried on with persistence and upon lines that are well

thought out and carefully planned. The money that may be spent for a spasmodic dive into publicity, by which the advertiser makes what to him is a tremendous splurge, but what to the public scarcely creates a ripple in the tide of their interest or enthusiasm, he may better devote to the purchase of a box of cigars or other luxury and get the enjoyment of them himself.

There are many lines of publicity that may be opened up in the smaller studios without the expenditure of a cent for printed matter of any kind and at this season of the year it behooves the ambitious man to get busy and work out the problem for himself. If he has a studio register that contains any considerable number of names, let him go carefully over it for the past four or five years. Let him pick out the names of patrons who have not been in his studio for a considerable length of time—it is safe to assume that he will find many such—and let him, during the spare time that he would otherwise employ in waiting for the customer to come in, sit down and write a few lines to the customer, reminding him of the time that has elapsed since the last negatives were made in the studio. Let him mail this letter under a two-cent stamp and await results. If none are in evidence during the following two or three weeks, let him repeat the dose, using a little different phraseology, but at the same time dwelling upon his desire to show them something new in the line of portraiture or to bring to their attention some special line of printing or other special line of his studio which he believes would particularly interest them.

There is an endless field of possibility in the studio register of almost every photographic establishment in the country and it has never been half worked. If the proprietor of the studio does not feel competent to work out the problem of framing and phrasing such a letter, let him ask help of someone who can help him. There are plenty to whom he can apply and he need not be at any considerable expense in the matter, either.

If he wishes to reach a large circle of possible buyers, let him prepare, or have prepared a neat, attractive, but inexpensive folder or leaflet, which may be mailed under a one-cent stamp, and let it be followed by another or a personally written letter a little later on. In any event, let him assure himself at the start that whatever course he undertakes must be persisted in for a reasonable length of time if he is to expect any considerable return.

One thing may be taken as a self-evident proposition, namely, that if the establishment has been kept going without any effort of this sort, the right kind of effort will materially increase the returns. It is also evident that if the returns can be increased in this way, the percentage of profit arising from increase of business will be very much greater than that resulting from the business as carried on under the old method. There are few galleries in the land that cannot handle a large proportion of new business in addition to that which they are already turning out, without any material increase of outlay over and above that necessary for the purchase of stock and material. It follows, therefore, that every new order resulting from this increased effort brings a larger proportion of profit to the studio than any single order for the same amount that may have been taken without it.

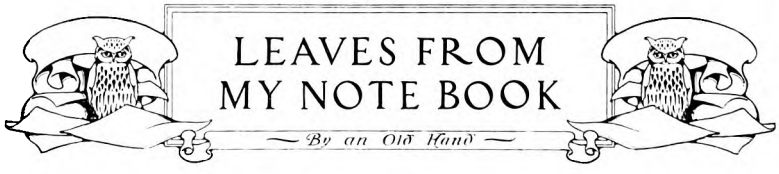
There are, too, in every community, opportunities for special work in the photographic studio that ought to be put to very much greater use than they are at the present time, or ever have been.

The studio with its outfit of more or less expensive apparatus ought to make it pay back its cost every year in the commercial work outside the studio limitations. If the rank and file of the craft in this country would see the possibilities that lie dormant in the field of commercial photography, and avail themselves of them, there would be far fewer causes for complaint about dull business than there are today. None of these possibilities, however, will develop themselves. The studio having an outfit to do the work, and an operator with a fair amount of ability and ambition, may find them, if it will push out into the surrounding field and acquaint the public with its existence. There is no better demonstration of this state-

ment needed than the experience that is coming under the eyes of photographers everywhere in connection with the amateur worker, who, despite the handicap of inexperience and poor facilities, is in many cases taking work out of the hands of the professional photographers and is getting from it, in some cases, prices higher than the ordinary photographer would dare to charge for the work produced.

In such work as this it is not necessary to go into expensive advertising, but persistence is a necessity of the utmost importance.

As the season opens the photographer is urged to arouse himself from his lethargic conditions and to reach out after more business—business of the kind that will pay and help to support his studio. There is far more of it to be had in the land than the most sanguine photographer can imagine. It must, however, be gone after and by a persistent campaign of personal letters, printed matter, or other kind of effort that brings the photographer frequently in touch with the public at large. After this campaign has been in operation for a reasonable time an appetite will have been created for work of this nature which in the beginning of the campaign may not even exist. Like all other luxuries it is necessary to educate the public to a desire for the goods advertised before the full returns from an advertising campaign of any extent may ever be reasonably expected.



HYPO-ALUM TONING

NOTWITHSTANDING all the formulas for the sulphiding or so-called redeveloping baths, the old hypo-alum toner is not to be beaten when properly used. Like everything else it will not take care of itself, nor will it last forever.

Everyone has his own pet formula and here is mine. I do not say that it is better than all the rest but it works well:

Hypo	500 gm.
Water	1000 c.c.

Heat to 120° F., and sift in slowly, stirring all the time,

Potash alum	62 gm.

Bring it to the boil and let it boil gently for half an hour; a little water will evaporate, therefore enough should be added to make up bulk. Now add the following mixture:

Silver nitrate	1 gm.
Water	50 c.c.
Common salt	1 gm.

Dissolve the silver in the water, add the salt dry, stir well, and add to the hot bath. Finally sift in

White sugar	50 gm.

It is preferable to make the bath up the day before it is to be used, though this is not actually necessary.

There is one precaution that must be observed, no matter what formula is used, and that is, see that no iron comes into contact with this bath or it will be at once spoiled. Very frequently enamelled iron trays are used and kept hot with a gas-ring under. It is a mistake to use these, as sooner or later the enamel cracks and then all sorts of trouble appears. I use an old enamelled pan, much cracked and chipped and no good for anything else, as a water bath, and use a deep porcelain tray inside for the actual toner. I took a piece of one-inch diameter lead pipe and sawed off four half-inch rings; these are placed in the outer tray and act as supports for the inner one, which is thus completely isolated from the water bath and allows plenty of hot water to circulate. The old iron tray is two or three sizes larger than the porcelain one. This takes somewhat longer to heat up the bath than if the heat was applied direct, but it absolutely precludes any possibility of iron contamination.

The exact temperature for toning is dependent on the make of paper used, but I have found that from 100° to 120° F. is about right for most of the development papers. The only thing to do is to make a test and that is easy enough. Make three prints all alike and put one into the bath at 100°, another at 110°, and the third at 120°. The temperature that gives you the tone you like should then be adhered to. Sometimes

prints are a little too warm in color; then diluting the bath will give a colder tone. Too hot a bath tends to give bluish tones, while a cold one tends toward the yellows.

Having once determined the temperature and dilution, toning becomes purely automatic, and my method of working is as follows: I always wait until there is a decent batch to tone, and the prints are immersed one by one, and slightly brushed back and front with a small mop made of cotton-waste that was bought in a ten-cent store. This insures absence of air bubbles and that each print is thoroughly soaked before another is put in. Not more than a dozen prints are ever in the bath at a time, though I could easily get three dozen in. This is the secret of success. Every print is thoroughly soaked and has plenty of solution, so that unequal toning never results.

When the desired color is obtained, the prints are flung into a dish of running water and left while the next dozen are put in the bath. If a lot of prints are put into the hot bath in a lump, the middle ones will either melt or else be unequally toned, and all sorts of spots and stains appear. Putting the prints in singly and only a few at a time takes more time but it certainly lessens the waste.

All prints are washed for half an hour and lightly rubbed back and front with a tuft of absorbent cotton, which removes any deposit that may have settled on the surfaces.

This bath does not last forever, but it can be used for at least six dozen 8 x 10 prints, and it can be renewed by adding more hypo and alum. I never do that. It is so easy to make up, and by not using it too long constant tones are always obtained. On the other hand, one of my neighbors, quite a good sort with whom ideas are frequently exchanged over a friendly smoke, although he is a competitor, uses the above formula in a different way. He makes up a double quantity and puts half away in a stock bottle; from this he adds fresh solution after every batch, so as to make up to the original bulk, and he works the bath until it begins to turn gray and smell, then he turns it out.

Some people advise hardening the prints with a preliminary alum or formalin bath, but this is quite unnecessary if the toner is made up properly and not used too long.

The Artura people advise the addition of a little gold chloride to the bath. I have never tried this, but many say that it works well and insures regularity of tones. I have not tried it for the simple reason that I never have any difficulty in getting the tones I want every time.

For amateurs, to whom time is not of great moment, the above bath may be used at room temperature, but the toning will then take all night, and as long as each print is well saturated with the bath they will take no harm through lying one on top of the other.

It is not absolutely necessary to use the sugar in the above formula—as a matter of fact toning seems to proceed as well without this as with; but if the prints have to be squeegeed down to plate glass, so as to obtain a high glaze, then the sugar is necessary, as the prints leave the glass much better.

Some Plate Troubles

At a recent meeting of the R. P. S., Mr. Olaf Bloch gave a very useful summary of the various ills that a plate is incident to, and while there is nothing actually new in the same it may be worth while to summarize it: Optical troubles were not dealt with, though attention was called to the peculiar string-like markings interlacing and rioting over the surface of film or plate, due to a minute pinhole somewhere in the bellows acting as a lens and projecting a little beam sufficiently strong to cause a distinctly-marked line, which curves and interlaces from the swinging of the camera. (To this might have been added the central patch of fog due to the accidental release of the shutter in the small cameras which one puts into one's pocket.)

Chemical agencies are more prolific, and of all these hydrogen peroxide is the worst. So energetic is it that an exposure of a plate for one second $\frac{1}{4}$ inch from the surface of a 30 per cent. solution, in the dark, gives a very strong image; even a 1 in 1,000,000 solution will act on a plate, and Bloch states that he has fogged plates that were stored in a drawer several feet away from a sink down which he had poured some solution and neglected to wash it away. Unfortunately this chemical is produced by wood, by metals, resins, and consequently varnishes. The obvious moral is never to keep plates or films for long in either plateholders or cameras, either before or after exposure.

Zinc, aluminum, brass, lead, tin, nickel, all when freshly scratched give rise to the formation of hydrogen peroxide. The remedy suggested is cleaning the metal surfaces and then painting them with a very weak solution of platinum perchloride.

Dampness and the products of coal-gas consumption are two of the strongest enemies to keeping plates. Plain paper, strawboard, and, above all, newspaper are the materials that the careful operator will shun as separating materials for his plates; all act on the film. In

some experiments with uranium salts, little pill-boxes were placed as containers on the plates, and it was subsequently found that the strawboard of the boxes was active. And here comes in a joke: An ingenious writer in the theosophical journal, *Light*, expounded a theory in which he ascribed separate individualities to the pill-boxes in order to account for what appeared to him as a weird manifestation.

Finger-marks and traces of hypo cause results that are too familiar to need description; abrasion is also a frequent cause of markings; air-bells we are all too familiar with. Even the great gods nod at times, and what can be more exasperating than to expose a backed plate through the backing? Exposed but undeveloped plates should be kept as dry as possible. Ebonite, so much used for plate-holder slides, in England at least, is not opaque to light and may fog a plate if unduly exposed to sunlight.—*Photo. Jour.*, 1915, p. 219.

Automatic Exposure and Development

Chas. Gravier has proposed a method of popularizing photography, starting out with the idea that apparatus and materials are now so well standardized, that having once chosen the lens, shutter, plate, and developer, the only thing to do is to standardize the method of using them. The lens should work at F. 45 and be fitted with a reliable shutter marked with the speeds at which it can be set. The plate should be backed and "rapid" for summer and "extra rapid" for winter work. To choose a plate, one should be taken direct from a box and immersed in the chosen developer for the standard time of development and then fixed. If the plate shows no fog it is suitable for the process. Adurol is the particular agent recommended, but metol-hydro, hydroquinone, or pyro can be used. To test the shutter, the camera is focussed on a building lighted directly by the sun, the diaphragm set at F. 45, and an exposure of $\frac{1}{4}$ second given; then the aperture is altered to F. 11 and $\frac{1}{40}$ second given. On development the two plates should show identical results in tone and density. In summer a speed of $\frac{1}{40}$ second is adopted. No dark-room is required, the plates being placed in a tank, under a cloth or by means of a bag, and the developer poured in and allowed to act for the given time. The plate is then rinsed for about two minutes with three changes of water and fixed in daylight or merely well washed for five minutes, dried with alcohol, and printed from without fixing, and this gives softer prints. He also states that if the plate be fixed and washed for five minutes and then be immersed in 10 per cent. solution of sodium bisulphite for three minutes, a washing of not more than ten minutes suffices to remove the hypo decomposed by the bisulphite. The following was the actual formula for the hydroquinone:

Hydroquinone	8 gm.
Sodium sulphite, dry . .	40 gm.
Sodium carbonate, dry .	30 gm.
Water (40° C.) . . .	1000 c.c.
Potass. bromide . . .	5 gm.

Time of development, ten minutes; for five minutes, halve the quantity of water.—*Photo. Jour.*, 1915, p. 234.

Gravier is the editor of *Moniteur de la Photographie*, succeeding the late Leon Vidal. No notice would have been taken of this paper but for the fact that it may be reprinted on this side. No serious worker can for one minute uphold his recommendations. He ignores entirely the temperature of the developer, and his method of choosing a plate, if carried out, simply would mean that no plate on the market could be used, for no plate or film will show "absolute transparency" if developed for the normal time in any developer. Again he entirely ignores the velocity of development, which varies for nearly every kind of plate, and his suggestion as to non-fixing and his chemistry as to the action of bisulphite are hopelessly absurd. The process should be at once stamped as unsound and impracticable.—E. J. W.

Artificial Lights

Dr. Lux, of Berlin, has made some determinations as to the efficiency of various light sources for photography, taking as a unit the action of a Hefner amyl-acetate lamp at the distance of one meter, which he calls a *Phot*. A nitrogen Mazda of 1250 cp. is 9000 times more active than the Hefner; an open arc, with inclined carbons, of 3450 cp. is 73,000 times; while an enclosed arc, which is only 137 times visually brighter, is 655,000, and one of 1900 cp. gives 234,000 *Phot.*—*D. Phot. Zeit.*, 1915, p. 176.

Hardening Asbestos

Sheet asbestos is useful for making rough enclosures for safe lanterns or enlarging lantern bodies, but in its ordinary condition it is somewhat unsatisfactory, as it becomes very limp in damp weather and when dry is rather crumbly and readily cracks, especially around the edges or holes where it may be screwed or nailed. This can be cured by making a fairly strong solution of sodium silicate in water about the consistency of olive oil. The strength is immaterial, but it should be sufficiently diluted so that it can be easily painted on with a soft brush. Lay the asbestos flat on a table and paint it all over with the dilute solution. It will absorb it readily and the application should be continued until the surface just remains wet for a few minutes. Turn the sheet over carefully and paint the other side and leave it to dry naturally. When dry it will be found to be converted into a hard, rigid substance that is far more serviceable than the original material. —*B. J.*, 1915, p. 442.

Photoelektrophone

A. Berglund recently described before the Physical Society of Stockholm an invention to which he has given the above name. In place of the needle of the ordinary talking machine, which cuts the sound waves in the surface of a wax or other plate, he uses a small mirror fastened to a thin membrane. On the mirror

there falls a small beam of light, and the sound waves cause the mirror to vibrate and the light beam is projected on to a sensitive film, which on development shows the sound curves. To reproduce the sound, light is projected through the film on to a very sensitive selenium cell that has practically no lag. The cell is connected up to an electric current that varies with the illumination, and the current is transmitted to a loud-speaking telephone. Speech at a distance of from eight to ten meters can easily be reproduced.—*Phot. Ind.*, 1915, p. 370.

The only novelty in this is the use of the loud-speaking telephone for the reproduction of the sound. Photography of sound waves has been employed for years.

Dry Mounting

Renger-Patsch summarizes some facts as to dry mounting and suggests the following as the best formula:

Orange shellac	65 gm.
Glycerin	5 c.c.
Denatured alcohol . . .	100 c.c.

Dissolve by heat and shaking. The shellac should be the best pale orange in thin scales.—*Apollo*, 1915, p. 92.

Roloff is generally credited with having originated dry mounting, but Romyn Hitchcock certainly suggested it before 1890, fifteen years before Roloff.

The Discoloration of Condensers

At the present time, when it is no uncommon thing to use from 50 to 100 ampere arcs for kino projection for some hours at a stretch, the question of the discoloration of glass is a serious matter. It is a well-known fact that glass containing iron always has a green tinge, and that glass smelters add a little manganese salt, which imparts a pink tinge to the glass, to counteract this trouble. Under the action of the ultra-violet rays the manganese salt is decomposed and gives a distinct pink or, in time, a deep violet tinge to the glass. Martin, of the Busch Optical Co., states that he has found that if this discolored glass is heated to 450° F. for half an hour in an electric oven it will again become quite colorless.—*Eder's Jahrbuch*, 1914, p. 44.

This fact was first pointed out by Gaffield (*Bull. de la Soc. d'Encouragement*, 1881).

Gratings to Reduce the Light in Photometry

When the photometry of very intense light sources is in question, decrease of the light is effected by concave lenses, rotating sectors, or neutral-tint glasses. Hugo Kruess, of Hamburg, calls attention to the suggestion, first made by F. E. Ives, of using black and white gratings for the same purpose. They have the advantage of comparative cheapness, and convenience and are absolutely without selective spectral absorption. Kruess uses plate glass with black lines, and compensates for any absorption of the glass by inserting a sheet of the same glass in the corresponding object field. The reduction of the light by the grating is dependent only on the ratio of the sum of the breadth of the opaque lines to the sum of the breadth of the transparent ones.—*Eder's Jahrbuch*, 1914, p. 60.

Double Intensification

Namias strongly recommends the use of mercuric iodide as an intensifier, and when very dense negatives are required he states that it is better to bleach with mercuric chloride, wash well, redevelop with a developer, and again intensify with a solution of mercuric iodide in excess of potassium iodide. This last solution keeps very much better than one made with sulphite. This double intensification gives very great increase of density and is especially suitable for black and white work.—*Eder's Jahrbuch*, 1914, p. 105.

Toning with Cobalt Sulphide

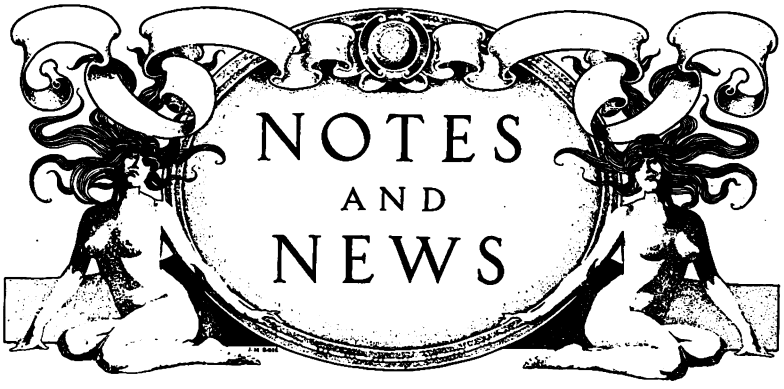
Namias suggests immersing developed prints in a 5 per cent. solution of potassium ferricyanide till quite bleached, well washing, and then immersing in a 2 per cent. solution of cobalt chloride acidulated with hydrochloric acid till the image turns green; after this the prints must be well washed for at least half an hour. If they are then treated with a 1 per cent. solution of sodium chloride, a rich brown tone will be obtained. This process intensifies the print.—*Eder's Jahrbuch*, 1914, p. 109.

To Remove Coating Quickly from Old Plates and Films

Make a 40 per cent. solution of formol, and dilute 3 ounces of it with 32 ounces of water. This solution keeps well if kept in well-corked bottles, to prevent evaporation of the formol, and it may be used over and over again. If a 12-plate washing tank is available, 24 plates can be cleaned at a time by placing two plates glass to glass in each groove. They are covered with the formol solution and left for 15 or 20 minutes, when the formol is poured off and the tank filled with hot water (about 140° F.). Then coating quickly loosens and falls to the bottom. If only a few plates are to be cleaned, it can be done in a flat tray; and two or more plates can be cleaned at a time by placing them glass to glass and separating the film side so that the solution can reach them freely. In case the films do not come off readily, add a little washing-soda to the water.—*Photo-Revue.*

The Care of Lenses

All lenses should be cleaned from time to time, but with proper care, as the adjustment of an anastigmat is easily disturbed by careless handling. Dust the surfaces first with a perfectly clean camel's-hair brush, which every photographer ought to have especially for that purpose. Then wipe them with a piece of old, soft linen (an old cambric handkerchief that has been laundered several times will answer admirably). Never use any acid or other strong fluid on the glass surface of your lens or it will be ruined.



The National Convention at Indianapolis

Everyone who attended the Thirty-fifth National Convention at Indianapolis during the week of July 19, seemed to be satisfied.

Hereafter the association year will begin on October 1 instead of January 1, and an advisory committee of three to be chosen by the President will assist in Association affairs.

The officers elected for 1916 were as follows: President, L. A. Dozer, Bucyrus, Ohio; first vice-president, Ryland W. Phillips, Philadelphia, Pa.; second vice-president, Homer T. Harden, Wichita, Kan.; secretary and treasurer, R. W. Holsinger, Charlottesville, Va.; general secretary, John I. Hoffman, Washington, D. C.

The Women's Federation elected the following officers: President, Maybelle Goodlander, Muncie, Ind.; first vice-president, Clara Louise Hagins, Chicago, Ill.; second vice-president, Mamie Gerhard, St. Louis, Mo.; secretary-treasurer, Bayard Wootten, New Berne, N. C.

Certificates for the permanent exhibit were presented to Mary L. Smith, Binghampton, N. Y.; Pearl Grace Loehr, New York City; Miss Meade, Atlanta, Ga.; Gerhard Sisters, St. Louis, Mo.; E. E. Doty, Battle Creek, Mich.; Joe Knaffl, Knoxville, Tenn. Complimentary recognition: Rembrandt Studio, Philadelphia, Pa.; C. R. Reeves, Anderson, Ind.; J. L. Sipprell, Buffalo, N. Y.; Edward Weston, Tropico, Cal.; Victor Georg, Chicago, Ill.; Titus & Burnell, Buffalo, N. Y.; Hoover Art Company, Los Angeles, Cal.; J. C. Strauss, St. Louis, Mo.; James W. Porter, Youngstown, Ohio; J. A. Bell, Cincinnati, Ohio, and Stricker Studio, Pittsburgh, Pa.

The following Code of Ethics was adopted, which if adheared to will certainly mean much for the future of the profession:

"My business standards shall have in them a note of sympathy for our common humanity. My business dealings, ambitions, and relations shall always cause me to take into consideration my highest duties as a member of society. In every position in business life; in every responsibility that comes before me, my chief thought shall be to fill that responsibility and discharge that duty so when I have ended each of them, I shall have lifted the level of human ideals and achievements a little higher than I found them.

"1. The practice of photography, both as a science and an art, is worthy of the very best thought and endeavor of those who take it up as a vocation.

"2. Having accepted photography as a vocation, the practitioner should at all times and in all places consider it beneath his dignity to deny the appelation 'photographer,' but should, on the contrary, esteem it an honor to be able to say, 'I am a professional photographer.'

"3. Our brother photographer's name and reputation should be as sacred to us as our own. The off-hand slur, the unnecessary criticism of his work or methods or manners, the meaning smile, or shrug of the shoulder, have no place in the daily life of a professional photographer.

"4. The re-photographing of the work of another to achieve a saving of cost for a patron is inconsistent with the best interests of the profession, and is not in accord with the established rights of our brother photographer.

"5. The cutting of prices in order to get business away from other photographers without any other legitimate excuse is inconsistent with the dignity of our profession and not in accord with the rights of every man to have a fair and open chance to do business.

"6. Advertising in its many forms is essential in these days of commercialism, but the claiming of false or ungained honors, untrue statements of any nature, boastfulness, of work better done than others can do, depreciation of the work of other studios, is unworthy of the professional photographer, and its consistent repetition should be severely and publicly condemned.

"7. The best interests of the patron should at all times be the first thought of the professional photographer. A studio based on service to the patron, and demanding fair pay for real service, is following the best tenets and precedents of the profession.

"8. It is a privilege to give aid and advice to those whose knowledge is less than our own and who come seeking our help, so that they may progress in the practice of photography. We learn most by giving to others of our knowledge. By refusing to give of the gifts that have been vouchsafed to us we impede the progress of the art.

"9. True service to our patrons is founded on

giving them what they desire at a price which will leave a fair profit to ourselves. This is not possible without a knowledge of what it costs to do business; therefore we cannot reasonably be giving true service unless we know what it costs us to sell, and unless we sell at a price which will give us a return proportionate to our skill and to our expense, so that both our reputation as photographers and our credit as business men may be maintained."

Cleveland was selected for the 1916 convention. With the International Exposition of Photographic Arts and Industries to be held in that city next spring under the auspices of the Photographic Dealers' Association of America, that section will have an inundation of photographic opportunity.

Worth While

There comes to our table, each month, a little unpretentious journal which is devoted to the interests of the photographic fraternity in general and wonderfully full of good common sense, meaty, right-to-the-point, articles, most helpful and suggestive. And the best of it all is, this little monthly feast of reason can be had for the asking. Just write The Fowler & Slater Co., 806 Huron Road, Cleveland, Ohio, and ask them to send you *The Ohio Photo News*. It will repay you many times.

John J. Bausch, Head of Optical Firm, is Eighty-five Years Old

John J. Bausch, president and founder of the Bausch & Lomb Optical Company, celebrated the eighty-fifth anniversary of his birth on July 25. Before leaving his office, Mr. Bausch was met by a committee representing the entire working force of the plant and presented with a large volume containing a salutation signed by every one of the twenty-five hundred employees of the company.

Mr. Bausch's response to this tribute became known when the employees received their pay envelope. In each envelope was a card which red:

On July 25, 1915, I will have reached the eighty-fifth anniversary of my life, and being able to enjoy my work in daily association with my employees, I desire to give expression to my feelings of gratitude by contributing $10,000 to the pension fund, $10,000 to the relief fund, and by making Monday, July 26, a holiday with full pay.

Although eighty-five years old, Mr. Bausch is at his desk every day and takes as much interest in the work as he exhibited when the great plant was in its infancy.

A Valuable Booklet

If you want some interesting information in lenses, send to the Goerz American Optical Co., 317 E. 34th Street, New York City, for their new, handy and attractive booklet. This tells you of the "Focal Length of a Lens," "Use of Lenses for Enlargements," "Air-Bubbles in Lenses," etc., and is well worth having.

Eder's Jahrbuch for 1914, Published by W. Knapp, Halle

One minor effect of the war is the delayed appearance of this well-known annual; it is seven months late. For twenty-eight years this work has appeared and has made for itself a position that is unique. It always has some important original communications, but its great value lies in the abstracts of all important papers and inventions of the year. In this volume the original papers are much fewer than in previous years, but the abstracts are more complete and their character even more academic than ever, and it is for this particular character that the book is one of the most valuable to the earnest student of photography.

New M-shaped Tube Cooper Hewitt Lamp Outfits for Photographic Enlarging

Photographic enlarging has for years sought an ideal, a window of artificial light. It has wanted a steady light without flicker or variations; one that could be used without condensing lenses or many dense mediums to get diffusion; and above all, a light that did not need constant trimming and that did have a long, useful life.

The ideal light must excel in the quality of its enlargement. It must bring out the roundness and the atmosphere of the negative and it must not accentuate any coarseness or retouching that would produce a granular effect in the result.

This was first realized by the Cooper Hewitt lamps with one, two, or four 20-inch tubes to the outfit. But in order to get the maximum of the light-giving tube directly behind the negative, the 50-inch tube has been bent six times into the so-called M-shaped tube.

M-shaped outfits give a strong, perfectly even field with two sheets of ground-glass. The ground-glass can be placed within three and one-half inches of the tube and within one-half an inch of the negative. This is well worth looking into.

"Practical Photography" is the name of a new series of photographic books which treat of various photographic subjects of present-day interest in a thorough and practical manner. Each one gives all the information on its subject which seems to be worth the attention of the average worker. The books are well printed, illustrated when necessary, and fit the pocket. They sell at 25 cents in paper and 50 cents in cloth, and you can get them from most photographic dealers. Two are ready now. "The Secret of Exposure," is a guide to exposure under all conditions, and will enable you to make perfect negatives every time. All the factors of exposure are fully explained, exhaustive tables given, and the use of meters clearly gone into. "Beginner's Troubles," contains some hundred practical paragraphs on how to make perfect negatives and prints, written from long experience and useful to every photographer. If your dealer does not have these little books, we will send them postpaid on receipt of price.

THE WORKROOM

By the Head Operator

Waste

With due care there should be very little, if anything, to be called waste in the photographer's workroom. There is a use for even such an untoward a thing as a broken plate that has not been developed. At the present time there is a fashion for the use of an acid fixing bath, for which there is something to be said. It does not stain the plates or papers as does an ordinary hypo bath that has been in use for some time. Bromide and gaslight prints may be left in an acid bath much longer than in a plain bath without any deterioration taking place, etc. But the very fact that it does not discolor appreciably after considerable use may easily and at times actually has led workers to think that as long as it remains clean-looking it is doing its work. Whereas every plate or print passed through the bath has used up some of its fixing power. In the case of a plate we can see how quickly (or slowly) it is working by noting the time it takes to remove the milky appearance from the back of the plate. But in the case of a paper print we cannot apply this test. Here comes in the use of a piece of a broken plate, which we may use as a test of the speed of working of the bath. In making this test we must bear two things at least in mind, viz., the colder the solution the more slowly it will work, and that different brands of plates take somewhat different times to fix.

Dead Stock

At present, with most of us, rent is a serious proposition and a large part of our expense. This being the fact, we cannot afford to have our space occupied by anything that cannot be of service and bring us results. In the large stores every foot of space is considered and figured out at a certain value, and if the goods offered for sale do not bring in enough to take care of this expense they are immediately pushed aside for something else. These stores know specifically the exact cost of doing business in every part of the store.

How much dead stock is there in your place? Commencing with those pictures on the walls of your reception-room, in frames of a style used twenty years ago; going through the operating-room to the backgrounds, old cameras, etc., which you have not used for years; in the negative-room, the old negatives that are so completely covered with dust that you know when you look at them that they have not brought you in two dollars in ten years; then in the stock-room there are the odds and ends of mounts and cardboard that has become soiled and many other things that will never be of any value whatever; then in the dark-room the old bottles, part of them empty, part of them containing chemicals discarded long ago, all occupying valuable space.

Should you want to sell your studio you would receive more money for it with all this dead stock out than you would by leaving it where it is. One of those stormy days in January why not start at one end of the studio and go through the entire place, throwing out all that is of no value, and replacing it as far as you can with up-to-date goods. You will find it more profitable to throw away the old, discarded mounts and sell new, up-to-date goods than you will to try to use these mounts on pictures at a cut price. It is true you have saved the cost of mounts, but you have lost many times their value, for the work placed on the same would have brought you a much higher price on new or up-to-date goods. Customers know just as well as you do whether your stock is old or not and they will not pay the price for it. Posing chairs that have not been used for years should be thrown away and replaced by new ones. Your customers will recognize new things the moment they enter your operating-room and this will help you to increase your orders.—*Ohio Photo News.*

An Overlooked Property of Bichromated Gelatin

Everyone nowadays knows about the continuing action of light and has doubtlessly, if a carbon worker or gum worker, noticed how the light action once started goes on in the exposed carbon print even in total darkness. Now it is not generally known that this action can be transmitted to an unexposed film by simple contact, or that it is possible to get a non-reversed print from an ordinary negative by a single transfer. Many years ago M. Marion read a paper before the Royal Photographic Society and showed results based on this principle. A sheet of paper coated with gelatin is sensitized in a 4 per cent. bath of bichromate and dried. It is then printed and as the image is a visible one its progress may be watched. When complete the print is put in another solution of bichromate one-half the strength of the first. The print is freed from excess of moisture and laid upon the bed of a printing press having vertical pressure. An ordinary copying press will do. Instead of a fatty ink an alum bichromate solution is applied, two parts each of bichromate of potash and alum and a hundred parts water. Apply with sponge and remove the excess with a blotter. An ordinary piece of carbon tissue is then placed upon it and pressure applied for a couple of minutes. Remove

the tissue and if desired substitute more, as many as desired. The impressions are exposed to light for a few minutes, mounted and developed in warm water as in the ordinary carbon process.

PROFESSIONALS generally take advantage of this part of the year to brighten up their premises. It is surprising what a stimulating effect a coat of paint has; it makes one want to live up to the smart idea which it conveys. But its advertising value is the most important point; the public always look upon fresh paint as a sign of life and activity. Showing clean pictures in a dirty window is not going to create a good impression; neither is having a clean window and a dirty doorstep. The public get their first impressions of the whole from what is presented to them; it is only afterward that they take the trouble to examine the parts. If the first impressions are not good the probability is that there will be no desire for further knowledge. The photographer who wants to increase his business should bear in mind that he cannot drive customers to his studio—he must draw them. One of the greatest drawing powers is clean, smart-looking premises. There is such a thing as fusion of ideas. The public cannot separate your photographs from the appearance of your premises; when they think of the one, the other comes into their minds. If your premises look dirty and dilapidated, the public cannot help thinking of dirty, badly finished photographs.—*The Professional Photographer.*

SULPHOCYANIDE

THERE have been objections raised to the use of sulphocyanide for toning p.o.p., at intervals ever since its introduction; but to judge from the formulæ supplied with the different makes of papers, it is still the most widely employed of any of the chemicals which have been brought forward for the purpose.

The objections to the use of sulphocyanide take two forms. One is that as it is a salt which has a very powerful action on gelatin, softening it and making it extremely tender; it makes the prints toned with it much more liable to injury, especially in hot weather, when the action of heat is added to that of the sulphocyanide. The objection is more theoretical than practical; for though sulphocyanide certainly does attack gelatin, its action in the very dilute solutions which are used for toning purposes is so slight that it may be ignored. If any trouble arises on this score, it is not so much due to the use of sulphocyanide as to the fact that it is being used in far too strong a solution.

The other objection is that sulphocyanide is a very deliquescent salt, readily attracting moisture from the air, and turning into a clammy, wet mess, which it is quite impossible to weigh out. The remedy here is obvious.

The salt keeps in solution well enough; and if it is kept in the original one-ounce bottle in which it is sold, it will remain dry in good condition for years, if the bottle is not opened. When it is opened, the contents may be dissolved in three or four ounces of water, and then diluted to make a total bulk of nine ounces, one dram. This gives a 10 per cent. solution, which keeps very well indeed. For use, all that has to be done is to take ten minims of this solution for each grain of sulphocyanide that may be required.

The toning baths in which sulphocyanide is used should not be employed the moment they are mixed up. It is better, if they are made with cold water, to keep them from six to twenty-four hours. Time can be saved by using hot water, when the bath is ready for use as soon as it is cold. Cooling may be hastened by any of the ordinary methods.

An excess of sulphocyanide in the bath not only tends to soften the gelatin, but is also a very great cause of double toning.

The writer has referred throughout to "sulphocyanide." The salt generally met with, and recommended is ammonium sulphocyanide. Potassium sulphocyanide is also on the market. It looks very much like the ammonium salt, and behaves in much the same way. One can be substituted for the other in any formula, using an equal amount.—M. P. S., in *Photography.*

POTASSIUM METABISULPHITE has long been known to photographers as an excellent preservative, but I do not think many photographers, especially amateurs, know of its power as a local reducer for bromide prints. Dark patches on prints can readily be reduced by this chemical. The mode of procedure is as follows: Take half an ounce of potassium metabisulphite, and dissolve it in an ounce or two of *boiling* water; allow this to cool. Now take the print, thoroughly soaked, and place it face uppermost on a piece of plate-glass or other similar surface, and gently squeegee it. Take a "tuft" of cotton wool, free from grit, and soak it in the solution; then apply it in a circular movement on the part to be reduced. Be sure to have some water handy, as, if the solution runs on the other parts, it will reduce them. When the reduction is complete, wash in several changes of water, and dry in the usual way. A whole print can be reduced by immersing in a dish containing four ounces of water to half an ounce of the solution previously used. The second use for this solution is for the removal of "stress" and other markings so often found on the skies of prints. You take the cotton wool saturated, and rub the defects till they disappear, taking care that the solution does not float on to the picture itself. Both these methods are now in constant use in a large technical business where scores of prints are handled, and both have proved eminently successful, owing to their simplicity and effectiveness.—S. G. H., in *Amateur Photography.*

A GOOD many breakages are caused by the careless use of hot water in making up solutions. When you pour very hot water into an ordinary graduated glass measure you are almost certain to have a smash, unless you take the precaution to warm the measure before doing so. Glass measures have a tendency to break on account

of the uneven thickness of the glass and because the engraving on them cuts up their surfaces into a series of starting points for cracks. When hot liquids have to be poured into a bottle, there is less likelihood of a breakage if the outside of the bottle is rinsed over with warm water first. It is also a good plan to pour in the liquid through a funnel, so that it will go straight to the bottom, instead of running down one side of the bottle. The funnel will not break if it is rinsed with warm water first. The thinnest possible glass should be used for hot liquids. Thick glass is almost sure to break, because the inside expands with the heat before the warmth has had time to get to the outside to make that expand also. A few earthenware jugs should be kept for use with hot water, as earthenware is much less liable to break than glass. The jugs, however, should be white, so that their cleanliness, or otherwise, can be seen at a glance.—*The Professional Photographer.*

Always Keep Some One on the Job

There are only a few persons who will go to a photograph gallery the second time to have their pictures taken. They go once, and if they find the studio locked, that settles it, they never go back. We do not mean by this that you should not take a vacation. Take it, you will do more business during the balance of the year if you take a vacation than you will if you do not. Go and see how photographers carry on their business in other cities. Talk the matter over with them. Look your own situation squarely in the face, give it to them and get their advice. If you find it necessary to close your studio, advertise it thoroughly, so no one will be disappointed, but it is a great deal better to always have someone there.

Recently the writer went with a friend to a studio, found the studio open and no one inside. Waited around twenty minutes and no one showed up. Anyone could have walked in and taken out anything that they wanted. Then the proprietor returned; he had been out to lunch. He had lost three customers that had come in while we were there. If I were running a gallery like that I would carry my lunch with me and eat it standing up.

Never leave your studio alone, and never close it during the hours that other stores are open. If you must go away, get some boy or girl to go there and tell your customers why you are gone, then they will come back. There is such a thing as sticking to the job so tight that you get into a bad rut and never broaden out or grow, and the result is that the business does not grow but gradually shrinks. Any man that sticks to one job without any change too long gets to be too narrow to do anything else and even do that job as it should be done.

You can make money oftentimes by hiring someone to do part of your work, giving you more time to look after the business end of it, advertising, seeing that the showcase is kept clean, the pictures changed and the whole studio bright and clean, and be there ready to meet your customers with a smile on your face, than you can by trying to do your work alone, looking through your dark-room window and hollering to your customers when they come in to wait awhile, hustling all the time seven days in the week and never having any time to brighten up, either yourself or your studio. Can anyone tell my why the grocer and hardware stores open at seven o'clock in the morning and the photographer does not open until ten? There is always work to be done in the studio, and this work should be out of the way, so when customers come in you are right there, johnny on the spot, to meet them and take care of their wants.

Another thing. In these days, studios are rapidly changing hands. Photographers outgrow the city in which they are working. Those who are doing business and climbing up the ladder, go from one city to a larger one, until they reach one of the largest in the country. You do not know how soon that is going to happen in your town. It may be almost any day that you will find that the leading photographer, the man who has had the business, has sold out or is going to some other city; then is your harvest time. You should be prepared to do the work which he has been doing. Your name should be so well known in the city that when he has gone people will come to you rather than go to a stranger. In other words, you should prepare yourself to do his work when the opportunity comes.—*Ohio Photo News.*

Phosphorescent Photographs

Photographers with a turn for experimenting will probably be interested in the following account of the preparation of self-luminous photographs. There are at least three variations of the method, and no real difficulty if a little care is exercised. In all cases the subject should show plenty of contrast between the lights and shades.

To take the simplest case first, a phosphorescent screen may be prepared upon which the image will be printed if placed under a negative and exposed to a very brilliant light. The image requires no development, and is invisible in the light; but if taken into a darkened room the screen will be seen to glow with varying degrees of brightness, the subject being reproduced in a startling manner by the ghostly glow from the chemically-prepared surface. These prints are quite transient, lasting no more than ten or fifteen minutes—not altogether a disadvantage, for the same screen may be used repeatedly.

To prepare the screen, some phosphorescent calcium sulphide will be required. This can be purchased finely powdered in one-ounce bottles. It is necessary to specify that it is required for making luminous paint, because the common sulphide of calcium does not phosphoresce. The property is due to the presence of certain other ingredients contained in a state of "solid solution," as it is termed. A little of this fine white powder should be mixed with some weak gum water to the consistency of thin cream. A piece of white cardboard may then be painted with this mixture as evenly as possible, using a broad camel's-hair brush. The screen is ready for use as soon as it is perfectly dry. Only

enough paint for the purpose in hand should be made, because the sulphide does not keep well when moist. The dry powder will keep for any length of time in a well-corked bottle.

An ordinary printing frame may be used for printing, the film side of the negative being placed in contact with the prepared surface of the card. The experiment is best made in the evening, when the room can be darkened by merely turning the gas down low. Three or four inches of magnesium ribbon burned a few inches away from the printing frame will excite lively phosphorescence on the card. Of course the eyes should be shielded from the intense light of the burning wire.

If the negative is not of any particular value a coat of the luminous paint may be given to the film side, in which case no separate screen is needed. Phosphoresence is excited by holding close to the gas or by burning a few inches of magnesium wire as before.

The following is a little more troublesome, but quite within the capability of a careful worker. First soak half an ounce of gelatin in 5 oz. water, and when the gelatin has softened dissolve by warming. While still warm stir in 25 grains of finely-powdered potassium bichromate and 100 grains of the special calcium sulphide. This forms the sensitizing solution with which a piece of plain celluloid film may be coated and dried. Printing may be done in a printing frame through the back of the film—that is, with the plain celluloid surface in contact with the negative. The exposure is about the same as for carbon printing, and the developer is warm water. The print is ready for use after drying, phosphorescence being excited by holding to the light, or with magnesium as before. While a negative may be used to print from, most subjects are improved if the print is made from a transparency—a transparent positive.

Receipt for Ferrous-oxalate Developer

As there seems to be a prospect of a very great scarcity of quinol and metol for developing purposes, together with very high prices, I wish to give a recipe for a ferrous-oxalate developer, which gives not only very good results at minimum cost, but also gives better black tones than the coal-tar developers now used. And as for permanency, a ferrous-oxalate developer gives a more permanent and unchangeable deposit than the others. The only drawback is a more yellowish tone for the sepias toned in the hypo-alum bath; in fact, it is more like real sepia, and not the brown tones generally admired. I like it better.

Solution No. 1

A saturated solution of oxalate of potass.

Solution No. 2

A saturated solution of protosulphate of iron.

Solution No. 3

Water 10 oz. or hydrochloric acid 1 oz. to 60 oz. water.

Acetic acid, No. 8, 1 oz.

To use it, mix 6 ounces of No. 1 with 1 ounce of No. 2, and add water to make 10 ounces. Expose and develop as usual and then put in the acid solution for five minutes, or rather have two separate solutions, five minutes in each, and then rinse off and put in the fixing bath. The first acid solution should be thrown away after a little use and then make the other solution, the No. 1, and make new for No. 2. The acid solutions are necessary to get rid of the iron left in the paper by the developer, in order to have pure whites or high lights. The more the iron is eliminated the less yellow will the sepia tones come out. The black tones are richer and warmer than those got by the usual process. I have made a full test, and when our stock of the others is exhausted we shall use it.—David Bachrach.

Making a Graduated Background

It is an easy matter (writes Mr. E. Moore in *Photography and Focus*) to make a plain background by stretching some sheeting on a frame and giving it one or more coats of distemper; but I was very much puzzled how to make a graduated ground, until a friend told me of the following method, which has proved perfectly satisfactory: A piece of sheeting of a suitable size having been stretched on a frame, it is well wetted with water and left for a few minutes for the water to permeate it. Some fabrics seem to be very repellent at first, and the water may require rubbing in with a sponge. Vegetable black and whiting are the colors which may be used, and these are finely powdered—the whiting will have to be very dry—and mixed altogether. Three or four lots will be needed, starting with almost plain black, then dark gray, gray, and light gray. Each of these should be well mixed with about twice its bulk of powdered dextrine; the best way of mixing being to put the powder in a sieve and dust it on to a sheet of newspaper. The background is then laid flat, and the powders are dusted on to it in exactly the same way, graduating them by thinning out the darkest where it comes against the next dark, and so on. When this has been done, a stiff brush of fairly large size, say an inch in diameter, is taken, and starting on the light side the powder is well brushed into the wet fabric. This not only makes a permanent job of it, but also helps to give a nicely graduated effect. A little more of the powder can be dusted on where it is wanted at this stage; but it is best to endeavor to get the effect as much as possible by the first application of the brush. I have no doubt other powder colors can be used, but have not tried them. The backgrounds made in this way can be rolled up when once the fabric is quite dry.

Enlarging Broken Negatives

When using a broken negative which has been bound on a glass with gummed strips, irridescent marks are often the cause of a lot of trouble, especially if used through the enlarging camera when making a transparency for reproduction. These marks can easily be got rid of if the negative is treated in the following way: Scrape the

binding strip off the edge a little way along, trim a match-stick to a wedge shape and insert the thin edge of wedge between two glasses just to the depth of binder. Then cut the rest of match-stick away. This allows air to enter between the two glasses and so disperses the irridescent marks. Sometimes it is necessary to do this on two sides, this depending on size of negative or number or position of marks.—F. D. in *British Journal of Photography*.

A Photographic Name Plate

A name plate with silver or gold letters on a black ground can easily be made by photography in the following manner: The name is first very carefully drawn in pencil, on a large scale, on a sheet of white cardboard, and when it is done with the required accuracy, the pencil lines are inked over, any visible pencil marks are cleaned out with india rubber, and the letters are neatly blocked in, in solid black, with Indian ink. The design is then fastened up in a good light and photographed to the size required. When the negative, which must have a dense black image with clear, transparent lettering, has been made, all that has to be done is to go over it with gold paint, to roll silver paper down on to the film, or, better still, to get a little gold leaf and apply that. Viewed from the glass side the lettering is the right way round, and shows up in silver or gold letters on the black ground caused by the photographic image of the white paper.—Percy Laing, in *Photography*.

Bleacher for the Bromoil Process

I have used all the recommended bleachers successfully (writes Mr. Bertram Cox in the *Amateur Photographer and Photographic News*), but prefer to use one known as "Silvax," solely on account of the practically colorless image left after bleaching. This question of color seems to be not one only of bleacher, but of make of paper, developer, and type of bromide print. The print is rinsed, and the bleacher poured on at a temperature of about 65° F. If the bleacher is applied to the dry print, uneven markings are likely to appear, and these are retained in the final results. With a strong print the action is complete in about five minutes. I use the same solution over and over again, but find that with a fresh solution there is a more pronounced hardening of the gelatin, sometimes causing a difficulty in retaining gradation in the deep tones. A trace of sulphuric acid added to the bleacher will remedy this, and also help to bleach out any deep shadows. This bleacher is intended to be used with an acid bath, but I find that it is not necessary in order to obtain relief. However, I prefer to use a 5 per cent. bath for a few minutes at 60° in order to remove the last trace of image. A weak solution of hypo, 1 in 8, is strong enough, and, indeed, preferable. All washing is done at as near as possible 65° F.

Printing Portraits on Fabrics

Any fairly close-grained linen, silk or other cloth may be used, but must first be well washed to free it from any dressing, and dried and sensitized in the following solution, which it is important should be mixed as directed. All water should have been previously boiled for five minutes and cooled.

No. 1

Ferric ammonium citrate (green flakes)	55 gr.
Water (cold)	1 oz.

Dissolve.

No. 2

Citric acid	55 gr.
Water (hot)	½ oz.

Dissolve and add to No. 1 slowly.

No. 3

Nitrate of silver	55 gr.
Water (warm)	½ oz.

Dissolve and add to No. 1 and No. 2, which were previously mixed.

This amount of solution is ample for three to four handkerchiefs, which should have been first washed. The cloth should be saturated in this and wrung out a little, so that the solution will not drip all over the place, then hang out to dry. Of course, the sensitizing must be done by gas or candle light, and the material dried in the dark. When hanging out, don't let any metal touch the part which has been sensitized, as if so it will leave a dark-brown stain. When dried it can be kept for a week, but it is best to use as soon as possible. Print in the sun and to about the depth of self-toning paper prints. Then wash thoroughly in running water until all yellowness disappears from the parts not printed. Wring out nearly dry and immerse in fixing bath:

Hypo	1 oz.
Water	20 oz.

Leave in this for three or four minutes, then wash well to get rid of hypo, and dry. If needed, the print may be dried quickly by ironing back of print with a fairly hot iron. Take care, however, that you don't scorch the cloth; then iron front of print, which will put a slight gloss on it.

If the cloth is not boiled this image is fairly permanent; if too dark, let it be boiled on washing day, which will soon lighten it. Ordinary washing does not appear to affect the image very much. The process is not suitable for fine detail unless heavy silk is used. It is very fair for portraits from a plucky negative. Personally, I am of opinion that a blocked-out negative shows up to better advantage, as in all portraits which I have done by this process, it is the background which detracts from the appearance when put on a handkerchief, for instance, which from the nature of it is a large expanse of white with a portrait in one part, and so calls for bold work.

When printing, it is a great safeguard if an extra piece of glass is used in the frame in front of the negative, as a certain amount of pressure is necessary, and if the piece of fabric is large it has to be folded up, and it may put an uneven pressure on the negative. The single thickness of fabric is laid on the negative, then a piece of cardboard, and the excess of fabric is folded on

top and the back of printing frame fastened down.

An important detail is that when printing one should use a mask that will cover all the cloth, so that any solution on it (which can be easily seen by the yellowness) will not be light-struck. Of course, if the light strays in the end of the printing frame it makes a brown stain. This solution can also be used on note paper or envelopes, being applied with a brush or piece of flannelette turned over the edge of a piece of wood or glass.—E. GOODE, in *Australian Photo-Review.*

PROTECTING WORK ON THE GLASS SIDE OF NEGATIVES

MANY retouchers who put color on the glass side of a negative, either by dabbing or with an air-brush, seldom think of protecting the work, though in the course of handling in printing, etc., half the work may easily be rubbed off. It is quite easy, however, to give the glass a coat of celluloid varnish, which will prove an effective protection. Before applying the varnish, it is preferable to warm the plate and let it cool again, just as for the film side, because moist water-colors are rather hygroscopic. Negatives which have been worked up on the back with pencil, either on matt-varnish or on one of the new mediums, should always be protected with a cover-glass, which can often, with advantage, carry more work, or a coat of matt-varnish for diffusing purposes.—B. D. in *British Journal of Photography.*

PLATES AND THEIR ENEMIES

MANY a plate is spoiled because its user does not recognize that the emulsion with which it is coated is sensitive to other influences beside that of light. It is useless to take all sorts of elaborate precautions against light fog and at the same time to give no thought to the protection of the plate in other directions. The coating upon it is wonderfully robust, considering its extreme sensitiveness to so slight a stimulus as that of the light during exposure, but there are certain things which we cannot do to it with impunity.

One of these is to leave its coated surface for any length of time in contact with impure paper or cardboard. It may not be generally known, but actual contact with the card is not necessary. The injurious emanations from it can bridge a narrow interval between their source and the plate. For this reason, if a plate is left loose in a plate box it should always be kept face upward.

The best possible protection for the film of one plate is the film of another, but the glass side of a plate should not be left in contact with the coated side of another, as although the glass itself, if perfectly clean, would do no injury, we have no guarantee that it is clean. In fact it is almost sure to be dirty, since the fact that the other side of it has a sensitive coating compels any handling it may receive to be given to its edges or back. The writer has seen negatives badly marked by being left lying face downward on the glass side of another plate for a short time after exposure and before development.

Printed paper, it is now pretty generally known, is very prone to affect a plate, and on no account whatever should it be allowed to come in contact with the emulsion. Even the mere wrapping of a number of plates, placed face to face for protection, in brown paper may set up injurious action, which, starting at the edges, will extend inward more or less according to the nature of the paper and the length of time the action is allowed to go on.

Fumes from burning gas and the sulphuretted hydrogen given off by the darkening bath in sulphide toning affect the film very powerfully; plates, and even p.o.p., gaslight, and bromide papers exposed to them are rapidly spoiled. As the hot air and fumes from a gas burner ascend, the top of a room where gas is burned is a worse place for the storage of plates, films, and paper than somewhere near the floor.—*Photography.*

DIFFUSED LIGHT IN THE DARK ROOM

MOST of the small dark-room lamps at present on the market are fitted with clear ruby or orange glass, so that a glaring light, which is not nearly so comfortable or so satisfactory to work with as diffused light, is thrown on the bench. A sheet of ground glass makes a splendid diffuser, but the groove into which the ruby or orange glass slides is generally too narrow to admit an extra sheet of glass. A piece of translucent paper will also serve, but is opened to the objections that too much light is absorbed, and that when replacing the screen, after lighting the lamp, the paper may be crumpled, after which it is difficult to get it into place. A very satisfactory way is to matt varnish either one or both sides of the glass; usually one varnished side will be found sufficient. This gives the necessary diffusion without absorbing too much light. The ruby glass itself, which is flashed, cannot be "ground," as this would take away the color.—*Amateur Photographer.*

DEVELOPER MARKS

THE most careful of dark-room workers will at times fail to flow the developer quite evenly over the plate, and will be the victim of developing marks, either in the form of lines or bubbles. When this occurs it is generally possible to save the plate by immediately washing the developer off under a good stream from the tap for a few minutes, then developing a trifle further than usual, and giving the finished negative a dip in a bath of fairly stronger reducer. The quick wash will ensure the unevenness being confined to the upper surface of the film, so that it is readily removed by a very brief immersion in the reducer with scarcely any effect on the remainder of the image.—B. D. in *British Journal of Photography.*

COPYING A BLUE PRINT

OCCASIONALLY, one is asked to copy a blue print; that is, a blue image on white paper. A panchromatic process plate is wanted here, and as deep a yellow light-filter as one can lay one's hands on—two or three on the top of each other

if one is not deep enough. The deeper the screen the greater the contrast and the better the result. The idea is the deep yellow screen keeps back all the blue rays, and turns the projected image into black and yellow. The plate being sensitive to yellow will give a result with good contrast when the exposure is right. When working with more than one screen, the actual value has generally to be found by experiment with the screens on hand.—J. P. M. in *British Journal of Photography.*

Blue Stains on Bromides

Sulphide-toned bromides, which have been bleached by means of ferricyanide, frequently show blue stains which are not noticed until after the sulphide bath. These stains can nearly always be removed with strong hydrochloric acid. The print should be laid in a large, dry dish, and the stain carefully wiped over with a piece of clean wadding well charged with the acid, which must be concentrated—dilute is of no use. Gradually the stain changes from blue to a brownish yellow; immediately this happens, the print should be flooded with water to remove the acid, which if allowed to remain would damage the print. The yellow stain will gradually dissolve out in the final washing.—G. F. G. in *British Journal of Photography.*

Waxing Prints

By giving a print a thin coating of wax (says *Photography and Focus*) it is not only protected to some extent from atmospheric influences, but is made to appear much richer. The method, as is well known, answers best with toned enlargements on bromide paper, especially those with deep shadows. The preparation of wax I have found most useful is made by dissolving a hundred grains of mastic in two ounces of turpentine. When dissolved the liquid is put into a warmed jar, and two ounces of melted white wax are poured in, well stirred, and allowed to get cold. The mixture keeps indefinitely in a pot with a loose cover to exclude any dust, and is used by putting a little on a piece of flannel and well rubbing it into the print. If it is considered necessary, the print may then be held to the fire for a few moments, and this will be found to remove any streakiness.

Removing Varnish from Dry-plate Negatives

Make up solution—caustic potash (pure), 1 oz.; methylated spirit (pure), 10 oz ; water, 10 oz. Put the varnished negative in a dish, pour the solution on, and gently rock until the varnish is dissolved. Then wash well under the tap. One or two baths of methylated spirit and a little rubbing with cotton wool, afterwards soaking in water with a little ammonia, will also be found effective.

PATENT NEWS

Under this heading it is proposed to include each month a list of all the U. S. patents, and brief abstracts of the more important, and to include also such foreign patents as present special features.

Copies of any patent can be obtained from the Commissioner of Patents, Washington, D. C. Price, five cents each.

Cinematograph Apparatus. A. S. Newman. 1144774.
Film and sprockett drum. O. J. Holmes. 1144414.
Film-machine regulator, M. G. Delaney. 1144694.
Film-reel. M. G. Delaney. 1144693. 1144695. 1144697.
Film-winding apparatus. Kempff and Smith. 1144362.
Distance measuring device. R. A. Wilson. 1144675.
Roll holder. J. W. Cutler. 1144934.
Color photography. G. S. Whitfield. 1144575.
Motion picture cabinet. W. L. Smith. 1144736.
Moving picture machine. M. G. Delaney. 1144696.
Dark-room lantern attachment. Holland. 1145589.
Film. 2″. Heatherstone. 1145410.
Color photography. F. E. Ives. 1145143.
Camera. J. H. Trumbull. 1146291.
Camera. W. A. Warman. 1146293.
Date recording camera attachment. C. C. Finn. 1146755.
Film-washer. C. W. College. 1146136.
Flash-light apparatus. F. J. H. Rustige. 1146453.
Image-producing device. Gay and Duke. 1146323.
Optical micrometer. N. S. Amstutz. 1145959.
Film. P. D. Brewster. 1145968.
Moving picture car. A. Truchan. 1145946.
Machine for cutting film. C. J. Lang. 1146003.
Automatic shutter. B. L. Simpson. 1146964.
Focussing mechanism. E. C. Allen, 1146837.
Magnesium lamp. R. and E. Sudiah. 1146973.
Copyholder. E. W. Sweigard. 1147196.
Film holder. W. F. Folmer. 1146858.
Printing process. E. H. Farmer. 1147317.
Blue-print apparatus. R. Herman. 1147693.
Plate-etching apparatus. A. H. Coombs. 1147145.
Banknote printing process. E. Howard Farmer. 1147317.
Projection apparatus holder. W. L. Patterson. 1146948.
X-ray tube. J. E. Seeley. 1147125.

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THE USE OF PANCHROMATIC PLATES IN PORTRAITURE

By PAUL L. ANDERSON

IN order that we may fully understand the effect of color sensitiveness in portrait work it is necessary to have a grasp of at least the fundamental principles governing the phenomena of light, and I will outline these before commencing the discussion of actual portraiture.

If we stand on the seashore and watch the motion of the waves, it will be seen, especially if we can fix the vision on a small boat, a block of wood, or other object, that so long as the motion is free the molecules of water do not travel forward in the direction in which the wave moves, but simply rise and fall in a direction at right angles to the axis of translation of the wave. That is, wave motion consists of a transference of motion and not of particles. Further, it will be observed that, in the absence of outside influences tending to modify the wave, the distance from the crest of one wave to that of the next, or from any portion of a wave to the corresponding portion of the next, remains constant so long as the disturbance causing the wave remains constant, and this distance is known as the wave length.

Light is analogous to the wave motion in water, in that it consists of waves at right angles to the direction of transmission, these waves being set up by every self-luminous body and consisting of vibrations of the particles of the luminiferous ether, an invisible, highly elastic substance of infinitesimal density which pervades all matter. These ether waves, impinging on the retina, cause what we call the sensation of light, and the length of these waves has been measured.

The thought will at once be suggested

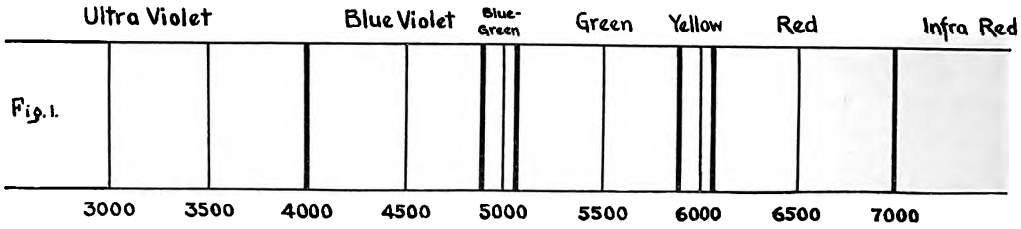


Fig. 1.

that, since waves of water may be of different lengths, such may be the case with the ether waves, and this does, in fact, occur. Also, so long as the motion is free the wave length remains constant for any given source of disturbance, though it may be artificially changed, as in the polarization of light by means of tourmaline, in the phenomenon of fluorescence, or in the passage of the wave from one medium into another of different density. It has been found that visible light is made up of waves ranging from about 4000 A. U.[1] to about 7000 A. U., the precise limits depending on the observer, as the sensitiveness is not always the same in different individuals. There is also a series of invisible waves of greater length than 7000, which are known as the infra-red and manifest themselves as heat, and another series of less than 4000, which are known as the ultra-violet.

Different portions of the retina are sensitive to different wave lengths, the waves from 4000 to 5000 affecting one portion, those from 5000 to 6000 another, and those from 6000 to 7000 a third. The first set give rise to the sensation of blue-violet, the second to that of green, and the third to that of red, so it is seen that color is not an actual fact, but is due to the different wave lengths of light. All secondary and tertiary colors are made by the mixture of two or more of the primary colors, blue, green, and red, the complete synthesis of the three giving white. If we analyze a beam of white light by means of a prism, which refracts (that is, bends) the rays of light, those of less wave length to a greater extent than those of longer, or, preferably, by means of a diffraction grating, we shall project, not a spot of white light, but an elongated band of colors, as indicated in Fig. 1.

If, now, we examine this band, or spectrum, we shall find that the yellow portion (formed by the overlapping of the green and the red) appears brightest, the intensity falling off toward both ends, and if we plot a curve in which vertical distances represent intensities, it will appear about as shown in Fig. 2.

If the sensitiveness of the plate corresponded to that of the eye, a photograph of this spectrum would represent the colors in their correct relationship, but such is not the case, and if we photograph the spectrum on a non-color-sensitive plate (Cramer Crown or Banner, Seed's 30, 27, 26, etc.), the resulting intensities, when plotted, will have approximately the form shown in Fig. 3.

That is, the invisible ultra-violet will be recorded, the blue-violet will be

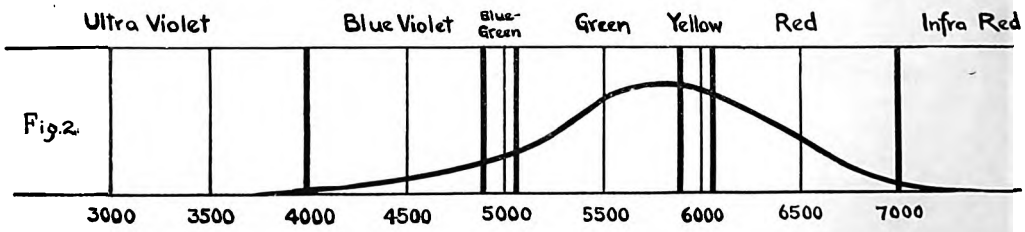


Fig. 2.

[1] A. U. is the abbreviation for Angstrom units, the unit being 1–10,000,000 of a millimeter.

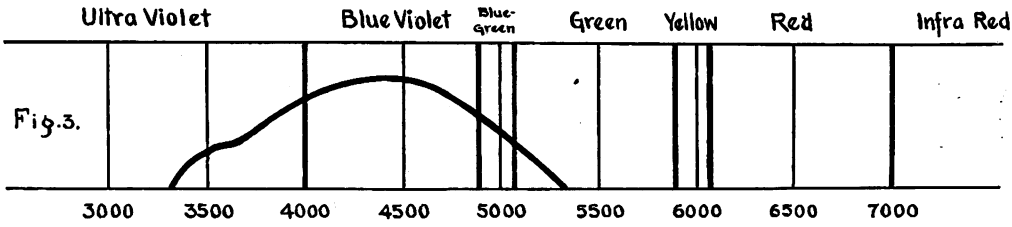


Fig. 3.

the strongest, and the yellow and red, both of which are very luminous to the eye, will make no impression on the plate at all, being represented as though they were black. If, however, we use a panchromatic plate the record will be about as follows:

It will be seen that this is much nearer the visual impression, though it is still far from correct, since the ultra-violet is recorded and the blue, which is a dark color to the eye, is represented as brighter than any other. If a ray filter be used the result may correspond precisely to the visual sensation, provided the filter is so constructed as to absorb all the ultra-violet and the correct amount of the violet and blue, so that these colors are retarded, so to speak, thus permitting the yellow and red to record more strongly.

Coming now to the practical application of these facts, we find that if daylight (which contains rays of all visible wave lengths) falls on any natural object this incident light is divided into three parts: (*a*) that which is reflected unchanged from the surface of the object (every natural object reflects some such light); (*b*) that which is completely absorbed; (*c*) that which penetrates to a slight depth below the surface and is then reflected, this being the portion which gives the object its color. That is, the light penetrates to a certain depth, a portion passing on and being quenched, whereas waves of a certain wave length, depending on the molecular structure of the object, are reflected. It follows from this that a red or yellow object may be photographed on a non-color-sensitive plate by the ultra-violet light which is reflected from the surface, but this superficially reflected light is, in general, so small a proportion of the total incident light that the rendering will be faulty. The representation of the colors of natural objects by a non-color-sensitive plate (or by an orthochromatic or an antiscreen plate, if used without a ray filter) will be about as given in the following table:

Violet.—Either too light or too dark, or correct, depending on whether the red or the blue predominates.	
Blue.—White. (Or in any case much too light.)	
Blue-green.—Too light.	
Green.—Nearly correct.	
Yellow-green.—Too dark.	There will be little differentiation between these.
Yellow.—Much too dark.	
Orange.—Much too dark.	
Red.—Black.	

In considering the effect of this relationship in portraiture we must take into account both the natural and the artificial color, the former referring to the skin, hair, and eyes, the latter to the clothing and to the color of the shadows, due to reflected light. The skin is, in the case of Caucasians, yellow with reddish portions; wrinkles have a tendency to red, resulting from the fact that they are bordered by a network of very fine veins which lie near the sur-

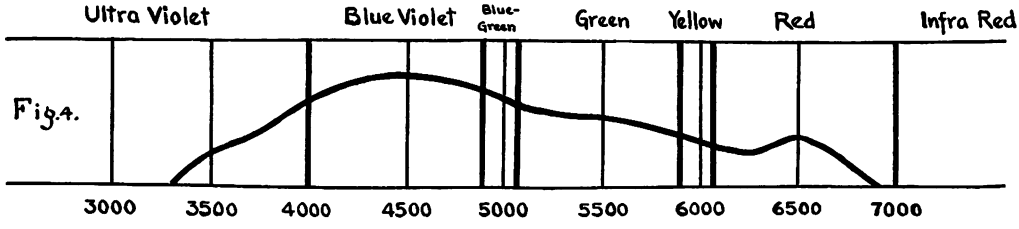


Fig. 4.

face; skin blemishes, such as freckles, are generally of a reddish or yellowish brown; the lips are red, and the hair is usually warm in color, ranging from a warm brown through red to yellow. The eyes ordinarily tend toward a blue-gray, though in some individuals they are brown and in some blue. Hence it follows that we may expect the skin to be rendered too dark, wrinkles and freckles almost as though they were black, the hair too dark, and the eyes as either too light or too dark. There will in addition be a loss of gradation in the warm colors, due to the fact that slight differences in value are not recorded. Of greater importance than this, however, is the fact that the planes are falsified, as will be seen when we consider that every shadow, not only on the darker side of the face but also those under the eyes and in the wrinkles, is illuminated by reflected light, and that this is rarely of the same color as the incident light, being modified by the reflecting surface. (It is obvious that if an object is illuminated by red light, for instance, its photographic quality is red, no matter what the actual color of the object may be.) To correct this falsification of planes and exaggeration of wrinkles and blemishes retouching is resorted to, and it will be apparent that if we can render the colors in their correct relationship retouching may be abandoned except for the purpose of straightening pug noses, reducing outstanding ears, and otherwise rendering the sitter's appearance more beautiful than is actually the case. If, now, the wages of a retoucher amount to more than the difference in cost between ordinary and panchromatic plates (a matter for each photographer to determine for himself) the use of color-sensitive plates is justified without further consideration; but even apart from this the results are far better, since even the best retoucher cannot bring colored clothes into their proper relationship, and if retouching is avoided skin will have a true texture, instead of that of an egg-shell. In short, the results are far better, regardless of cost—the great advantage of photography over painting and drawing being its power of rendering a perfectly fluent and unbroken series of gradations, which the hand cannot do, and this is actually the way we see things, so the finest hand must necessarily be inferior to the lens and plate in this respect. It must also be remembered that the sitter is before the camera at the time of exposure, whereas the retoucher practically never sees the subject, but works in accordance with a fixed set of rules, the consequence being that not only are wrinkles and freckles eliminated, but also some, if not all, of the character lines are lost, thus impairing the truthfulness of the reproduction.

For these reasons it is safe to say that any portrait photographer who is interested in the production of good work in contradistinction to the mere acquisition of money, and even many whose sole aim is financial, must be neglecting a very definite advantage in adhering to ordinary or orthochromatic plates to the exclusion of the panchromatic.

Now, as to the method of employing these plates in the studio. First, they should be loaded into the holders in absolute darkness. It is indeed possible to use a very weak green light, but it is better to have no light whatever, and this presents no hardship, since a very little practice combined with a definite system of arranging the box of plates and the empty holders will enable anyone to load by touch quite as fast as can be done by sight. Next, a ray filter should be used in exposing, for the ultra-violet sensitiveness of the plates is such as practically to overpower the color sensitiveness unless this is done. True, the rendering will be better than that given by the ordinary plate, but it will still be far from perfect. Many workers will object that this will increase the exposure unduly, but such is not the case, as may easily be shown. For full correction a filter which increases the exposure five times is required, but this is much stronger than is necessary for ordinary use, a two-times filter giving satisfactory color rendering except in the extreme case of a dark red dress or hair of the same color. The panchromatic plates which

FIG. 5

FIG. 6

I use (and have used for over two years) are equal in speed to the Seed's 27 and Cramer Crown, so those photographers who are accustomed to employ plates of that speed need only double their exposures, while those who use plates such as the Cramer Banner and Seed's 26 need increase their exposures only one-third, such increases being within the power of practically everyone, except in extreme cases of lighting. Should anyone object to prolonging the exposure to this extent, I would remind him that the magnificent portraits by D. O. Hill, which have appeared from time to time in this magazine, required exposures of three or four minutes. The panchromatic plates which I use are furnished backed, this being a highly efficient preventive of halation, and because of this backing, as well as on account of their color sensitiveness, it is not easy to develop them by any dark-room light, so tank development is strongly recommended. In fact, I consider it the most satisfactory method in all cases, whatever plate is used, for reasons which space prevents my taking up here. I would not, however, have anyone think that I am speaking from a limited experience, so I may say that I used ordinary and orthochromatic plates for about six years before taking up the panchromatic, making thousands of negatives, and used tray development for about five years before taking up the tank. I have now used panchromatic plates for about two years, and tank development for about three, so it will be seen that I have had a fair experience of both forms of work.

In short, there is no question that panchromatic plates give results far superior to those given by any other type of emulsion; that despite their higher first cost they will in many cases effect an actual economy, and that their use presents no difficulty. I am aware that many photographers regard a color-sensitive plate almost with fear, and hesitate to adopt anything which involves a change of method, but I can assure them that the difficulties

are purely imaginary. The only cautions I would give are not to develop for the full time given on the speed card furnished with each box of the Wratten plates (personally, I develop for about one-half or three-quarters of this time, but my negatives are softer than most professionals would desire), and to use a filter which is adjusted by the manufacturers to the plate employed, since a filter which is correct for one emulsion will not necessarily be so for another.

In conclusion, I would say that I am confident that anyone who will adopt panchromatic plates for regular portrait work, giving them a fair and adequate trial, will never discard them in favor of non-color-sensitive emulsions.

In the accompanying illustrations, Figs. 7 and 8, the dress was dark blue, the stripe and chevrons on the sleeves being bright red, as was also the book, the eagle being white.

In Figs. 5 and 6 the dress was dark blue, a yellow and gray fan being substituted for the book.

Figs. 5 and 7 were made on non-color-sensitive plates, Figs. 6 and 8 being on panchromatic plates, with a Wratten K3 filter. Corresponding exposures were given, the plates being developed for the same length of time in a tank, and the printing being the same in each case. It will be seen from this that any difference in textures and gradations must result from the difference in color sensitiveness.

In Figs. 5 and 6 portions only of the negatives were used, the reproductions being on a larger scale, in order to show more clearly the improvement in the rendering of skin textures resulting from the use of panchromatic plates. Attention is especially called to the skin texture, to the eyes, and to the general difference in expression resulting from the different rendering of the planes.

I might add that the sitter does not present an exceptional case, for the freckles so conspicuous in Figs. 5 and 7 are actually not noticeable except on close inspection. Fig. 6, which is a perfect rendering of color values, proves this, no retouching having been done on any of the negatives or prints.

TONING

By SAMUEL WEIN

BLACK is, as we know, the standard color of photographic prints, and it sometimes occurs to the photographer that the pictorial qualities of his print could be greatly enhanced if it were toned. It is the writer's intention to review some of the toning formulas he has made use of in toning prints on paper, lantern slides, transparencies, and motion-picture films.

We will begin with the sepia tone, since it is the most popular and pleasing of all tones. The majority of the methods employed at the present day for sepia toning are based upon the conversion of the silver image into a sulphide of silver. The silver image is first converted into some insoluble salt upon which the sulphide solution can act. The reagent most commonly used for this purpose is a solution containing potassium ferricyanide and potassium bromide, and the image so "bleached" in it is "sulphided" or toned by means of a solution of sodium, barium, or ammonium sulphide. These solutions are more or less unstable and costly. The formulas about to be described are inexpensive and the "keeping qualities" are excellent.

Red-brown to Purple-brown

Dissolve 10 grams selenium in 600 c.c. of a 1.5 solution of sodium sulphide. Dilute five or six times with water for use.

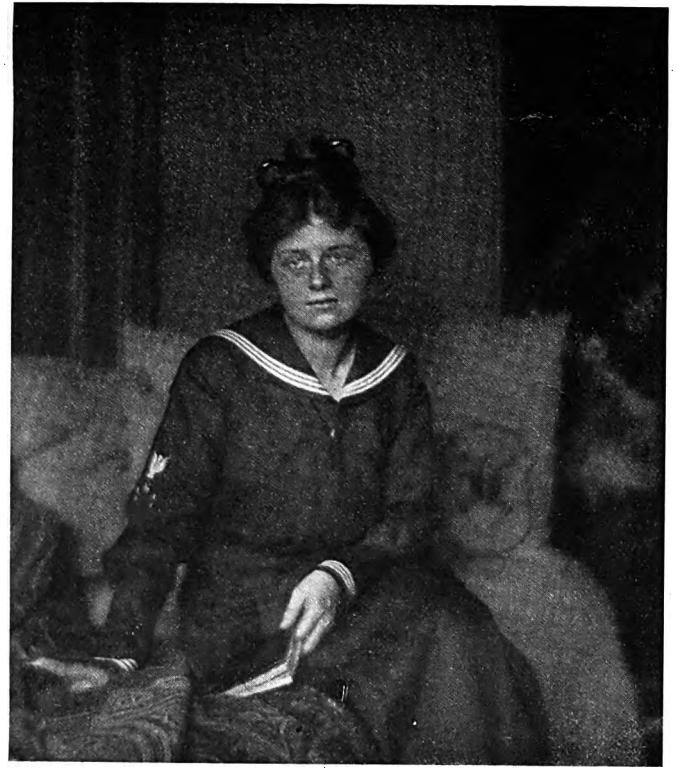


FIG 7

FIG. 8

"THE USE OF PANCHROMATIC PLATES IN PORTRAITURE"

In place of selenium, salts of the metal can be used to advantage; 1 gram potassium sulphite, 1 gram sodium selenium sulphate are dissolved in a little water and added to a solution of 5 grains of potassium bisulphate in 30 c.c. of water, the mixture being heated to its boiling point; 10 c.c. of such a solution is added to 200 c.c. of a 20 per cent. solution of hypo. This solution can be kept for months and is very stable.

Rich Brown to Violet-blue

Hypo	100 gms.
Sodium selenium sulphate	1.5 gms.
Sodium sulphite	15 gms.

Dissolved in 1 liter of water.

More rapid toning is obtained by the addition of 5 to 10 c.c. of 1 per cent. of pyrocatechin solution to 50 c.c. of the concentrated bath diluted with 200 c.c. of water. This bath gives a sepia-brown tone in a few minutes, and a very agreeable purple-brown print on longer action. The high-lights are slightly stained, but are readily cleared in a sulphite bath.

Brown

Water	250 c.c.
Ammonium carbonate	60 gr.

To this add:

Water	30 c.c.
Copper sulphate	1 gr.

Then dissolve and add to the above:

Potassium ferricyanide	2.5 gr.
Water	30 c.c.

Dark Brown

Water	4 oz.
Uranium nitrate	16 gr.
Potassium ferricyanide	16 gr.
Acetic acid	1 dr.

Green

To 45 c.c. of a saturated solution of oxalic acid add 0.6 gram ferric chloride and 0.6 gram ferric oxalate. To this add 2 grams of potassium ferricyanide dissolved in 30 c.c. of water, stirring as same is added. Lastly, dissolve 1.2 grams of vanadium chloride in about 5 c.c. of hydrochloric acid to which has been added 5 c.c. of water.

The print upon being placed in this solution turns blue, which disappears in washing, the print gradually turning green.

The shorter the time in the bath, the more blue-green the result. After washing, the print is placed in a 1 per cent. solution of ammonium sulphocyanide to clear the high-lights.

Foliage Green

Bleach thoroughly in

Potassium iodide	24 gr.
Iodine (resublimed)	24 gr.
Water	32 oz.

Dye in

Malachite green	61 gr.
Water	32 oz.

Clear in

Hydrochloric acid	80 ♏.
Water	32 oz.

Fix in

Hypo	275 gr.
Water	32 oz.

Warm Green

Oxalic acid (saturated solution)	45 c.c.
Ferric chloride	0.6 gm.
Ferric oxalate	0.6 gm.

To this add, stirring constantly:

Potassium ferricyanide	2 gms.
Water	30 c.c.

Lastly add

Vanadium chloride	1.2 gms.
Hydrochloric acid	5 c.c.

Green Tones with Lead and Cobalt

Water	100 parts
Potassium ferricyanide	6 parts
Lead nitrate	4 parts

After bleaching in the above solution place in

Water	100 parts
Cobalt chloride	10 parts
Hydrochloric acid	30 parts

Green

Vanadium chloride	20 gr.
Ferric chloride	10 gr.
Ferric oxalate	10 gr.
Potassium ferricyanide	20 gr.
Oxalic acid (saturated solution)	2½ oz.
Water (to make up to)	20 oz.

The yellowish stain in the high-lights is removed by placing the print in the following solution:

Ammonium sulphocyanide	20 gr.
Water	10 oz.

Bright Red

Ammonium sulphocyanide	10 gr.
Gold chloride	1 gr.
Water	1 oz.

Red

Water	250 c.c.
Ammonium carbonate	60 gr.

To this add

Water	30 c.c.
Copper sulphate	1 gr.

Dissolve and add to the above

Water	30 c.c.
Potassium ferricyanide	2½ gms.

The high-lights are cleared up somewhat by a solution of ammonium carbonate, about 2 per cent. strength, or with a 0.5 per cent. solution of potassium cyanide.

Dark Red

Water	1 gill.
Sodium citrate (crystals)	2½ oz.
Copper sulphate	1 oz.
Ammonia (specific gravity .91)	½ oz.
Potassium ferricyanide	⅔ oz.
Potassium permanganate	5½ gr.

Brick Red

Potassium citrate (10 per cent. solution)	75 ♏
Copper sulphate (10 per cent. solution)	24 ♏
Potassium ferricyanide (10 per cent. solution)	18 ♏
Ammonium carbonate (10 per cent. solution)	6 ♏
Water	1 oz.

This bath has a tendency to give double tones, that is, the deep shadows show a blackish tinge. A cherry-red tint with violet shade is obtained by replacing the citrate solution in the above bath with a quarter-ounce of 10 per cent. ammonium oxalate, but the high-lights are often tinged.

Red-brown

Potassium citrate (10 per cent. solution)	150 ♏
Copper sulphate (10 per cent. solution)	24 ♏
Potassium ferricyanide (10 per cent. solution)	18 ♏
Ammonium alum (saturated solution)	60 ♏
Water	1 oz.

Venetian Red

Water	250 c.c.
Ammonium carbonate	60 gr.

To this add

Water	30 c.c.
Copper sulphate	1 gm.

Then add to the resulting mixture

Water	30 c.c.
Potassium ferricyanide	2.5 gms.

Yellow

Water	250 c.c.
Potassium ferricyanide	15 gr.
Lead nitrate	15 gr.

The thoroughly washed print is bleached completely in the above; this taking from ten to fifteen minutes.

Wash the print well, and place for a minute or two in a solution of hydrochloric acid (15 c.c.) and water (3000 c.c.). Then wash until every trace of yellow in the high-lights disappears. This will take at least thirty minutes, and unless done thoroughly will cause the entire print to turn yellow, instead of the portion of the picture represented by the silver image.

When washed, flow with a 1 per cent. solution of bichromate of potash and remove when print has turned yellow.

Wash for a minute or two to remove bichromate solution and fix for five minutes in a 1 per cent. solution of hypo. Unless this is done, the print will turn dark, owing to the presence of haloid salts in the bleached print.

Yellow

Water	250 c.c.
Potassium ferricyanide	15 gms.
Lead nitrate	15 gms.

Bleach in the above solution, then wash thoroughly and immerse in the following bath for two minutes.

Hydrochloric acid	5 c.c.
Water	1000 c.c.

Wash and tone in

Potassium bichromate, 1 per cent. solution. Wash and fix for five minutes.

Orange

Water	1 gill.
Sodium citrate (crystals)	5 oz.
Copper sulphate	⅔ oz.

Dissolve while stirring; then add

Potassium ferricyanide	⅔ oz.

Plus

Potassium permanganate	5½ gr.

Orange-yellow

Lead nitrate	4 gms.
Potassium ferricyanide	6 gms.
Water	1000 c.c.

Bleach in the above solution, then wash thoroughly and tone in

Potassium chromate	4 gms.
Water	1000 c.c.

Blue

Ferric ammonium citrate	12 gr.
Water	5 oz.
Potassium ferricyanide	12 gr.
Nitric acid	⅔ ʒ

Blue

Oxalic acid (sat. solution)	45 c.c.
Ferric chloride	6 gr.
Potassium ferricyanide	6 gr.
Water	30 c.c.

Then add

Vanadium chloride	1.2 gr.
Water	5 c.c.
Hydrochloric acid	5 c.c.

Light Blue

Ferric ammonium citrate	100 gr.
Potassium ferricyanide	100 gr.
Acetic acid	20 ♏
Water	8 oz.

Deep Blue

Ammonium iron alum (10 per cent. solution)	12.5 ♏
Potassium ferricyanide (10 per cent. solution)	10 ♏
Potassium citrate (10 per cent. solution)	10 ♏
Ammonium alum (saturated solution)	50 ♏
Hydrochloric acid (10 per cent. solution)	2.5 ♏
Water	1 oz.

Cold Blue

Ammonium alum (10 per cent. solution)	50 ♏
Potassium ferricyanide (10 per cent. solution	10 ♏
Potassium citrate (10 per cent. solution)	30 ♏
Ammonium iron alum (10 per cent. solution)	12.5 ♏
Hydrochloric acid (10 per cent. solution)	2.5 ♏
Water	1 oz.

Light Blue-green

Water	100 c.c.
Oxalic acid	6½ gr.
Ferric oxalate	6½ gr.
Ferric chloride	3½ gr.
Potassium ferricyanide	3 gr.

Blue-green

Potassium ferricyanide	30 gr.
Ferric citrate	30 gr.
Acetic acid	½ oz.
Water	4 oz.

Violet

Sodium tartrate (neutral)	15 parts
Chloride of iridium and potassium	1½ parts
Water	100 parts

Boil for two minutes then add 400 parts of water and 10 parts of acetic acid.

Brilliant Purple and Violet

Gold chloride	1 gr.
Potassium sulphocyanide	10 gr.
Hypo	½ gr.
Water	2 to 4 oz.

Purple

Gold chloride	1 gr.
Potassium sulphocyanide	20 gr.
Hypo	5 gr.
Water	2 oz.

Purple

Gold chloride	1 gr.
Phosphate of soda	20 gr.
Water	2 oz.

Toning and Tinting

Many beautiful results can be obtained by toning and then tinting the print with an aniline dye. For instance:

Blue Tone and Yellow Tint. The yellow tint makes the dark parts of the image green which were previously made blue by toning and the high-lights assume a beautiful shade of yellow. This is a very desirable combination for open-air scenes, also sunset effects on marine scenes.

Blue Tone and Rose Tint. A light rose tint on a blue-toned print or slide gives marvellous color effects and combinations.

Red-brick Tone and Orange Tint. Interior scenes and light effects are made exceptionally beautiful and acquire wonderful brilliancy in this combination.

Red-brick Tone and Rose Tint. This combination is especially adapted to, and desirable for, sunrise, early morning, and late afternoon effects.

RODIN ON POSING

WAITING in the studio of Mrs. Kasebier, some time ago, we picked up a new *Life of Rodin*, by Frederick Lawton, and came across the following observations of Rodin's on posing that apply with equal force to the photographer, who is so apt to forget that the sitter has a personality of his own and which he can best express unaided.—Ed. P. J. of A. . . . I should like to call myself a naturalist, but that word is so much misused both by critics and the criticized. It is safer for me to say that I feel myself to have most affinity with the Greeks, not with the school that colored their statues—color has nothing to do with statuary. Light and shade are all a sculptor needs, if his structural expression is right. . . . Nature has been my great teacher. Everything can be obtained if Nature is followed. In my early apprentice days, I had not thoroughly learned my lesson, and in seeking subjects sometimes relied on my unaided imagination. But I came more and more to see how much analogy there was between all the forms that Nature begets; and thenceforth I had only to observe them closely; to place myself, so to speak, in the midst of them, for like shapes to arrange themselves in my fancy and to make a harmonious whole. . . . So many, who begin to study, dictate to Nature; if they have a man or woman model before them they impose a preconceived attitude with no relation to the mind or actual intention of the subject. Today, toward the end of my career, I still content myself with leaving my model to himself or herself. I *dictate no poses*. At most, I venture to prolong them, when I have found what I seek. . . . Any dictated attitude is for the nonce unnatural and is worse than useless to the student. It is the finite substituted for the infinite, isolation and interruption of the secret law of our being; the body loses its charm and becomes absurd and ridiculous. . . . I reproduce only what I have seen, and what anyone else could see if they would only take the trouble; but then I am always looking, and I know there remains to be found out infinitely more than I shall ever have time to discover. . . . People don't perceive that reality of every kind can have its perfection, age no less than youth; what is called ugly no less than what is called beautiful. To some extent it is realized in painting—and more in painting than in sculpture. The portraits of Rembrandt and Holbein show people old and wrinkled, but the beauty is there that belongs to humanity. It cannot be otherwise. Nature is always perfect. She makes no mistakes. The mistake is in our standpoint, our vision. There is beauty in a skeleton; but it wants observing from all around, for the fineness of the workmanship, the exact adjustment of all its parts to be duly admired, to be understood.

WET-COLLODION PROCESS AS USED BY THE GOVERNMENT

By L. G. ROSE

As many of the modern photographic workers have no idea of the wet-plate process as now practised, the following article has been written to set the process down as it is used today throughout the entire field of process work.

The wet-collodion process is used to a considerable extent by establishments requiring negatives of good density, clear lines, and easy manipulation, and is employed by the government for the reproduction of tracings, maps, books, and other line subjects.

This process may also be used to good advantage by commercial photographers in the reproduction of maps, pencil drawings, etc., and in the making of transparencies, lantern slides, and small work for enlargement; in fact, anything requiring great contrast, clearness, and ease of control.

In the practice of this process the best equipment and apparatus on the market is none too good, and a great deal of it has to be constructed to suit the individual case. The camera has to be one of heavy construction and on a bed free from vibration. The lens for copying is preferably a high-grade anastigmat corrected for color work, although a good rectilinear lens does very creditable work. The government usually provides good equipment and good workrooms.

We are using at present Cooper-Hewitt mercury tubes for the illumination of our copy, and find they give very even light—much better than the open arcs formerly used. (See Fig. 1 for arrangement of camera, lights, etc.)

The dark-rooms are provided with a coating table, storage cabinet for glass, developing sink with running water, developing light, and plenty of ventilation. The wet-collodion plates, being much slower than dry plates, can be developed in an amber light, making it possible to have plenty of light in the dark-room. It is essential that everything should be scrupulously clean. In fact, nearly all the troubles of the wet-collodion process can be avoided by cleanliness. A careless workman on this process is never out of trouble.

FIG. 2

The glass we use in making wet-collodion plates is common window glass, free as much as possible from scratches, bubbles, and other imperfections, and as flat as can be obtained. If new glass is used, it is cleaned by immersing in a weak nitric acid bath for some time, then washed thoroughly and albumenized. The albumen solution is made as follows:

White of one fresh egg	
Water	20 oz.
Aqua ammonia	3 drops.

These ingredients are placed in a bottle with a few pieces of broken glass to cut the albumen, then well shaken, filtered, and it is then ready for use.

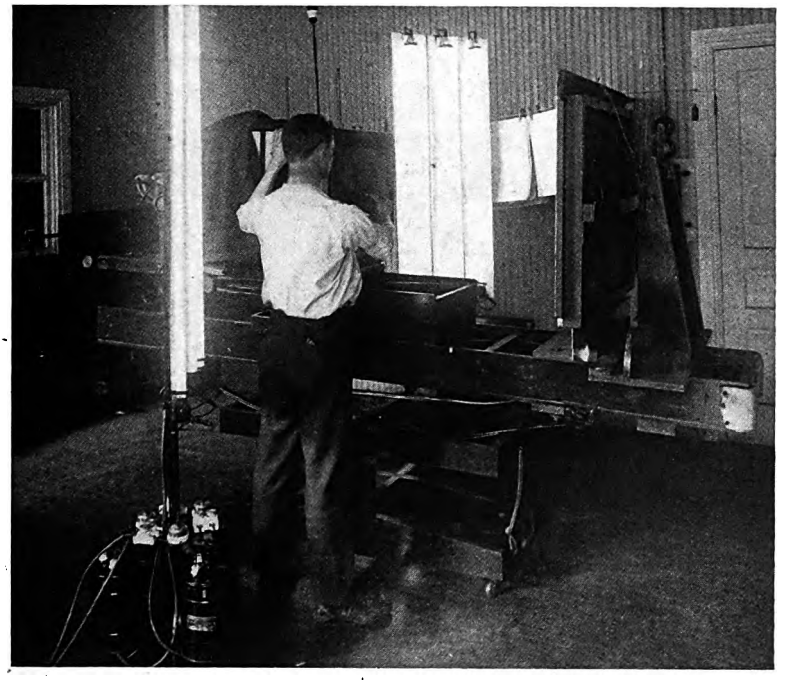


FIG. 1

FIG. 3

Albumen and collodion are applied in practically the same manner, the albumen a little more rapidly, and drained off at one corner (Fig. 2). We generally apply the albumen twice, the first coating to remove surplus water, and the second being the actual effectual coating.

If old negatives are used, they should be first placed in a strong solution of potash and left over night, then washed thoroughly and immersed in a nitric acid bath, again thoroughly washed, after which the albumen solution may be applied as above.

After the glass has been albumenized and dried, it should be stored in a cabinet free from dust.

Coating

The coating of these plates is an operation that requires a little skill and experience although we have no difficulty in breaking in men to this work who have had no previous experience whatsoever in photography, it merely requiring a little application and perseverance. The albumenized plate is placed on a plate rest (Fig. 2), and after being dusted with a camelhair brush, taking care to dust slowly so as not to start any static action, is then coated with the following collodion:

Alcohol	32 oz.
Negative cotton	320 gr.
Ammonium iodide . . .	160 gr.
Cadmium iodide	100 gr.
Ether	32 oz.

The ingredients are added in the order in which they are named, after which the collodion should set for at least twelve hours to ripen; though if necessary to use the collodion immediately a few flakes of iodine may be added, which will produce the same effect.

This formula has been in use by government photographers several years, and is practically trouble-proof. It is advisable, when a formula is found suitable for existing conditions, to stick to it. In fact, one of the axioms of wet-plate photography is "Do not experiment with collodion" if you want to avoid trouble.

Collodion is best applied to a plate by using a collodion bottle and, starting at the upper right-hand corner, allow it to flow until the plate is about one-third full; then flow over the entire plate slowly and drain off at the lower right-hand corner (Fig. 2). The way a plate is coated has a great deal to do with the resulting negative. If unevenly coated, that is, thin at one end and thick at another, the resulting negative will show a difference of density. If the collodion contains bubbles or floating particles they will cause pinholes and large transparent spots.

The plate is then thoroughly drained and allowed to set for a short time, or until it appears "tacky" to the touch. It is then immersed in a silver bath with one continuous motion. This motion must be continuous, otherwise the plate will be streaky. The plate is left in the silver bath from three to five minutes, or until the greasy appearance has disappeared. This is governed by the time of the year, temperature, etc., the higher the temperature, the shorter the period necessary for the immersion.

The silver bath is made as follows: Distilled water built up with nitrate of silver crystals to test 40° hydrometer. C. P. nitric acid is added until the bath is slightly acid.

If a new bath, the addition of some iodide is necessary, which is best obtained by coating a plate with collodion and leaving in the bath for about ten to twelve hours; or about ten grains of potassium iodide may be added to the bath to obtain the same result, after which the bath is filtered and ready for use.

After the plate has been immersed in the bath the proper time it is placed in the regulation wet-plate holder, which is constructed with a trough to catch the drippings, care being taken that no iron, brass, or other base metal is allowed to come in contact with the plate. It is then ready to expose.

Nearly all of our work consists of tracings about one-half reduction for which we use 14 x 17 plates. Our exposure, using 17-inch collinear lens stopped 32, is two and one-half to

three minutes, depending upon the condition of the copy.

After exposure the plate is taken to the dark-room and developed with the following developer: Sulphate of iron solution to test 20° hydrometer, to every 80 ounces, to which is added 3 ounces of acetic acid No. 8, to keep the lines clear and to act as a restrainer.

After the bath has been used some little time, 1 ounce of alcohol is also added to make the developer flow readily, but this is not needed until after the sensitizing bath has been somewhat charged with alcohol from the collodionized plates. The developer should be filtered before using.

In developing, the plate is held in the flat of the hand and the developer applied from a graduate or tumbler with one sweep, being careful to cover the plate at one time, and also to prevent any of the solution from running off the plate, as some of its density would be lost.

As the image of a wet-collodion plate is a surface image, it develops very rapidly, and as soon as the developer is applied will appear almost immediately. The development is carried on until the proper density is obtained without fogging, the time for which has to be governed somewhat by local conditions. Plenty of amber light may be used in developing.

After the plate is sufficiently developed, running water is applied thereto until greasiness has disappeared. The plate may then be exposed to daylight, fixed, and intensified. (See Fig. 3 for arrangement of intensifying outfit.) The plate needs intensification, as it will be too thin for the average printing process.

The plate is fixed in a 10 per cent. solution of potassium cyanide, and after fixing it washes very readily, everything being on the surface; 10 or 15 seconds under a tap is sufficient.

In intensifying, the plate is first bleached in a copper bath made as follows:

Solution copper sulphate	2 parts.
Potassium bromide	1 part.

Both 30° hydrometer test.

After bleaching, the plate is again washed a short time and then immersed in a silver solution composed of water with enough silver nitrate added to bring it up to 30° hydrometer test.

After removal from the silver bath, by holding the plate up to the light, any parts or lines thereof which are not clear may be readily seen. Such parts may be cleared by applying the following solution:

Saturated solution of iodine	2 drams.
Saturated solution of cyanide	4 drams.
Water	20 oz.

The flowing of this solution over the parts necessary to be cleared should immediately have the desired effect. Great care, however, has to be exercised at this point or the plate may be ruined. (See Fig. 4 for method of clearing.) If the solution is left on too long it will eat away the background. Certain minor portions may be cleared by applying the above solution with a tuft of cotton.

After clearing the plate more density may be obtained by repeating the intensification process, if desired.

The plate is then thoroughly washed for a minute or so and immersed in a sulphide bath made as follows:

Water	64 oz.
Sodium sulphide	4 oz.
Aqua ammonia	a few drops

Upon being taken from this sulphide bath the plate is again washed thoroughly, somewhat longer this time, and placed upon a rack to dry. When surface-dry a fairly strong solution of gum arabic is flowed over the plate in order to form a protective coating for the tender film.

The negative is then ready for blocking out. This is not always necessary, but there are very often a few pinholes and other slight imperfections, due to dirt or other causes, and which will have to be blocked out. For this purpose we use drop-black (ground in Japan drier) thinned down to the proper consistency with turpentine, which is applied by a brush consistent with the size of the part to be blocked out. This paint dries very rapidly.

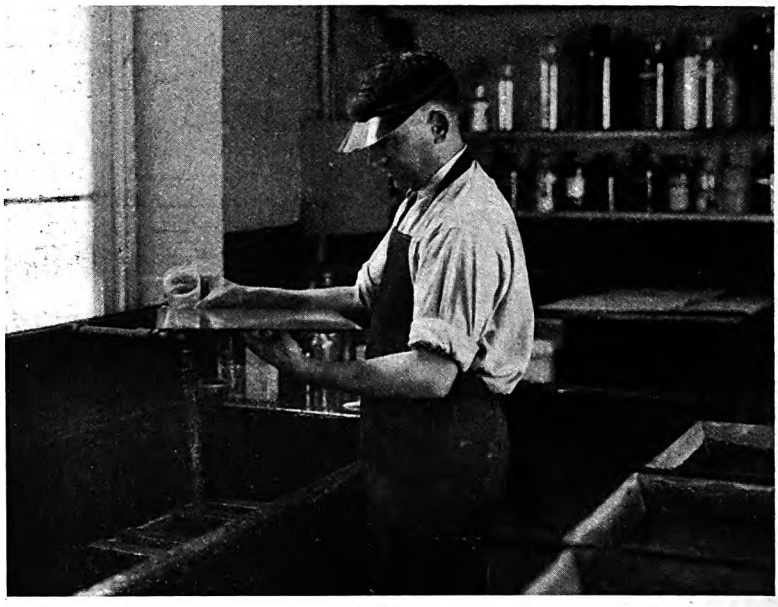


FIG. 4

Any filling-in of lines, or lettering which needs touching up, may be done with an engraver's needle and draftsman's triangle. It may be here stated that an important advantage of the wet-collodion process is that old broken and dirty tracings or other copy may be greatly improved at this point in the hands of a skilful workman, and in many cases the copy can be much improved over the original.

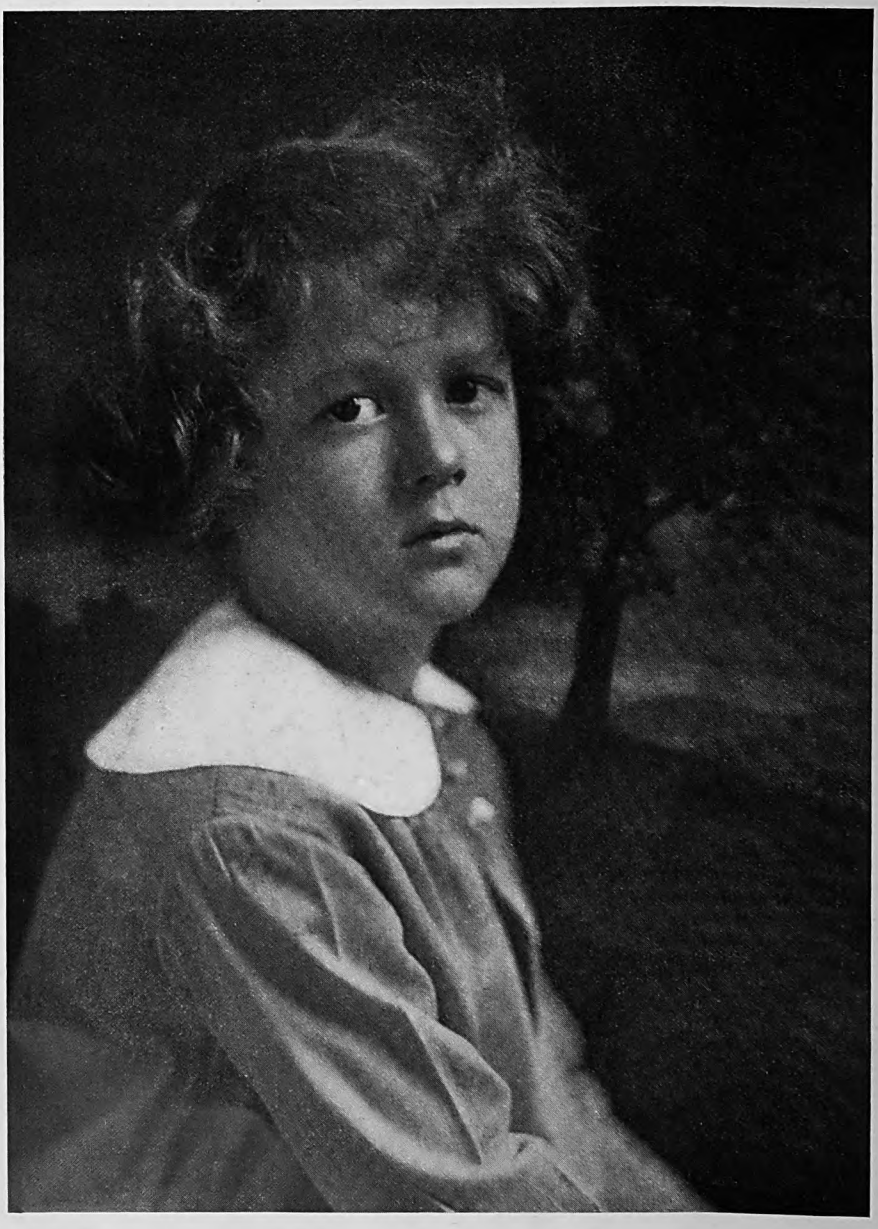
Care of Silver Bath

After the silver sensitizing bath has been used for several days the plates show a large amount of pinholes, due to excess of iodides taken into the bath by the collodionized plates. To remedy this the bath may be rectified as follows:

To the original bath from two to three times the quantity of distilled water is added, neutralized with a saturated solution of bicarbonate of soda. This is placed in an evaporating dish and boiled down until but a small quantity remains. The object of this is, first, to evaporate alcohol and ether from the bath, and secondly, to throw down organic substance which may get into the bath from various sources.

After being boiled down the bath may be brought up to the original quantity by adding distilled water; thoroughly stirred up, and placed in the sun for two or three days. This throws down the iodides. The bath is then filtered, built up to the proper silver strength of 40° hydrometer, acidified, again filtered, when it is ready for use.

By WALTER K. BACHRACH
THE BACHRACH STUDIOS



By WALTER K. BACHRACH
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COPYING DAGUERREOTYPES

By JOHN A. TENNANT

THE copying of daguerreotypes offers a test of skill worthy of the enthusiastic copyist at his best. Much has been written about the subject, special stress being laid upon the necessity of "cleaning" or restoring daguerreotypes before their reproduction. As this is not invariably necessary, my first word will be a word of caution. The daguerrean image, although in a sense absolutely permanent, is extremely delicate in structure, and may most easily be destroyed by an incautious touch. As a rule the daguerrean artist did his work well, and if the original to be copied shows no signs of tarnish, it will be well to set about its reproduction without any attempt at restoration. If the surface under the glass cover in the little case shows dust, remove the glass and carefully clean it. Any dust on the surface of the picture image itself may be removed by very lightly passing a soft camelhair brush over it. On no account must the surface be touched with the fingers or the most delicate material, or the delicate film will be injured. Mr. W. M. Hollinger, whose clever copies of daguerreotypes have excited the admiration of all who have seen them, tells me that very rarely indeed does he in any way attempt the renovation of the originals sent him for reproduction. This is weighty counsel, since few men have been so wonderfully successful in this particular field.

If the entire surface has become darkened or tarnished by the influence of the air upon the film, some restoration is, of course, essential to the best results. To effect this, remove the silvered plate from the case and place it, image uppermost, under a box-lid or other protector from dust, etc. Now put a small piece of potassium cyanide (deadly poison) into a graduate, and pour over it an ounce or two ounces of water. Holding the daguerreotype by the corner with a pair of pliers, rinse it in clear running water; then pour over it the weak cyanide solution (a 3 per cent. solution is usually employed), and return it to the graduate. Repeat this operation several times until the discoloration quite disappears. Within a few minutes the daguerreotype will appear as fresh and as brilliant as when first made. Wash well in running water, and then, before the surplus water has time to collect in tears upon the image, begin to dry the plate gradually over a spirit-lamp, holding the plate in an inclined position so that it will dry from the uppermost corner. The plate must not be held too long over the flame, or the thin silver film may separate from its copper support. The secret of success is in the use of pure water for the final washings, and the drying of the image without check or the formation of tears. The picture should now be restored to its case, and the edges secured with gold-beater's skin or gummed paper to thoroughly exclude the air.

In copying daguerreotypes in their cases it is usually advisable to turn them on one side. If fixed to an open board or support, reflections will undoubtedly give trouble, and these are not always visible on the ground-glass. It is therefore usual to copy daguerreotypes placed at the end of a fairly deep box lined with velvet, the lens being pointed at the picture through a hole cut in a black cloth flap which covers the front end of the box. Light is admitted through openings at the side of the box. The exposure is necessarily protracted. Care must be taken to avoid movement during the exposure. If the marks of the buffer—fine horizontal lines—are seen in the resulting negative, the plate should be placed vertically and rephotographed, when these lines will usually disappear.

In explaining the poor quality of the average copy of a daguerreotype, as

produced in many studios, Mr. Hollinger informs me that this is probably due to two causes: First, daguerreotypes sent in to be copied are usually allowed to accumulate with other copying orders until the photographer or his assistant can devote a dull day to the work. They are then "put through in a bunch," without much individual consideration. Mr. Hollinger avers that the daguerreotype deserves just as much consideration as the living sitter, and he therefore takes each one separately as part of the day's work, giving it place among the regular sittings of the day. By this plan the original gets the care and attention it needs, and the results amply justify this common-sense treatment. The second error made by the professional is his slavish adherence to the old rule concerning "copies" in general, viz., "Avoid hardness, and get all possible detail." In other words "expose for the shadows and let the high lights take care of themselves." This, in copying daguerreotypes, can only result in flatness and gray shadows—the things to avoid. Mr. Hollinger, in his practice, gives a generous exposure, and in development keeps his attention on the high lights, letting the shadows come as they will. In this way he secures the strongest high lights in development, making after-manipulation of the negative unnecessary as far as crispness and brilliancy are concerned. It necessarily follows that he secures rich shadows with all the details desirable therein. In this way he obtains negatives requiring very little handwork before printing, and vigorous copies without harshness, usually more pleasing than the originals from which they were made.

There is another point to be mentioned. Clever as the daguerrean artist undoubtedly was, he did not understand the art of spacing. In copying his productions, therefore, it is often possible to improve upon his work by careful attention to the trimming (or shaping) of the copy. If shaped according to our modern methods, the artistic value of the daguerreotype portrait may often be enhanced and effect wonderfully improved.

THE BRONZOGRAPH, A VALUABLE PHOTOGRAPHIC NOVELTY

By "PHOTOCHEMICUS"

A PHOTOGRAPH that possesses both novelty and merit will always attract customers, and custom to a photographer means income, and income means profit. To secure these the photographer must produce something that possesses the qualities that will attract. Then if he makes a specialty of a particular kind of portrait it cannot fail to attract customers. How to produce what has been termed a Bronzograph, which is a portrait made upon glass by the carbon process, and when completed is treated in various ways which give the effect of a bright bronze in all the highlights of the picture. Portraits produced by this means are both permanent and elegant, and when suitably framed produce a charming effect. This class of portrait attracts by virtue of its unusual effect, at the same time being a permanent photograph gives it an additional recommendation. The production of these beautiful photographs can be carried out more readily than described; that is to say, that they are easily produced from the start; the process being one of simplicity is given herewith.

Procure some carbon tissue in three colors—portrait brown, red chalk, and engraving black. Make up a sensitizing

"MOTHER AND CHILD"
BY BIANCA CONTI
SAN FRANCISCO, CAL.
AWARDED GOLD MEDAL OF HONOR, PANAMA EXPOSITION

bath (a twenty-five ounce bath will be enough to commence with) as follows:

Sensitizing Solution

Filtered water . . .	25	fl. oz.
Potassium bichromate .	1½	oz. av.
Strong water ammonia .	1	dram
Glycerin	1	dram

When the potassium salt is dissolved, filter the liquid through absorbent cotton; it will then be ready for use. The carbon tissue may be purchased in one dozen lots; 5 x 7 is a good size to practice with. Place a piece of the tissue into the sensitizer. After it has been poured into a clean tray, press it beneath the liquid, it will soon lie flat. Two minutes in this will completely sensitize it. Remove it and place it, face down, upon a clean, cold, glass plate; place a piece of manila paper over this and stroke the back of this from end to end; lift the paper and wipe the excess of liquid off by using a piece of clean rag; then suspend the tissue to dry away from light. As soon as it is dry, printing may be proceeded with.

The next thing to be done will be to prepare a number of 4 x 5 plates, although it will be better to prepare these before any sensitizing is done, so as to have them in readiness. Take, say, half a dozen 4 x 5 ordinary dry plates, wet their surface well under the faucet; then place them in the negative fixing bath for twenty minutes; remove them, and wash well for half an hour in running water; wipe their surfaces with a tuft of absorbent cotton while the water from the faucet is running upon them, then place them in a bath made up of one ounce formaldehyde and twenty ounces water; five minutes in this will be enough; remove them, and place them in a rack until dry.

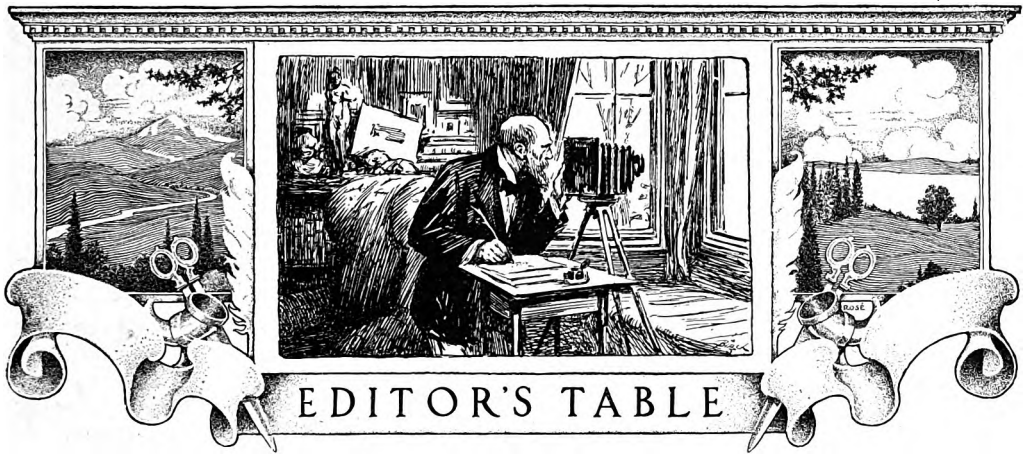
Having a number of these plates ready, and a print upon the tissue made, the exposure must not be longer than for a print on printing-out paper when one-third done. Otherwise it will be too dark.

The carbon print being made in the usual way, when the tissue may be placed into cold water, and the 4 x 5 glass plates placed to soak in another tray. As soon as the tissue lies flat, place it upon the plate beneath the water; lift them out together; place a piece of hard manila paper upon the tissue, and apply the squeegee with some pressure; allow the plate or plates to stand aside for twenty minutes.

Then development may be proceeded with by placing the plate in warm water. As soon as the coloring matter is seen to ooze from the edges, the paper may be lifted, and the development proceeded with by pouring warm water over the surface until a clear picture remains. It must then be rinsed under the faucet, and placed into an alum bath made up by mixing one ounce of common alum, powdered, in twenty ounces of water. A stay of five minutes in this will suffice, then wash it well for about ten minutes in clean cold water, when it may be placed aside in a rack to dry.

To complete the operation the bronzing comes in here. Procure a bottle of bronze, a so-called gold paint, also a bottle of aluminum bronze, which may be purchased for ten cents per bottle; shake the contents well, then pour the bronze over the carbon print; let it lie level until it dries, and then coat it again in the same way, only draining the excess off at the opposite corner. In draining, only a very small quantity must be permitted to run off, because a thick coating is necessary, while brushing the liquid bronze over the surface will not give the desired result. Prepare two such prints, one with the gold bronze and the other with the aluminum. As soon as they become dry, examine them; the result will prove to be highly satisfactory. As the bronzing material is likely to prove slightly sticky, it will be advisable to aid the evaporation of the solvent by heat.

The finished portraits will exhibit at once the novel effect, and when suitably framed will prove to be excellent trade getters.



EDITOR'S TABLE

SUCCESSFUL PHOTOGRAPHY

IF success in the production of a photographic portrait is to be determined by the artistic interpretation of the subject, when measured by those rules of art that govern the portrait painter in his work, the question must be treated in one way. If, on the other hand, its answer lies in the technical perfection of manipulation along more technical lines, a totally different estimate must be made. There is, however, between these two extremes, a middle ground from which the subject may be viewed and a definition found that will satisfy and profit the professional photographer. This middle ground should always be found in the work that contains the highest percentage of artistic and technical excellence compatible with the tastes and purchasing ability of the community in which it is circulated, always provided, however, that the producer possesses the requisite ability to keep his work properly before the public and to let it be known that it *is* successful. In other words, successful photographs are those that enable the photographer to make a reasonable profit from his business without degrading his profession or stultifying himself. We are in business for this purpose largely, if not wholly, and any other kind of work than that on which a profit may be made is not successful—at any rate from a business stand-point.

It may be very well to make occasional side journeys into the field of art. It certainly is very ill to confine our efforts within the narrow limits of a too commercial line, without ambition for betterment, but the success of a line of photographic work must be measured by the demand in dollars and cents that may be created for it.

The correct proportion of art, technique, individuality and other attributes depends mainly upon two things: the community and class of trade for whom the work is produced and the nature and qualifications of the man behind the business.

In the early days of photography, almost any kind of a photographic portrait found favor and ready sale. It mattered little what were the artistic or even, in many cases, the technical merits of the production. The art was new (only we must not say "art"), the pictures even at their worst were far superior to anything previously known and the photographer made money. His photographs were successful, but they would not meet the demand of today. It is not at all impossible that they would repeat their successes if introduced into some country where nothing of the kind had ever been, but even this is doubtful. Conditions have changed and the public taste has been developed to a point that makes the successes of a few years since comparative failures in the same field today. This change has been a gradual one and is still going on in every community.

Some are farther advanced than others in their appreciation of rational artistic treatment.

This change is due, not only to the production of better work, but also to its better exploitation, and photography, no matter how excellent it may be as a work of art or technique, may yet fail absolutely in finding a market unless its good qualities are made known and emphasized. Many a photographer of ability fails utterly in making his business profitable because he does not know how to create a demand for photographs in his community. The business ability of the photographer counts as much in the production of successful portraiture as does his technical ability, and it must be taken into account when writing the formula for success. If, then, we combine the right proportion of artistic feeling and interpretation, technical skill in manipulation, and business ability in presenting the product of this combination to the buying community, we shall have that which can be nothing else than successful photography. Logically, the man who produces this kind of photography will be a successful photographer in all that the name implies.

AT-HOME WORK

THE ignoring by the average professional of the possibilities of at-home portraiture is one of the wonders of the photographic world. In many ways the gallery is as unreal and untrue as it is necessary. Necessary it undoubtedly is, but it is not worthy of the practical monopoly which has been accorded it. The artificiality of much connected with the studio has passed into the realm of common ridicule. The excesses of accessory and background, the conventions of pose and of lighting, became monotonous to nauseation and led to an inevitable reaction. The change to simplicity and naturalness, to banishment of accessory and limitation of background, was a change for the better but not to the perfect thing. In the nature of things no one style or fashion can be the best. Some are inherently and everlastingly bad, others are good, but fashion cannot fix on any one thing for long. To break away from what was bad was a right move, but the adoption of simplicity and a certain negative correctness was but a step.

The naturalness of at-home portraiture makes it as right as the old accessory period was wrong, and although it is not likely to become a common line of professional work—at least for some time to come—there is no reason why it should not hold a place in the economy of the fraternity. Those photographers whose work keeps them busy, particularly if they are men in large towns, have no present use for at-home work; but where trade is limited this work is as necessary a help as is the photographing of school or wedding groups. It might almost be said that at-home work is *limited* to country towns. The city flat is a heart-breaking place in which to practice portraiture, and outdoor work has limited possibilities. In the larger houses there is, of course, more scope in the size of the rooms; but far greater possibilities lie in and around the country house, lighted as it is from four sides, and with its stoop or veranda and garden.

At-home portraiture has a great educational value. To a young photographer it is more than useful in its lack of monotony, its difference in each subject, leading to the necessity of a versatile mind, quick to see the best possibilities. One of the most level-headed men in the profession pushes for at-home work and turns over nine-tenths of it to his son. He is a busy man himself, and could well keep his son busy about the gallery, but he sees an educational value in the other. But it was direct income to the photographer, rather than education, which prompted this article. There are many people who are nervous on entering a studio, and some who decline to enter one. By getting *at* the sitter among familiar and comfortable surroundings we get the sitter in a happy frame of mind. And we get them in both a pose and a light which is familiar and congenial to themselves and to their friends. Exposures will be a little longer, of course. The

light will usually be much less than in the studio, and the lens must be stopped down a little to do justice to the furniture.

Often a commission for at-home portraiture may be extended to one for some of the rooms. It is a good plan to carry a wide-angle lens, and after the portraiture is finished, if the room and the people seem the right kind, to take a view of the room also. Whenever possible, a visit should be made to the house before any photography is attempted, when the size of the rooms and the direction and placing of the windows can be noted. Then when the camera is taken the exact handling of the light will be understood and the photographer will appear to know his business.

WALTER KEYSER BACHRACH, OF THE BACHRACH STUDIOS

A NEW school of photographers is coming to the front. It is made up largely of a second and younger generation—men who have succeeded to their fathers' business. To practical knowledge they add modern methods, and are so enabled to maintain, and even enhance, the reputation of the old-established studios.

Typical of this "new school" is Mr. Walter Keyser Bachrach, of the Bachrach studios, and we take pleasure in showing our readers the fine examples of his recent work.

Mr. Walter Bachrach, the maker of these pictures, is a little over twenty-six years of age, and his becoming a photographer, we learn, was rather contrary to the wishes of his father, Mr. David Bachrach, whose eldest son, Louis Fabian, of Boston, is also one under the same circumstances. Walter graduated from the Polytechnic Institute of Baltimore in 1906, and at once took a position as rodman on a Baltimore and Ohio corps of field engineers. The panic of 1907–1908 caused the company to lay off most of its construction corps, and his cousin, desiring to change his business, sold him the Bachrach Studio of Washington, and he made a success of it at once, though he had but little experience. The artistic element seemed to be inborn, and his strong point was "at home" portraiture.

The various changes each additional subject brought up, with new lightings and surroundings, seemed to develop the originality of his work, and his technical knowledge was acquired in his father's studio in Baltimore. His uncle, retiring from business, Walter took his place and so brought the young blood necessary to keep the business up to date. Besides the Baltimore and Washington studios, the firm have offices in New York and Philadelphia, mainly for "at home" work.

FINISH WHAT YOU BEGIN

THE advice contained in the line above has fallen under our eyes; it is advice which can be applied with profit to the photographic profession as well as in other walks of life. How much of life is wasted in unfinished work! Many a photographer uses up his time in splendid beginnings. The labor wasted to commence ten things and leave them useless, would finish five of them and make them profitable and useful. Photographers, finish your work well; look after all the little details; stop to think only, Can I do this better? —*then do it.* Life is short and art is long. Stop beginning forty things, and finish well four. Put patient and persistent toil in all your work, and be assured one complete undertaking will yield you most pleasure and satisfaction; your customers will be better satisfied, and, at the same time, will contribute very materially to your exchequer.

LEAVES FROM MY NOTE BOOK

By an Old Hand

SULPHIDE TONING

PROBABLY the chief reason for the use of the sulphide or redevelopment process is that cold solutions are used and it is generally considered easier than the hypo-alum method. The chief trouble with it is that one can never be quite certain as to the tones that will be obtained, and all sorts of bleach have been suggested to obviate this. The real cause of the trouble lies in the exposure and development. If the exposure is prolonged, so that development has to be stopped early, then unsatisfactory yellowish tones are obtained; while if the exposure is so adjusted that development is not complete in less than two and a half minutes, rich tones can be obtained every time; further than that, it seems then as though it is perfectly immaterial what the actual developing agent is. A flat, thin, foggy print will never give a good tone. As a matter of fact the print should be developed so far that, as a black and white, it is hopelessly overdeveloped, and there should be no actual whites even in the high lights. The sulphiding so lightens the tones that an underdeveloped print will look weak and washy. A print that is overdeveloped, with all its shadows blocked up, will when sulphided show details even in the deepest shadows, as the brown is so much more transparent and luminous than the black.

I have not found that there is one paper more suitable for this process than another; though those with buff supports look better. I have found that some papers are more prone to blister than others. The remedy for this is a chrome-alum fixing bath.

All sorts of formulas have been given for the bleaching bath, and frequently it is recommended to bleach the bath right out. I do not believe in this. It is all right if you want bright yellowish colors; but some of the finest tones I have been able to secure are from prints that have been so superficially bleached that only the fine details in the highest lights have disappeared. One has then a main image in black silver and superimposed on that a superficial film of yellow silver sulphide, and the two give a particularly rich tone that cannot be obtained by any other method.

The usual bleach is a mixture of ammonium bromide and ferricyanide, but I think that much finer tones are obtained with the following:

Potassium iodide . . .	5 gm.
Potassium ferricyanide . .	15 gm.
Water	1000 c.c.

This bath is about half the usual strength, but it is made so on purpose. It ensures quite even action and it works so much slower that one can stop its action at any desired stage.

A very instructive experiment is to make half a dozen prints all alike from the same negative, immerse them in the bleach for various times, mark on the backs the time of bleaching, then cut the prints in half after washing and sulphide only one-half. One has thus a record of how a print should look to obtain any particularly striking tone and also a record of the duration of the bleaching.

One factor, which is often neglected, is the temperature of the bleach. It is a well-known fact that all chemical reactions take place much more rapidly the higher the temperature. If regularity of tones is required, then a constant temperature and a constant time of bleaching is essential. Some operators claim that drying the print before bleaching is an improvement, but this I cannot personally confirm.

What is most essential is a thorough washing after fixing so that every trace of hypo is removed from the print and image. If this is not done, one has formed in the print surface the well-known Farmer's reducer, and the print loses considerably in vigor with the consequent result of poor tones.

The redevelopment bath may be any soluble sulphide, but the sodium salt is the simplest. It is the cheapest chemical that we can use, but my advice is to purchase only the purest—that which is used as a chemical reagent; it costs twice as much, but it is 98 per cent. pure. It is bad stuff to keep, as it rapidly absorbs water from the air and spoils. The best thing to do is to dissolve it as soon as purchased in three times its bulk of water, and store in tightly corked bottles. For use, one part of the above may be diluted with five parts of water, the prints immersed one by one, and the batch left with an occasional turn over. The time of immersion in this bath seems perfectly immaterial; five seconds or fifteen minutes seems to make no difference to the tone, though too long will cause blisters in the subsequent washing with some makes of papers. Too long washing after the bleach will also cause these, and actually a wash of two minutes in running water is quite enough and better tones seem to be thus secured.

Some operators prefer liver of sulphur, rendered alkaline with ammonia; but this, which is a potassium salt, presents no advantage over the sodium salt.

The only process in which I have found the potassium salt useful is in the direct toning process, which may be said to be a variant of the hypo-alum bath. After fixing and washing the prints should be hardened in a 5 per cent. solution of chrome alum for five minutes, then washed for one minute, and immersed in the following:

Liver of sulphur . . .	6 gm.
Water	1000 c.c.
Ammonia, a few drops	

The temperature of the bath should be 105° F. A very rich brown is obtained in a very short time.

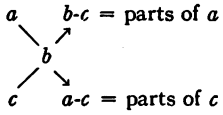
ABSTRACTS AND TRANSLATIONS

BY E. J. WALL, F.R.P.S.

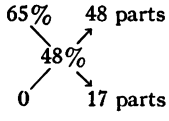
Rules for Diluting Solutions, Etc.

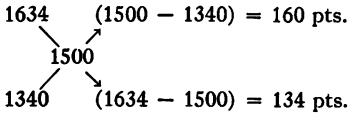
Mr. Hackh gives the following method for finding the amount of water to be added to a solution to reduce it to any desired strength or specific gravity, and while not novel, it may be new to some readers.

The method is based on the following scheme: *a* represents higher percentage; *b* represents desired percentage; *c* represents lower percentage (water).



The operation consists of deducting *b* from *a* and writing the result on the end of the arrow pointing downward, and deducting *c* from *b* and writing the result on the end of the arrow pointing upward. That is all—the numbers thus obtained indicate the parts of the solution to be taken in order to make the required solution of *b* per cent. An example will illustrate it better:





1. Dilute a 65 per cent. solution with water (0 per cent.) to make a 48 per cent. solution. For this purpose take of the 65 per cent. solution 48-c = 48 parts and of water (0 per cent.) 65-48 = 17 parts.

2. From a solution with the specific gravity 1634 and 1340 shall be made a solution with the specific gravity 1500. Applying the rule, there are necessary from the solution with a sp. gr. 1634-160 parts, and from the solution with a sp. gr. 1340-134 parts.—*Chemistry and Analyst.*

Chemicals in Germany

In an editoral article German photographers are cautioned to be economical in the use of chemicals. Developers should be used for four to six plates, instead of for one only. Special care should be taken with the fixing bath and it should be used to exhaustion—there being no danger in this if the plates are treated to a second bath. After the first bath the plates should be rinsed and left for ten minutes in the second; 450 grams (about 1 pound) of hypo will fix at least 50 cabinet plates.—*Atel. d. Phot.*

The Action of Flashlights on Plates

Fl. states that it has frequently been observed that plates exposed to flashlight show a slight fog. This may be caused if the plate-holders are not thoroughly shielded from the flash by the penetration of the extremely energetic ultra-violet rays that are evolved. Under all conditions holders containing unexposed plates should be shielded by thick dark cloths.—*Phot. Chron.*

Breath or Vapor Pictures

Lueppo-Cramer points out that if a daguerreotype plate be exposed in the camera and then subjected to the vapor of metallic iodine, the latter will condense only on those parts of the plate that have been affected by light and an image is actually obtained in metallic iodine which can be driven off by heat, leaving the latent silver iodide image intact.—*Phot. Ind.*

Moser, in 1842, pointed out that a surface that had been touched by another would condense aqueous vapor at the points of contact, and it was also stated by him, in 1898, that a daguerreotype plate could be developed by steam alone. In 1900, Waterhouse found that pure silver plates and even clean glass acquired the same property after exposure to light. Herschel, in 1842, described a "breath-printing process," in which silver nitrate mixed with ferric tartrate was painted on paper and after drying was exposed for a very brief period to light and then the image was made visible by merely breathing on it. This was, of course, nothing more than reduction of the silver nitrate to the metal by

the ferrous tartrate produced by tbe action of light on the ferric salt.

Black and White Copies of Autochromes

C. Fingerhuth recommends the following method of making ordinary black and white negatives from autochromes. Two unexposed plates should be well fixed, washed and dried and immersed for four minutes in a 0.5 per cent. solution of Hoechst filter green and in a 1 per cent. solution of filter yellow respectively, and after rinsing for one minute they should be dried and bound together. The greenish-yellow filter thus obtained should be placed in the printing frame, and the autochrome without a cover glass laid thereon, film up, and a non-halation isochromatic plate placed in contact. This plate should be backed up with a black card or cloth. Using a 100 candle-power nitrogen Mazda lamp, the exposure is about six seconds at a distance of from 1½ to 2 meters. Any ordinary developer may be used and a negative is obtained showing no grain.—*Apollo.*

The only novelty in this is the use of the greenish-yellow filter, which may be necessary owing to the richness of the nitrogen lamp in red and orange rays. Negatives have been made from autochromes almost since the first introduction of the plates and the results show almost true color rendering.

Sodium Phosphate as a Restrainer

Lueppo-Cramer points out that many neutral salts, such as sulphates, nitrates, oxalates, etc., can accelerate development, while citrates, it is well known, are restrainers. Sodium phosphate, the disodium compound, exerts the same action as the citrates. This action is very pronounced with hydroquinone but more so with pyro.—*Phot. Korr.*

The author ascribes this peculiar action to the stabilizing action of the phosphate on the silver hydrosole, while the accelerating action of the other salts is due to the similar action they exert on the coagulation of a suspension colloid. He has unfortunately practically one point of view only and explains everything from that standpoint, namely, colloid chemistry. It is open to question whether an equally good explanation might not be found in the ionization theory, for disodium phosphate would ionize into sodium and phosphate ions and the latter would then merely neutralize some of the alkali. This explanation seems quite feasible, as Lueppo-Cramer himself states that if the sodium salt be added to a plain solution of metol or pyro it acts more energetically, probably because then the sodium ion forms a phenolate with the developing agent. The difference may also be ascribed as entirely due to difference in velocity of development.

Gum Printing

Gurtner suggests the following method of sizing papers for this process. A 2 to 3 per cent. solution of hot gelatin solution is filtered into a warm dish and the paper drawn through it and then hung up to dry. They are then hardened by immersion in a 2 to 3 per cent. solution of formaldehyde, again dried and again drawn slowly through the warmed gelatin solution and again dried.—*Apollo.*

It is important to note that after passing the sheets through the gelatin bath the second time, that they should be hung up from the opposite end to that which was first used, otherwise unequal sizing may result. The double bath may be an improvement, the idea being probably that there is enough formaldehyde absorbed by the gelatin to diffuse into the second film and render it partially insoluble, for Lumiere and Seyewetz proved that formaldehyde was so strongly "absorbed" by gelatin that only on prolonged washing or by the use of hot water could the "formol-gelatin" be decomposed.

Preserving Cut Flowers

The following plan of preserving cut flowers (recommended by Mr. G. Lefevre in the *Photographic Revue*) may be of interest to photographers, either for ornamentation of the studio or for the purpose of flower photography. First of all, well sprinkle the flowers with fresh water, then fill the vase which is to hold them with the following solution:

Water	34 oz.
Hard white soap	1 oz.
Common salt	50 gr.

Shave the salt and dissolve in the water; the addition of the salt causes a slight gelatinizing of the solution. When the mixture is well stirred add a very little boric acid. Every morning take out the flowers, wash off the foliage, and return to the vase. Renew the solution every three days. It is claimed that flowers will keep in good condition for a couple of weeks with this treatment.

Annuario 1915 della Fotografico. Edited by Dr. G. Castruccio. Published by "Il Corriere Fotografico," Milan

This volume is the seventh of an annual well known to photographers generally and appealing particularly to those conversant with Italian. The first section includes an original article by the Editor on portraiture in sunlight and reprints of articles on radiography and microradiography, the reproduction of speech by photography, the manufacture of papers and prints by various processes and a summary of Lueppo-Cramer's work on the ripening of mercuric iodide by the action of light.

The second part includes a general calendar, tariff data, weights and measures, Italian copyright laws, and the usual chemical and physical tables. The third part comprises the usual photographic formulas and a summary of the latest advances in color photography. Part IV is a somewhat circumscribed abstract of advances in negative and positive processes and apparatus therefor.

To readers of Italian it will form a useful addition to the library.

NOTES AND NEWS

The New England Convention at Boston

The seventeenth annual convention of the Photographers' Association of New England took place in Copley Hall, Boston, Mass., August 10 to 12 inclusive, and the attendance was some three hundred, including the representatives of manufacturers and photographic dealers. A banquet, which was part of the entertainment program, was attended by about one hundred photographers. It was undoubtedly the best attended and the most spirited convention of the Photographers' Association of New England that has taken place within the last few years.

President Haley had an unusually attractive program. There were interesting and practical "talks" by Will Towles, John A. Tennant, A. J. Philpott and others.

The new officers are: President, Orrin Champlain, Boston. First vice-president, M. D. Hanson, Portland, Me. Second vice-president, A. E. Whitney, Norwood, Mass. Treasurer, W. H. Partridge, Boston. Secretary, George H. Hastings, Newtonville. State vice-presidents: Maine, Frank Hutchins, Sanford; N. H., Claude L. Powers, Claremont; Vermont, A. Allyn Bishop, Newport; Mass., G. W., Godehaux, Attleboro; R. I., John Sabine, Providence; Conn., W. F. Donnelly, New Haven.

The Wollensak Trophy was awarded to Mr. W. H. Partridge.

Boston was chosen as the next place of meeting.

Salon Honors were given to the following exhibitors: Peterson, Hartford, Conn.; Haley, Bridgeport, Conn.; Tingley, Mystic, Conn.; Partridge, Boston, Mass.; Kimball, Concord, N. H.; Manahan Studio, Hillsboro Bridge, N. H. The seven honor pictures will be added to the National Salon as the New England Collection.

Photographic Action of a Plant Juice

According to Messrs. J. M. Petrie and H. G. Chapman, the dried milky juice of *Euphorbia peplus* acts on a sensitive photographic plate in the dark. Some of the juice was spread in the form of letters on glass and separated by a space of 3 mm. from the photographic plate. Sharp images were produced after an exposure of fourteen days, while faint images were produced by as short an exposure as twenty-four hours. The interposition of black paper, impervious to light, between the letters and the photographic plate, did not prevent the formation of images or diminish their intensity, and the same result followed the intervention of paraffined tissue paper, thin aluminium foil or gold leaf, and thin sheet glass. In an attempt to ascertain the cause of this action, the authors examined the dried juice with a sulphide screen but no scintillation of particles could be seen. On testing the juice in a gold-leaf electroscope there was no apparent increase in the rate of discharge of ionized gases. With a sensitive electrometer no action of the dried juice on ionized air could be detected.

Burke & James, Inc., Enlarge Their New York Offices

The New York offices of Burke & James, Inc., Chicago, have been removed from the ninth to the tenth floor of the Brunswick Building at 225 Fifth Avenue. This removal gives Messrs. Burke & James four times their former space and enables them to carry a much larger and more varied stock of supplies for their eastern trade.

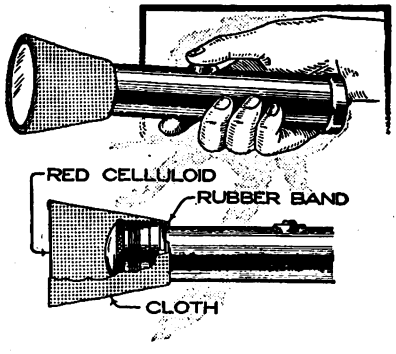
The new *Rexo Manual*, just received from Burke & James, is a 48-page booklet, fully describing the different varieties of Rexo developing paper for contact printing and enlarging, amateur and professional grades, with many tested formulas for the manipulation of the paper, including formulas for obtaining sepia, green, blue and red tones. Copies of the *Rexo Manual* can be had for the asking from either the Chicago or New York branches of Burke & James, Inc.

Hicro Color Photography

Hicro color photography is the name adopted by the Hess-Ives Corporation, 1205 Race Street, Philadelphia, for F. E. Ives' new process of prints on paper in natural colors. Full information regarding the process and the general manipulation will be sent upon request.

AN EMERGENCY RUBY LAMP

A RAILWAY photographer, securing pictures of the manner in which the engineers were placing a certain manufactured tiling, found that the ordinary camp life provided no dark-room facilities, which is necessary in transferring the plates and loading the plate holders, as the exposed plates were sent to the city for finishing. A piece of light-proof hood canvas served the purpose of the field dark-room, but the dark lantern was provided for in a manner which can be applied in many ways.



A circular piece of red celluloid, about 1¼ inches in diameter, was glued to a strip of light-proof focussing cloth, cut in the manner shown in the sketch. The outer end of it had an elastic band which was slipped over the lens of a small electric pocket-torch. The device was very useful on the field, as plate-holders could be safely loaded and the exposed plates securely packed at any place where views of interest might be taken. The cap was slipped from the end of the torch after using it as a dark lantern, and carried in the vest pocket.—*Popular Mechanics.*

ROENTGEN PHOTOGRAPHS OF PLANTS

MEDICAL science calls such compounds as are impervious to the Roentgen rays "contrast matters," and therefore in taking photographs when these substances are present, strong shadows are produced. Such matters are used in Roentgen photography for filling hollow bodies that would otherwise not give any distinct pictures.

Naturally, the contrast substances applied to living organic structures must be of such a nature as not to be harmful to the organism. Such are, for instance, bismuth carbonate, barium sulphate, thorium oxide, and others. Wounds are usually prepared by filling same with dermatol or iodoform. (Iodine gives a very strong shadow.)

The Hungarian scientist, Dr. Adalbert Kelen, performed a series of similar experiments with different plants. The attached picture is one of his Roentgen photographs, and shows an enlarged photograph of a rose leaf in front of which are placed some carnation stems. In his experiments he first prepared the plants by putting them into a solution of 20 per cent. potassium iodide. After a few hours the plant

absorbs a part of the solution and is ready for the Roentgen pictures.

The thin parts of the plant would hardly be visible on the photograph without having been first prepared with the potassium iodide solution.

Naturally, the original photograph shows more perfect details, which are entirely lost by the reproduction and printing.—*Scientific American.*

Honors Awarded Ansco Products at the Panama-Pacific Exposition

Photographers may be interested to know that Ansco products were selected for honors at the Panama-Pacific Exposition, despite the fact that prizes were not sought by Ansco Company, nor were their goods entered in competition. Indeed, a full line of Ansco cameras and Ansco photographic materials was not on exhibition when the judges met.

The Ansco booth was not erected for the purpose of exhibiting goods, but merely to carry out the terms and conditions of Ansco Company's $5000 Lovliest Women Contest, one of which conditions was that the prize-winning photographs would be shown at San Francisco.

One of the judges who had attended the photographic exhibition recently held in New York City, at the Grand Central Palace, under the auspices of the Photographic Dealers' Association, noticing that the Ansco line was incomplete, turned to the jury and remarked: "Gentlemen, the Ansco Company is making the finest small camera I have ever seen. In fact, in my opinion it is the best camera of that particular style in the world; but since they have not seen fit to place it on display we cannot take it into consideration." On the strength, however, of such Ansco goods as were accessible to the jury the Ansco Company was awarded the gold medal, and also the medal of honor, the latter being the highest award for professional photographic goods.

The studio equipment and professional goods which merited and received the highest award represented by the medal of honor, were the following: New York studio outfit with Ansco upright studio stand, Ansco printing machines, and Professional Cyko paper.

The gold medal was awarded to Ansco amateur cameras, Ansco film, amateur grades of Cyko paper, Ansco and Cyko chemicals.

The line of small cameras referred to by one of the photographic members of the jury as "the best camera of that particular style in the world," and which could not be taken into consideration because not on exhibition, is that represented by the Ansco vest-pocket series.

The proof piles up daily that "If it isn't an Ansco it isn't the best" is not a mere slogan coined for the purpose of procuring a prize offered by an advertising manager—but a natural outburst based on facts.

Photographing Gas Meters

Gas meters in New York City are to be photographed by meter-readers in the future, and the gas company believes by adopting this method it will insure an accuracy which it is hardly possible for the hand, eyes, and mind to attain in keeping such records.

A device has been invented for photographing the indicators of the gas meters. The readers will be equipped with a small camera and a spool of film, the entire outfit being not unlike the ordinary camera. The camera fits over the indicator in the gas meter, and by pressing a button a flood of electric light is thrown on the dials and the exposure is made. The e tire operation requires only a fraction of a second. A safety device prevents the making of double exposures, so that the inexperienced meter-reader will find little difficulty in snapping the photographs.

The readings will be made from the negatives by the bill clerk. Identification of each meter will be made by means of a numbered tag, stuck on the side or below the dials, which also will be contained in the photograph. The name of the new photographic meter-reading device is "factograph."

Novel Camera Built to Obtain Distortion

A German engineer has built a camera based on the pinhole principle, in which, instead of a small round hole, he uses narrow slits, vertical and horizontal, in two walls, although to vary the effects other angles are sometimes employed. With this arrangement he is able to obtain exaggerated pictures, showing either vertical or horizontal dimensions out of proportion. By multiplying the number of slitted walls between the exterior of the camera and the plate, and inclining some of them at an angle, he has produced some remarkable photographs.—*Popular Mechanics.*

Commercial Work

Are you ready for a customer to call and ask your terms for commercial work? Suppose an architect wants a series of photographs of an old building that is going to be pulled down, the manager of a factory wants views of his works for advertising purposes, or a tradesman wants photographs of his goods for his catalogue—you'll be pleased to quote, of course.

Some professionals are ready enough to quote, but when the customer asks to see a few examples of their work they seem to think that he is trespassing on their professional dignity. They rush about from one room to another, turning over piles of dusty old photographs in their search for a few dirty prints which will show that they really have done some commercial work at one time or another.

Are *you* ready? Or are you one of those who cannot find a few specimens of your commercial work? Why don't you have a few expanding albums, so that you can mount in a print of every good piece of outdoor work you do? You can have an album for each section of work, such as architecture, workshops, goods for catalogues and athletic groups. They cost very little, but they make a big difference when you are dealing with a prospective customer.—*Professional Photographer.*

Awards at the Panama-Pacific International Exposition

Mrs. Annie W. Brigmann, of Oakland, California, was awarded the Grand Prize Medal for her "Nude Study."

Miss Bianca Conti, whose photographic work is well known in San Francisco, acquired laurels by winning the gold medal of honor for her display of artistic photographs. And to add to her laurels, the most admired of her pictures on exhibition is that one entitled "A Mother and Child," posed for her by an older married sister with her infant babe. Associated with Miss Bianca Conti is her younger sister, Miss Nina Conti, also a talented artist.

We are pleased to be able to show our readers examples of her work.

A Film-saving Device

Mr. P. J. Besosa, of New York City, has applied for a patent for a "Picture Saver," an ingenious device quite novel. He leaves the old idea of trying to apply some form of lock to the film spool, and diverts his efforts to the shutter, in connection with turning of the film. There is a very delicate mechanism which touches the film, as it is rolled, and from this a cable connected to the shutter exposure-arm. After a picture is taken (the exposure may be either time or instantaneous) the exposure-arm of the shutter is locked, so that it is impossible for one to again expose the already taken picture. This lock can only be released by turning the film for the next exposure. We understand that this is soon to be on the market.

Announcements

R. J. Fitzsimons announces that he has received a new shipment of "sigma plates," and can now supply all present demands. These standard Lumiere plates combine a high speed and high quality.

Our readers will be interested in knowing that the highest award in the professional class at the International Exposition of Photographic Arts, New York City, 1915, went to R. C. Nelson, Hastings, Neb., for his "Portrait of Girl," a picture made by flashlight. The lamp used was the Halldorson "Home Portrait" flash.

The Photo-sketch

The photo-sketch is a combination of pencil work and the photographic image. On some, the pencil work is used only in addition to the photo; in others, parts of the original photo are substituted by the pencil work.

The results when properly executed give very much the effect of a pencil or crayon drawing, while having the advantage of the delicate tones of the photographic image, which it would be almost impossible for the artist to obtain otherwise.

Photographers know that almost any hand work added to the photo, unless too poorly executed, attracts attention and gives a reputation for originality to the studio producing it.

By Corydon G. Snyder, Minneapolis, Minn.

By Corydon G. Snyder, Minneapolis, Minn.

The difficulty has been that for the ordinary photographer it involved too much time and costly experiment to find out what to do and what not to do. Even if he ever arrived at a satisfactory method it is doubtful if he has the artistic ability to know which combinations and effects will give even fair results.

Prints from photo-sketch negatives are no more difficult to make than from an ordinary negative, and command so much larger price that the extra work in making the plate is hardly worth considering.

CORRESPONDENCE

Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names & addresses of the writers are given. We do not undertake responsibility for the opinions expressed by our correspondents

TO THE EDITOR OF THE PHOTOGRAPHIC JOURNAL OF AMERICA:

I have read with interest the article appearing in your esteemed Journal, of August, 1915, under the heading of "Practical Lens Testing," By Paul S. Helmick. In this communication Mr. Helmick describes the "Giltay" selenium cell on page 377. Permit me to correct an error, as the inventor of this particular type of cell was Dr. Shelford Bidwell, of London. It was described by him in a paper read before the London Physical Society on December 12, 1890. (See the *Proceedings*. Also reprinted in the *Philosophical Magazine* (5), vol. XXXI, page 250.)

Before going into the constructional detail of this type of cell I wish to add that Mr. J. H. Giltay is only a manufacturer of scientific apparatus and among which he makes the Bidwell cell. (See in this connection Mr. Giltay's paper on "Apparatus for Demonstrating the Action of Light on Selenium," appearing in the *Physikalische Zeitschrift*, page 675, 1901, and page 287, 1903.

The writer has made selenium cells for the market for the last eight years, and thinks a few remarks along this line from a man with this experience will be of interest to your readers.

Dr. Bidwell, in constructing his type of cell (see article by Samuel Wein, in the *Electrical Experimenter*, vol. iii, 1915; also *Scientific American*, May 1, 1915), made use of a piece of mica, soapstone, or porcelain (bifiliar shape preferably used), and being 2¼ inches long and ¾ inch broad. Beginning at ¼ inch from one end, wind around it in the form of a spiral some No. 40 copper or nickel wire. The pitch of each turn of the spiral is $\frac{1}{16}$ inch from its neighbor. Continue winding up to ¼ inch from the outer extremity, then fix the two ends of the wire by passing them through holes drilled in the slab. Now take a second wire and carefully wind this on beside the other, thus forming a second spiral, the turns of which are midway between those of the original one. Fix this as before (Fig. 1). Great care must be exercised that the two wires do not touch each other at any point. It would be well to make sure by testing this with a battery and bell.

For the succeeding operation a retort stand at least 15 inches high is convenient. Fix the ring 15 inches above the base; on the pedestal place a Bunsen burner. On this ring place a piece of mica (to save waste selenium) (Fig. 2.) Place the embryo cell on the mica plate, having brought the Bunsen burner close under the brass, melt a few grains of stick or powdered selenium (chemically pure) in a small spoon and let four or five drops fall upon different parts of the cell. Spread the melted selenium evenly over the surface with a piece of mica, a steel spatula, or knife, and at the same time press it well between the wires.

FIG. 1

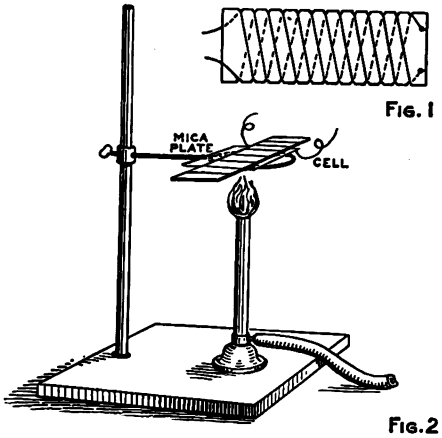


FIG. 2

During this process the temperature must be carefully regulated by raising or lowering the temperature of the Bunsen burner. If the temperature is not high enough the selenium will collect in drops, being apparently repelled from the surface of the cell. The temperature should, in fact, be just above the fusing-point of crystalline selenium. When a smooth surface is obtained, quickly remove the cell with pliers and let it cool. Its surface will now be smooth and lustrous.

The cell must next be annealed. The brass plate being cool, lay the cell upon it again, and adjust the burner at its lowest possible point. The selenium will soon begin to crystallize, as evidenced by its surface assuming a dull leaden appearance. (If crystallization has not begun in five minutes, raise the burner an inch or two.) In from five to ten minutes the whole of the selenium should be crystallized. Then gradually raise the burner until signs of fusion just begin to appear. This will probably take place when the flame is within three inches of the brass. Instantly remove the burner, and in about ten seconds recrystallization will occur. Now fix the burner ½ inch below the point at which it was when fusion commenced, and let it remain for four hours, merely looking at it from time to time to ascertain that, owing to increase of gas pressure or other causes, the heat has not become too great. After four hours, begin cooling by lowering the burner an inch or two,

and repeat this operation every ten or fifteen minutes, until the burner is at its lowest point. Then slightly lower the gas flame at short intervals, until it is finally extinguished. When the brass plate is quite cool, the cell may be removed.

A cell made in this manner is found to have a resistance in the dark of from 50,000 to 100,000 ohms.

An interesting application of the selenium cell is to the direct-reading photometer. This photometer makes use of no arbitrary color-matching schemes, etc., but of sound physical facts. It is an old-established fact, that the electrical resistance of a selenium cell is inversely proportional to the square of the luminous distance, thus its application to photometry is evidenced from this fact alone.

Fig. 3 shows just such an apparatus, in which a selenium cell as described, interpolated in one of the arms of a Wheatstone bridge; the resistances R, R^1 and R^2, of about the same resistance of the selenium cell, are so constructed that their value may be adjusted to a nicety. The battery is shown at *B* and milliampere meter at *A*.

The selenium cell is faced to a standard candle *C*, placed on the meter stick *M*, at a distance from the selenium cell; the resistances R, R^1 and R^2 are adjusted until no deflection in the milliampere meter is evidenced. Now allow the light to fall on the cell and a deflection will be seen on the galvanometer. The light to be compared with the standard candle is placed on the meter stick (adjusting the resistances till no deflection is observed), allow the light to fall on the selenium cell, and the reading compared to that of the previous reading. By the distance of the light from the selenium cell, now *D*, then its luminous intensity is $\frac{D^2}{d^2}$ standard candles.

The above comments are made purely in the interest of accuracy and as such this was written.

SAMUEL WEIN.

NEW YORK, August 10, 1915.

METHOD OF COLORED PHOTOGRAPHIC REPRODUCTION

THE method consists in obtaining three negatives of an object to be reproduced on suitable orthochromatic silver emulsion photographic plates with the aid of three respective color screens by the well-known three-color photographic process, so that one of the three negatives will produce a positive print with the yellow color value; another, with the red color value; and the third, with a blue color value. The blue print is made first from the yellow color-value negative. The entire blue part of this blue print is washed with a yellow wash, such as aurantia, which is then dried and afterward immersed in a weak solution of silver nitrate sufficiently strong to dissolve the blue and leave the yellow image of the yellow color-value negative. The so-formed print is then washed, to eliminate the silver nitrate, and dried. The side of the print bearing the image is then coated with a blue-print sensitizing medium. The sensitizing of the print may be done to advantage before the print is quite dry, to get an even coating. The resensitized print is impressed with an image through the red color-value negative, which negative is adjusted on the print so that the image formed by the red color-value negative registers with the image under the coating formed by the yellow color-value. The blue print so formed is washed with a red color wash, such as red eosin, and then dried and treated with a bath of silver nitrate strong enough to dissolve the blue, leaving the red image on the yellow image previously formed. After washing and drying the so-formed print, the side having the images is recoated with a blue-print sensitizing medium, the same as previously stated, dried and exposed to produce an image through the negative having a blue color-value, which image will properly register with the images formed by the previous negatives. The print so formed will have the blue color, the red color, and the yellow color placed successively in the order described; and in combination will produce a picture of substantially natural color, *i. e.*, the image on the print of the object will be substantially in its natural colors.

It is self-evident that the process can be used with only two, or with more than three colors if desired. The principle of the process consists in forming a series of superposing blue images, of which the preceding blue color of the image has been substituted by another color before the succeeding blue image has been formed.—JOHN LEWISOHN.

LENS HOODS

FOR studio work, and it may apply to outdoor photography also, it will be found (says *Photography and Focus*) that a sky-shade is a better protection against scattered light in the camera than a prolonged lens hood. That is to say, the shade which is provided for the lens should extend above it and at the two sides, but be open

at the bottom. No hood can be so well blacked as to reflect only an inappreciable proportion of the light which falls on it; and while the upper part of the hood cuts off the sky, which is certainly brighter, the lower part is illuminated by the skylight, and may easily reflect more light on to the lens than would be the case were this part omitted altogether.

Mending a Leaky Washing Tank

At first glance the need for stopping a leak in a washing-tank is not obvious (says *The American Photographer*), as one imagines such an article to stand on a sink to be supplied with an inlet current of water much greater in volume than that lost by leakage. But suppose the *e. g.*, supply stream, for any reason, is stopped—the water cut off in the main temporarily—we may return to our trusted washer and find it empty, all but, say, an inch or so of water standing at the bottom of the tank, and the negatives part dry and part wet, resulting in lines which refuse to varnish ever after. To be able to use a soldering iron of blow-pipe is a proper part of an up-to-date photographer's craft. But failing that, it may be useful to know that frequently one can mend a leak in a washing-tank, developing dish, etc., or other vessel that is only used for cold fluids, with the aid of a bit of marine glue. This is melted without actually burning by heat, as one uses sealing wax, and dropped on the affected part; it is then worked into a hole or crack, for instance, with the aid of a stout knitting needle or old knife blade made hot in a gas or candle flame.

Wet-Collodion Continuous-tone Negatives and Positives

Where fine detail is required, provided there is no color attached to the object to be photographed, a good wet-plate continuous negative will give excellent results, and prove a cheap method provided the process is constantly worked, as is usual in a process shop. An ordinary 8 per cent. silver bath is used in conjunction with any good make of collodion. A full exposure is given with a large stop, development being carried out with the following iron developer:

Iron sulphate	3 oz.
Acetic acid	3½ oz.
Water	100 oz.
Alcohol	q. s.

Overdevelopment must be avoided, but if the negative appears weak it can be redeveloped after fixing with the following:

Pyrogallic acid	48 gr.
Water	8 oz.
Citric acid	60 gr.

For use, a few drops of a 5 per cent. solution of silver nitrate is added to the above solution. Flow this mixture over the plate, moving it about until the required density is obtained. Should the mixture become thick, a fresh solution must be taken. Any scum that appears can be reduced away with a weak solution of ferricyanide of potash and hypo. The following intensifier can replace the redevelopment:

Mercuric chloride	160 gr.
Ammonium chloride	80 gr.
Water	10 oz.
Hydrochloric acid	¼ oz.

The plate, when first placed in this solution, will darken and then assume a gray appearance, when it is well washed and flowed over with a 5 per cent. ammonia solution. After again washing, the plate is flowed over with a 5 per cent. gum solution and dried. The negative should be protected with varnish. The following is recommended:

Gum dammar	1 oz.
Benzole, crystallizable	10 oz.

It is not necessary to heat the negative when applying this varnish. This varnish, when dry, will take pencil provided the surface is lightly rubbed over with finely powdered cuttlefish powder. In addition these directions apply to the making of positives for photogravure and enlarged negatives, and negatives for collotype.

Should the object be colored and price does not permit the use of large panchromatic plates, and there is a considerable quantity of work to be carried out, collodion emulsion can be employed. Messrs. Johnson make a special panchromatic emulsion for this purpose, or a plain collodion emulsion can be used and made panchromatic by the addition of pinacyanol.

Plain emulsion	100 parts
Pinacyanol solution 1:1000 alcohol solution	4 parts

Shake three or four minutes before use, and then allow bubbles to settle. As this emulsion lacks a certain amount of blue-green sensitiveness, a blue-green safe light can be employed. The emulsion is coated on a perfectly clean glass, and when set is washed under the tap for two minutes. The surplus water is drained off, and the plate is then ready for exposure. The following is a reliable developer:

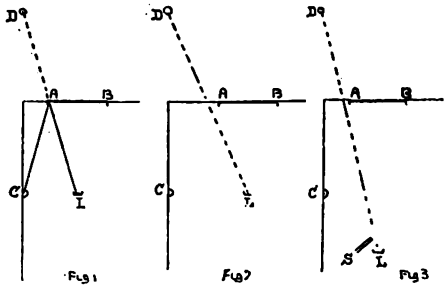
Glycin	20 parts
Sodium sulphite	50 "
Carbonate of potash	100 "
Water	1000 "

or any ordinary dry plate developer can be employed.—*British Journal of Photography.*

Reflections When Copying

Reflections are often a great trouble to the photographer when copying a picture. But if a little time is spent in studying the principles of the matter the trouble will soon vanish. Take a printing frame—say half-plate size—and put in it a piece of clear and well-cleaned glass. Behind the glass put a piece of black paper or velvet, and a piece of white paper, each the size of half the glass. Close the frame, and fix it to a wall with a side window light. Standing in front of it you will see that both black and white portions act as mirrors, but the black paper part shows up the reflections of yourself the more strongly; your white collar and black coat, for instance, show more strongly

on the black paper side. Now take your black velvet focussing cloth, stretch it out flat, and raise it till you can only just see over its upper edge, noticing that on both sides this gets rid of reflection patches of yourself and objects behind you. Next hold the frame in your hand at arm's length, and turn about until the room window or gas lamp is at your back, when you will soon see how both black and white sides show up only bright objects of these kinds. The moral is obvious. Next, put the frame again on the wall with a side window light, and move about until you see the window reflected in the glass nearly obliterating any distinction between the black and white sides. Whence you will infer that the source of illumination (window, lamp, etc) must be so much to the side that while it sends light on to the picture, its reflection image must not be seen by the lens. A glance at Figs. 1, 2, and 3 will make this clear in a moment. AB is a glazed or glossy surface picture put flat against a wall, L is the lens opposite the centre of the picture. To our left is C, a source of light, say a lamp.



In Fig. 1 the picture is so near the window at its side that the lens, L, can just see by reflection on the side of the picture glass the image of C, which appears to be at D.

But in Fig. 2 we have moved the picture a little further away from the window. The lens, L, no longer is able to see D, the virtual image of C. To do so a portion of the reflecting surface would have to cross the line LD.

But it may be not possible or convenient to alter the position of the picture, AB, on the wall, nor alter the position of the source of light, C, say a fixed lamp or window; but all is not yet lost, for by using a longer focus lens (see Fig. 3) we can get further away from the picture, and so avoid including any part of the reflecting surface, AB, in the line joining L, the lens, and D, the virtual image of C. Note in Figs. 1 and 3 the positions of AB and C are the same. It will thus be seen that the long-focus lens not only reduces the view angle, and so the danger of reflecting objects, but also has the advantage of minimizing distortion, does not make such a severe call on flatness of field, and favors evenness of illumination.—*The Amateur Photographer.*

Mounting without Cockling

Where a print is mounted by its four corners only to a sheet of paper or thin card, any cockling of the mount can be prevented almost entirely by the following very simple plan (writes Mr. H. Allen in *Photography and Focus*). The print is first laid upon the mount in the exact position which it is to occupy, and a pencil dot is placed to indicate its four corners. With a sharp knife and a straight edge as a guide, two clean cuts are made diagonally across the area so marked out on the mount, approaching the pencil dots to within about a quarter of an inch or more, according to the size of the print. The print is then mounted by its corners, being left under gentle pressure until thoroughly dry. The cuts allow a little play for the mount, and let it adapt itself to the tension put on it by the print. They may be hidden by means of a second mount when adopting a multiple mounting system; but, in my own case, I generally attach a second mounted print to the first, back to back.

Glazing Parts without Failure

Although some people prefer highly glazed photographs, they are not generally considered very artistic; but where it is desired to emphasize detail they are necessary. For instance, when preparing prints for publication the squeegeeing down of the glossy prints should never be omitted.

There are several materials which can be used for glazing prints on, such as glass, ferrotype sheets, celluloid, papier-maché boards, enamelled iron plates, etc., but, except that plate glass gives a slightly increased glossiness, there is little to choose between them for the performance of this function. My preference is for the papier-maché plaques, but that is only on account of their lasting qualities and their convenience, and the economically minded amateur can use his old negatives.

But the principal difficulty generally seems to lie in the removal of the prints when dry, frequently effected in small pieces. Many concoctions are advised for cleaning the plates or glasses before attaching the prints. I have even read an apparently serious suggestion to cover the glasses with old prints so carelessly that they all stuck, finally, when dry, scraping them off with a knife, the argument being that where prints have once stuck they will never stick again. This, however, seems a very drastic method, and my experience has not led me to believe that it is necessary. As I have glazed some thousands of prints without failure, the simple means I adopt may be useful knowledge.

The only requisite is a bottle of 40 per cent. formaldehyde. A pint of this can be obtained through any chemist for about 25c., and for use one part of it is diluted with nine parts of water, and it can be used over and over again as long as it is kept well corked when not in use.

If the prints are wet, as much water as possible should be removed before they are placed in the formaldehyde, where they are left for a few minutes. If dry, they are immersed in it and left until limp. From this bath they are put straight on to the glazing material without any washing, and squeegeed down—a flat squeegee being preferable for the purpose.

Ordinary newspaper is as good as anything for placing above the prints when applying the squeegee, a second piece being used to finally remove as much of the water as possible.

Very rapid drying can be secured by placing the ferrotype boards or glasses on the airing rack found above most kitchen grates, and, providing, of course, the fire is alight, the prints should commence to pop off in a quarter of an hour.

It is a mistake to leave them in a moist darkroom, even all night, and expect them to come off readily. If they are to be left during the night, put them high up on a cupboard or shelf in the living room, and they will probably be found all off in the morning.

It will be noticed that I have said nothing about cleaning the ferrotypes. As a matter of fact little preparation is needed. If they look clean that is sufficient, and a wipe over with a dry cloth will serve to remove any dust adhering.

The prints will have a faint smell of formaldehyde when they are dry, but it will disappear in a short time, their exposure to the air effecting this.—FRANCIS COLLAS in *Amateur Photography.*

MEASURING THE FOCAL LENGTH OF A DOUBLET LENS

IN a recent paper before the Physical Society, Mr. T. Smith, of the National Physical Laboratory, described a method of measuring the focal length of a lens, based on the focussing of the image of a distant object on the lens axis upon the ground-glass of the camera, using first with the complete lens and then each component separately. A further focussing is done with the two components at a different separation, this observation serving to determine the focal length of such component.

The optical rule which serves as a basis of the method is that the focus of a lens of focal length f is at a distance equal to

$$\frac{f\,\mathrm{F}}{f^1}$$

from that of the combination of focal length F is formed by placing in front of the first lens another of focal length f^1.

The method is carried out as follows: Fit the complete lens to the camera and focus sharply on a distant object. Mark the position of some part of the lens front or moving baseboard against a mark on the fixed part of the camera. Now remove the front component, and without disturbing the rest of the lens again focus on the object, noting the distance (d) through which the lens front requires to be racked out. The distance, as already stated, is

$$\frac{f\,\mathrm{F}}{f^1}$$

where F is the focal length of the whole lens and f and f^1 those of the components.

Now focus again with the whole lens on the object, but with the lens placed the other way about on the front, *i. e.*, with the back component to the front. Mark the position as before, and then refocus after removing the component (really the back combination) now in front. The distance (d^1) between the two positions is

$$\frac{f^1\,\mathrm{F}}{f}$$

$$\text{or } dd^1 = \mathrm{F}^2$$

that is to say, by multiplying the distances d and d^1 together and extracting the square root we get the focal length.

Mr. Smith proceeded to show the application of the method to finding the focal length of each separate component of a doublet by increasing the separation of the component lenses by a known amount t. Let the two components be separated by this further distance of t. Then focus on a distant object, first with the complete altered lens and then with the back combination alone, the distance between these two foci being d^{11}.

$$\text{Then } \frac{1}{\mathrm{F}} - \frac{1}{\mathrm{F}^1} = \frac{t}{ff^1}$$

(where F^1 is the focal length of the altered whole lens)

$$\text{and } d^{11} = \frac{f\,\mathrm{F}^1}{f^1}$$

From these two last equations and the first given in the paper,

$$f^2\left(\frac{1}{d} - \frac{1}{d^{11}}\right) = t,$$

from which the focal length of the back component can be found. That of the front component can then be found from the equation

$$\frac{f}{f^1} = \sqrt{\frac{d}{d^1}}$$

—British Journal of Photography.

THE START AND THE FINISH

IT has been said that where a hundred men can start a good thing only ten can continue to the finish. We all know that in all races there are many that start and only a few that will finish.

A sales manager of a large manufacturing plant once said he had no difficulty in securing men who could start out to sell goods. They could interest the customers, but there were only a few who could close the sale.

Many a fine chap starts out with good ideas, ambition, and apparent determination to win, but he is not in at the finish. Only a few have the reputation of finishing the things they start. Many a time we see a big-hearted, promising man start in business with ideas of his own and it would seem that all obstacles must go before

him. A little later his interest begins to wane or he becomes interested in something else, and oftentimes when success is just within hailing distance he drops his plans and takes up something else. He could not keep his courage up to the finish.

We lay out our plans for what apparently will mean a successful year, work along these plans during the winter and spring, but when the summer comes allow them to lag behind, and by the time we return from our vacation have almost forgotten them, and the work done in the early part of the year is lost. It is true we make quite a spurt near the end of the year and secure quite a bunch of business, but if we had continued our plans started the first of the year, to the finish, we would have been made better off and in better shape for another year's business.

Don't swing from one thing to another until you are absolutely positive that the new thing is bound to be better than the old. Finish what you start. Get away from the crowd that starts and never finishes. Get out of the rut, get away from the plodders. Finish the things you start and start only the things you can finish.—*Ohio Photo. News.*

The Combined Bath

The combined toning and fixing of P. O. P. prints is frequently disparaged on two grounds: First, it is alleged that the prints are not permanent, and second, that the high lights have a marked tendency to turn yellow, this yellowing being due to sulphur produced in the gelatin film through the decomposition of hypo by the citric acid preservative in the paper. It is well known that prints made carelessly by any method on P.O.P. may fade, but I have not found a higher percentage of combined-bath prints fade than of prints toned and fixed separately.

There are various formulæ for a combined bath; the one which I prefer is as follows:

A

Hypo	8 oz.
Ammon-sulphocyanide	1 oz.
Lead nitrate	175 gr.
Alum	350 gr.
Water up to	20 oz.

B

Gold chloride	15 gr.
Distilled water	7½ oz.

Dissolve in the order given and heat to 120° F. for 10 minutes.

To mix the working bath take 1½ ozs. of A, 1½ ozs. of water, and 120 minims of B.

The A solution requires a little care in making up, and the heating should be done in a stoneware vessel, such as a marmalade jar, set in a pan of boiling water.

I do not filter the solution, but allow the precipitate to settle and pour off the clear portion as required. The gold solution must be kept in a perfectly clean bottle or metallic gold may be reduced and deposited on the glass.

In working, great care must be taken to avoid an exhausted bath. The fact that the bath will continue to tone prints after all the gold is exhausted, and after its fixing power is exhausted also, makes it somewhat dangerous in the hands of careless and thoughtless workers. It is advisable to use a certain quantity and to throw it away when the full number of prints have been passed through it. The quantity of bath given in the formula, namely, 3 ounces, containing half a grain of chloride of gold, will safely tone eight to twelve quarter-plate prints, or a proportionate number of any other size.

The prints cannot be fixed thoroughly in less than, say, ten minutes, and if the desired tone is obtained sooner than this, the prints should be passed into a plain hypo bath of 5 per cent. strength for the balance of the time to ensure perfect fixation. This is seldom necessary if purple tones are required, but may be needed when very warm brown or reddish tones are being aimed at.

The advantages of the combined bath appear to me to be: 1, simplicity; 2, cleanliness; 3, ease in judging color; and 4, rapidity.

The simplicity needs little demonstration. We have a solution into which the prints are placed one by one, evenly immersed, and kept moving until sufficiently toned. They are then washed for an hour in running water. Nothing could well be simpler.

As to cleanliness, the danger of getting hypo contamination in the early stages of separate toning and fixing is well known. Of course it can be, and is, avoided by the experienced worker, but it is an ever-present pitfall for the beginner. There is, I find, a higher proportion of clean prints, clean back and front, when a well-compounded combined bath is placed in the hands of the somewhat inexpert, than when separate baths are adopted.

Separate-bath toning of P.O.P. is, in my opinion, one of the less easy, every-day photographic processes, especially if anything like regularity of color is desired. The appearance of the print changes so much in the fixing bath that some experience and a good memory are essential to the production of uniform results, especially if the negatives vary very much. When toning in the combined bath the final color can be seen at any stage of the process, as the only change occurs in drying, which makes the color a shade colder. Speaking generally, the color of prints toned in the combined bath is, to me, more pleasing, though, as with any other method, much depends on the character of the negative.

Finally, the rapidity of the process is unquestionable. There is no tedious preliminary washing, merely the ten minutes in the toning bath followed by a careful washing. If an odd print or two be required hurriedly they can be toned in ten minutes and washed in another five by holding them on a sheet of clean glass under the running tap.—C. H. Hewitt, F.R.P.S., in *Photographic Scraps.*

Treating Machinery before Photographing

Desirous of ascertaining the best way to treat machinery so that it will photograph to

good advantage, *Penrose's Monthly* asked its readers and received replies as follows:

1. From the question, I take it that the trouble is reflection from the bright portions of the machinery. There are several methods of getting rid of the reflection from the highly polished metal, and a simple and very effective one that I always use is merely to smear the parts with putty until no reflection is seen. Of course all it does is to grease the polished portions with a dull grease which does not affect its color photographically, at the same time it obliterates all reflection. The putty can easily be removed with ordinary machine oil. Another paste which can be used for dulling the bright metal is made by mixing whiting with linseed oil; another, carbonate of lime with linseed oil, or fine cement and stone dust and linseed oil. Any of these can be applied with a brush, although it is advisable to have the paste very thick indeed and then apply it with a rag. If made thick enough it will resemble putty and can be used for anything that putty is used for, such as fixing windows, etc. It would perhaps be best to add a little japanner's gold size or glue, which will aid as a settling substance for any of the above. The cheapest and quite satisfactory method is the putty, as a nickel's worth goes a long way.

2. A machine or engine ought to be photographed when it has received the coating of "gray filling" which precedes the final paint. If the machine in this state is not available, something can be done by dabbing over the painted parts with putty. If the photographer has to do the painting, the mixture I should advise him to use would be: white lead and turpentine (of the consistency of thin cream), enough lampblack being added to dull the brilliancy of the white, and then one-third (in bulk) of gold size to give adhèsion to the mixture. After use, a rag dipped in turpentine removes the coating. Lettering cast in intaglio on the machine may, if not plain enough, be filled up with a paste of whiting and water. The prominence thus given to the firm's name is a point which they will appreciate.

3. The body of machinery should be painted with slate-color flatting, or with a mixture of milk and carbonate of magnesia. It is seldom necessary to do this, however, before photographing, as the rough casting gives an excellent tone. All bright parts should be dabbed over with suet or putty, which can easily be removed with paraffin oil.

4. The photographer will find the following very good for applying to machinery prior to photographing it. Mix white lead with turpentine to the consistency of thin cream with sufficient lampblack to form a light-slate color, and then add one-sixth the bulk of japanner's gold size. Paint the machinery over with this. After the photograph has been taken, the color can be quickly removed with a pledget of "cotton-wool" moistened with turpentine or benzoline.

5. A simple preparation for applying to machinery prior to photographing is made up as follows: Thin down white lead with turpentine to the consistency of cream, add sufficient lampblack to make it a neutral gray, then add gold size. Paint over machinery with this mixture; after photographing it can be cleaned off with turpentine or benzoline. If the photographer merely wishes to dull bright parts without affecting permanent painted portions, he can't do better than just dab over slightly with putty. The photograph will show all the true tone values, and also show to perfection the contour of the machinery, without giving that objectionable halation which is so common when bright objects are photographed.

Trimming Prints

Trimming prints with the ordinary trimming board is simple, but it is a rather difficult matter for some people to judge just where the knife will cut for the full length of the print, owing to the fact that the cutting edge of the trimmer is covered by the print itself. This often necessitates making two cuts to get an even margin, and doubles the amount of work connected with trimming.

Many professional photographers are using an ingenious device which not only makes trimming easy but takes care of the print trimmings as well.

Place your trimming board on the work table where it is used most, and mark off a space about three inches wide and the length of the blade. Saw out the part of the table top so marked, making a slot directly under the edge of the trimmer. On a shelf directly under this slot, and about two feet below, place an ordinary electric bulb. This will give a light directly under the edge of the trimmer, so that when a print is placed on the board, ready for trimming, the portion extending over the edge of the board is made translucent by the light underneath, and it is readily seen just where the knife will strike the print for its entire length. As the blade trims off the edge of the print, the trimming falls through the slot, and to prevent these trimmings from falling about the light globe a piece of glass is fastened to the under side of the table, one edge being even with the farther side of the slot, the glass being set at a sharp angle so the trimmings will drop through the slot, strike the glass, and slide off into a box or waste basket placed under the table for this purpose.

Small holes may be made in the top of the table for the legs of the trimming board so it will stay in one position, and the part of the table that has been sawed out may be made to fit back in the opening when the trimmer is not in use. This little device is not hard to make, and once used, the idea will never be discarded.—*Studio Light.*

Cleaning Old Negatives

Anyone with many old glass negatives to clean off will find that if he merely puts a pile of them into a dish to soak he will get them all stuck together in an almost solid mass, and the labor of separating them will be more than the glass is worth. The method I adopt (writes Mr. R. Owen Evans in *Photography and Focus*) is a very simple one, but it avoids the danger altogether. Two long pieces of thin

string are required, and one end of each is tied round one of the plates, leaving most of the string as a loose end. A second plate is put on the first, and the strings are passed across it, then a third is put on, the strings being pressed back, and so on until the pile is as high as can be soaked. In this way each plate is separated from its neighbors by the thickness of the string. It is best to do the piling in the vessel in which the plates are to be soaked, so that the solution makes its way between each at once, or air may be included and some parts of the film may not get their due soaking. I use a large basin, which is filled with a solution of washing soda—a handful of soda to the quart of hot water. Left in this overnight, a scrubbing brush will remove the films in a moment the next morning. The glass should not be left more than a night, as the solution soon attacks it.

Photographic Waste

There is one kind of silver residue that is absolutely neglected, and which I have never seen alluded to, viz., the silver in the films of discarded negatives. That such films are rich in silver I proved last winter at the chemical class I was attending. Having exhausted a special line of research and looking out for another, the idea occurred to try and see what I could obtain from a quantity of sludge resulting from washing off a quantity of old negatives. This was drained and dried, a rough assay yielding quite a large globule of silver.

Just then I had to abandon the class without having an opportunity for a quantitative experiment, and the whole thing was forgotten until I came across the globule of silver and the remainder of the residue when clearing out the locker at end of session.

Now that the glass carrying old and useless films has some value, and as no doubt that value will be greater if the plates are clean than if covered with what to the would-be purchaser of the glass is a nuisance, because it has to be got rid of before the glass will be of use, photographers, therefore, will find it pays well to remove the films, sending the result to the refiner, and sell the glass plates clean and worth more money to the buyer.

I find the best way to clean off the films is to put the plates one by one, and either film up or film down (not alternate, because in this case film sticks to film, and one if not two plates get broken in parting them), into a dish or pan containing a boiling solution of washing soda. When the soda solution has cooled down the plates should be taken one at a time, the film (now loose and powdery) being wiped off into the soda solution, leaving the plate clean. Then drop the plates flat (not edgewise) into clean water, and when all are cleaned off change the water three or four times; then give a bath of 2 per cent. acid, using either nitric or hydrochloric (commercial, not pure). A couple of changes of fresh water will leave the plates clean and ready to be put on racks and dried. The hot soda solution having disintegrated the gelatin, the silver residue falls to the bottom in the form of a blackened sludge. The next thing to do is to filter the soda solution through an old felt hat suspended over a vessel in which the soda solution can be caught, as it can be used over and over again for further batches of plates. The blackish sludge is retained in the felt hat, and when in time the soda solution cannot filter through so quickly as at first, the felt hat is carefully dried and sent to the refiner for the recovery of the silver.—W. T. W., in *British Journal of Photography*.

Permanganate as a Hypo Eliminator

Potassium permanganate is a cheap salt (writes Mr. Woodgate Humphrey in *Photography and Focus*) and a very little of it goes a long way in the removal of hypo. It can be kept in solution, but it is better to dissolve a little as it is required. One small crystal about the size of a split pea will make quite enough solution to prepare at once. It can be dissolved in an ounce or two of very hot water, as, although it immediately colors a large bulk of cold water into which it may be put, it is a long while dissolving altogether, whereas in hot water it dissolves quickly. So little of the solution is needed, in proportion to the bulk of the cold water to which it is to be added, that there is no need to wait for it to cool.

If it is a negative that is to be treated, it is first washed in several changes of water, draining it well between each, and is then placed in water colored slightly pink with a few drops of the permanganate solution, and the dish rocked. The pink color of the liquid will soon be found to change to a very pale brown, and when this is the case it must be poured away, dish and negative drained, and fresh pink solution poured over it. In this way we go on until the negative can be left in the liquid for three or four minutes without it losing its pink color. When this is the case we know that the last traces of the hypo have been decomposed, and a rinse in one or two changes of plain water will complete the operation.

Rapid Toning of P. O. P.

Now that the scarcity of P. O. P. leads one to use as little as possible at the present time, it is an advantage to dispense with the usual toning baths, since (once a bath has been used for even one or two prints) it is not possible to depend absolutely upon its condition for the best tone. An alternative method which yields a first-rate tone, allows of just enough solution being made up (if necessary) for only one print, and gives, if anything, results which are brighter and better than those obtained in the ordinary baths is the following, which I was in the habit of using years ago, but it may be new to some workers. The print is toned with a brush, a good-sized camelhair mop, dipped in a toning bath, which is made up at the time of use by mixing the following stock solutions: (*a*) 10 per cent. ammonium sulphocyanide; (*b*) 10 per cent. soda phosphate; (*c*) saturated solution of borax; (*d*) gold chloride 1 grain per dram. To make the toning mixture, 70 minims of (*a*) are measured out and water added to make 5 drams. Then ½ dram of (*d*) is added little by little, and

next 2 drams of (*b*) and eighty minims of (*c*). This quantity of mixture is sufficient for toning about twelve quarter-plate prints. The quantity of solution for one print of this size is from 35 to 40 minims. It is best to use a mop which will take up as much solution as is required for toning a print of given size. If the brush be then kept moving, first one way and then the other, over the surface of the print, toning takes place very quickly, but the print does not over-tone, as the quantity of toning mixture is exhausted of gold. More gold is used in working on this system, but I do not think I have ever made prints of better tone and brilliancy than by the plan described above.—MONTAGUE BRISTOCK, in *British Journal of Photography*.

AIR, WATER AND CHEMICALS

Now that economy in all kinds of chemicals is more particularly borne in upon us than it has been of late years, it may not be inexpedient to recall a few of the factors which contribute to this end. In the making of all photographic solutions the water which is used plays a more important part than is realized by many photographers of even long experience. Water is—well, just water—and it is thought, I believe, by many that so long as it is clean and bright one water is very much like another. I don't believe it is fully apprehended that one of the chief things which contribute to waste of the more expensive chemicals is the air which is dissolved in the water. But it is so, and the fact applies more especially to chemicals such as developers, which in these days of development papers form the contents of most of the preparations upon the shelves of a dark-room.

The chief things to get firmly in mind are that water from the tap almost invariably contains a considerable quantity of dissolved air; that that air does very considerably depreciate the pyro, metol or hydroquinone which may be dissolved in the water; that the air can be boiled out very easily before dissolving the developer; but is just as easily taken up again into the water if the solution is given much opportunity to move about in contact with a surface of air.

Therefore, we start under the best conditions if we use for the making of developers water which has been boiled quickly for a few minutes. If the premises are fitted with any ordinary hot-water supply, by all means use it to the extent of getting as hot water as you can from it. But don't be content with such degree of heat for getting rid of air. It doesn't do it. You need to supplement it by bringing the water to really vigorous boiling over a gas flame or fire and to let the boiling go on for five minutes. An uncracked enamel-iron vessel is the best for this purpose because of its cleanliness, but a clean saucepan of tinned iron is practically just as good. The water having boiled in this way, don't be in a hurry to cool it by stirring or pouring from one vessel to another, as I have seen people do in ignorance of the fact that as the water is thus cooled it takes up air again. Instead, let it stand quietly to cool. In making up developers, sulphite and carbonate are best dissolved at about a temperature of 100° F., since they pass into solution more readily at this degree of heat than they do at a higher or lower.

Having made the solution in the water as free as may be from dissolved air, the next thing is to prevent the spoiling action of air on the bottled developer. For this there is no better plan than to spread the storage of a stock solution among a number of small bottles each filled to the neck. In this way, each separate lot of the stock solution is exposed to the spoiling action of air only for one-tenth or one-sixth the time (as compared with bottling it all in one vessel), if, for example, ten or six separate small bottles are used. The term "small" here should be interpreted not in ounces but in the time which it takes to use up a given amount. In other words, I mean by "small" any capacity which represents, say, a week's supply. It may be ten ounces in the case of a fairly concentrated solution of pyro, or it may be a Winchester quart in the case of those putting through a heavy dose of work each week and using a developer which is made up pretty much of the working strength. The point is, that on either the large or small scale, economy of material and of the labor required in making up developing solutions is effected by providing a sufficient number of receptacles to ensure not one of them being in a condition of constant opening and closing for more than a week or a fortnight. That is, indeed, pretty well the whole gospel of preserving developing solutions in fit condition with its consequent economy not only for developers themselves but of plates and papers.—CHEMICUS in *British Journal of Photography*.

GOOD BLACKS ON BROMIDE PRINTS

Too often do workers who fail to obtain good black tones in bromide prints put the blame upon the manufacturers; whereas, by the observance of a few simple rules, much correspondence can be avoided, and good results obtained every time. Undoubtedly the chief faults are over-exposure and under-development, resulting in weak, greenish blacks with poor gradation.

The object of this article is to put in a good word for that deservedly popular developer, metol-hydroquinone. Such a developer, compounded on the lines suggested below, will be found to give good results on all makes of bromide and gas-light papers, also on plates and films.

The exposure for a bromide print should be such that will give perfect results with a development of two minutes' duration at a normal temperature. At the end of the first minute the prints may appear, on the surface, to be fully dark, but if the exposure has been correct, the second minute's development is merely adding depth or quality of black, and after fixing it is apparent that the prints are of good quality and color.

When the negative is very thin and poor it is not possible to produce good prints on bromide papers, and such a negative should always be printed on gas-light paper, the "contrasty" grade.

A particularly good formula for a metol-

hydroquinone developer which may be used for all purposes is as follows:

Metol	64 gr.
Hydroquinone	½ oz.
Sulphite of soda	4 oz.
Carbonate of soda	6 oz.
Bromide of potassium	16 gr.
Water to make	80 oz.

For bromides, plates, and films add equal part of water. For gas-light papers only use full strength.

In mixing this developer it is often advised to first dissolve the metol in the water and then add the other ingredients in the order named. The writer has made many hundreds of gallons in the following way: Place all the chemicals in a stone jar and pour hot water over them, stirring until all solids are dissolved. Then add cold water to make up to the total bulk, and bottle off. This developer may appear to be cloudy at first, but when cold will become quite clear and colorless.

The amount of bromide of potassium in the developer is an important factor in the time of development and the results obtained. Some makes of bromide and gas-light papers will fog if the developer is without bromide.

There is considerable variation in the amount of bromide of potassium recommended by different makers for use with their papers, and, generally speaking, it is wise to follow the instructions, but the developer given above works well with all makes of bromide and gas-light papers.

It will be noticed that the developer given is double strength, and for bromides, plates, and films should be diluted with an equal part of water. As regards modifications of this solution, the two most practical are (1) increasing the amount of bromide, and (2) dilution to make a weak-acting developer.

For the former modification it is advisable to make up a 10 per cent. solution of bromide of potassium and put it in a bottle with a slit cork, so that drops can easily be obtained. Increase in the amount of bromide in this developer gives additional contrast up to a point, and of course increases the time of development. It also gives greenish blacks on bromide, and particularly on gas-light papers. The second modification by dilution is useful when printing on bromide paper from hard negatives, but it is essential to examine the print by transmitted light when judging the depth of development. Generally speaking, gas-light papers should always be developed quickly by a strong developer containing only just sufficient potassium bromide to prevent fog. With the formula given above a gas-light print should be so exposed that development is complete in one minute, and this will give a pure black.

As regards fixing, particularly of gas-light papers, it is most essential to remember that the first minute of a print's immersion in the fixing bath is the most important, and therefore the worker should make a point of seeing that the print is kept moving and well under the surface. Similarly, the first five minutes of the washing is the most important.—R. R. RAWKINS, in *Amateur Photographer*.

PATENT NEWS

Under this heading it is proposed to include each month a list of all the U. S. patents, and brief abstracts of the more important, and to include also such foreign patents as present special features.

Copies of any patent can be obtained from the Commissioner of Patents, Washington, D. C. Price, five cents each.

Camera. E. F. Strutton. 1148127
Camera attachment. H. Whitaker. 1148346.
Film apparatus. F. W. Battershall. 1148139.
Print-drying apparatus. H.T. Neuman. 1148117.
Camera. F. Leonhardt. 1148911.
Photographer's easel. A. and L. Vandenburg. 1148554.
Flashlight. A. J. Harnack. 1148839.
Apparatus. J. J. Unbehann. 1149157.
Printing frame. F. A. and O. F. Helwig. 1148967.
Camera. J. W. Berwick. 1149493.
Camera attachment. J. A. Norton. 1149676.
Shutter release. F. Huppertz. 1149832.
Lantern slide. G. P. Smith. 1149693.
Printing machine. F. W. Norton. 1149852.
Submarine apparatus. J. T. Parker. 1149678.
Motion picture machine. E. M. Wooden. 11490609.
Motion picture screen. H. Pannill. 1149940.
Film restoring composition. F. W. Hochstetter. 1149433.
Camera. F. Dietz. 1150814.
Shutter. W. R. Savage. 1150544.
Drying cine film. J. Marette. 1150609.
Diaphragm. J. H. Kinealy. 1150606.
Pocket flashlight. F. M. Rosenfeld. 1150066.
Studio lighting apparatus. Goldensky and Bartlett. 1150628.
Changeable pictures. C. W. Kanolt. 1150374.
Blue print developer. W. M. Harris. 1155031.
Plates for half-tone and line. C. Bleacher. 1150414.
Projection apparatus. C. F. Dussaud. 1150350.
Time-controlled shutter. Kurowski & Martini. 1151196.
View-finder. E. A. Bradley. 1151157.
Exposing table. H. C. Knudsen. 1151477.
Cut-film holder. Barnes and Lovejoy. 1151153.
Flashlight. L. B. Lincoln. 1151201.
Flashlight. Matthies & Rehberg. 1151114.
Condensing lens mount. Guthrie & Post. 1151008.
Translucent projecting screen. J. F. R. Troeger. 1151502.

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MOTION PICTURES IN COLORS

By E. J. WALL, F.R.P.S.

THE Editor has specifically asked me to write on some subject in connection with color photography, and unfortunately, as I happen to have struck rather more work just at the present moment than I can get through, I am compelled, rather than disappoint him, to send on what is but a disjointed fragment of a very much longer treatise; but there may be enough wheat in the chaff to repay someone for the trouble of reading it.

Although the motion picture in monochrome is wonderfully attractive, there is no question that it is infinitely more so in the colors of nature, and in the following notes I propose to examine some of the possible, the patented, and the actual processes now employed to attain the end that we all hope for.

One of the most striking effects of moving pictures in colors is the enhanced stereoscopic relief in the picture. The exact cause of this is open to argument and would lead us too far astray to consider now. Personally I think the effect is a mere illusion and that we just fool ourselves, as in so many other things.

It was but natural that known methods of color photography, such as the additive process, should be tried, and it will be seen from a perusal of the patents that this method has had the greatest attraction for the inventor, who, by-the-by, is not necessarily a practical man. There are certain difficulties inherent in this process, the most obvious of which is that, if the three constituent pictures are to be taken on one film, this must move three times as fast as the ordinary film, a mechanical difficulty easy to overcome; but the physiological effect in the projection of the pictures is not so easy to avoid; in fact it is impossible to avoid that irritating eye-

strain that must accompany such rapid excitation of the three nerve fibrils. Practically the three-colored images must fall on the retina in the same period of time as the normal black and white image. It is possible that this might be overcome by a trick—but, as Kipling says, "this is another story."

Closely connected with this subject, also, must be the growth of the visual sensation with time, for Broca and Sulzer[1] have found that with the blue the maximum sensation was at least five times the final, and the maximum occurred about 0.07 seconds after the initial exposure; while red overshoots to about double the final intensity after about 0.13 seconds, and green hardly overshoots at all. From this it might be argued that to obtain the best effect the rate of projection of the different pictures should vary, for if the red and green excite the maximum sensation at 0.13 seconds, it is at this period that the maximum blue sensation should be attained. An examination of the curves given by these authors will at once make this clear, and practically the blue should be projected at twice the rate of the red and green. Arguing from this, those systems in which the constituent images are placed side by side, one series of pictures representing one monochrome constituent and the other series the other, should present less irritating effects on the eye, and obviously the blue picture should be that film bearing only one picture, so that two blue images should be projected during the period of the red and green.

The difficulties enumerated above have lead to numerous patents in which the three constituent images are obtained side by side, either on three separate films or on a triple-width film, by the use of refracting or reflecting prisms or reflecting mirrors. With the two latter appliances it is obviously necessary for the length of the path of the rays of each color to be the same, which can be easily obtained by suitable means. In the case of refracted images, one has of course to take into consideration the refraction required, that is, the deviation from the central image, and this is dependent on the refractive index of the glass, for if we call a the refracting angle of a prism, D the angle of deviation and the refractive index of the glass, then obviously

$$D = (n - 1)\, a$$

If we take a concrete case and assume that three images are required side by side and that the side ones shall be displaced one inch, that is, the width of a picture, then obviously the angle a of the prism must be approximately 30 degrees, for putting our values in above equation we have

$$D = (1.50 - 1)\, a = a/2$$

and conversely a must equal $2D$.

There is yet another point in connection with the use of prisms, and that is the unequal dispersion of the rays of light. The regions of the spectrum transmitted by the tricolor filters cannot in any case be considered to be so narrow as to be monochromatic; therefore one would expect to find not only unequal-sized images, but also distortion, unless the sensitive plane was placed at the proper angle, and these defects would be the more apparent at the blue end. This could be overcome by the use of achromatic prisms, which have apparently not been adopted by any inventor.

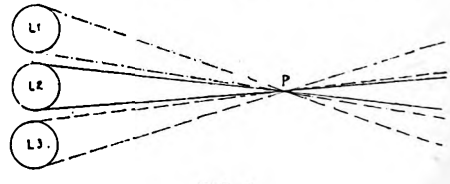

FIG. 1

To overcome these difficulties the use of three objectives has been frequently patented, either alone or with reflecting prisms or mirrors; but at once there is produced the bugbear of parallax, and the further the three lenses are separated the worse it becomes—in no case is it possible to obtain perfect superposition of the

[1] Compt. Rend., 1903, vol 137, pp. 977, 1046.

three images except of the mathematically impossible point, and then only of this point, as will be seen from Fig. 1, in which *L1*, *L2*, *L3* represent the three lenses and *P* the point—the rays from the latter being shown by dotted continuous and dot-and-dash lines respectively. It is at once apparent that objects in front of or behind this plane cannot superimpose.

Of all the patents for the use of three lenses, that of Christensen[1] is one of the most ingenious and novel. Starting with the premises that the lenses must have as large an aperture as possible, and that each filter absorbs two-thirds of the spectrum, he argues that it is unnecessary to use achromatic lenses, as the chromatic aberration is necessarily reduced to one-third by the action of the filter. The only condition to be filled is that the images given by the three lenses shall be all of equal size, which can of course be fulfilled if the focus for each spectral region is the same. He has therefore used the Herschellian double lens, consisting of a biconvex lens with radii of 1 : 6 with a positive meniscus in contact with the side of greater curvature, which is comparatively free from spherical aberration but not achromatic. Naturally parallax cannot be entirely done away with; but to minimize it, as far as possible, Christensen arranges the lenses one above the other, and cuts segments out of the centre lens. The blue filter is placed opposite the centre lens, as this requires the least exposure, and it is obvious that the aperture of the lenses can be varied so as to give equal effective exposures for the three filters. This method requires the movement of the film in a horizontal and not a vertical direction as usual, but this would present no difficulty.

The next advance is that made by Gaumont, of Paris, which promised to be one of the most successful practically. The basis of this process is as follows: The three lenses, which are arranged one above the other, give through three color filters correct trichromatic images, which can be projected in a similar manner. By placing the lenses very close together, and doing away entirely with the ordinary circular form, parallax is reduced to a minimum. Details of the patent will follow, but the result is that all three constituent pictures are on the screen at the same moment and the synthesis of the colors need not take place on the retina but on the screen—and this is I believe one of the most important points as regards eye-strain.

At the moment of writing, this method has gone beyond the experimental stage, and exhibitions have been given that have called forth unstinted praise from the technical press. The process is not perfect: Slow-moving objects are perfectly reproduced; but with greater rapidity, the movements as shown are less satisfactory than with ordinary black and white work, because the speed of the movement of the negative films is insufficient —a fault which the future may possibly remedy.

This defect of rapid movements being shown in different colors is inseparable from any process of color projection in which two or more pictures are taken at different intervals if the rapidity of the moving object is such as to bring it into different positions at each exposure.

We now come to a process which, if it fulfils the claims made, should be a distinct advance. It is called the ortographic process.[1] Apparently a triple-width film is used, which moves at uniform rate, and variation of the pictures is obtained by making the lenses act at different periods; in fact, the film moves continuously and uniformly, while the lenses have a reciprocal motion which is just fast enough to keep the images in register (this is not new); but all perforations and sprockets are done away with, the film being moved by friction rollers, although continuously moving sprockets may also be used. As the lenses reciprocate alternately, it must follow that only one picture at a time need be

[1] German patent 203110.

[1] Motography, 1912, p. 171.

darkened, thus there ought to be much less of the irritating effect on the retina and more perfect blending of the pictures.

Turning now to the two-color process it may reasonably be considered to be antedated in principle by Du Hauron, in his anaglyph patent, and by Guertner. Apparently Jumeaux and Davidson were the first to apply this principle to moving pictures, and I believe that their results were shown at the meeting of the Photographic Convention of Great Britain in Southampton in July, 1906. In the *British Journal of Photography*, 1906, July 27, p. 584, a report says: "So far as we could gather, the results shown by Captain Davidson and Mr. Friese Greene were obtained solely by the aid of two-color records side by side on a standard negative film, and positives from these were shown in an ordinary cinematograph. In front of the objective was a color box, by means of which the two positives were combined. The impression one gathered, though possibly wrong, was that these two experimentalists use two-color records only, a blue-green and an amber or orange. If so, correct color cinematography on these lines is impossible. We have here applied the same principle which Guertner, of Berne, has utilized in his process; the real reds are ignored, and while this may be useful for pure landscape work, it can never be a true scientific record of color by the aid of cinematography."

I saw these pictures and can confirm the impression and conclusions of the above paragraph.

In December, 1907, I saw some results by G. A. Smith's process, before they had been publicly exhibited, which has since become so well known as kinemacolor. In this process the blue-violet color sensation is wanting; orange-red and blue-green are the colors of the taking screens, while the projecting filters may be said to be red and green. Apparently the inventor was led to cut out the blue record through experiments in triple projection, when, as everyone knows who has worked this system, the blue positive adds no color to the colors as such, but merely whitens the whites and brightens the picture generally. This statement may seem erroneous, but it is based on some years' experience in the projection of triple transparencies.

Theoretically, of course, it is impossible to obtain correct color rendering without the blue element, and for scientific work it must be used. Without the blue pure white cannot be formed, and widening the transmission spectra of the red and green filters merely pales the yellow formed; obviously, however, if the green transmission is so widened as to pass sufficient blue as to excite the blue-sensation nerve fibrils to any great extent, then an unskilled observer might conclude that white was actually formed. On the other hand, widening of the green transmission band must necessarily lighten all the other colors by the addition of white.

With regard to this point, C. N. Bennett[1] says that, at first, Smith used Wratten and Wainwright's ordinary tricolor red and green filters for all subjects that did not show a pronounced admixture of pure blue, and a lighter set which were distinctly orange and green-blue. The blues were rendered much better by these lighter filters, but the grass and green foliage became bronze-brown, and he advised the cutting out of the blue-green and the transmission of a little pure blue, and that much-improved rendering of the colors was thus obtained.

The actual composition of the filters and the discussion of this point would lead us too far afield just now.

A distinctly novel method of working the two-color process has been invented by Hernandez-Mejia,[2] which he calls the colorgraph process. Apparently he obtains two negatives, each through a different color filter "placed in the divided (reflected and refracted) paths of the light." From these negatives he prints on both sides of a positive lemon-colored film, and

[1] Col. Phot., 1911, p. 45.
[2] Moving Picture News, Oct. 5, 1912, p. 12.

then each image is dyed up with a dye complementary to the filter through which the picture was taken. It is obvious that the process is a subtractive and not an additive one. The inventor states that his red filter transmits from the extreme red up to the *D* lines, wave-length 5890, and his green filter transmits from the *F* line, wave-length 4861, to *H*, wave-length 3970. The "green" filter is not green —as a matter of fact it transmits no green at all. He also states that he dyes his positive from the negative taken through the red filter with a dye of the malachite green character, and the positive from his negative taken through his "green" filter with rhodamin or fuchsin. Malachite green may be said to be complementary to his red filter, because it transmits the complementary rays, but it also transmits a great many more; as a matter of fact it transmits from the *D* line right up to the ultra-violet, only dampening the blue-violet; but neither rhodamin nor fuchsin can be said to be complementary to his "green" screen; both these dyes are distinctly bluish-red, but their blue transmissions might be absorbed by his lemon-yellow base, therefore making them distinctly orange-red dyes; but even then they would not be complementary to his green screen.

The inventor states that, "if, instead of superimposing two positives, we print them on each side of a lemon-yellow-colored film of celluloid or other material, which has been coated on both sides of the film, we will find that we secure perfect and permanent register, and that the blue-green color on one side, the lemon-yellow in the centre, and the orange on the other will supply the full range of colors of the original object with a degree of correctness that is truly astonishing." In the first place it would be as well to point out that one of the negative images must be reversed. The explanations given above are a little weak, because as already pointed out neither rhodamin nor fuchsin are orange-red dyes, but they may make the latter color with the yellow base, though one would imagine that the latter color should be varied with the depth of the former, otherwise one ought to have a distinct red-orange in parts, while in others it would be an orange-red verging into a full yellow. Accepting, however, the inventor's statements as to the correctness of his color rendering, it may be worth while to try and explain how he attains that end, because there may be a germ of valuable practice in it. The red filter absorbs the whole of the more refrangible rays up to the *D* lines, therefore the whole of this region will be the printing part of the negative, or that part of the positive represented by the dye. This is printed in a dye which fills the whole of the more refrangible end of the spectrum with the exception of a small dampened region in the blue-violet, but the hue is green and green throughout, because the eye is unable to disperse the rays transmitted by a solution of malachite green and is merely cognizant of the color which is their sum. But as this image is printed on a yellow base, this would naturally alter the resultant hue. As a matter of fact it would be possible for a bright yellow, with a considerable admixture of white light, to be so faintly stained by the green dye that, superimposed on the yellow base and projected by an arc light which is always distinctly yellow, it might appear a pure yellow, particularly in contrast to the surrounding colors. On the basis of this argument all the bluish-greens must be shifted toward the red end, so that the inventor fills up by his color base those regions of the spectrum which he does not record in his negatives.

Obviously this reasoning is precisely the same employed by Ducos du Hauron in his original patent for the anaglyph process (1895) put in other words. This being the case, would a patent be valid?

But this does not explain the formation of a violet or deep red. Now his "green" filter absorbs the whole of the less-refrangible rays up to the *F* line; therefore the negative taken through this filter must print in rhodamin or fuch-

sin, and the whole of the green, yellow, orange, and red will be represented by these colors, which are distinctly bluish-red, possessing an absorption in the green, which the malachite green plus the yellow base has filled up. But the action of the yellow base on a weak tint of the bluish-red dyes would be to destroy the blue shade and convert them into orange-reds and pure reds, and assuming that the yellow base transmitted some blue-violet, and it is rare to find a yellow dye that does not, this transmission, coinciding with that of the rhodamin and the malachite green, might give violet. This is purely speculative, but there is more than a grain of truth in it. In conclusion, it may be pointed out that Mejia claims to be able to bleach and dye simultaneously his silver image by the use of basic dyes. Obviously this is comparable to Traube's diachrome process.

It is hardly necessary to examine in greater detail the various processes which have been suggested by inventors; but the recent outbreak of *rabies inventorum* evinced by the multiplicity of patents since the commercial exploitation of the kinemacolor process may permit calling attention to one or two points.

In the first place to a note[1] on "Cinematography in Colors," part of which runs as follows: "The question next arises as to whether it would be possible to obtain a negative of each color record, and so combine them afterward into one film that they could be projected by any cinematograph. This immediately resolves itself into the question of printing.

"Supposing that we obtained simultaneously the three-color record negatives on one or three films (because for this it would be perfectly immaterial as long as the films for all three moved synchronously), is it possible to utilize one of our present printing processes so as to obtain on one film a series of pictures, each of which shall be in itself a perfect color picture; and thus each picture, being itself a color record, could be projected in any existing cinematograph lantern? At the first glance it is at once obvious that we must at once reject any process in which superposition of stained films is used, for the exposing, printing and staining up of, say, 150 feet of each color record and superimposing of the same would be a task, in face of which the labors of Hercules would be child's play. The question then remains whether we could use the imbibition process. Here seems to be a possible solution of the question, for in these processes we have not the superposition of three films, but merely the transference of dyes to one film, and it should be possible, though possibly not easy, to obtain accurate register of the matrix films, for this would mean merely accurate mechanical movement, accurate perforation and pressure. Slight irregularities on superposition would probably be absolutely unnoticeable on the screen; and however idealistic the suggestion is, this is what we want: A length of cinematograph film, each picture in which shall be a record of the movement at the instant of exposure, and at the same time in itself a complete color record. Assuming that this last idea is feasible, then one can conceive of three separate lenses, three separate negative films, and three separate color filters, and of these the only one moving being the film. Then one might, by means of an imbibition process, obtain one film, each picture of which should be perfect in color; or one might use the alternating color filter and obtain an alternating color record negative, and using an imbibition process, transfer each color record to the one picture; this at least means accurate superposition."

I now come to an extremely important point—important for would-be patentees—if American law runs on all fours with English patent law: On July 28, 1911, I filed an application for an English patent for producing motion pictures, and I received from my English patent agent a letter which is of such importance that, if publicly upheld, it would knock the bottom out of a great many patents

[1] British Journal, 1906, p. 584.

that have been granted, particularly of late. This letter says: "I had a long interview with the examiner in charge of the application, when in London last week, and he pointed out that, as disclosed in the specification, there is nothing in either of the processes that has not been previously applied to the printing or production of lantern slides, the difference only consisting in your applying this process to motion-picture films. If this be so, he informed me that there is no subject matter upon which either a patent or patents can be granted. The case has already been raised in the Patent Office, and settled by the Comptroller, that there is no subject matter in preparing a kinematograph or motion-picture film in the same way as a lantern film has already been produced."

I repeat that the far-reaching effect of this dictum, if upheld, would knock the bottom out of many patents.

Before leaving these general notes, it would be as well to refer to the question of screen-plate processes. I have purposely chosen this term because the processes we want to discuss are so much used at the present time for the production of the screen plates on the market. This includes all processes in which, instead of using three separate filters or a selective screen for each picture, the selective filters are distributed in some form of minute geometrical figure on the support and the emulsion is exposed through the same, so that the picture is a composite of minute areas of the three constituent colors.

Probably everyone knows that the principle of this was laid down by Ducos du Hauron in 1867 (French Patent 83061, 1868), and this patent is of such importance that it proves that no patent can be valid for any particular pattern of geometrical figure as a screen element. The only patents that can be upheld are for particular methods of arriving at the particular geometrical figure desired.

There are other questions, however, to be considered in connection with this subject, and they roughly divide themselves into three: (1) Is it practicable to coat celluloid with a series of minute geometrical figures in lengths of not less than 200 feet? (2) By what known process can we print from the matrice negative? (3) If possible, what will be the result on the screen?

The most important of these questions is the third, the question of visibility on the screen of the screen elements. Assuming these to be 0.04 millimeter in diameter, and that the pictures are shown on a 12-foot screen, then the magnification is approximately one hundred and forty-four times; therefore the screen elements will be approximately $\frac{7}{82}$ of an inch, and as these become visible at one thousand times their diameter, the nearest point that an observer could be placed would be about 18 feet. This raises another important point, as to what should be the size of the projected picture, and, although this has nothing to do with the subject, I may be excused for considering it. Assuming that the picture is three-quarters of an inch in height, and that a star, be it male or female, occupies the most prominent position, and the size of his or her image is exactly half an inch in the film, which is not unusual, and we project the picture on to a 20-foot screen, then the star would appear no less than 12 feet high, which is an absurdity, even for a star. I contend that in no case should the picture be more than that required to give a man his average height of, say 6 feet. In color work the smaller the picture the better the result, and an 8-foot picture is ample. Then, if this size were adopted, the screen elements would be approximately $\frac{1}{7}$ of an inch and the nearest sitter could be practically 12 feet from the screen.

It would lead us too far afield to consider the shape and distribution of the screen elements, though this is an extremely important matter, because on the former depends to some extent the latter. Briefly it may be stated thus: If one of the screen elements is composed of a line, then that line must make an angle of about 45 degrees with the direction of travel of the film.

As to the practicability of coating a 200 feet length of celluloid with minute geometrical figures, I have very grave doubts, based on actual experiment, for I spent months and plenty of money in trying to do it. Theoretically it ought to be possible to handle celluloid as easily as glass, but only those with practical experience know that it is the most tricky base to deal with in long lengths. Cut-sheet films are as easy to handle as glass plates, when you know how, but motion-picture film is another question altogether.

Then supposing that one has managed to obtain a uniform, even coating of screen elements, what is going to happen? Are we to coat this with a pancromatic emulsion and reverse the negative image as with the autochrome plate? If so, it means a fresh exposure for each positive film required, which at once puts the process out of court. If the color screen matrix is to be pressed into contact with the film during exposure, then it means absolute optical contact, for it is a known fact, if the film of an autochrome plate be stripped, it is impossible to obtain any color by subsequently putting the film on the screen plate. But we will admit that sufficient contact can be obtained, so that negative is broken up by the screen matrix into elemental silver deposits. It is obviously easy to print an ordinary black and white silver positive from this—but how are you going to obtain register of this elemental positive with the projecting color screen? To do it with a lantern plate is not too easy, and to attempt to do it with a 1000 feet of celluloid, an expansive substance, is a hopeless task it appears to me. And if one did not obtain register of each silver element with its corresponding color element, we should have a hopeless jumble, no color at all, or else partial negative and partial positive results; that is, some patches of color might be correct, but others would be shown in their complementaries.

It has been suggested that it would be possible to put the color elements on the screen and project the positive so as to make each silver element block out its corresponding color element. If we assume the color elements on the screen to be $\frac{1}{7}$ of an inch in diameter, it might not be such an impossible task to so superimpose the silver elements of a small glass plate as to do this, but what would have to be the rigidity of an apparatus to do this with a celluloid strip moving at the usual rate? Obviously this is merely a wildcat scheme.

Returning to what we may call practical methods, it is clear that a three-color process, an additive one, ought to be the solution of the problem. But there are many difficulties in the way, not the least of which is the question of patents. I propose, therefore, to finish these notes by putting on record the fact that H. Isensee, of Berlin, appears to have been the first to patent the three-color process for kinematography, and because of its interest this patent is given in full, though now void:

"Vorrichtung zur Darstellung farbiger lebender Photographien" (Arrangement for the Production of Colored Living Pictures), German patent 98799, December 17, 1897.

"By means of this invention the projection images, which up to the present have been only in monochrome, should appear to the eye of the observer in natural colors, by means of the images being projected rapidly one after the other, and in regular sequence in the colors red, green and blue. For this purpose there is placed eccentrically before the objective of the series apparatus, a disc with three sectors, which consist of red, green, and indigo-blue glasses or correspondingly colored films. The movement of this screen is so regulated that during the duration of a photographic exposure every time a colored sector is moved in front of the objective, so that there will be found on the strips of film, negatives in regular succession produced by red, green, and blue light rays. From these negatives, positives are now made and projected by the series apparatus. During this the red, green, and blue sectors pass over the objective in

exactly similar manner as during the exposure, so that there are formed on the screen in rapid succession red, green, and blue pictures, corresponding to the negatives produced by the said colored rays. While in the well-known analogous process for the production of colored images, for instance, with Ives' heliochromy[1] three different colored images of one object are formed at one and the same period, here different colored images follow in successive periods in sufficient rapidity, and there is formed in the eye of the observer a moving picture in natural colors."

Patent claim: An attachment to apparatus for producing living photographs, in order to produce picture in natural colors, characterized by a disk with three ray filters of the fundamental colors, necessary for the formation of three-color pictures, is moved in front of the objective in such a way, that with every new negative exposure as well as projection of the same, another colored sector appears before the objective.

So far as I am aware this is the first time this patent has been mentioned in any photographic journal printed in English.

It is, of course, impossible for me to follow here the later patents and analyze them. Possibly at some future date this may be done, but the subject is to some extent limited in its interest, and an analysis of all the patents, which I have already made, is so lengthy that the Editor would naturally object, if nobody else did, to my absorbing the whole of the JOURNAL for the next twelve months.

PORTRAYING HUMANITY

BY F. B. HODGES

A PORTRAIT is really, in its best sense, an expression of the subject's personality, and the one essential, beside this, is that it be a good likeness. Otherwise it is not a portrait, but simply a study. Every house has its framed pictures of loved faces that look out at us from their place on the wall and delight our heart with their glimpse of the character we know so well, or that are perhaps all that we have left to recall the expressions so dear to us in life. Every garret has its quota of pictures stored away to make room for the newer and more modern ones, but that still interest the younger generations, and show them in some degree what stuff their progenitors were made of, and incidentally where they get their good looks.

[1] Eder's Jahrbuch, 1891, p. 174, and Krone, "Die Darstellung der natuerlichen Farben durch Photographie," 1894, p. 103.

It falls upon photography to transcribe the life of the world, and photographers should pride themselves accordingly and see that their standard is never lowered, but rather continually raised, that future generations will have for record and remembrance pictures that give not only the outward semblance, but a portrayal of the character and the personality, making them valuable and interesting as well as inspiring. Here we may see the necessity for careful workmanship, without which these records, many of them priceless, are of doubtful stability, and instead of being objects of satisfaction pointed to with pride, they are worthless and held up for ridicule.

Portraiture by photography is said to have made great strides in the last decade, and undoubtedly it has; yet the majority of photographers do not know the meaning of the word "pictorial" as used in photography. Show them a wonderfully beautiful portrait,

so vivid a representation of character that it almost seems to live and breathe, a portrait, say, that was made with an uncorrected lens, and they will say, "The subject moved," but they are not in any degree moved themselves—not an emotion stirred.

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The fact is, however, that these men influence a large part of the public, and it is certain that their influence is not of a highly cultured sort. Therefore it is safe to assume that the advance in photographic art in portraiture is confined to a comparative few, and that the results are just beginning to take a firm hold on the public.

Photography in its rudimentary stages is not hard to learn, its technical elements are easy to comprehend, and nearly every person can so perfect himself as to be able to make plain photographs of a fair quality; but to make photographic portraits that excel in those particulars that mark them the work of a gifted personality, portraits that rise to a high plane and justify us in calling them pictures, is quote another matter, and this ability is not given to the mass of people. The man or woman who essays to portray, upon paper or otherwise, the real living personality of his subjects must have been fitted for it at birth. It is a gift and in some rare cases amounts to genius. Such a person must also be possessed of the powers of observation in a high degree and must constantly foster and cultivate them. Without these gifts no one can hope to do with sureness and regularity more than to portray the superficial; his pictures cannot have a strong degree of power and they cannot hope to strike a vital note. The possession of them, however, combined with shrewdness, enables him to reach the heights of excellence, because he will see the essentials of face and form and expression that convey the strength of personality and character of the subject in a manner pregnant with significance.

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In order to handle the work strongly and decisively what a degree of technical skill must be his! At times his touch must be broad and soft, at other times hard and narrowed to a certain point. Again the treatment must be rigorous and rough; but no matter if it

be any of these, or if it be light and ethereal, the treatment, while the acme of perfection in craftsmanship, must be conceived in the mind of the worker, which ever guides his hand.

There are days coming when photographic portraiture will reach great heights, but they will come only with a realization and culmination of high ideals. Imaginative vision is just as beautiful a gift for the pictorial portraitist as for the landscape worker. The man or woman thus equipped is the winner in the end, and produces results that add more to the progressive advance of their art than do the strict and unromantic realists. The realist may make strong pictures and faithful likenesses, even delineations of character, but it always seems to me that he falls short of the real vital note of beauty and importance. We have too few of the people, in any walk of life, who are overflowing with poetic and

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esthetic visions, beautiful thoughts, and rare imaginative moods. Let us not discourage them, but rather endeavor to see with their eyes and revel with them in their soul-felt desires and expressions. There is a significance in their conception of life and humanity that should never fail to convince us of its value to us as one of the rarest assets of pleasure we have. We see many instances that prove clearly how little the mass of people realize this idealization's importance.

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The worker who is an idealist will make a portrait of a plain-looking subject that will prove a strikingly beautiful picture. Most, if not all, of the people who see it will say that it flatters the subject, because they have never realized there were pictorial possibilities in her face, and because they are incapable of seeing what has brought about the result. We might say the result was produced, as indeed it was, but the magic was in the soul of the man who made the picture; he was a true artist. He saw that when the subject was entirely at ease and free from all restraint she reflected in her face her maiden purity and goodness, and it only required certain conditions relative to pose and light, which he instantly divined, to secure one of those rare, fleeting expressions that idealize the subject. Yet the resulting picture was a perfect replica of her face. There was a psychological

condition here perhaps, resulting from the purity and goodness of mind in the subject and a poetic and pure vision in the artist. In fact, such a picture in its best sense and highest state of perfection could hardly be made otherwise. The beauty that is expressed by reason of a pure mind is unlike any other beauty; but if the artist is of the wrong sort, he will, despite all trials, fail to secure its appearance on the face of his subject.

After all our study of the background question, after all our study of composition, spacing, or other equally important matters, which study we surely must give, it is only too evident that the expression is the vital touch that gives our picture the effect we were working for. This being the case, it is equally evident that all else should be subservient to this paramount point. We must have nothing in our pictures that we are to look at and live with, enjoy and profit by that has a tendency to take our attention from the expression, that close glimpse of the character, that indefinable something that the true artist always imparts to his work that causes it to seem to us for the moment the living person before us. Can this be done without imaginative vision?

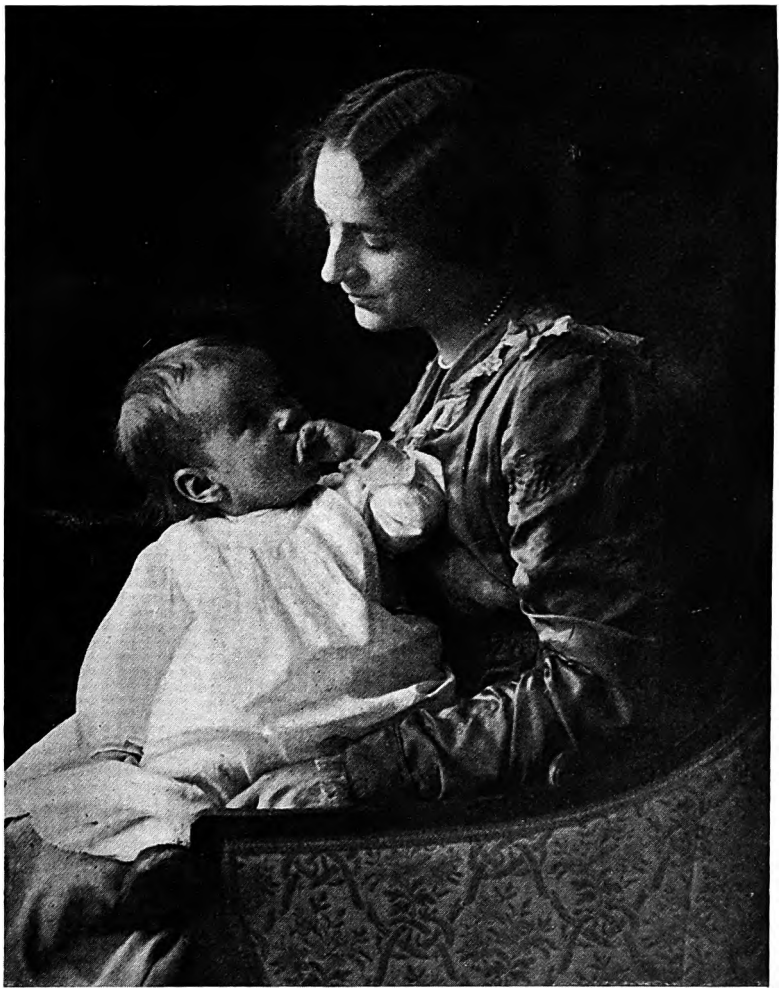
Portraiture calls for the best in the man; he must reach his greatest heights as a technician in order to freely and easily express the beautiful ideals and poetic dreams that yearn for expression.

The making of landscape pictures is fascinating, and the subjects of nature are lovable but still always inanimate. In portraiture we add the great magic and overpowering wonder of life. There is a never-ceasing variety of physiognomy, for no two people are just alike. Each person has his individual characteristics and important expressions to be determined. There are many people, as we well know, who have never had a satisfactory portrait and many who probably never will have. It is not given to any one man or woman, that state of perfection that enables them to always succeed. There seems to be no doubt but that in order to make a picture of some particular personalities, to show them at their best, the artist must possess such characteristics or charms of personality himself as are needed in their particular case. There is much of a psychological nature, much of a hidden depth, that enters into successful picture-making of humanity. Many workers succeed famously with certain of their *clientele* without knowing the real reason. They do this or that thing instinctively or intuitively, and do you think they can tell exactly why?

Let there be, then, a distinct note of sentiment in your work, but never a careless handling of it technically. Break away from the conventional and strike your own original note. I like to see the intrepid worker who, amongst his more sober lines, indulges in curious lightings, figure poses that are out of the ordinary, schemes clearly daring but therefore charming, all however with some degree of consistency and logic for a foundation. Such a man is pretty sure to be full of feeling and to be intellectual. He thinks for himself and the portrait worker must invariably do this.

Consider the people he has to please —friends, family, and mere acquaintances, beside the subject. If he wavers from his rule of independent thought, he is lost. Is it an easy matter, think you, in these days to achieve a reputation for a distinct and really original style? Ah, no, there is no such thing as an easy matter in winning any sort of victory of which this would be one. Rely on the old and tested standard. First, the gift that lies inherent in one at birth; afterward hard and unremittent work. In the case of the portrait photographer we might add a calm, easy manner without obtrusiveness, good morals, and therefore a clearly honorable countenance.

Photography is being taken up and adopted for a livelihood by men and women whose strength of personality forces them to go beyond the first spasmodic joys of technical success and introduces in their work their individual feeling. This it is that is putting it on a plane ever higher and more enduring. This it is that bespeaks for



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it a place in art and will win for it that place if such a thing is right and just.

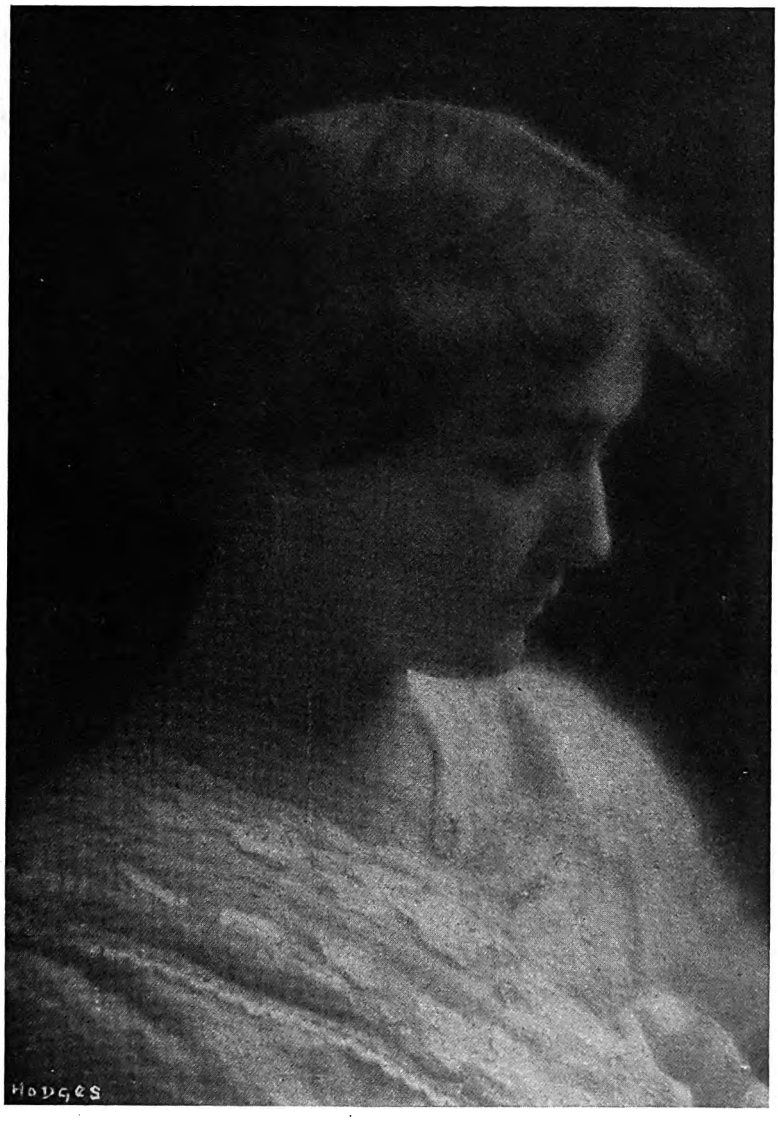
All manner of changing expressions can be written down in photographic language, from the joy of youth to the dignity of age. The emotions and feelings are vividly shown in photographs, phases of character graphically pictured, and no peculiarity of humanity can evade the camera; but never forget that the depths of these things are not possible with the mechanical alone. There must be always infused the spirit of a human soul. Without this there is never any great photographic art and never will be. Nature study and portrait work may seem to you far removed from each other, but no; every form of art is dependent more or less on nature. I believe I see in the portrait work of men who are devoted to nature a largeness of design and a clean sincerity of purpose that is absent—in its highest sense at least—from the work of those who have never known nature in her solitudes and beautiful places where she shows mankind the biggest side to every problem.

Ah, when you made those portraits of that beautiful young girl, did you give your work thought enough? Did you see that beneath the surface of her fresh and entrancing beauty there was a noble sense of goodness, an innocence of mind and a purity of thought that the world should honor and revere and try to keep perfect? Did you, by any chance, see the real worth of the privilege that was yours in portraying her face and form to bequeath to coming generations? The guileless face of girlhood, the joyousness of youth, the rare charm of her personality, did these things impress you? Or, when you pictured the small boy, the irresponsible urchin whose whole being spoke mischief, did you see the genius lying dormant there; did you realize that perhaps your picture would be gazed upon a century hence by a eulogizing public? Perhaps you had for a subject a man well past the meridian of life; at that stage we are wont to call old. His face afforded you a glimpse of years of toil, experience, of trouble and of happiness, of all things incident to a long life in this changing world, and perhaps also a vision of that bright and perfect country to which he was drawing near. Did you see these things and sense the lesson before you? Did you appreciate the position you were in, the duty which was so clearly yours? Much depends on your work that you think little about. Will you make the map-like delineation of your subject's features that we deplore? Or will you, through your observant understanding, produce a picture that shows us what is beneath, a picture out of which the life of the subject speaks to us?

To portray the human face and form, and keep to the high standard you should set for yourself, you must have eyes that are sensitive to beauty; your ideas of design must be free to admit of their instant application in your work; you must always keep a certain dignity present in your work; you must have a keen sense of rhythm, and work ever toward the realization of your own ideals. There are many photographers in America today who have decided talent but allow it to remain undeveloped. They neglect their daily opportunities. Time spent in frivolous and sensational pleasure could be devoted to good literature and the study of good painting. Efforts directed toward the attainment of culture are never wasted. Very soon, with study and its refining influences, comes the desire for a sincere expression in your work of the ideals you are acquiring.

Your aspirations are of a new character, they are stimulating and vital. Your understanding of the deeper meanings of life and art becomes intuitive. A better comprehension of the importance of your profession comes to you.

The pictures which illustrate this article show in a marked degree the individuality of the subject. They were made under varying conditions—in the home, the office, the camp; but each with one thought in mind—to secure a picture that was a perfect



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likeness and full of the life spirit. The picture of the Adirondack guide is typical. If it seems to you at first glance to be rough and crude, it is because of its very strength and forcefulness. If you study it, you will find the inner man looking out at you. Underneath its uncouth exterior appearance you see the native intelligence, the inborn common-sense that is a marked characteristic of these sons of the wilderness. The eye seems searching you as it has for a lifetime searched the forest reaches. In the picture "Mother and Child" we have an example of the intimate spirit that gives such pictures a charm for all people. On the face of the mother there is an unmistakable expression of tenderness and mother love, and on the child's face is a perfect expression of babyhood's happiness and trust.

It is not the finely appointed studio, the skylight, the finely painted background, the newest lens or accessories, or the expert retoucher, it is none of these things that makes the picture of vital worth. It is nothing less than that bright spark of talent, that subtle and elusive gift that lies in the heart of the true artist and clears his vision of all obstructive theories and fancies, and enables him to see more than the feature map before him, to see what it is in each face that awakes in response to his dominative genius, and is best to perpetuate his subject's personality most truly and effectively. This I believe is true portraiture; it is the portrayal of humanity in its best sense and is portraiture's only expression by photography that is of lasting worth.

There is nothing new about it, faces are no more or less faces than they were in the beginning. You can invent nothing new, in the last analysis. The best you can do is to show, by reason of your superior gifts, deeper aspects of life, higher thoughts and a more ideal state of culture; but is this not enough? Is it not enough to be true to your own best self, to spend your life in the development and perfection of the gifts your Maker has blessed you with?

When photography is unhesitatingly and universally conceded a place in art it will have reached its highest achievement; it cannot do more. Unquestionably it is the pictorial workers who are advancing it toward that place. Real pictorialists everywhere in the world are people of culture and refinement; they are the people whose eyes are opened and who see clearly by what road the goal is to be reached. Is it not deplorable that there are so many photographers in our country—some of whom stand in high positions—that cannot comprehend the real status of the pictorialist and what his presence in the photographic world means? To them he is a freak; while the real truth is, that he is the sanest of the sane, and much more ought they to be designated "freaks" who ridicule his ideas and work. Remember, the incontrovertible fact is, that if you cannot appreciate art it is because of your unfinished state of culture.

I reiterate, if you wish to do justice to yourself, to your community, to the world at large, to your fellow-workers and to the cause of photography, it is not enough to make technically perfect photographs. You must first look yourself over and add this state of culture and refinement to what nature has already given you, in order to understand what else is needed, for you must have more than a formulative theory as to your requirements. We have enough of the superficial; we must go beneath the surface to find the vital principles of the art that lives. You must have a keen realization of that deep undertone of refined intellectuality that suffuses the spirit of the genius and transforms his photographs into pictures.

It is in this way only that his work lives through the years and gives pure and unceasing pleasure, and that he leaves, in the words of Longfellow, "footprints on the sands of time."

"YSAYE, THE VIOLINIST"
BY BIANCA CONTI
SAN FRANCISCO, CAL.

"AN ENGLISH ACTRESS"
BY BIANCA CONTI
SAN FRANCISCO, CAL.

HOW TO MAKE A STEREOGRAPH[1]

By H. A. MILES

AS this lecture is not prepared for experts, I need not apologize for confining myself to the elements of the subject, as I shall thus have more time for actual demonstration and for the circulation of a number of selected stereographs. At a later stage I shall show you other examples of suitable subjects for stereography, but for the present I will draw your attention to an interesting botanical study—a date palm in full bearing! You will see that this tree is evidently a patriarch, the fruit on the oldest branch being dated 280 B.C., which is the period when our old school friend Euclid first wrote about the wonders of binocular vision. From Euclid to Wheatstone is a long stretch, but it was not until 1832 that Charles Wheatstone discovered a means of combining or superposing the slightly different pictures, which it was known were seen by right and left eyes respectively. This instrument he termed the stereoscope—a combination of the Greek words *stereos*—solid, and *scopeo*—I view, or "I see solid."

There have been many varieties of stereoscopes invented, but the refracting and reflecting were both the fruits of Wheatstone's fertile brain, Crewster's claims notwithstanding, and the refractive principle is that on which most modern stereoscopes are made.

When the stereoscope was first invented, all stereographs had to be drawn by hand, and consisted mainly of geometrical figures or other simple outlines. In 1834, Fox Talbot was successfully experimenting with photographs on salted paper, and in 1839 his discoveries and those of Daguerre had so far advanced that stereoscopic photographs of statues, buildings, and portraits of living persons were made for Wheatstone by Messrs. Fox Talbot and Cotten. In 1851 Queen Victoria bravely endured a three-minutes' exposure for a stereoscopic portrait at the great exhibition of London. In 1861 Oliver Wendell Holmes invented the hand form of stereoscope, with a hood for the eyes and a series of receding grooves for the stereographs. A sliding holder was subsequently introduced by J. L. Bates, and there we have the stereoscope of the present day. In 1904 Albert J. Snow founded the United Stereoscopic Society, which at first consisted of, I think, only eight zealous and enthusiastic workers, and yet is today the leading stereoscopic society in the world, with branch secretaries in American and Australasia respectively, and members in many other parts of the globe. Truly a wonderful snowball, which still continues its enrolling propensity and exhibits no signs of thawing.

A photograph has been poetically described as a "sun picture," or "a mirror with a memory," and the same writer, Oliver Wendell Holmes, also christened stereography "sun sculpture." Could anyone have devised a more charming, apt, or accurate simile?

A thoughtful person, after viewing a good stereograph, will ask, What is it that enables a stereograph to reproduce nature in a manner impossible by any other process? What is it that invests it with the interest which enables one to look at it again and again and yet never exhaust its possibilities? What is it that gives the sense of perspective, delightful plasticity, rotundity, and realism which we find so fascinating as compared with the flatness of an ordinary photograph? Let us see!

Stand a candle on the table about three inches from the edge and a book on end about six inches beyond it. Now, on looking from the edge of the table

[1] A lecture delivered before the Royal Photographic Society of Great Britain.

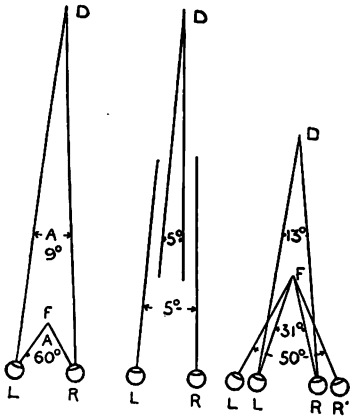


FIG. 1.

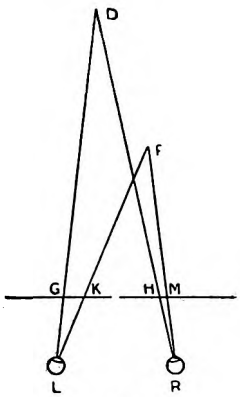


FIG. 2.

with alternate eyes, the candle will appear first on one side of the book and then on the other side; but viewed simultaneously with both eyes it will assume its proper place. This proves that each eye sees a different view, but that seen together the brain receives the impression of a single picture possessing certain attributes not possessed by either single view when seen by one eye alone. To make this experiment at so close a range has almost necessitated squinting, or in other words, the eyes have had to converge somewhat excessively. This convergence is an important factor in stereoscopy.

When looking at an object in nature, the eyes converge and imaginary lines from the eyes to the object form between them a certain angle (*A*). This angle varies both with the distance of the object and the separation of the eyes, the angle being greater in the case of near objects or wide eye separation, and less when the object is more distant or the eye separation small. If, therefore, we can by any means place before the eyes a pair of pictures which will, when viewed, cause them to converge at a certain angle, the position of the imaginary point of intersection will determine in the mind's eye the exact position of the object viewed, relative to other objects which would cause a different degree of convergence.

In the diagrams, Figs. 1 and 2, *L* and *R* represent left and right eyes respectively; *F* and *D* are objects in foreground and distance; *G* and *H* the points on each picture of a distant object as seen by each eye, and *K* and *M* similar points representing a foreground object. Note that the distance between *G* and *H* (the angle of convergence) is greater than between *K* and *M*.

Let us reverse right- and left-hand prints, the effect produced is known as pseudoscopic and is very peculiar—foreground objects receding to a distant plane and distant objects coming forward.

The diagram Fig. 3 will explain the point, and I shall presently show you some interesting examples of pseudoscopic slides, including a view of Camber Castle, in which the ruin of a tower stands out in front of the archway through which it was photographed.

The success or failure of a stereograph depends largely upon the presence or absence of planes and the distance of the foreground from the camera. If the nearest object is far off the lenses need to be separated correspondingly. There is practically no stereoscopic relief in a photograph of an object in a single plane. For all-round work, such as the average tourist would undertake, a separation of about three inches would meet all requirements; but close work, such as flower studies and other small work in the studio, birds' nests at short range, etc., should have a separation of from one to two inches only. This

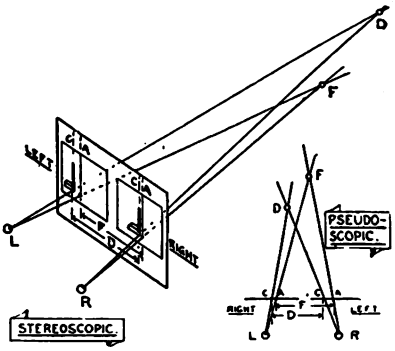


FIG. 3.

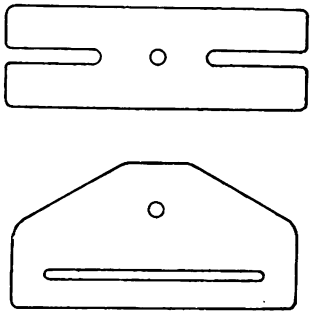


FIG. 4.

introduces a new phase which prevents anyone saying he cannot attempt stereography because he does not possess a stereoscopic camera. Objects very close to, or very distant from the camera—that is to say, views consisting either of foreground or distance only—necessitate the use of separate exposures and can be taken with a one-lens camera which is moved (and a fresh plate inserted) between the exposures.

The average person is unable to appreciate binocular relief at a distance exceeding about forty-five feet, and to counteract this, opticians in constructing prismatic binoculars place the object glasses about twice as far apart as the eye-pieces.

When a one-lens camera is used a special top for the camera stand may be made without any difficulty—two designs are shown, Fig. 4, enabling the camera to be clamped in either position—for studio use a plain top with a ledge along the front or back (against which the camera can slide) will suffice; but the clamping is more secure and will effectually prevent the camera being caught in the focussing cloth and upset. A field camera may be shifted bodily by moving one leg of the tripod at a time, gauging the distance by means of a pencil, visiting card, or pocket knife.

With the numerous types of camera I cannot deal at any length. I will merely mention them and point out that the best that can be afforded will usually give most satisfaction. For average work the box form magazine camera is most convenient though somewhat bulky. Then comes the hand or stand and lastly the field camera—half-plate and stereoscopic. I place this type last, not because I consider it less capable of giving good results, but because it is more awkward for average work. I have at times been much amused by watching a descendent of Job, armed with a stand camera, stalking a horse or cow around a field—just as, apparently everything was ready for exposure the tantalizing model would get a move on and all the patience be wasted. Or, again, you may desire a view of some picturesque old house in a certain street: by the time you have erected your apparatus and focussed, the village children and their mothers have had time to make the necessary preparations and appear "all in a row," clad in spotless starched pinafores and aprons, ready and willing, in their innocence, to utterly spoil your picture. In either circumstance a hand camera would have enabled you to secure several good pictures in less time. Nevertheless, if the worker has a leaning toward architecture, portraiture, or other work involving the use of longer focus lenses than usual, he will find a triple-extension field camera a boon, the numerous movements possessed by such a camera enabling many subjects to be taken that would be impracticable with other varieties of apparatus. It is, of course, practically impossible in this, as in any other branch of photography, to find one camera which will do everything.

There are a few extra items of apparatus which, though not essential, will be found useful; they are: A tilting board, useful in nature studies and architecture; a short tripod, for table studies or small animals on the ground, and magnifiers or supplementary lenses. These items are mainly useful to nature and still-life photographers.

The lenses usually employed are 3½ in. to 4½ in. focus, and herein lies a convincing reply to critics who object to the small size of a stereoscopic picture. A 4 in. lens will give a picture 2½ in. wide which embraces approximately the same field of view as that afforded by a 12 in. lens on a 7½ in. plate. The small size of the pictures is compensated for by the lenticular magnification afforded by the stereoscope and the separation of detail due to stereoscopic relief.

Stereographers used to be sneered at as "*f*64'ers," but people are wiser now, Stereographers do not stop down to obtain critical definition so much as to get all planes in focus. No one would stop down to *f*64 if a shorter exposure with a larger aperture would give him what he wanted.

Soft results are to be desired rather than avoided, and harsh, contrasty negatives guarded against in every way possible. If the factorial system is employed, four-fifths of the indicated development will suffice. Developers giving soft results are preferable, and mind you never underexpose. A soot and whitewash negative of a forest glade in summer will give a capital representation of a snow scene, though it is said, "photography cannot lie."

Prints should always be taken on smooth-surface paper—P. O. P. is usually found to be the most suitable. Any preceptible grain is fatal to success, and though a burnished or highly glazed surface is undesirable, the gloss due to natural drying is agreeable and sufficient. For toning, a warm brown tint is found to be most suitable for average subjects. Dark mounts, preferably chocolate, should be employed. It must be remembered that the only object of the mount is to support the prints, and if it could be rendered quite invisible it would be better still.

There are various patterns of printing frames on the market, of which I illustrate two, Fig. 5. I prefer the upper one, which enables almost the whole of both pictures to be examined without any risk of the paper slipping. Prints should be exposed until rather darker than usual, and a short central line pencilled longitudinally across the back before separation.

For a toning bath I invariably use the sulphocyanide and gold, and endeavor to obtain a rich brown tint. Phosphate, platinum, borax (combined), and other baths are, however, used successfully by numerous workers.

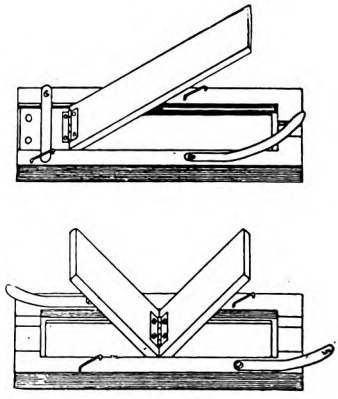


FIG. 5.

Whether anyone can make a real picture out of such a subject as a bathing-machine wheel is a matter of opinion. If possible, it would be a stereographer who would succeed. Even the most unlikely subjects are interesting in the 'scope; many a picture which appears flat and uninteresting, monoscopically, is at once endowed with beauty as a stereograph. Hidden detail springs up and stands out in bold relief. Perspective is imparted to views which appear absolutely devoid of atmosphere, and the result is a surprise to those who for the first time begin to gauge the marvels of stereoscopy.

The power to see stereoscopically, even with the aid of a stereoscope, is not possessed by all. One lady, after

repeated attempts, gave it up, saying "she was not going to twist her eyes in their sockets for the sake of seeing two pictures come into one." Another old dame declared she could see as well without as with the stereoscope. I tried various adjustments and selected easily superposed slides and, at last, when showing her a church interior, was rewarded by the exclamation: "Goodness gracious! you could sit on those chairs." I knew, then, that she had, at last, attained stereoscopic vision.

The eye may be trained to see stereoscopically without the aid of a stereoscope. One method is, by fixing the sight on a distant object and suddenly inserting a stereograph, at arm's length, in the line of sight. The effort to discard the stereoscope necessitates parallel vision, and is thus decidedly beneficial, as having a tendency to counteract the injurious effects due to close study, nowadays so prevalent.

It is not strange that stereographers are enthusiastic in the pursuit of their beautiful art; personally, I always like two lumps of sugar in my tea, and I could fully appreciate two Sundays in a week. A stereoscopic friend, who a few years ago took unto himself, a wife, was so deeply smitten with the twin art that after about a year of twin-souled happiness he found it necessary to purchase a twin-seated perambulator.

You may have noticed that a good stereoscopic view usually seems to lie behind the mount on which the prints are supported. There are, however, exceptions; for instance, I think statuary, flower studies, and a few other subjects are generally better displayed if they stand out in front of the mount; but the former method, giving what is called the window effect, is better suited to most subjects.

Let us see how it is obtained: I mentioned the peculiar effect in a pseudoscopic picture where the background appears to stand out in front of the foreground. This is due to the same cause, viz., that the eyes, owing to their separation, have the power of seeing slightly behind or around objects.

It is apparent that the left eye sees a little more of the right-hand side of the view, through the opening, than is visible to the right eye, and also that the right eye has the same advantage over the left eye so far as the left-hand part of the view is concerned. If then, when trimming a pair of prints, we allow, say, a sixteenth of an inch more on both inner edges, that is to say, on the right of the left print and on the left of the right print, we shall cause the picture to lie back behind the mount. If the excess is allowed on the outer edges, the picture will stand out in front of the mount. It must be noted that in allowing for this margin the measurements should be taken from a foreground object.

When prints are taken from a stereoscopic negative, a short central line should be drawn lengthwise across the back of the prints before separating them. The reason is this: If you photograph anything in an ordinary camera, you find the view is inverted on the ground-glass, and all you have to do with a print from the resulting negative, in order to view it correctly, is to turn it round. The same inversion is effected by each lens in a stereoscopic camera, but each picture is inverted separately, so that if you simply turn the entire print around you get the right-hand picture opposite the left eye and *vice versa*. It therefore becomes necessary to separate the two pictures, and if each is turned round separately it will be found that each half of the central pencil line comes on the outside of the pair and serves as a guide when mounting. Some early workers used to mark their prints right and left, *R* and *L*, or *A* and *B* respectively; the line is much simpler.

The width to which prints should be trimmed is important. Two and seven-eighth inches should never be exceeded, and not less than a sixteenth of an inch should be left between the two pictures in mounting, the spacing depending upon the width of the prints.

It has been said that photography cannot lie—a monoscopic picture, if not wilfully lying, may yet not possess the ability to tell the whole truth, or

may seriously mislead, but a properly constructed stereograph will give a faithful reproduction of whatever it portrays. There are, however, ways of causing even the morality of a stereograph to deviate from the path of veracity, *e. g.*, excessive separation will cause a cube to assume the appearance of an oblong end on—or will give certain objects the appearance of being farther away than they really are; in other words, it increases the apparent separation of planes. This is a property which is particularly useful in record work. Many an old inscription is easily decipherable in a stereograph, which would be totally illegible if either of the pair was viewed separately.

Excessive lens separation in the case of a portrait gives a very weird appearance; the nose and chin stick out in front of the face, which itself projects unduly beyond the neck and shoulders; the eyes appear sunken, and the portrait is no longer a likeness. Conversely, insufficient separation has naturally the effect of reducing relief.

If night photographs are desired and objects move too rapidly for the available lens speed, successful results may be obtained by taking the photos from a somewhat elevated position, using an increased separation and then trimming off all foreground from the prints.

Of the multitudinous subjects to which photography can be applied it is difficult to say which would be unsuitable for stereography, but there are many for which stereography is particularly well adapted.

Record work: Minerals (especially those of crystalline formation), fungi, corals, flowers and fruit, microscopic sections of wood, bone, etc., feathers, fur, hair, fish scales, mosses, birds, birds' nests and eggs, ancient remains, fossils, clockwork and machinery, inventors' models, surgical and physiological details, biology, geology, civil engineering, contractors' work illustrating progress reports, and natural history, all are better illustrated by stereographs than by any other process.

Stereoscopic portraits are real likenesses. In 1911 I urged Sir Edward Henry to adopt stereoscopic photos of criminals in place of the two views—side and front face—now taken. The matter was promised consideration, but I have heard nothing since and have no doubt that the usual official apathy and objection to anything new has resulted in the matter being shelved.

Another field in which I have found stereography valuable is in the detection of forgeries. Different varieties of ink sink to a different depth in paper, and this, as well as erasures or alterations, are easily detected in the stereoscope.

Stereo-photomicrography and stereo-radiography are both intensely interesting and you will presently be able to admire some of Dr. Rodman's wonderful shell ghosts produced by the latter process.

I have now shown you a variety of subjects of which good stereographs can be or have been made, and I will describe the apparatus used, as there will doubtless be some difficulty in seeing small details during the demonstration, except at very close quarters.

I have a sheet of plate glass 15 x 12 inches with a bevelled strip of hardwood so secured as to press firmly on one edge. As soon as I have trimmed one edge of a print I simply place it against the hardwood guide and trim another edge by means of a set-square which also bears against the guide. The remaining edges are thus successively trimmed with great ease and accuracy. For stereoscopic prints a bar parallel rule is used for trimming top and bottom edges, after which the two views are separated, placed one on the other, the sixteenth of an inch margin allowed for, both placed against the guide and the vertical edges trimmed with the special set-square, or one of the guillotine trimmers may be used with excellent results.

If the camera had not been upright when the exposure was made, or if two separate photos had been taken, individual treatment would have been necessary, in which case either a horizontal or vertical line in each picture has to be adopted as a guide in order to trim the first edge, after which the remaining edges can be trimmed together.

WHY A PHOTOGRAPHER CHANGED HIS LINE

By ROBERT F. SALADÉ

AMONG the most popular portrait photographers in Livetown was Wilbur Stanford, an artist in his line. During the years in which he had followed his profession Stanford had made portraits for many noted people of the city, and he became well known through his fine work. Recently, however, business had diminished considerably, and one morning Stanford remarked to his assistant, Roland Downs:

"I believe that our line is about done for down here. This neighborhood is changing so. Nothing but large business concerns springing up on all sides. The time has come for me to go in exclusively for commercial photography."

"We are in the right section of the city for that class of work, Mr. Stanford," ventured Downs. "One day last week Mr. Harris told me that he wanted several photographs of a new motor his firm is about to put on the market, and he claims that this was the only studio he could find in this neighborhood that could care for his kind of work. You know he was delighted with our retouching."

"Yes; I recall that order," answered Stanford. "You handled it well indeed." Then he continued optimistically: "There are wonderful opportunities for expert commercial photographers. Just consider the great number of prints that are now required for advertising purposes. Why, with our equipment, and our facilities for retouching, we are in a position to produce the highest quality of commercial work. Next week I expect to begin a little advertising campaign, and land a lot of that business."

"You will succeed all right," predicted his assistant, who knew that Stanford was not one to lose courage quickly. "You already have a reputation for good portrait work, and the business folk will soon learn about your new line."

"Well, hunt up all of the good specimens of commercial photography we have," said Stanford, "and redress our window and cases. Arrange the plant ready to turn out plenty of work, because in a little while we are going to be rushed with orders."

One week later, and the principal business houses in the downtown section received a neatly printed booklet entitled:

COMPLETE SERVICE
IN
COMMERCIAL PHOTOGRAPHY

STANFORD STUDIOS

The pages in this booklet contained several beautiful half-tone reproductions of fine photographs of mechanical subjects which Stanford and Downs had taken with exceptional care. Before the printing plates had been made the prints had been artistically retouched, thus the half-tones had worked out with remarkable clearness, creating an unusual interest in the booklet.

In a literary way the little publication was also excellent. The text matter explained in pleasing phraseology that experts of the Stanford Studios were ready to go anywhere at any time for the taking of artistic commercial photographs. Mention was also made of the fact that special attention would be given to the making of that class of photographs required for advertising purposes.

"When exceedingly attractive interior views of business houses, public buildings, institutions, etc., are desired," read one paragraph of the booklet, "let the Stanford Studios attend to all of the important details, such as the proper arrangement of the furnishings, etc.

This is only one part of the *Complete* Photography Service these studios offer to busy business people. We retouch prints of mechanical objects so that half-tone plates of the finest quality can be reproduced. If desired, we will also attend to the ordering of the printing plates from the engraver."

Another paragraph stated: "We have the equipment and the training necessary for the taking of exceptionally good exterior views of buildings; in fact, we specialize in both inside and outside photography. When a 'misty' picture of some old, historic structure is wanted, we have the ability to produce it. When special illustrations of machinery, salesrooms, mechanical parts and supplies, designs for magazine covers, and so on, are desired, consult the Stanford Studios."

The show window and the show cases of the studio had by this time been redressed. Attractive prints of things commercial had been attached to beautiful mountings, and these took the place of the old "portrait gallery." A tastefully hand-lettered placard in the show window read:

THE STANFORD STUDIOS
OFFER COMPLETE SERVICE IN
PHOTOGRAPHY

∴

INTERIOR AND EXTERIOR VIEWS
PHOTOGRAPHING FOR ADVERTISING PURPOSES
RETOUCHING BY EXPERTS

Among the first customers who came to the studio for commercial work was James Birmingham, proprietor of a large wickerware factory, and a former patron of Stanford's for portrait work.

"I received one of your booklets yesterday," he acknowledged to Stanford, "and I was glad to learn that you have gone in for this class of work. I am about to issue a new catalogue, and in it I want to exhibit about fifty illustrations of my latest line of chairs, settees, and tables. I would like you to take the photographs down at the factory. Will it be necessary for us to clear a lot of space for you to work?"

"Not at all, Mr. Birmingham," laughed the photographer. "We have draperies, and coverings that will make your stockroom look like a regular studio. That's part of our complete service. Don't bother about anything. We will attend to the proper arrangement of your goods and all other details."

"I'm glad to hear that," replied Birmingham, greatly relieved to find that it was not necessary to have his stockroom cleared out for the photographing. "The last fellow I had to do such work was a rank amateur, and he nearly worried me to death moving things around—he had about six of my men on the job to help him. And, when the prints were finally ready, they had a cheap appearance."

"Our work will be sure to please you," assured Stanford, and Birmingham departed in the best of humor.

During that week a number of orders for interior and exterior views were received, and on the following Monday several large orders came in for special photographs for advertising illustration. One job called for more than one hundred different pictures of a newly invented machine and its various parts. As half-tone plates were to be made of these photographs for use in a *de luxe* edition of a catalogue, the customer followed Stanford's advice to have the prints retouched. This work kept the plant hustling for several weeks.

Although business continued to be active, Stanford took advantage of every opportunity of procuring more. Down the street a new bank had just opened for deposits, and on the following morning Stanford stopped in and asked for an interview with the secretary. This was granted, and handing his card to the official, the photographer asked pleasantly:

"Have you had any photographs taken of this beautiful building? Both the exterior and interior are certainly splendid."

"Finest building of its class in this locality," proudly replied the secretary. "But, to tell the truth, we haven't had time to think about having pictures taken as yet. You know, we opened only yesterday."

"Well, a view from the balcony would be unusually interesting," suggested Stanford. "And think of what fine illustrations could be made of the north and south aisles! The hallway would also make a dandy. The stairway, too. Then, the offices being so nicely furnished, they would show up fine in photography. A picture of the outside architecture, showing 'lights and shadows,' would be exquisite."

"I agree with you," admitted the bank man, deeply interested. "But, what use could we make of the views you suggest?"

"Why, have good half-tone plates made from them," exclaimed the enterprising photographer, enthusiastically. "Then have the plates worked up into a fine booklet, with text-matter explaining why the public should support such a splendid institution. Show people illustrations of the bank's beautiful interior, as well as its exterior and thus win them over as depositors."

"You should have been an advertising man instead of a photographer," laughed the secretary, delighted with Stanford's plans for the bank's publicity. "Your ideas are certainly good, and I am going to follow them. The board of directors will sanction the plan, I feel sure. Come around on next Saturday afternoon, after banking hours, and take the pictures."

In this manner Stanford "made" business for himself as well as for others. To give another example of how he "created" sales when there were but few looming, he called one day upon the owner of a large apartment house where there were a number of suites for rental, and remarked:

"Why not let me take photographs of some of your best suites, an exterior view of the building, and a picture of this really grand avenue. Have halftones made of the photographs, and have them printed up in a neat little booklet. When inquiries come in about your apartments, mail the parties copies of the book which would exhibit at a glance what a fine place you have here, the exclusive neighborhood, etc. This plan would save you a great deal of valuable time, and the little 'house magazine' would tell more with its attractive illustrations than the longest letter you may write."

"That's a clever stunt," conceded the real estate man, thoughtfully. "An illustrated booklet such as you suggest would be very useful, for there are always some people moving in and out of a big house like this, and I could attend to all inquiries with the booklet. Go ahead and take the photographs. I appreciate your interest."

As Stanford's business developed and extended, he did not cease issuing advertising matter. Every month he mailed out to a list of well-selected concerns, as well as to his regular patrons an attractive folder, announcement, booklet, circular, or something of that sort. In all of his publicity he kept hammering away on the importance of the quality idea in photography, and he reinforced his statements by giving the highest grade of work. In time he found that there was a scarcity of first-class retouch artists, so he "reached out," so to speak, among the advertising folk and large manufacturing firms for this class of work as a specialty. He also discovered that there was a dearth of expert commercial photographers, and through giving his customers the best in this line, he built up a select trade rapidly.

Today the Stanford Studios have been enlarged and improved, and are famous throughout the city. The business has grown remarkably for the simple reason that Stanford is always willing to give complete service in his art. Busy business men come in and ask for intelligent advice, and they get it. Stanford gives to customers something which they cannot obtain in every little photo shop. But, in addition to making the proper charge for his product, he also charges a substantial rate for the use of his brains!

IMPROVING THE NEGATIVE

By HENRY W. BENNETT, F.R.P.S.

1. *The Aim of Every Photographer* is to produce perfect negatives. Most, however, find that a large proportion of plates fail to reach the high standard that they wish to attain.

Mechanical defects mar a small number. In spite of every care, small mechanical defects exist in a large proportion of the negatives produced.

2. *Defective Quality.* Much more serious, however, is the loss of quality that results from defective working or imperfect conditions of working. Experienced workers have learned by former failures how to avoid the principal sources of failure. There are many others who have passed the elementary stage, and who, consequently, have set a high standard before them, but have not yet succeeded in obtaining a sufficiently large proportion of satisfactory negatives.

From time to time every worker must divide his negatives into groups, separating them into those that are satisfactory for printing without further treatment, and those that are not.

Many of the latter may be rendered thoroughly satisfactory by methods which an experienced worker may suggest. Very few should be absolutely hopeless. In most workers' experience a moderate proportion of plates can be improved by subsequent treatment. Some that are very far from good can be made to yield satisfactory prints.

3. *Causes of Imperfect Results.* Many photographers find that a series of negatives exposed while on a tour present a larger proportion of defective results than those produced at home or on short half-holiday expeditions. And these are frequently the plates that it is most desired should be thoroughly good negatives. Many are subjects that cannot be retaken; most could only be photographed again after a very long interval.

Carrying the plates away and repacking after exposure form a source of trouble to the inexperienced. There is much greater liability to dust and scratching of the surface of the film. Changing under difficult conditions or in an unsafe dark-room will often result in fogged plates. These and other similar difficulties arise on a tour, causing defective negatives, when the same difficulties could not arise in the ordinary routine.

4. *The Most Simple Method of Repacking Plates* when away from home is to place them in pairs, face to face, without anything between them. Care must be taken that the films do not rub together when packing. They should be tightly wrapped, four or six in a packet of paper, before putting them in their boxes. On no account should plates be packed with paper in contact with the films.

5. *When Changing Plates*, either in an unknown dark-room or under any conditions when there is reason to doubt the safety of the light, keep the plates as far away from the light as possible. If no other source of shadow can be obtained, stand between the light and the plates while changing. The shadow of the body will frequently assist in changing plates in safety. Light reflected from the walls has far less influence than the direct rays of the lamp.

6. *Spotting and Retouching* to remove small transparent spots or mechanical defects should be considered first, as it is common to all negatives. Those that are perfect in other respects will require careful spotting. This work should not be attempted until all other operations are completed. When the spotting is finished nothing should remain except varnishing.

7. *Semitransparent Spots.* These are caused by air-bells in development. During the development they have

been broken and the image has been partially developed. Pouring the developer on to the plate with an even motion will prevent them from forming. The plate should be wetted entirely at the first flowing of the solution. If any should exist in the finished negative they must be carefully worked out with a hard pencil, very finely pointed. A little retouching medium should be applied to the surface of the film and a series of light and fine touches made with the pencil until the defect almost disappears. There is a great risk of overworking defects of this character.

8. *Transparent Spots or Pinholes.* These are most frequently caused by dust settling on the surface of the film before exposure. Even when the film is carefully dusted before it is inserted in the slide there is still a risk of dust settling from the shutter. This is more liable to occur when the apparatus is carried a long way. The slides should be frequently and carefully dusted.

The method of treating these spots is the same as that given for semi-transparent spots in paragraph 7 if they are of moderate size. If they are small no retouching medium is necessary. A single touch with a finely pointed pencil should effectually remove the spot.

9. *Negatives that Require Chemical Treatment* must be classified according to the manner in which they may depart from the normal quality.

(*a*) Thin, with fairly clear shadows; insufficient density to give good contrast in the print.

(*b*) Too strong in contrast, giving harsh prints. Clear shadows and strong high lights.

(*c*) Fogged or veiled shadows with normal strength of image, giving inferior quality in the prints.

(*d*) Strongly veiled shadows with weak high lights. A generally weak image giving a very poor and flat print.

(*e*) Chemical fog.

(*f*) Stains and surface markings.

A distinction must be made between negatives marked (*c*) and (*d*) respectively. The causes and nature of the defective quality are different.

10. *There is Always a Simple Test* available for determining whether a veiling of the shadows of a negative is caused by a general fogging of the plate or by over-exposure. If this veiling is the result of over-exposure, or of the condition of the atmosphere, or of the lighting of the subject, those parts of the plate which have been protected by the rebate of the dark slide will remain quite clear and clean. The fog will be confined to those parts of the plate that have been impressed by the image. The same rule will apply if fog is caused by a leak in the camera.

If, however, a veiling in the plate should be caused by changing in an unsafe light, or by too much exposure to light during development, all parts of the plate will suffer equally. Those parts covered by the rebate of the slide will no longer remain clear. This will apply equally to chemical fog.

11. *When to Intensify.* Negatives that are thin but have clear or slightly veiled shadows can always be improved by intensification; their only defect is insufficient contrast. There are several causes that result in weakness or want of contrast. It may be due to over-exposure of the plate and stopping development as soon as the shadows veil, or to insufficiently developing a correctly exposed plate, or to extreme weakness or want of contrast in the subject photographed. Under-exposure in the case of a weak subject will always result in a thin negative.

In the case of under-exposure or under-development the shadows of the plate will always be quite clear and the shadow details weak. In the case of the flat subject or over-exposure, the shadows are always slightly veiled, and the plate is very full of detail throughout. There are well-marked gradations down to the deepest point of shadow.

12. *Formulæ for Intensification.* The most simple form of intensification is by means of mercuric salts. With care and reasonable precautions the results are quite permanent and satisfactory. Two methods are here given; each has its own distinctive character. The

results produced by the two methods are different both in degree as well as in their effect in the gradation.

No. 1. Mercuric Bromide

Intensifying Solution

Mercuric chloride	100 gr.
Potassium bromide	100 gr.
Water	10 ozs.

The negative is immersed in this solution until it is thoroughly bleached. The image should appear as a fine white positive when examined from the back of the plate. The negative must then be washed in several changes of water, then in two or three weak acid baths consisting of one dram of hydrochloric acid in ten ounces of water, and again washed in several changes of water. It should then be immersed in a solution of sodium sulphite, the best strength being one ounce of the salt dissolved in ten ounces of water. In this solution the bleached image rapidly changes to a good black color. When this blackening is completed the operation is finished, and the negative simply requires to be well washed and dried in the ordinary manner. The peculiarity of this intensifier is that it intensifies the stronger parts of the image without a corresponding strengthening of the extreme shadows. A slight veiling is not strengthened at all, and the extreme shadow details receive very slight increase. The medium and lighter tones are strengthened in a uniform ratio, and to about double their original printing value. The increase of density is a fixed quantity. The operation makes a certain and definite change in the negative, and this degree of strengthening is the only result possible. Repetition gives no increase of density.

The peculiar character of the result given by this method of intensifying makes it especially suited for treating over-exposed negatives or any others in which the shadows are *slightly* veiled and the shadow details are relatively strong. It is unsuitable for under-exposed negatives.

No. 2. Mercuric Iodide

Intensifying Solution

Mercuric iodide	1 gr.
Sodium sulphite	20 gr.
Water	1 oz.

The sodium sulphite should be dissolved in the water first, and the mercuric iodide (which is insoluble in plain water) added. The mixed solution will not keep.

The negative is immersed in this solution and the dish rocked to ensure uniform action. The image will steadily gain in intensity for seven or eight minutes. It may be withdrawn at any time if less strengthening is desired. The increase in strength may be gauged by examining the plate. When taken from the intensifier the negative should be washed in several changes of water and acid baths, as directed for mercuric bromide. In the last washing-water the surface of the plate should be gently rubbed with a tuft of cotton-wool. After washing, the negative must be treated with an alkaline developer — pyro-soda or any developer containing sulphite—until the color of the image changes to a good black. Many plates show no change of color in the developer. In that case they should be treated for the same time as would be necessary to develop a fully exposed landscape. No fixing or other treatment is necessary after development, the plate simply requires washing and drying.

The character of the result given by this intensifier differs considerably from that given by the preceding method. The increase in strength is greater, and this increase is in the same proportion throughout the scale. The shadow details are strengthened in the same ratio as the high lights. This intensifier should be used for those plates that require the shadow details strengthening as well as the high lights. Under-exposed plates, more particularly, should be treated with this intensifier rather than with mercuric bromide.

13. *Special Precautions.* Negatives that have been intensified should be as clean and clear, and as free from

defects as those that have been developed in such a manner as to require no further treatment. If failures occur or if the plates appear stained or defective after intensification, it may be regarded as an indication that the work has been imperfect or defective, either in the original production of the plate or in the intensification. Defects or careless manipulation will frequently become evident when intensification is attempted, even when their result has not been visible sooner.

The points that require special attention in the work of producing the negative are:

1. Clean and careful development, special attention being given to securing absence of staining and surface marks or defects.

2. Washing between development and fixing so as to secure a plate free from surface staining.

3. Very thorough fixing. If the plate is imperfectly fixed, stains are certain to arise during intensification.

4. Careful washing after fixing. Although this is very desirable, the preceding points are more important. Without sufficient attention at the other stages, thorough washing is valueless.

14. *Negatives that Require Reducing*, having clear shadows and too strong high lights, giving harsh prints with too much contrast. Negatives of this type are mostly caused by under-exposure, or by unsuitable development of subjects possessing very harsh contrasts. A method of reduction is available by which the high lights are reduced considerably more than the shadows. The high lights may lose half their strength while the shadow details are scarcely affected at all. This is an ideal reducer for the negatives under consideration.

15. *Formula for Reduction.* The reducing solution is:

Ammonium persulphate . .	10 gr.
Water	1 oz.

The negative is immersed in this solution until sufficiently reduced, the dish being rocked to secure even action. The plate is then rinsed rapidly and placed in a 2 per cent. solution of sodium sulphite, then well washed and dried. Instead of the sodium sulphite solution, a plain solution of hypo, an ordinary fixing bath, answers equally well.

16. *Special Precautions.* In using this form of reduction it is very necessary that all the precautions specified in paragraph 13 should be rigidly observed, and that the plate should be free from hypo. In addition the action of the solution must not be allowed to continue after it becomes turbid, or the plate may be unevenly reduced or badly stained. And when taken from the solution it must be placed in the sulphite or hypo solution as quickly as possible, or a similar result will be obtained.

17. *Negatives that Require Reduction*, having fogged or veiled shadows but with normal strength of high lights (par. 9*c*). In many cases the high lights are little, if at all, too strong, and the shadows are strongly veiled, the result being that though the negative prints very slowly the print is still weak and deficient in contrast. Intensification is valueless on account of the fog or veil.

In such a case a reducer is required that will attack the shadows without materially affecting the denser portions of the image. If the fog is due to overexposure and the shadow details are strong, such a reducer can be applied with safety, and the negative can be considerably improved in quality and printing value. If the shadow details are very weak this method of working requires extreme caution.

18. *Formula for Reduction.* The reducing solution consists of a 10 per cent. solution of hypo, to which a few drops of a 10 per cent. solution of potassium ferricyanide are added at the moment of using. The exact strength is unimportant, as the result given by a weak solution is identical with that produced by the shorter action of a stronger solution. If a slight action is desired, ten minims of the potassium ferricyanide solution may be added to each ounce of hypo solution. Four or five times this

quantity of ferricyanide may be used if greater reduction is desired. The mixed solution rapidly deteriorates. When the negative is sufficiently reduced it is simply taken from the solution and well washed; no other operation is necessary. By the use of this reducer greater contrast and brilliancy are secured in the print, and the quality described in paragraph 9*c* greatly improved.

19. *No Special Precautious* are necessary when using this reducer beyond care in not employing too strong a solution. If the work is commenced with a solution that is too weak in ferricyanide, more may be added as required.

20. *Negatives that Require both Reduction and Intensification.* Plates described in paragraph 9*d* are troublesome and difficult to treat satisfactorily. They combine defective qualities of opposite character. The high lights and lighter tones are weak and insufficient for giving good printing value even if the shadows were clear; but the fact of the shadows being badly veiled renders the poor quality still more pronounced.

This defective quality may result from extreme overexposure or from chemical or light fog. All the gradations are extremely weak in addition to the work being lost in general fog.

21. *Before Strengthening the Image* it is necessary to remove the fog or veiling. The plate should first be treated with the reducer given in paragraph 18 until the extreme shadows are almost clear. Care must be taken that the action does not proceed too far. If too much is removed from the shadows, if any details are eaten away, they cannot possibly be restored. The reduction should be stopped while there is still a perceptible veil over the deepest shadow. In addition, regard must be paid to the general character of the negative. It should be left in such a condition that a moderate strengthening will produce a plate of fair printing quality.

22. *After Reduction the Negative should be Intensified.* Either of the methods previously given may be employed, but the negative should be thoroughly washed before intensification is attempted. The first formula in paragraph 12, mercuric bromide, produces less density than the second formula, mercuric iodide. The former will also slightly reduce any veiling left in reducing. The method to be employed must be determined by examining the plate after reduction. If it is very weak the mercuric iodide method should be used. If moderate strengthening only is required either formula may be adopted.

23. *Chemical Fog.*—This is the most difficult defect to treat successfully. In many cases it is accompanied by general weakness of the image, and frequently the shadow details are very weak or non-existent. In such a case the result can never be good. If the fog is slight and the image fairly strong the reducer given in paragraph 18 may be employed. Extra care will be required in order that the weaker details of the image may not be affected. This will improve the printing quality of the negative and produce a brighter print. If the fog is more pronounced and the image weak the treatment given in paragraphs 20, 21 and 22 should be followed.

24. *Negatives Stained in Development.* Staining will occasionally happen with prolonged development in a solution containing insufficient sulphite. This stain can be removed by means of a acid bath. The formula is:

Alum	1 oz.
Hydrochloric acid . .	1 dram.
Water	10-20 ozs.

The strength may vary according to the degree of staining. The less time that intervenes between finishing the negative and applying the acid bath, the more readily can the stain be removed. After a time it is almost impossible to remove it.

25. *Negatives Stained after Development.* If negatives are allowed to remain out of water for any length of time between development and fixing, they may become stained. The stain is somewhat different from that caused by prolonged development; it is a

more lemon-yellow color. It appears to be impossible to remove this stain after the plate is fixed. If it is noticed that a plate has been only partially submerged in the washing between development and fixing, it should be at once placed in the acid bath given in paragraph 24, and then well washed and fixed.

26. *Surface Stains and Markings.* These are generally caused by want of care in development, *e. g.*, mixing a developer in a measure containing a little stale developer, using a dirty dish, omitting the washing between development and fixing, etc. Surface stains of this nature are removable by the application of the reducer given in paragraph 18. The solution must be much weaker than when used for reduction; the first formula given in paragraph 18 should be diluted with four or five times its volume of water. It will then consist of a 2 per cent. solution of hypo, to each ounce of which about two drops of a 10 per cent. solution of potassium ferricyanide should be added.

27. *Iridescent Staining on the Margins of the Plates.* This is most frequently caused by the plates being stale or improperly stored. No precaution in working will prevent it from appearing. In many cases it is visible before development. It can be easily removed by the method given in paragraph 26. In extreme cases the solution may have to be used much stronger than given in paragraph 26. It should, however, never be stronger than the first formula given in paragraph 18. This solution will remove all surface defects before producing any effect on the strength of the image.—*Practical and Pictorial Photographer.*

SOME GOOD ADVICE

BE polite at all times and under all circumstances; if you are not, you lack the qualities of a gentleman.

BE all that is expected of you at all times and a little more.

BE as honest in the small details of life as you are about the big things.

BE true to yourself and you will not be false to any man.

BE willing to learn from everybody, but be sure to rely on yourself.

BE willing to climb slowly and surely; it is worth while.

BE willing to give everybody a square deal, if you demand this for yourself.

BE open to convictions; to refuse to do so, is a mark of stupidity or stubbornness.

IF you keep to the middle of the road you are bound to succeed however steep the road.

IF you believe that you have friends you are sure to make them.

IF you must falter, do it in your own closet and not in the presence of others.

IF you wear a smile and have a pleasant voice you are bound to make friends.

IF you wear a chip on your shoulder you will find your friends slipping away one by one.

IF you kick all the time your friends will not listen to you when you make a just complaint.

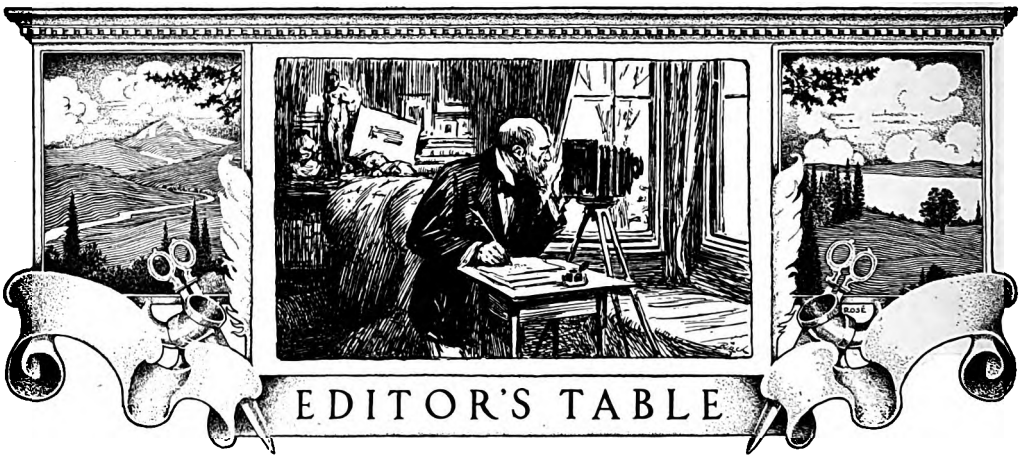
IF you want to have friends, go out of the way to please others as well as yourself.

IF you want to win out, first respect yourself and then make others respect you.

IF you cry out in your troubles, the world will not sympathize with you but consider you a weakling.

IF you want to succeed, be as careful about the small things as you are about the big things.

IF your rival tries to down you, go him one better by proving your worth. If you fail once, believe that you must succeed a second time.



EARNEST WORKERS

PHOTOGRAPHY has need of more earnest, careful, intelligent, and conscientious workers. There are among its shining lights, working in its varied departments, men whose whole lives are given over to it; to its advancement not only scientifically and artistically, but to help the noble endeavor of placing it among the high and honorable callings of this world. Men there are who are working for the pleasure which they derive in the gratification of their tastes and their noble ambitions. Occasionally comes the pang of disappointment at failure, or at non-appreciated artistic results. The close relations between the photographer and his sitters almost daily tax his patience, causing him, perhaps for a moment, to regret being engaged in the profession and practice of photography; but as he recovers his equanimity, he takes fresh courage to try for the higher walks which he knows are still above him.

How discouraging must it be to the earnest workers who produce their results at an incessant expenditure of vital force, and frequently of no inconsiderable sums of money, to find themselves surrounded sometimes on all sides by hordes of wayside robbers, who lay in wait to filch from them their thoughts and visible substance.

By many, how slightly are regarded the sacred rights of property. A new camera of superior workmanship is exhibited, and not only at home but abroad is it cheapened by carelessly made imitations. A new style of frame is designed, time and money expended, and the imitator lies ready with cheap materials to cheapen a good article. Photographs by earnest, able men are remounted and exhibited as "specimens of our work." A leading man of taste procures a background, and his neighbor immediately gets a poor imitation, and makes and gives publicity to pictures of notorious or disreputable characters to damn the work of the former. No sooner does B introduce to his customers a new card-mount of his own design, than C and D follow suit, blaming themselves if they do not immediately appropriate B's ideas. And on and on it runs.

Are there not more galleries of the first class in our cities than formerly, and is not the gap wider between the high and low ones? Is not eternal vigilance the price of the photographer's liberty, artistic and financial? Are not many of our stockdealers making a mistake in continually crying about the ignorance of the photographer; that he does not know a good or artistic thing from the reverse; that price alone is the important item? And is not the photographer who delights in palming off badly lighted, printed, and mounted work, gradually seeing that the public are no longer the stupid dunces he has been considering them?

Will not one frame of striking, new,

novel, artistic photographs placed on exhibition in a town of fifteen or twenty thousand, so influence or educate the people that they will want the same or similar? And this naturally leads to the question of a teacher. We have, in America, a few leaders in photography who set the fashion for the whole country. They happen to be men mostly who have met with financial success; some with expensive tastes, a part and parcel of, and necessary to, their artistic life. These men excel in their specialties, and in scarcely one do we find the merits of several combined. Still we have no great and willing teacher.

Relying on our photographic publications, should we not have something more concise and definite than anything yet published? Who will write and illustrate a book which will not only explain why a figure should be lighted and posed in a given position, but illustrate it with pen, pencil, and photograph, making the right and wrong both palpable by forcible illustration—a book that will guide a man in the narrow paths of good taste, and by the most direct route? Who, we repeat, will write that book, and what will be his reward? Will the first man or men of the country do it? We fear not. Earnest workers with the brush and camera are seldom given to writing books.

Our earnest workers, American and foreign, are a legion slowly but surely increasing in numbers; to their united energy we trust for the elevation of photography to its place in the scientific and art world.

ON FAILURE

THERE are very few men who have the honesty to admit, even if they have the perception to see, that their failures in life are brought about by their own shortcomings. They set failure down to ill luck, to the treatment they have received from other people, to want of capital—to everything, in fact, but the real cause, the insufficiency of their own efforts or their unsuitableness for the occupation they have chosen. One cannot always expect success, and it is not given to all of us to win the prizes of life. Out of every score who are striving, perhaps only one can win. But remember the prizes are going all the time, and if you fail once there is still opportunity; find out the cause of your failure, and remedy it in the next attempt.

The true man knows he can do better than he has done if he tries. The best men are those who do the best with what talent they have. We may not all have the capital which glints in the sunshine and chinks on the counter, but if we have our faculties about us we possess capital in the shape of brains, which, though not recognized as assets in the bankruptcy court, are worth twenty shillings in the pound to the man who knows how to use them to a good purpose.

It used to be said that in the days of our fathers a little capital and a very little aptitude for business was sufficient to ensure a living, but what we want today is men with a little capital and a *great* aptitude for business.

The times have changed, are changing still, and will change more rapidly than heretofore, so that the business capacity and enterprise that would have made a fortune twenty years since is utterly inadequate today. The times need a knowledge of business far in excess of what was formerly required for men to live, even without accumulating a fortune. It is an age when men must think more; the brain must be kept active, quick to grasp every side of a question at once, so as to know exactly what is best to do. To cultivate such a faculty men must not cease learning when they leave school. They must read, they must listen, they must keep their eyes open to the teaching of everything around them, never allowing prejudice to warp the judgment and prevent them from grasping the advantages of the inventions and discoveries of a progressive age. We want practical knowledge to go hand in hand more with advanced science. Competition is, indeed, so keen that the stern monitor, necessity, will compel the union of scientific thought and practical work.

It is not all, however, that a man should be possessed of a scientific and a practical education to be successful in business, any more than that the possession of money will ensure his success. We see too often, on the one hand, the practical man wasting the hard-earned savings he gained as a useful and valued employé in now trying to run a business for himself, and, on the other hand, some poor unfortunate who has been placed by his friends in a position for which nature has made him totally unfit.

The elements of success are in a man's personal character, and among the attributes he must possess to be successful in the highest sense of the word are the virtues of patience, honesty, and industry. To avoid failure, he needs energy, concentration, skill, and thrift; in fact, to do anything great, needs assidious application and tenacity of purpose.

MEN AS SITTERS

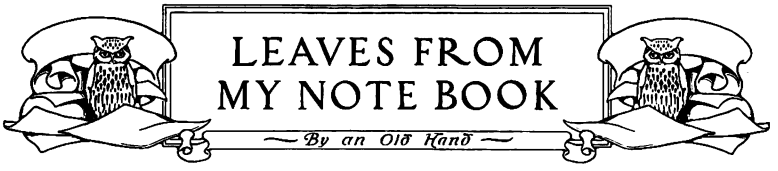
THE average man is not a satisfactory object for the photographer's art as the photographer at present works it. Perhaps this is largely because we have not studied our male sitters with the same close thought and attention which we bestow on our lady customers. In the latter case we have often great assistance in the clothing of the subject; and our greatest help is the natural inclination of a woman to endeavor to look her best at all times. The man depends for his appearance on a few stock lines, clean linen and boots, a shave, and clothes well brushed or pressed.

When the man enters a studio there is often—though perhaps unconsciously—a feeling of restraint. How many men nervously stroke their hair back or endeavor to adjust their collars. The man is in fact reverting to the time when he suffered under the Sunday scrub and hair-brushing, that never-to-be-liked *interim* when romping was forbidden and decorum reigned supreme. The woman in entering the studio is only experiencing the sensation which she feels daily when she dresses for the evening or titivates before the glass. The first thing, therefore, that the man does when he is posed is to hold his breath and refrain from winking, in short, to become uncomfortably self-conscious. And the most the photographer can get is a mere map. The man is suited with the picture, perhaps, and his family think it is lovely and "slicked up," but still they keep a miserable little snap-shot, underexposed and badly printed, which has more of the life of the man, because the man thought it was fun to be taken, and grinned at the camera. *Give the man something to do.* In many a case the man is squared up for the ordeal, and he is resolutely gazing at some mark on the wall.

Do not imagine that because you have placed your sitter in a back corner of the operating room, where only a few stray rays of light can reach him, that you are practising art principles. Do not think that the use of any so-called system of lighting is going to make you artistic. These things are all right in their way, but are mere trifles compared to the art knowledge that must be back of them in order to make any intelligent use of them. You can make no worse mistake than to copy others. Practice effects but sure your method of illumination is helping tell your story. To exhibit all your efforts and insist that they are the proper thing will only demoralize your business and give you a false idea of your own abilities. We think one of the prevailing errors of those who attempt the so-called artistic effects is that they are impressed by a certain style of lighting, and in order to get as far away as possible from what they have been doing they exaggerate that effect. We do not believe that ruggedness is the chief virtue of art, and do not believe in the bald statement that art is truth. Art can have no higher aim than a dissemination of a love for the beautiful. If you will remember that the human head is a ball, and to retain that rotundity the further portion should be in deeper shadow than the nearer, you have learned one lesson of art. If you will

remember that one of the essentials of a picture is to tell its story, you will have learned another lesson. *Educate yourself and you will educate the public.*

To educate is, indeed, the key of the situation. It is the man who trains himself who improves. "I fear my work won't quite please you," wrote a subscriber recently, "because I keep trying new lines, and am sometimes a little shaky on them." The man who is trying new lines is educating himself, and his distrust of his work is evidence that he is improving in it.



WASHING PLATES AND PRINTS

PROBABLY there are more different kinds of plate and print washers on the market than any other kind of apparatus; some are efficient and others are—well, let us say—less so. When one has an unlimited supply of water and does not have to pay for it, undoubtedly running water will do the trick, provided certain precautions are taken, in a reasonable time.

Naturally, when one has to deal with plates, a grooved tank is a great convenience, as it saves considerable space; although really placing plates in a large, flat dish, and tilting this up so that one end is a little higher than the other, and directing the water along the upper edge, will really wash plates quicker than the average trough. Some troughs have a connection to a water tap, so that the water issues a a fine spray between the plates. Theoretically this should be the most efficient; but my experience of this type is that the plates become very rapidly covered with innumerable air bubbles, which cling most tenaciously to the gelatin, and really prevent the access of the water to the film. I soon abandoned this type of washer and just let the water run down the rubber tube to the bottom of the tank and the surplus out of the top.

Some years ago I was told that the only way to wash plates properly was to soak them five minutes, empty the tank, then soak again, and repeat the operation twelve times in an hour. The man who told me suggested that I pour an ounce or two of old, dirty, pyro developer into a tank and try both methods. I followed his advice and found that it took just four times as long to entirely remove all trace of color from the water by a continuous flow through the tank as it did when the water was changed every five minutes. This, then, is the practice that I have continued ever since. It is not much trouble and certainly the negatives are thoroughly washed. I do not use any siphon or tap in the tank. It is just tipped up bodily and the water emptied out as quickly as possible and filled up as quickly as possible.

Where there is plenty of room, and quantity of water used is no object, then a series of trays, one under the other, is very efficient. Any carpenter can make these; as a matter of fact, I made mine myself out of some old lumber, and they are, I may say, used only for small plates—nothing larger than 4 x 5. The top board has an edge of one-fourth-inch moulding on each side, and at every five and a half inches are driven into the bottom board two brass picture-tacks that are just long enough to project above a plate. I have five boards, one over the other, each 2 feet long and the boards are sloped in alternate directions, the actual drop being two inches in the two feet. The water runs over the top board and its four negatives onto the second board, which projects an inch beyond the first, so that all the water must run down the second board, and from this onto the third, and so on. The negatives placed on the top board I have found to be washed enough, with quite a slow stream of water in thirty minutes. They are then removed; those on the second shelf moved up to the top shelf, and those on the third moved up on to the second. As I have six such shelves, I find I can wash twenty-four 4 x 5 plates in about two hours.

Now there is one point which, as far as I can find out, very few photographers take any notice of, and it is whether the water they use is clean or dirty. My experience has been that there is no water that does not carry small particles of suspended matter or dirt, which settles on the gelatin film and is not removed by mere washing. It is as well, therefore, to use a tuft of absorbent cotton; pass this over the surface of the negative film while the latter is held under the tap, then squeeze the bulk of the water out of the cotton, and pass lightly

two or three times over the film so as to remove the excess of water from the film. This enables one to dry the film much more rapidly.

When we come to the question of washing prints, we have a totally different set of conditions. Here we have a support which is porous, while in the case of a plate or film the support is not porous, and therefore in the former case the hypo can be removed from the back as well as the front of the print, but in the case of the plate or film it has only one surface to exude from. Naturally, one might say, that as the paper is porous it must absorb some hypo solution, and this must be admitted; but the gelatin film of a print is very much thinner than that of a plate, so that as the hypo can diffuse from the paper the print ought to be more quickly washed—and it is.

Many of us can recall the old days when albumenized paper was the only one that we had and we washed our prints for hours—in some studios even all night was not thought too long—but we are saner now. Yet there are probably few who know how little washing is actually required to free a print from hypo. Twenty years ago it was proved by Haddon and Grundy, two English chemists, that ten minutes' washing in running water would remove all the hypo from a gelatino-chloride print, and the paper they used had a much heavier coating of baryta gelatin than is ever used at the present day for the so-called development papers. Long washing of prints, therefore, is quite unnecessary.

The most striking of all experiments on the washing of prints were those of Lumière and Seyewetz; so striking were they that few believed the facts, yet they have been confirmed. These chemists stated that if a pint of water was allowed for every square foot of print, the print soaked for five minutes, then drained and squeegeed, and the operation repeated eight times, the print would be thoroughly washed. They proved that if a 5 x 7 print is soaked in successive changes of water, the total consumption being about a quart, that it is more efficiently washed than if twenty gallons of running water were used.

Such a statement as this is almost incredible, but it is at least worthy of credence, and should show us that repeated soaking, draining, and squeegeeing is the most satisfactory and economical way of washing. One need not squeegee each print, a dozen or more can be piled one on top of the other, and a heavy roller squeegee passed over them two or three times. For some years I have adopted this method and found it eminently satisfactory.

Toning Blue Prints

Sommer recommends the following baths for toning cyanotype or blue prints. For platinum-black tones bleach the print in the following bath, which must be freshly made and filtered.

Borax	23 gm.
Ammonia	23 gm.
Water	1000 c.c.

Wash well and immerse in a saturated solution of gallic acid.

For violet-black tones the print should be first treated with a 5 per cent. solution of borax and then immersed in

Tannin	30 gm.
Gallic acid	30 gm.
Water	1000 c.c.

For sepia tones use instead:

Tannin	40 gm.
Hydrochloric acid	80 drops
Water	1000 c.c.

For use dilute 1 part with 50 parts of water; immerse the print for five minutes, then wash and immerse in a 5 per cent. solution of potassium carbonate till the desired tone is reached. —*Phot. Welt.*, 1915, p. 21.

Like all other processes, of which this is merely a variant, it is unsatisfactory and almost impossible to obtain clean whites.

A New X-ray Tube

Professor Zehnder has introduced a new *x*-ray tube which has been tried at the Zurich Hospital. The tube is constructed of metal and is therefore unbreakable. The anticathode is thus the whole of the body of the tube, while the cathode is introduced with a high-tension insulator. The principal advantages of the tube is that the rays are limited by a window in the metal walls, so that vagrant rays are not emitted and the intensity of those emitted is said to be one-thousand times increased.—*Frank, Umschau*, 1915, p. 200.

Depth of Focus

To find the distance which should be sharply focused in order to obtain sharp images of objects at different distances, the following rule is given: Multiply the near and far dis-

tances together and multiply by 2 and divide the result by the sum of the near and far distances. For instance: Suppose there are objects at 10 and 30 feet, both of which it is desired to be in sharp focus; then the distance to focus on is $10 \times 30 \times 2 \div 10 + 30 = 15$ feet, the distance required. As the focus point is always nearer to the near distance, it is more important to correctly estimate this than the more distant one.—*A. P.*, 1915, p. 147.

Cyanotype or Blue Paper

Valenta has been examining the effects of various additions to the sensitizing solutions for this paper. The formula for the sensitizer was:

Green ammonio-citrate of iron	25 gm.
Potassium ferricyanide	9 gm.
Water	120 c.c.

This was spread on pure raw paper and for comparison additions of various salts made to it. The green salt gives a much more sensitive paper than the usual brownish-red salt and paper prepared therewith keeps better. The addition of small quantities of ferric oxalate caused marked increase of sensitiveness, but no pure whites were obtained. Ferric ammonium oxalate and tartrate also increased the sensitiveness, but these also gave impure whites. The addition of oxalic acid increases the sensitiveness and deepens the color, but with impure papers the whites suffer. Ammonium tartrate and Rochelle salts increased the sensitiveness slightly, but tartaric acid was without action; these did not affect the color nor did citric acid, but larger quantities of the latter lowered the sensitiveness appreciably. Very small additions of ammonium bichromate make the paper keep very much longer; in larger quantities it deepens the color, and in still larger quantities the sensitiveness is lowered. Arsenic acid, ferric sulphate, mercuric and tin chloride, perchlorates and perborates were without action; sodium perborate in larger quantities gave pale prints. Small additions of starch paste caused deeper tints, but if too much be added the image washes away in development.—*Phot. Korr.*, 1915, p. 217.

New Safe (?) Lights

H. Hartridge has taken out an English patent for a safe light for dark-rooms which has the characteristic visual properties of white light. He proposes to use two regions of the spectrum which are approximately complementary and thus obtain a species of white light. For instance, one screen is to transmit from the extreme red, wave length 730 to 785 and another a portion in the green from 540 to 515. The color of the mixed lights is a pale rose color. For this form of safe light gelatin screens stained with malachite green and picric acid are superposed. A better light is obtained with a filter that transmits red, wave length 680 to 590 and green, wave length 570 to 530; the region between 590 and 570 is only subdued. The light transmitted appears of a pale cream color, almost indistinguishable from ordinary light. To make this, gelatin films are stained with victoria blue, napthol green, mandarin orange and filter yellow K respectively.—*E. P.*, 17789, 1914; *B. J.*, 1915, p. 593.

Such lights as these would be totally unsafe for any color-sensitive plate and even for the most rapid, ordinary plates.

Etching on Glass

Line designs may be easily etched on glass by the following method. Beat the whites of two eggs to a froth and allow to settle, then mix:

Clear albumen	85 c.c.
Ammonia	3.5 c.c.
Solution of Indian ink	10.5 c.c.
Ammonium bichromate	1.0 gm.
Water	10.5 c.c.

Coat the glass with this and allow to dry in a dark place free from dust. Expose under a positive for two or three minutes to direct sunlight. Wash for ten minutes in water, and then under the tap gently rub the glass with a soft pad of cotton. Immerse the plate in a weak formalin solution for a minute and dry.

Cast a shallow ring of wax round the images so as to form a little dish and pour in:

Sodium fluoride	16.5 gm.
Alcohol	90.0 c.c.
Water	260.0 c.c.
Glacial acetic acid	11.0 c.c.

In a few minutes the drawing will be etched into the glass, the liquid may be washed off and the wax removed. Immersion of the plate in a strong potash lye will remove the albumen.—*Phot. Zeit.*, 1915, p. 255.

Testing Paper for the Cyanotype Process

Valenta gives the following simple method of testing the suitability of a paper for this process. Prepare a fresh solution of:

Ammonio-citrate of iron	1 part
Distilled water	4 parts

and

Potassium ferricyanide	1 part
Distilled water	7 parts

Mix in equal parts and dilute with 3 or 4 parts of water. Place a narrow strip of the paper in a test-tube and pour in some of the above diluted solution and boil; remove the paper and wash. A paper suitable for the blue process should show no blue color or only the very faintest tinge.—*Phot. Korr.*, 1915, p. 57.

Silver Salts in Germany

Kieser calls attention to the increase in price of silver nitrate, due to the abnormal use of nitric acid for the manufacture of ammunition and suggests that silver chlorate and perchlorate can be used in place of the same. Citric acid has also gone soaring as to price, and Kieser suggests its replacement with phosphoric acid. Apparently there is a chance, if the war is much prolonged, of a complete famine in citric acid.—*Phot. Ind.*, 1915, p. 531.

VIEWS AND REVIEWS

The Old Masters of Photography

Alvin Langdon Coburn contributes an interesting article on "The Old Masters of Photography" in the *Century* for October, and reviews the work of David Octavius Hill, Dr. Thomas Keith, Mrs. Julia Margaret Cameron, and the Rev. C. L. Hodgson.

In conclusion he says: "Now let us look back for a moment and think how different are the four personalities we have been considering in these notes—a painter, a surgeon, the wife of a philosopher, and a teller of wonder-stories, linked together by their attraction to a mysterious little black box, with a piece of glass to let the light of day into it.

"What is there in the medium of photography to draw within its spell so varied a gathering?

"Perhaps it is the humanity of it, for undoubtedly camera portraiture brings one in touch with the sitter in an intimate personal way not possible in the ordinary round of social functions. Perhaps, again, it is the mystery of it, for the strangeness of a negative flashing up in the developer, the absolute presentment of a living person, is a phenomenon that does not become commonplace even after a life-long acquaintance, but rather tends to intensify in the quality of strangeness. But, above all, I believe the strongest incentive to the artist-photographer is the storing up of the contemporary truth of beauty for posterity. This looking forward to the welfare of a future generation is one of the finest and most hopeful traits we find in humanity in these ominous days."

Some of the illustrations have appeared in the Journal but are inferior in reproduction.

Ten Year's Work of a Mountain Observatory

A Brief Account of the Mount Wilson Solar Observatory of the Carnegie Institution of Washington, by George Ellery Hale

This is an extremely interesting account of the work and accomplishment of the Mount Wilson Observatory as Pasadena, and gives valuable data of the observations made and recorded by photographs. The interpretation of the varied phenomena recorded on astronomical photographs is the most important phase of the Observatory's work. At first thought it might seem that a good photograph of a celestial object would represent the chief aim of the astronomer. In fact, however, it is only a first step, since the information it contains does not often lie on the surface. It is the task of the investigator, not merely to take photographs, but to interpret them.

The eleven departments of research of the Carnegie Institution of Washington, of which the Mount Wilson Solar Observatory is one, are located in various places selected because of their suitability for the several purposes in view. Information regarding the work of the Institution may be obtained on application to the Office of Administration, Washington, D. C.

Courses in Photography

For the past four years the Department of Photography of the Brooklyn Institute of Arts and Sciences has been conducting courses in photography for the benefit of amateur photographers who feel that they can improve their work by taking a course where personal instruction and demonstrations are given.

There will be two courses, one for the novice or beginner, and another for advanced workers.

The tuition fee is very nominal.

These courses in the past have been successfully conducted by Mr. William H. Zerbe, who will again assume charge.

Write for a prospectus to the Brooklyn Institute of Arts and Sciences, Academy of Music Building, Brooklyn, N. Y., or to William H. Zerbe, 345 Spruce St., Richmond Hill, N. Y.

Mr. William H. Zerbe, in the first of his series of photographic talks and demonstrations, will devote the evening to the amateur and his troubles, giving advice and criticism to such as need it.

Photographers are invited to attend this talk and to bring their photographic troubles with them. Very few amateurs there are who haven't got some perplexing problem which they are unable to solve. Mr. Zerbe will try to solve them for you. Bring prints and films that have not turned out satisfactory to you, and in which you are unable to locate the trouble. In this talk you not only can learn from your own failures, but from those of others.

Death of Maurice G. Gennert

As we go to press we learn of the death of Maurice G. Gennert, senior partner of the well-known firm of G. Gennert, of this city, on October 2. Mr. Gennert was born in Chatsworth, Ill., in 1868. He went to New York early in life, was educated at Columbia University and in Germany, and was an authority on ancient languages.

Funeral services were held at the family home, Greenville, N. J., on October 5.

"Development and Recent Advances of the Technographic Arts," by Louis Edward Levy, is the leading paper in the *Journal of the Franklin Institute* for October.

American Paper Manufacturers Preparing to Supply Home Demand for Photographic Papers

Practically all the paper used for photographic prints in this country has been imported from abroad, but, as in the case of many other imported materials, conditions in Europe are interfering seriously with the supplies, and our manufacturers, says the *Scientific American*, are turning their attention to meeting the home demand. The main reason why our manufacturers have given this class of paper so little attention was that the principal consumer was well provided for by the foreign product, which it practically controlled.

Paper for photographic purposes must be unusually pure and entirely free from chemical and mineral matter, which would result in spots and stains on the finished photographic print; and the principal requisite for the manufacture of the proper quality of paper is an abundance of water of a purity not required in any other manufacture. For the reason given above, little effort has been made until recently to ascertain whether water of the necessary purity could be obtained in this country, but it is reported that two American concerns have solved the problem and are making photographic paper, for which the market now exists.

Besides the financial and chemical problems that have been involved, there is still another of a technical nature. One of the worst enemies to the production of photographic paper is iron in any form, as it is sure to make its presence known by spots; and after a water absolutely free from mineral salts has been secured, special provision must be made in the construction of the paper-making machinery to prevent the contamination of the paper by particles of metal from the part with which the paper comes in contact.

The general nature of the problem has been understood by paper manufacturers for many years, but until the present complications, conditions have not been such as to warrant the building of new mills and machinery, as well as the expensive work of developing and perfecting the details of a new manufacture.

Abridged Scientific Publications from the Research Laboratory of the Eastman Kodak Company, 1913–1914, Published by the Eastman Kodak Company, Rochester, New York

Research work in any field is of many different grades, ranging from the investigation of the fundamental problems of a science to the working out of the purely practical problems in production. Research problems show a tendency to fall into three chief classes: (1) problems of purely scientific interest, (2) problems in applied science, largely the determination of exact data and the working out of methods of testing, and (3) engineering problems in the application of scientific data and laws and routine testing. Industrial research laboratories usually cover the first two classes of research in any given field, the third class is taken care of by individual departments of the works.

The Research Laboratory of the Eastman Kodak Company is organized in accordance with these principles. Some work is being carried on along lines leading to results of no apparent practical importance whatever. On the other hand, practical problems of a very recondite nature are referred to it at times by the manufacturing departments. But the great bulk of its work lies in the middle ground of the investigation of the properties of materials, including the determination of precise physical and chemical data, a large proportion of the investigation being initiated by the men within the Laboratory.

There are three chief departments of the Laboratory—chemistry, physics, and photography—about equally balanced as regards number of men and space occupied. The chemical department contains subdivisions dealing chiefly with problems in inorganic, organic and colloid chemistry. The work of the physics department is chiefly along the lines of photometry, spectroscopy, lens optics, visual and photographic optics, colorimetry, and allied subjects. Photographic research covers photographic chemistry and the various photographic processes. Many problems are, of course, investigated by two or more departments in coöperation. Technical research, routine tests of product, the investigation of works, troubles, and the development of new works and processes are fully provided for outside the Research Laboratory.

The Laboratory was organized in 1912, and work was in full swing in the new building early in 1913. The more important scientific results of general interest that have been obtained have been heretofore published in various scientific journals. Some of these are not available to many who wish these results and hence this abstract journal is being published which contains all of the more important results of each paper. This first number contains abstracts of all scientific papers published during 1913 and 1914.

The National Geographic Magazine for September contains an interesting sixteen-page insert of photogravure prints by H. C. Mann of Norfolk, Va. Mr. Mann's pictures are most striking in light and cloud effects, and several have gained wide recognition by receiving high awards. These beautiful reproductions are well worth careful study.

One of the most interesting and valuable numbers of the *Photo-Miniature* is the September issue (No. 141) on "Home Portraiture." This presents a new survey of the vital problems of this profitable field, from the professional viewpoint; showing what to avoid and what to strive for in practice, with many illustrations covering the problems. The price of this important number is but twenty-five cents and is worth many times more. Copies can be supplied through this office or through any dealer.

THE Eastman Kodak Company, Rochester, N. Y., has been awarded the following prizes at the Panama-Pacific International Exposition, 1915, by the International Jury of Awards: (1) The Grand Prize for Hand Cameras. (2) A Gold Medal for Kodachrome Plates and Photographic Supplies and Equipment. And (3) A Gold Medal for Photographic Papers.

METER-READING CAMERA

SINCE our brief note last month, on the use of cameras for recording the readings of gas and electricity meters, further details have reached us. A special camera has been developed by the Folmer & Schwing Division of the Eastman Kodak Company, for the use of men on meter-reading routes, who are thus enabled to bring into the office at the close of the day's work, photographic evidence of the positions of the dial pointers on the meters of the customers visited. To "take" the reading, the meter man simply holds the camera opening against the meter dial glass and presses a lever, which automatically opens the shutter for a definite period and at the same time lights four small battery-operated lamps to illuminate the meter dial. After each exposure is made the shutter is locked and cannot be operated again until the film roll has been advanced to the position for the next picture. The device can also be used as a hand-lantern in dark passageways by pressing the lever part of the way down without operating the shutter.

Each roll of the special film used provides for seventy-five exposures, and costs twenty-five cents. Two additional rolls can be carried inside the camera box, making a total of 225. The film on which the pictures are taken consists of an emulsion on opaque paper, which is backed up with a white coating that makes details of the developed film show up clearly, although reversed right and left, mirror-fashion. This reversed film is then examined by mounting the rolls in a special stand and reading the reflection in a mirror. As the customer's name and meter number are marked on each dial, the photograph leaves no doubt of the identity of the reading. If the customer is "out," the meterman notes this fact on a card and photographs it for his film record.

The "Factograf" camera, as it is called, provides a definite photographic record of the condition of the customer's meter and avoids all possibility of misreadings or future controversies. Especially useful is such evidence, it is pointed out, in the case of maximum-demand meters, where, ordinarily, the meter reader notes the position of maximum-demand pointer and then sets it back to zero, thus destroying all future record of its position, unless this is photographed as with the meter-reading camera. Including developing, it is estimated that the total cost of reading meters with the "Factograf" camera will not exceed ½ cent per exposure. The camera weighs about eight pounds and is leased to the user for $22.50.

ELEMENTARY PHOTOMICROGRAPHY. By W. BAGSHAW. Published by Iliffe & Sons, Ltd.

THIS is the third edition of a work which has always been well received, and deservedly so, because it adequately fulfils the purpose for which it was written, which is to interest the microscopist in photomicrography and also to enable the photographer to take photomicrographs with comparatively little outlay. In his preface the author states that he is aware that some of the methods he recommends are not in strict accordance with the practice of experts, for whom he does not write, and are more suitable for amateurs, and for this class it can be heartily recommended.

Possibly, if one wished to be captious, one might suggest that a little more instruction on the microscope itself would make the book still more valuable and would obviate the necessity, which the author has found, of advising his reader to consult more advanced works.

There is little to find fault with generally, though one might question whether the statement that some plates are apt to frill and pucker at the edges is a statement of fact or one of those hoary, moss-grown ideas that are handed down from generation to generation.

The book is well printed, contains numerous good illustrations, a colored frontispiece, and a useful glossary and a bibliography. It may well serve as the first stepping-stone in this particularly fascinating pursuit, and if the instructions are followed out will inevitably lead to good work. We cordially indorse the author's recommendation of the adoption of one particular line of work and following this up by contemporaneous reading of allied subjects.

NOTABLE PRINT EXHIBIT

THERE will be an exhibition of Pictorial Photography at the Print Gallery, 707 Fifth Avenue, New York, during the month of December. Any pictorial photographer may submit three prints before December 15, and they will be passed on by a jury of three prominent men in the art world. The jury will consist of Henry W. Kent, Secretary of the Metropolitan Museum of Art, Albert Sterner, and another well-known artist. Further particulars may be secured from the Print Gallery, 707 Fifth Avenue, New York.

NOVEL FILM FOR COLOR PHOTOGRAPHY

PERCY B. BREWSTER, of East Orange, N. J., assignor to Brewster Film Corporation, has patented, No. 1145968, a photographic film adapted to be acted upon one side by the light of one group of colors including from violet to green or yellow-green or even yellow, the other side being sensitive to red, orange, and yellow light. In effecting this, the film is coated on one side with an emulsion sensitized chiefly to light of one group of colors and on its other side with an emulsion sensitized chiefly for other colors.

CORRESPONDENCE

Correspondents should never write on both sides of the paper ☙ No notice is taken of communications unless the names & addresses of the writers are given ☙ ☙
We do not undertake responsibility for the opinions expressed by our correspondents

Editor, THE PHOTOGRAPHIC JOURNAL OF AMERICA

I HAVE read with much interest your editorial in the September number, on "Plain *versus* Pictorial Portraiture," and trust that you will pardon me if I take the liberty of disagreeing in some measure with your conclusions.

If I have grasped your meaning, your inference is that some photographers have failed in their efforts to employ pictorial portraiture for the reason that certain classes of persons consider the plain, old-fashioned style of portraiture to be preferable to the pictorial variety, and it seems to me that this is a mistake. I have in the past shown many examples of pictorial portraiture to individuals of such diverse classes of society as National Academicians, literary workers, physicians, business men, scientists, building contractors, housemaids, saloon-keepers, and ambulance drivers, to enumerate only a few, nor have I found a single person to whom the more artistic sort of work did not appeal more strongly than the old-fashioned kind. It is true that some individuals cannot afford to pay the price which must be asked for the more careful work, but the fact remains that there seems to be a general preference for the portrait which embodies fundamental art principles.

Such being the case, and it being undeniably true that some photographers have not met with success in their attempts to sell pictorial portraits, it remains to find the true cause of such failure, and I do not believe that it is far to seek: During recent years there has been a just revolt against the excessive sharpness of definition of the anastigmat lens and the portrait objective of the Petzval type, and many pictorial photographers have gone so far as to employ extreme soft-focus lenses, thus losing contours and planes, and failing, for this reason, to secure even a moderately truthful likeness of the sitter. Also, in the effort for tone, very flat negatives have been deeply printed, giving to Caucasians the complexion of a mulatto or even, in some cases, of a negro. Now, a good portrait must be, first of all, a characterization, but it must also be a likeness, and it is obvious that the average person is not truthfully represented by a photograph in which contours are lost and the coloring is negroid. Portrait workers, however, have seen only the diffusion and the low key, having failed to see the character rendering, the harmony of tone, and the pattern, which make for art expression, and, naturally enough, the public has refused to accept prints which show no recognizable likeness to the individual. If, however, the photographer will make a study of psychology, so that he may suggest the sitter's character, and of art principles, so that he may produce a harmonious and pleasing work of art, and will at the same time employ a soft-focus lens with such discrimination as to render outlines and planes not microscopically sharp or excessively diffused, but as seen by the normal eye, and will bear in mind that the average complexion, though far from white, is still well above a middle tone, he will undoubtedly find that persons of all classes will prefer his work to that of the old-fashioned photographer, which lacks all art qualities and, what with a conventional lighting and equally conventional retouching, is only a moderate likeness.

The illustrations in the same number of the magazine are an excellent case in point. Signor Bonaventura has absorbed the ideas of extreme diffusion and extreme tonalism, but has failed to produce a likeness, a characterization, or a pleasing arrangement of light and shade. In short, these photographs can by no stretch of imagination be regarded as portraits, and could be popular only with those esthetes to whom the truthful and sincere work of art is of less value than the bizarre.

To conclude, I feel that the public cannot be blamed for not liking what is so often designated as pictorial portraiture, but I am convinced that if the photographer will produce a true work of art, that is, if he is willing to study and apply the fundamental principles, and to cultivate his appreciation of beauty, his clientèle will prefer his work to that of less cultivated workers. Of course, to produce work of the higher type more time is required, for the technique cannot be rendered mechanical, and a greater expense is involved, since panchromatic plates and platinum or carbon paper cost more than ordinary plates and gas-light paper, so it may be that the photographer's clients cannot afford to pay for the better class of work, but this is a matter for each photographer to determine in his own particular instance, and this much is certain: that if every photographer will do all that he can to introduce art quality into his work, it will not be many years before the general public is educated to demand this quality and to pay for it.

PAUL L. ANDERSON.

THE WORKROOM

By the Head Operator

Making Light-filters

COLOR filters are not easy to make. A considerable amount of patience, coupled with careful and skilful manipulative dexterity is necessary. There are three methods of making color filters: (1) dyeing a coated gelatin plate; (2) coating the dyed gelatin on the actual glass used for the filters; the drawback to these two methods is that as the gelatin film dries a powerful contraction sets up, which is likely to distort the flatness of the glass; (3) the third method to be described in this article is the most reliable. It is to coat a given quantity of dyed gelatin solution on a piece of specially prepared glass so that when the film is dry it can be stripped off and cemented between two pieces or perfectly flat glass. The following requisites are required: A large sheet of plate glass about three-eighths to one-half inch in thickness, the dimensions of which are determined by the size and amount of glass to be coated. It is so arranged that it can be levelled either by the aid of wedges or levelling screws, this being known as the levelling table. Three or four pieces of plate glass, about 8 x 6 inches on which to coat the dyed gelatin, are required, also other pieces cut to the size it is intended to make the filters. A packet of Nelson's No. 1 photographic gelatin is required, also bottles of the following dyes specially prepared for filter making: rose bengale, flavacine, rapid filter K, esculin, rapid filter green, naphthol green, victoria blue, mandarin orange G. About 2 ounces of the best picked Canada balsam, 5 ounces of chloroform, some strong wooden clips, lantern-slide binding, and a spirit level complete the equipment.

In regard to the selection of the glass, there are three kinds: ordinary patent plate, white patent plate, and optically worked flats. The two first can be obtained at Messers. Hetley's, Soho Square, who make a specialty of the glass suitable for the purpose; the flats can be obtained from Messers. Hilger and Co., of Camden Town. For filters for use with lenses ranging from 4 to 15 inches focus, ordinary patent plate will do; for foci of 15 to 20 inches white patent plate is preferable, although the latter kind of glass can be used. For very accurate work flats are employed, the thickness of which is generally three-sixteenths inch. The thickness of the patent plate should be about one-eighth inch; thinner glass is likely to become distorted. The glass used for filter making must be perfectly true, and pass an undistorted image. A good method of testing is to stretch a length of wire across a window, and so hold the glass that an image of the wire is reflected on the surface. Slowly tilt the glass so that the image of wire passes across the surface, when any distortion will show. The glass must be free from rough pits, but small specks or bubbles can be ignored provided they are not numerous. All glasses must be of exactly the same thickness. This can be tested by laying each glass side by side on the levelling slab. Then pass the finger across the surface, when it will be easily felt if one glass is thicker than the other. Messers, Hetley will cut the glass to the required size, sixteen pieces being necessary to make the eight filters; it is, however, advisable to order twenty-four, and thus ensure having eight pieces that will couple together. Test the glass in couples by clipping them together and fixing on the lens of the camera. Focus same size on a test object, which may consist of a black cross drawn on white card. Place the first couple against the lens and focus on the test object. Take the next two and place in front of the lens. This should not disturb the focus. Repeat until the eight couples have been tested and passed. Should the focus be thrown out, the couple will not work in a color set, but may be suitable for a single filter provided the image can be focussed. Filters that have been tested and passed are wrapped together in tissue paper. On no account use paper having printed matter, as the surface of the glass is very soft, and the greasy ink will be impressed in the glass, which cannot be removed.

The following are instructions for making the filters, which will be known as follows: A, light yellow; B, dark yellow; C, light orange; D, dark orange; 1, blue; 2, green; 3, red; 4, esculin.

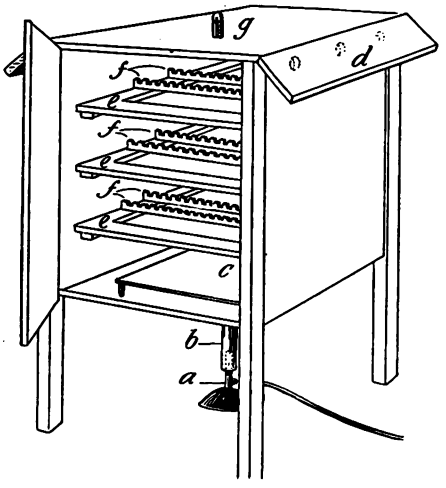
The action of the red filter is to transmit the red and yellow and to absorb the remaining portion of white light and ultra-violet. A mixture of rose bengale and flavacine will give this absorption.

The green filter transmits the yellow and green and a small portion of the blue, and is a mixture of rapid filter green, rapid filter K, and a small quantity of naphthol green.

The blue filter transmits the blue only, for which purpose a mixture of naphthol green and Victoria blue is used.

The esculin filter absorbs the ultra-violet, and is useful when employing an ordinary plate in color work for the yellow printer. The latter can also be employed sometimes to considerable advantage when there is an excess of ultra-violet such as experienced on bright days at the seaside. The four ortho filters are those generally used in orthochromatic work. Very small quantities of the dyes only are necessary, and are best made up in solutions which contain a known quantity of dye to a given amount of water.

Some means must be employed to dry the films in a current of warm air not exceeding 76° to 80° F. There are several forms of drying cupboards; a very serviceable one is shown in the following diagram:

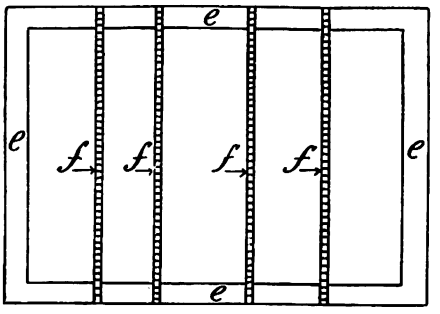


The cupboard must be well made, so as to withstand heat, and the door must fit accurately when closed, so as to exclude draughts. *a*, a small Bunsen burner; *b*, metal tube fixed to under side of cupboard to convey heated air into cupboard; *c*, metal sheet supported on the four corners and open round the sides; *d*, hoods of wood protect air exit holes, drilled in the sides and back of upper part of cupboard; *e*, shelves which are frames having wooden racks; *f*, fixed across to rest the filters in when drying.

Two pieces of three-ply wood cut as shown in *f* are fixed side by side on the frame *e*. *g*., thermometer let in at the top, which enables the temperature of the oven to be read.

Having explained the materials and apparatus necessary, I will now deal with the actual making of the filters. A room free from draughts must be selected; a bathroom is very suitable,

as hot water is at hand, and the steam arising from the latter will settle the dust and keep the room warm. A 10 per cent. solution of gelatin, containing a small quantity of glycerin, which renders the film pliable, together with some salicylic acid (to act as a preservative), constitutes the stock gelatin solution. This latter solution must be carefully prepared by first weighing out two ounces of gelatin which is washed in distilled water to rid it of any dirt. Twenty ounces of fresh distilled water is taken, and the gelatin allowed to soak in this for two hours, when it is ready for melting. A milk saucepan is most suitable for the purpose—that is, a saucepan contained in a larger one, the outer one being filled with water, the inner one containing the gelatin. Heat the water in the saucepan and the gelatin will gradually melt. When melted the solution should be constantly stirred and the temperature tested with a thermometer, which must not exceed 120° F. When melted, add glycerin ½ ounce and then salicylic acid ½ grain. Stir well, and allow to simmer gently for ten minutes. Remove and add in small quantities, with constant stirring, one ounce of absolute alcohol. The solution is now ready to receive the dye. Eight jars are obtained which will withstand considerable heat, as it is necessary to place these jars in hot water to remelt the gelatin.



The following are the formulæ for the eight filters:

A—Rapid filter K	1	grain
10 per cent. gelatin solution	5	ounces
B—Rapid filter K	3	grains
10 per cent. gelatin solution	5	ounces
C—Flavacine	4	grains
10 per cent. gelatin solution	5	ounces
D—Flavacine	4	grains
Mandarin orange	2	grains
10 per cent. gelatin solution	5	ounces
1—Victoria blue	1½	grains
Naphthol green	¾	grain
10 per cent. gelatin solution	5	ounces
2—Rapid filter green	1	grain
Naphthol green	1	grain
Flavacine	3	grains
10 per cent. gelatin solution	5	ounces
3—Rose bengale	2	grains
Flavacine	10	grains
10 per cent. gelatin solution	5	ounces
4—Esculin	4	grains
10 per cent. gelatin solution	5	ounces

I generally make each dye into an aqueous solution, in which 1 grain of dye represents 20 minims of solution. The Victoria blue is not soluble in water, therefore add the required quantity of water and sufficient alcohol to dissolve the dye. The esculin is added to the gelatin in a dry state.

The glasses on which the films are to be made must be thoroughly washed in strong soda water, well rinsed in running water, and dried. When dry they are again cleaned with a mixture of whiting and methylated spirit, polished with a clean Selvyt cloth, and finally well rubbed with French chalk and polished again. Motor spirit can be used in place of the chalk. The coating table is levelled and the cleaned glasses laid on, allowing three-quarter inch space between

each glass. Coat 15 minims of dyed gelatin to each square inch of glass. Thus an 8 x 6 piece will require 1½ ounces of solution. Carefully filter the dyed gelatin into a warm beaker, using swansdown wrung out in hot water for for filtering, and taking great care that no air bubbles enter the gelatin during filtering. Pour the filtered solution into the middle of the glass to be coated, and then lightly distribute by aid of a glass rod or the finger tips. This latter operation requires great care, otherwise the solution will run over the edge of the glass. Should this happen it will spread over the coating table and draw the solution from other glasses that have been coated. Having coated the glasses, it is necessary to leave them in a level position for about two hours to set. During this period they must be protected from dust. Four corks are placed at each corner of the coating table, and a sheet of glass the size of the coating table is laid over the filters, the corners of the glass resting on the corks. Before laying the glass down it should be breathed on or steamed, so as to avoid any dust being dislodged from it when placing over the filters.

The films having set, they are placed in the racks of the previously warmed oven. The actual time for drying varies; generally it is about eight hours. When dry, the temperature of the oven is gradually let down before removing; if the films are removed from the warm oven to a cool room they are likely to split and fly off the glass. The films are detached from the glass by cutting round the edge about one-eighth inch, when they may peel off; if not, a corner is raised and held in the fingers, and then gently pulled away from the glass. Allow the films to remain in the open room for an hour before packing away in tissue paper and storing between the leaves of a book.

Having obtained the films, the next item is to cement them between the previously prepared couples of glass. The pairs of glass are thoroughly cleaned with methylated spirit and whiting, and finally polished with Selvyt and laid aside ready for use. I have made experiments with numerous solvents for the balsam, and prefer chloroform. The lump balsam is dissolved in this solvent until of the consistency of thin cream. It is then filtered through muslin previously damped with chloroform. When cementing, use the levelling table; this will prevent a certain amount of waste. Cut the film to the size of the glass and lay aside on clean blotting paper. A sheet of blotting paper a little larger than the filter is laid on the levelling table, and the glass placed on top. A pool of balsam is then poured in the centre. The film is picked up by opposite corners and gently lowered on to the middle of the pool of balsam, taking great care to prevent bubbles forming. The balsam is worked to each corner of the glass by using slight pressure applied from the soft part of the third finger, starting from the middle and gradually working to the four corners. Having completed the latter operation, another pool of balsam is poured on top of the film, and the cover-glass carefully lowered on top and lightly pressed. The two glasses with the sandwiched film are lifted by the thumb and first finger of each hand, and the two glasses slowly worked about to exclude surplus balsam, turning the filter round and draining from each corner. These drainings can be caught in a cup, and, after thinning, can be used again.

This operation being completed, the four sides of the filter are lowered in succession on to a piece of blotting paper, which will bring the four sides of the glasses and film flush with each other. Each side is then clipped with a wooden clip and the filter placed in the warm oven (about 80° F.) for two days to harden the balsam. At the end of this period the clips are removed, and each filter laid perfectly flat on blotting paper for at least a week. Should bubbles form when the clips are removed they must be pressed out, and where expelled a small drop of balsam deposited, which will be sucked in and replace the air that has been expelled. The balsam having hardened, the excess must be removed. Grip the filter by each corner with the thumb and first finger, taking great care that the top and bottom glasses are firmly held; lay on a flat surface. Take a piece of fluffless rag which has been dipped into benzole, and gently remove surplus balsam. This operation will take some time. Finish off with methylated spirit 4 parts, water 2 parts. The sides are cleaned by scraping round with a knife, the final cleaning being given when bound. The binding is carried out in the same way as for lantern slides.

A new filter should not be handled by the sides, as bubbles are liable to form, however; it can be safely handled by gripping opposite corners between the thumb and first finger and then lifting. The film can then be used without sandwiching between glass, but it is likely to be easily scratched and become soiled. The latter can to an extent be overcome by dipping in celluloid varnish four times, draining off from each corner, and drying between each operation.—PRACTICUS, in *British Journal of Photography*.

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Catherine C. Blair,
(Seal) Notary Public.
(My commisssion expires March, 1916.)

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THE PHOTOGRAPHY OF MICROSCOPIC OBJECTS FOR BEGINNERS[1]

By DUNCAN J. REID, M.B., C.M.

I HAVE been asked to give a short description of how to photograph microscopic objects—the principal condition attached to the request, however, being that what I may have to say should be so simple as to be easily understood by those who know absolutely nothing of the subject, and who may not even possess a microscope. It is therefore unnecessary for me to apologize to those present who may be already conversant with the methods of photomicrography for the very elementary character of my remarks, but I hope they will kindly supplement anything that they may think I have left incomplete or obscure.

I may say that I intend to confine myself to low-power photography, but I shall try to make my remarks as practical as possible, and to avoid purely theoretical details.

It is not an uncommon thing for even the most enthusiastic photographer to get stale at times, and to feel as if he had nothing else to photograph. To such, I should think that photomicrography would come as a relief. If anyone present, however, thinks of trying his hand at this branch of photography, I would strongly recommend him not to go on photographing anything and everything, but to devote his attention to some one class of work and try and perfect himself at that. He will, in this way, be more likely to take an interest in the work, and will also acquire a great deal of useful knowledge.

At first I think the beginner ought to practice on objects which are already mounted. Many excellent slides can be bought second-hand. Suitable preparations for the purpose are sections

[1] An address before the Royal Photographic Society of Great Britain.

of animal and vegetable structures, strewn slides of diatoms and foraminifera, parts of insects, etc. Then there is an inexhaustible field in the photography of pond life.

I propose to arrange my remarks under the following heads:

I. Low-power photography with short-focus photographic lenses.

II. Photomicrography with the microscope: (*a*) apparatus, (*b*) management of light, (*c*) steps preparatory to taking a photograph, (*d*) estimation of exposure, (*e*) use of color screens, (*f*) plates, (*g*) development.

III. Simple method of taking photographs with the microscope and ordinary camera with its lens adjusted for infinity.

I. Low-power Photomicrography with Short-focus Photographic Lenses.

Until he gets a microscope, and to make a commencement, the beginner may try his hand at photographs of low magnification (say 5 or 10 diameters), using an ordinary double- or triple-extension camera and a short-focus lens. With a five-inch lens, and with a camera extension of twenty inches, he can obtain magnifications of three diameters; and with a three-inch lens, magnifications of over five. A camera extension of, say, thirty inches would be better. All that is necessary, besides the camera and lens, is a flat-flamed kerosene lamp or an incandescent gas-burner of the inverted type and some form of bull's-eye lens.

With this outfit he can take photographs of butterflies and other insects; of objects of some size, such as sections of animals and plants; of postage stamps, etc. It is very suitable for the photography of bacterial cultures on Petri dishes.

As to illumination, he can make use of either transmitted light, when the rays are projected so as to pass through the object, or of direct light, when they are directed on to the upper surface of the object; this latter method being employed in the photography of opaque objects. I shall now say a few words about the arrangement of things in those two forms of illumination.

1. *Transmitted Light*

(*a*) Having camera extended so as to give the magnification desired with the lens in use, we place the lamp at about fifteen to eighteen inches from the front of the lens, and centre it approximately.

(*b*) Centre the lamp by examining the position of the illuminated patch on the focussing screen.

(*c*) Focus object by moving the object holder to and fro.

(*d*) Place collecting lens of four or five-inch focus just behind the object, and centre it by observing the illuminated area on the ground-glass, or by the position of the image it throws on the front of the objective in use.

(*e*) Then if the distance of the lamp is so adjusted as to produce an image of the source of light—in air—a short distance behind the lens, *i. e.*, within the camera, you will find that the ground-glass is uniformly and brightly illuminated. Care must be taken that the condenser is large enough to cover the object.

Of course, I do not require to tell you that there are ever so many ways of producing the above result, but the one I have described is simple and effective.

Fig. 1 is a photograph of this arrangement, and Fig. 2, *a* is a diagram of the passage of the light rays.

2. *Direct Illumination for Ordinary Photographic Lens and Opaque Objects*

(*a*) Place collecting lens, of say $1\frac{1}{2}$ or 2-inch focus, in front of lamp, which ought to be Nernst or arc, and adjust it so as to throw an enlarged image of the source of light on the opposite wall. (*b*) Place a 9- or 10-inch biconvex or crossed convex lens in the path of the rays. It will be found that at a certain distance behind the 9-inch lens a solid circle of light is formed and can be seen by holding up a card in the path of the rays. This circle becomes larger the nearer the two lenses are to one another,

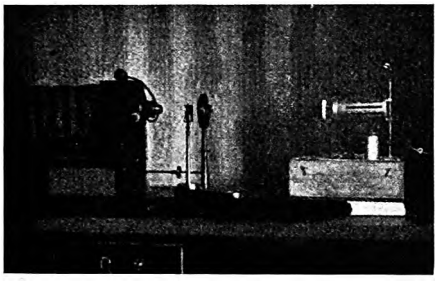

FIG. 1

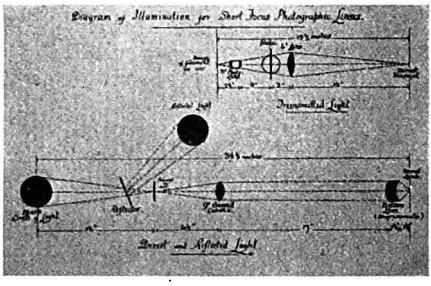

FIG. 2

and the illuminated area can therefore be varied to suit the size of object. (*c*) The rays may be diverted, as required, by means of a plane mirror. I show you a photograph of the above arrangement (Fig. 3), and the diagram of the path of the light rays is as in Fig. 2, *b*.

II. Photomicrography with the Microscope.

For magnifications higher than those to which I have been referring it is usually more convenient to make use of a microscope stand, and for high-power photography this is absolutely necessary.

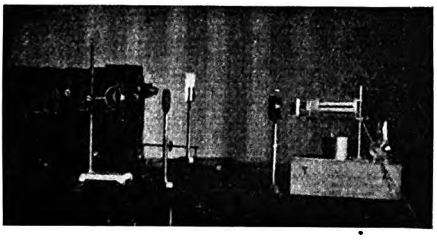

FIG. 3

As I have already said, I propose to limit my remarks to low-power work, *i. e.*, to magnifications of 50 to 100 diameters, and certainly not exceeding 200 diameters. For this purpose the beginner would require a couple of low-power microscope objectives (either a 1-inch and a $\frac{1}{2}$-inch, or else a $\frac{2}{3}$-inch and a $\frac{1}{3}$-inch), either of which would cost him about $10. Then for about $30 he could buy a microscope stand with sub-stage condenser, quite good enough for any work he is likely to do for some time. Second-hand he might get one for even less than that. Then, although a photomicrographic camera is most convenient, and saves a great deal of trouble, still for such low-power work, and to begin with, he can quite well use his ordinary camera provided it has a long extension.

(*a*) Apparatus

I am now going to say a few words about the pieces of apparatus usually employed in the photography of microscopic objects, and Fig. 4 is a photograph of the general arrangement of the outfit used by myself, and which I find quite suitable for high-power work.

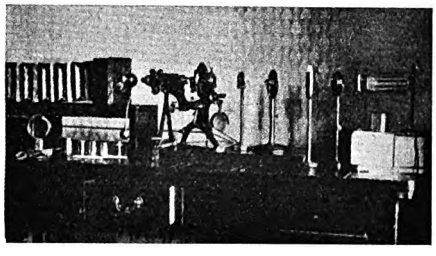

FIG. 4

Each one can then curtail it and modify it to suit his taste and his purse.

1. *Camera*

(Fig. 5.) This ought to be of long extension, say 30 inches, and better still 40 inches. A camera of 10 inches is the shortest that can be used with any satisfaction, and would give pictures of the same size as was seen by looking through the microscope.

At one end there is a ground-glass focussing screen, to be used for the

arranging and the rough focussing of the picture, and this can be replaced by one of plate glass for the final focussing with a focussing glass. At the other end is a brass tube which fits over the eye-piece end of the microscope and helps to exclude extraneous light. The camera bellows is supported on a thick board on which it slides, and this board ought to be marked off in millimeters or in fractions of an inch, so as to enable one to record the position of the plate at different magnifications with the several objectives and oculars one is in the habit of using. If those figures are then carefully arranged in a book under the heading of the different lenses, it will be found very useful in quickly obtaining the position necessary for the required magnification.

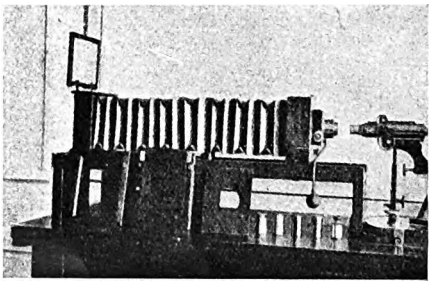

FIG. 5

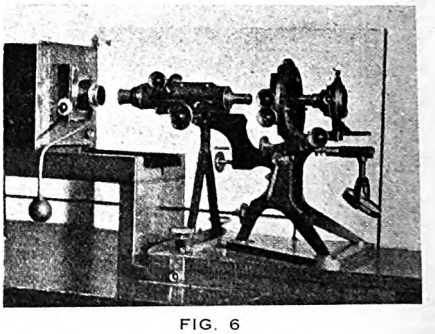

FIG. 6

At the microscope end of the camera there is an extension of the board on which the microscope is fixed (Fig. 6). This extension is usually made to rotate with the microscope and lamp in position, which is supposed to render the preliminary adjustments more easy. Personally, I do not use it, and have had mine screwed tightly in position.

A focussing rod runs along one side of the camera, and is connected to the fine adjustment of the microscope by means of a waxed thread, so as to enable focussing to be carried out when one is at the far end of the camera.

2. *The Microscope Stand and Lenses*

(*a*) *The Stand.* The compound microscope, as it is called (in contradistinction to the simple microscope or hand magnifier), consists of a tube, with a sliding inner tube, blackened on the inside; with a screw thread at the lower end to take the objective or object lens, and open at the upper end to receive the eye-piece or ocular. The short tube of $6\frac{1}{2}$ inches or 7 inches (150 or 170 mm.) is usually preferred to the long tube of 10 inches (250 mm.) for photographic purposes (Fig. 6).

The tube is supported on the limb, on which it slides in a groove, for focussing purposes. Focussing is carried out, first of all, by means of the coarse adjustment, and finally by means of the fine adjustment, by means of which the critical or exact focus is obtained. The limb is supported on what is called the foot. This may be of different shapes—like a horseshoe, but in most models it usually consists of three widely spreading legs. This latter form of foot gives, I think, a better and steadier support than the horseshoe foot, which usually requires some sort of clamp to prevent the stand from toppling over when used in the horizontal position. A triangular metal support may be placed under the front part of the limb to still further steady the stand.

Below the objective we have the stage on which the object is clipped. It may consist simply of a flat plate, the moving about of the object being done by the fingers, and this is quite sufficient for low-power work, but for high-power photography a mechanical stage is usually employed.

Below the stage we have the sub-stage, which carries the sub-stage condenser. For high-power work, and especially

when using an achromatic condenser, the sub-stage should be provided with centring screws.

The important requirements of a microscope stand that is to be used for photomicrographic work are—

1. That it should be absolutely steady in the horizontal position.

2. That all sliding parts should fit exactly, so that while allowing easy sliding movement there should be no wobbling or side movement.

3. That it should be as rigid as possible.

4. With some form of lever fine adjustment, when using the microscope in the horizontal position, the sliding movement in one direction is obtained by means of a spring. It is very important to see that this spring is strong enough to act at once, otherwise it may be found that after the exposure has been made that the focus has completely altered during the taking of the photograph.

(*b*) *The Lenses*

1. *Objectives.* The initial or primary magnification is obtained by means of the objective, and this magnification is again increased so many times by means of the ocular or eye-piece.

Objectives may be classed as dry or immersion. In the latter form they are to be used with a drop of water or cedar oil between them and the cover-glass. Immersion lenses are generally used in high magnifications, and do not therefore concern us on this occasion.

They are also divided into achromatic, semi-apochromatic, and apochromatic, just as we have achromatic and astigmatic lenses in ordinary photography.

The difference between these three classes of lenses consists in the extent to which the corrections for chromatic and spherical aberrations and other faults have been carried out.

With the ordinary achromatic lenses excellent results may be obtained, provided that only low-power work is attempted.

The semi-apochromats contain fluorite in their construction, and with them even high-power work may be undertaken, provided that a yellow screen or monochromatic light is employed. Nearly all the modern high-power, so called achromats, are really semi-apochromats.

The apochromats are, however, the lenses *par excellence* for photomicrography, because in them the corrections for color and for spherical aberration have been carried to the highest point of perfection. They are, however, very expensive, and for this reason the beginner will probably confine his attention to lenses of the other two classes.

Objectives are again classed according to their equivalent focal length: 2-inch or 48 mm.; 1-inch or 24 mm.; $\frac{2}{3}$-inch or 16 mm.; $\frac{1}{2}$-inch or 12 mm.; $\frac{1}{3}$-inch or 8 mm., etc.

Photographic lenses have each, as you know, a certain maximum aperture. The same thing is true of microscopic lenses.

In ordinary photographic lenses we speak of focal apertures, but in the case of microscope objectives the term we use is "numerical aperture," represented by N.A.

To go into an explanation of the term "Numerical Aperture" would almost require a lecture to itself, and I have therefore no time to touch on that subject at this time. I may, however, just mention that if one knows the aperture of a lens in terms of focal aperture, it can usually be converted into the numerical aperture by dividing 1 by twice the denominator, thus: *f*/6 equals 1 divided by 12, equals 0.08.N.A.

In the selection of lenses for different purposes, I may just here mention, that the lower the power of the objective the larger the size of the object it will cover; and that the larger its numerical aperture the greater its resolving power, and incidentally, the less its penetrating power.

2. *Oculars.* Oculars, as I have said, are used for the purpose of increasing the initial magnification obtained by the objective alone; and, in some cases, for correcting certain defects which exist in the objective.

They are usually, nowadays, numbered according to the number of times they increase the initial magnification,

as: 2, 4, 6, etc., although, especially in the case of the Hughenian oculars, many makers name or number them according to some plan of their own.

They are divided into Hughenian and compensating, the latter being for use with the apochromats, or with high-power semi-apochromats.

In photomicrography it is better to obtain the desired magnification with an increased camera length, and a medium ocular, rather than with a high-power ocular and a short camera length.

With some low-power objectives it is possible to do without an ocular altogether, but in that case it is necessary to use a velvet-lined sleeve or dummy ocular, in order to prevent reflections from the polished surface of the inner tube of the microscope.

A form of compensating ocular called a "projection ocular" is sometimes used. It is specially corrected for photographic work.

(*c*) *Illuminating Apparatus*

We now come to the apparatus employed in the illumination of the object, and, as transmitted light or axial illumination is that which is most frequently employed, we shall consider the apparatus required in this form of illumination first.

For efficient illumination we require: (1) a source of light, (2) a collecting lens, and (3) a sub-stage condenser.

Before explaining why it is necessary to employ those three, and why, for instance, we cannot manage with the lamp alone, I shall say a few words about each of them.

1. *Sub-stage Condenser.* This is a lens something like a microscope objective, which is carried by the sub-stage, and which receives the light transmitted by the collecting lens, and focusses it in the form of an intensely bright, solid circle of light on the object.

It ought to be of about the same focal length and of at least as large an aperture as the objective in use.

Perhaps the most useful condenser to have is one of the so-called universal condensers, of 1·0 N.A., which when complete can be used for high powers. With the front combination removed, it may have an aperture of about 0·40 N.A., and can then be used for low powers.

An ordinary pocket magnifier makes an excellent condenser for low-power work.

For photomicrography, I prefer that the sub-stage condenser should be achromatic, but there are many who say that an uncorrected lens, such as the Abbe condenser, works quite satisfactorily, and it is, of course, much cheaper.

2. *Source of Light.* For low- and medium-power work the kerosene lamp with flat wick and metal chimney, and with glass slip in front, is quite sufficient, and with it some excellent high-power work even has been done by some distinguished photomicrographers. It can be used either with the edge or with the flat of the flame, the latter being the rather easier to manage, but is several times less brilliant than the edge.

The acetylene gas jet, and the Nernst lamp are from 16 to 24 times more powerful than the kerosene lamp and therefore necessitate correspondingly shorter exposures.

The incandescent gas burner is a very effective source of light, and having a large illuminating surface, is especially suitable for use with very low-power objectives.

For high powers the arc light is best of all, but requires the continuous current for its satisfactory employment.

3. *Collecting Lens.* This may be a simple plano-convex lens (bull's-eye), or better still a lens of the Nelson type, which consists of two uncorrected lenses, so adjusted as to diminish spherical aberration.

It is employed in order to collect the rays of light from the lamp flame and to focus them on the back of the sub-stage condenser.

When it is used its illuminated surface practically becomes the source of light.

(*b*) Management of Light

Transmitted Light. To obtain a satisfactory photograph, and with as short an exposure as possible, considerable care should be devoted to the illumination.

There are two conditions which must be fulfilled, and which ought to be kept in mind, if the illumination is to be at all satisfactory. Those are: (1) That the "field" should be uniformly and fully illuminated. (2) That the back of the objective (as seen by looking down the tube with the ocular removed) should be evenly and completely filled with light, to the extent of the aperture in use.

NOTE.—With small sources of light it is difficult to fulfil both of these at the same time—especially when using a low ocular. This difficulty is usually experienced with low-power objectives of large aperture.

(c) STEPS PREPARATORY TO TAKING A PHOTOGRAPH

Let us now suppose the microscope to be arranged in the horizontal position, with, say, a one-inch objective and a medium-power ocular, and with a low-power sub-stage condenser; with an object on the stage; a kerosene lamp with the edge of the flame turned toward the microscope, placed at a distance of eight or nine inches, or if Nernst lamp, 14 or 15 inches from the back of the sub-stage condenser, and, as nearly as possible, in a line with the tube of the microscope, and on a level with it, we proceed as follows:

1. *Focus the Object.* Looking through the ocular, bring the object into view and focus it by means of the coarse adjustment.

2. *Centre the Sub-stage Condenser.* Still looking through the ocular, shut the sub-stage iris, nearly as far as it will go; then bring the small opening sharply into view on the field, by racking the sub-stage up or down, as may be required; and centre it by means of the sub-stage centring screws.

3. *Focus and Centre the Edge of the Lamp Flame on the Field.* Still looking through the ocular, open up the sub-stage iris, and rack up the sub-stage condenser by means of its focussing adjustment, until the edge of the lamp flame appears sharply on the field, and, if it is not quite in the centre of the field, centre it by moving the lamp from side to side and up or down, as may be required. The centre of the field is now brightly illuminated with an image of the lamp flame, the surrounding parts being, however, only faintly illuminated. This condition of things would be of no use for our purpose. The following steps show how this defective arrangement may be remedied:

4. *Introduce Collecting Lens in Front of the Lamp.* Place a collecting lens in front of the lamp, and adjust it so as to throw a sharp, enlarged image of the edge of the lamp flame on the back of the opening of the sub-stage iris; and adjust it roughly to the proper height, by raising or lowering it as may be required. (It is very important to note that the enlarged image of the flame must be large enough to completely cover the opening of the sub-stage iris, and if too small for that purpose, the lamp and collecting lens must be moved a little further away.)

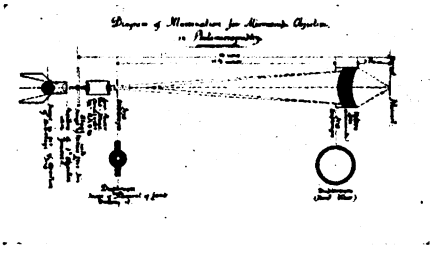

FIG. 7

5. *Centre and Finally Adjust Collecting Lens.* Close the iris of the collecting lens, and, by means of the sub-stage focussing adjustment, focus the little opening sharply on the field; then centre it, if necessary, by moving the collecting lens from side to side, and by raising or lowering it, as may be required. The iris of the collecting lens may then be opened up. (If the field is not now uniformly and fully illuminated to the very edge, or is fringed with red, the lamp and collecting lens must be brought nearer to the microscope until the field is fully covered with pure white light.) For diagram of above arrangement of light, see Fig. 7.

(The back of the objective may now be examined by removing the ocular and looking down the tube.)

We may find the following conditions:

Uniformly and fully illuminated to the very edge.—Correct.

Bright in the centre, but gradually fading off toward the edge.—Condenser is not aplanatic.

Uniformly illuminated, but not to the very edge, which is occupied by a dark border.—The iris of condenser is partly closed, or N. A. of condenser is too small.

Crossed by a broad band of light, from above downward.—Lamp and collecting lens are too near microscope.

Illuminated only on one side.—Either lamp, collecting lens or sub-stage condenser not centred.

Ring of light all around, crossed by narrow band, with dark area on either side of it.—Collecting lens is too near lamp.

Oval illumination from above downward.—Collecting lens too far from lamp.

6. *Eliminate Fog.* If the object is not quite clear and well defined, after it has been carefully focussed, but looks foggy, the sub-stage iris must be slightly closed. Not more, however, than is absolutely necessary.

7. *Color Screens, etc.* Interpose such color screens as may be considered necessary; estimate the exposure and extend the camera to give the required magnification; arrange the position of the picture on the ground-glass screen; roughly focus; change to plate-glass screen and focus critically by means of focussing lens; and everything is then ready for the taking of the photograph.

With the two-third and half-inch lenses the arrangements are essentially the same as those I have described for the one-inch objective. As they will, however, probably have a larger numerical aperture, it may be necessary to move the lamp and collecting lens a little further away, so as to obtain a larger image of the flame on the back of the sub-stage iris.

With the one-third-inch objective, which will have a much larger aperture, it will be necessary to use the complete high-power sub-stage condenser of 1·0 N. A., but otherwise the arrangements are practically the same.

Direct and Dark-ground Illumination. I have already shown how to obtain direct illumination. As I said it is very suitable for the illumination of opaque objects, and shows the object brightly lit up while the background is dark.

For this sort of illumination it is usually better if there is no cover-glass over the object.

At times it is of advantage to employ something of the nature of a reflector on the off side. A pill-box, with velvet in the bottom, and with white paper lining at the sides, makes an excellent little piece of apparatus for the photography of insects, and such like.

In dark-ground illumination, the sub-stage condenser is employed with a central stop to prevent the passing of the central rays. The object is brilliantly illuminated with a dark background. A shutter is often a great help to obtaining satisfactory dark-ground.

(*d*) Estimation of Exposure

As you are aware, the exposure varies with—

1. The intensity of the source of light, and way in which it is used.
2. With the rapidity of the plate.
3. Inversely as the square of the aperture.
4. Directly as the square of the magnification.
5. With the color screens in use.
6. With the color and opacity of the object.

I have devised a method of estimating the exposure required in photomicrography, based on those factors, which I have found to be a great help, but I have no time to go into it now. For those who may be interested in the matter, I would beg to refer them to the lecture to which I have already referred, published in the Society's *Journal* for January, 1909.

In the meantime, I would recommend the careful taking of notes of the conditions as to light, plate, aperture and magnification, etc., of every photograph taken. This will gradually supply a fund of information which will greatly help in deciding what the exposure should be.

Focussing. As I have already said, this is first of all done roughly on the ground-glass, and then more exactly on

the plate glass screen, with the aid of a focussing lens.

(e) Use of Color Screens

Those are used to obtain at times detail, and at other times contrast.

When photographing a yellow or red object, in which detail is required, a screen of a similar color should be used, and an increased exposure given corresponding to the known exposure factor for that screen. Blue can, however, take care of itself.

For contrast, on the other hand, one has to use a screen or combination of screens giving a complementary color to that which we wish to emphasize in the photograph—a yellow for blue, green for red, blue for yellow, and so on.

Opacity of the Object. Allowance has to be made for this, but if the notes are taken as I have recommended, it is astonishing how correct one becomes, after a time, in the estimation of the "density factor," as it is called.

(f) Plates

I prefer plates of medium rapidity, backed, and either orthochromatic or panchromatic. Sometimes, however, I use ordinary plates, and process plates often give very good results in the photography of diatoms.

(g) Development

For development, I use pyro-soda, and time development, carefully noting the temperature of the developer, according to Watkins' method. For some subjects where great contrast is wanted hydrokinone may be used.

III. Simple Method of Taking Photographs with the Microscope and Ordinary Camera and Photographic Lens Focussed for Infinity

Before showing you a few photographs, and if you are not thoroughly tired, I would like to show you a simple method of taking photographs with the microscope.

All that has to be done is to take one's ordinary camera, and adjust it for infinity with a 10-inch lens, or the nearest approach to that focal length which one possesses.

With the microscope in the horizontal position, or upright if desired, the picture is arranged, the illumination properly adjusted, and the objective carefully focussed on the object, as for ordinary visual work.

When everything is satisfactory, the camera and lens with the plate exposed and the shutter set, is run up toward the microscope so that the two lenses (the ordinary photographic lens and the microscope ocular) are nearly touching, and directly in a line with one another, and the exposure made.

The results are equal to anything taken in the ordinary way.

It is important, however, to note that if one's eye is not normal for distant vision it must be rendered so by suitable glasses.

By the use of Leitz double ocular, it can also be utilized for instantaneous work. The camera and lens being placed as above described, the picture is watched through the double ocular, and when the desired picture is seen the exposure can be made.

A small arc light would be advisable.

NEW EFFECTS

YOU often feel that your work has become stereotyped. Everyone does, no matter what their work may be, and it is a hard matter to get away from this feeling. Sometimes another man's work may put you on a new track. Again the idea may come from a demonstrator, a photographic convention, or some source altogether foreign to photography.

You can't change your style of work completely—can't make it entirely different from what it has been for years; but you can gradually work into new styles and effects without attempting to discard what you already know how to do well. Your own personality will always dominate; the new effects, which are the results of the new ideas, will only lead to new conditions of working.

This article has been inspired by the work of an English photographer which impressed the writer as being different in many ways from what we are accustomed to see.

And while we could not say it is technically better, we do believe it requires a great deal of skill and good judgment to produce such work.

At first glance you might think it the work of a woman, it is so delicate; but on second thought you recall that some of the best photographers of women are men whose work is characterized by extreme delicacy.

The general tone of these pictures is gray; the lighting effect is soft and harmonious; there is an atmosphere about them that is cool and pleasing, but not cold; there are enough shadows, but none that are harsh and solid. It would probably be difficult to find a bit of clear glass on the negatives, yet it must be there, for the prints show a perfect scale of gradation. However, the shadows are very much in the minority. The pictures are made up of half-tones for the most part, and this seems to account for the effect of delicacy.

Naturally, this style of work is best adapted to photographs of women and children, in light costumes, though the effect is partially carried out in other work by the same photographer.

One very noticeable thing about these pictures is the tone of the background. It is never white, neither is it dark or of a tone that lends contrast to the picture. There is only a tint of gray with figures in the background outlined no stronger than the white table or chair that is generally used for posing when such accessory is necessary.

Such effects require a much softer and broader lighting than the average photographer uses. If you would attempt such pictures, place the subject opposite the source of light or at least in a position to soften the shadows without the need of a reflector. You probably have a gray ground that will answer your purpose—also a light chair or table that may be used in posing your subject.

Now as to exposure: We might say that everything depends upon the correct exposures. Anyone can produce a *flat* gray effect—but that isn't the idea. There must be brilliancy and this *can* be obtained without contrast. The two must not be confused.

Once a brilliant but soft and delicate effect of lighting has been secured, make several negatives of varying exposure to determine what exposure is required for the very best result. The prints will show you, and you can readily understand the important part that exposure plays in negative making. In fact, such a comparative test is a good thing in any kind of photographic work. "Falling off" on exposure is the most common cause for drifting into mediocre work.

We have tried to describe one man's way of making photographs that strikes us as being a little out of the ordinary. If you really feel that you want to make your work a bit different and don't know just how to go about it, try placing your subject anywhere but in the light to which you are accustomed. Try the opposite end of your skylight. Work

with the light, across the light, and against the light. If there is a window in your sky light room, shut off the main light and try the window.

You can't produce new effects by working in the old way—that is certain: but, however you may work, bear in mind that there is a right exposure for every style of lighting. Don't condemn any result until you can be sure that the exposure is not at fault.—*Photo-Digest.*

A TWO-SOLUTION UNIVERSAL AMIDOL DEVELOPER

By T. H. GREENALL

DIAMIDOPHENOL, amidol, or amidol substitute, if not already manufactured in this country, ought soon to be obtainable, and the following method of employing it in two solutions, which I believe to be quite new, may be of interest.

It should be understood at the outset that, whereas the term "amidol" is used throughout, the remarks apply equally well to "diamidophenol," "amidol substitute," "dolmi," or any of the other compounds that are more or less amidol under another name.

A stock solution of sodium sulphite is required. This may be prepared by putting two ounces of sulphite crystals in a bottle of which the capacity is known to be eight ounces, and filling up with hot boiled water, which will make the strength of the solution approximately one in four. For better preservation this should be decanted into smaller bottles and well corked; and in winter time, to prevent crystallization, it should be stored in a warmed room. A solution of oxalic acid is also required, and is prepared by dissolving two hundred and forty grains of oxalic acid in twelve ounces of hot water, which makes the strength one in twenty-four.

The amidol mixture is prepared as follows:

Solution A

Amidol	16 gr.
Stock solution of sulphite	1 oz.
Stock solution of oxalic acid	2 oz.
Water to make	6 oz.

A method of making up the solution from the salts themselves is by dissolving

Amidol	16 gr.
Sodium sulphite (crystals)	120 gr.
Oxalic acid	40 gr.
Water to make	6 oz.

The amidol is dissolved in the sulphite solution diluted with water, and the oxalic acid added. A precipitate will form, which must not be filtered off, as it is essential to the activity of the developer. It is necessary, therefore, to shake the bottle before measuring out a portion, and to take reasonable care that a proper proportion of the precipitate is taken with the liquid. But the precipitate is very light, flocculent, and easily dispersed, and dissolves instantly in the accelerator.

Of the above Solution A, three drams contain one grain of amidol, and this quantity, together with a suitable accelerator, is sufficient to make one ounce of developer, quite strong enough for any purpose, and perfectly applicable either to develop a plate or make a gaslight or bromide print, the color of the image being of the same pure black as is given by amidol used with sulphite in the ordinary way. Solution A should be preserved in small and well-corked or stoppered bottles.

For the accelerator we have choice of several substances. We may use simply sulphite (Solution B), or for certain purposes borax (Solution C). Further, in the case of negative making

we may employ sodium or potassium carbonate (Solution D or E). The following are suitable formulæ:

Solution B. This accelerator is of universal application.

Sodium sulphite (crystals) . .	2 oz.
Hot water to make	8 oz.

From one dram to one and a half drams are required with three drams of Solution A and water to make one ounce of developer.

This solution is purposely made strong, because the more dilute solutions of sulphite deteriorate, especially when exposed to the air, with the formation of sulphate. It has been stated that the latter substance—sulphate—is injurious, and spoils the color of a bromide print, but, from personal tests, I have found that the presence of sulphate is without appreciable effect either on the rate of development or the color of the print. As much as ten grains of sulphate may be added to an ounce of developer without making any difference. Deterioration, therefore, in Solution B must be due, not to the presence of sulphate, but to the loss in sulphite, and may be compensated by taking slightly more of the solution. On the other hand, excess of Solution B, or other accelerator, would tend to make development too rapid, and out of control altogether.

Solution C. This may be used as an alternative to the above for bromide papers; it is not applicable to gaslight papers.

Powdered borax	½ oz.
Hot water to make	16 oz.

From three drams to half an ounce of this is required with three drams of Solution A to make, with water, one ounce of developer. When using borax a necessary precaution, at any rate in hot weather, is to add three times the normal quantity of potassium bromide, *e. g.*, three drams A, four drams C, one and a half grains bromide, and water to one ounce is equivalent to three drams A, one and a half drams B, *half a grain* bromide, and water to one ounce.

Solution D. This is to be recommended for negative making.

Sodium carbonate (crystals) .	1 oz.
Water to make	16 oz.

Of this solution two to two and a half drams are required with three drams of Solution A to make, with water, one ounce of developer.

Solution E. This is also suitable for negative work.

Potassium carbonate (B.P.) .	1 oz.
Water to make	16 oz.

Of this eighty to ninety minims are required with three drams of Solution A, and water, to make one ounce of developer. Potassium carbonate being very hygroscopic cannot be kept in dry form. It should therefore be placed in a bottle for solution at the chemist's.

Development of Bromide Papers

Before commencing to use a new bromide paper, the worker should consult the maker's formula to find out how much potassium bromide he advises with an amidol developer. It will not do to take as a guide the amount advised with M. Q., because amidol always requires more than M. Q. An examination of makers' formulæ show that practically all bromide papers may be classed as belonging to one or other of three groups: (1) Those which require a mere trace of bromide and give vigor readily, even with a dilute developer containing a minimum of accelerator. (2) Those which require about half a grain of bromide to the ounce of developer, and, for vigorous prints, require a strong developer with a maximum of accelerator. (3) Those which require from one to two grains and upward of bromide to the ounce of developer. The papers in this class are usually much faster than the others, and have little latitude, but properly used they give charming results from negatives usually considered too strong to make a good enlargement.

Practical tests, with some three different makes of bromide paper, in each of

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the above classes, enable me to give the following formulæ:

For a Paper in Class 1. 3 drams A, 1 dram B, $\frac{1}{10}$ grain bromide, water to 1 ounce. For these papers the developer may usually be further diluted with advantage.

For a Paper in Class 2. 3 drams A, $1\frac{1}{2}$ drams B, $\frac{1}{2}$ grain and upward of bromide, water to 1 ounce. Dilution of the developer gives grayer and softer results.

For a Paper in Class 3. 3 drams A, 1 to $1\frac{1}{2}$ drams B, 1 to 2 grains and upward of bromide, water to 1 ounce. With correct exposure the image is very slow in appearing. Development is quite unlike that of a paper in Class 1.

Individual Modifications

The exact amount of accelerator to suit the individual worker will not be far different from that given above. It may be found by dividing the first trial strip into two portions, and developing one portion with slightly more or less Solution B than the other. With a paper in Class 1 or 2, development is correctly carried out when it is completed gradually in from two to three minutes. Increase of accelerator makes it too rapid. In all cases it must be borne in mind that the developer only contains one grain of amidol to the ounce, and, consequently, will soon be exhausted.

Further variation in the amount of bromide may be made within certain limits. Increase of bromide allows an increased exposure to be given, and a more vigorous developer (more Solution B) to be used without degrading the high lights, so that we may get deeper blacks; but any increase of bromide must always be accompanied by a fresh trial for the exposure, otherwise its usefulness is lost. Rather than change the developer, it is often preferable to use a harder or a softer working paper to suit a particular negative. All that is necessary for a trial is a small strip of the paper, sufficient to cover the highest light in the picture together with a little adjacent shadow.

Gaslight Papers

The following gives clean and delicate prints and an excellent pure black: 3 drams A, 1 dram B, $\frac{1}{10}$ grain bromide, water to make 1 ounce. An acid fixing bath must be used, and to ensure a pure black it must be fresh for each batch, and not one which has been previously used for bromide papers. The exposure must be as nearly correct as possible.

For Negative Work

The two-solution method enables the worker to adjust his developer to suit his special requirements. For example, the hand-camera user who prefers a vigorous, soft-working developer may use 3 drams A, 2 to $2\frac{1}{2}$ drams D, water to make 1 ounce; or 3 drams A, 80 to 90 minims E, water to make 1 ounce; or 3 drams A, $1\frac{1}{2}$ drams B, water to make 1 ounce. Any of these will develop a plate classed by Watkins as of "medium-quick developing speed" in five to seven minutes at 65°, and give a negative suitable for enlarging. With correct exposure the image appears in about twenty seconds.

On the other hand, the stand-camera worker may prefer a less vigorous form, such as 3 drams A, 1 dram B, and water to make 1 ounce. With this the image should appear in about twenty-five seconds, and development be complete in about eight minutes.

With full accelerator the least light action is affected by this developer at an early stage in the development. The negative goes black all over. Care must therefore be taken to avoid all causes likely to produce fog.

In conclusion, as is well known, diamidophenol may be used like amidol by simply dissolving the dry substance in a solution of sodium sulphite; but the solution will not keep more than a few days. Nor does acid amidol developer, to which a proportion of meta-bisulphite, or bisulphite lye, has been added, keep any better, in my experience. Moreover, the preparation of a small quantity of developer from the dry powder and a stock sulphide solution is

"PAM"
BY S. WITHRINGTON STUMP
ADELAIDE, SOUTH AUSTRALIA

likely to be inaccurate, so much so that if only one ounce is wanted it is usual to prepare more, whereas by the two-solution method a stock solution containing developer sufficient to last a month may be prepared with as little trouble as making a plain amidol developer; and, from the stock, the equivalent of one grain of developing substance may be obtained at any time with great accuracy. Also by varying the accelerator, as I have already shown, we may make the developer of more universal application.—*Photography.*

THE POINT OF VIEW

By C. F. GREENLEAF

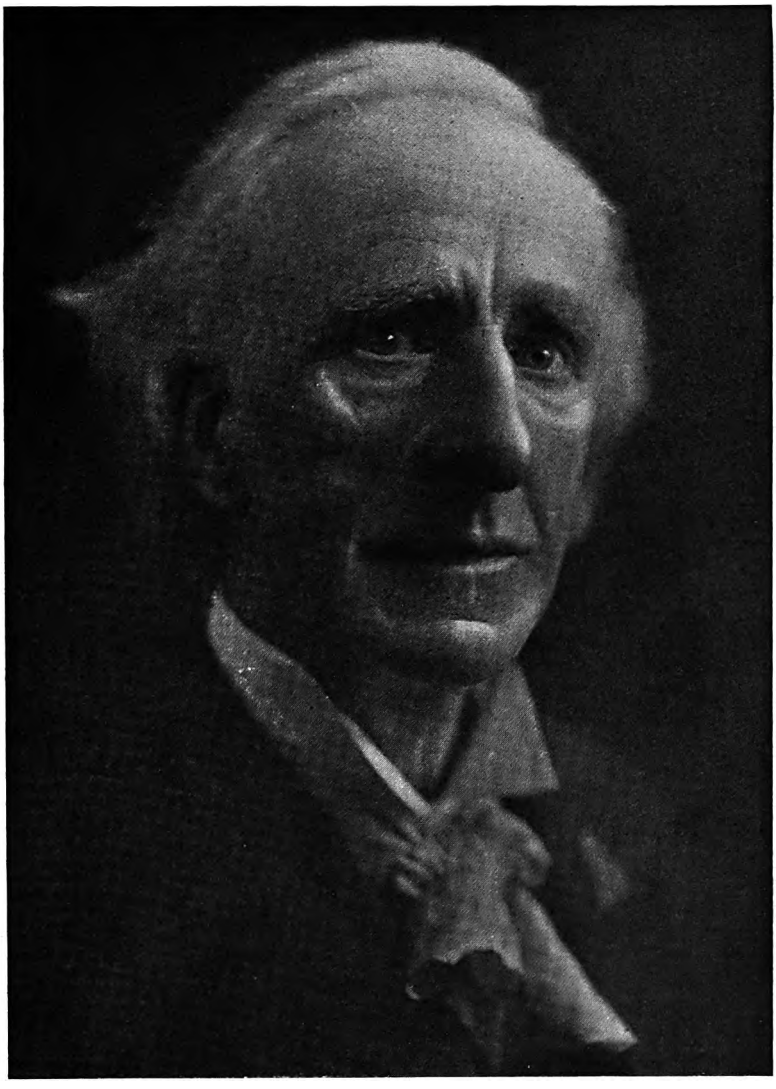
THE point of view that I wish to consider relates to commercial photography and mastery of the outdoor kind. Of course you must have a good lens for this sort of work—rectilinear, anastigmat, capable of working fast and fairly sharp with nearly full aperture, and all that. But no amount of technical excellence in any and all departments of the work can make up for a poorly chosen viewpoint. I think more views are failures from this cause than any other, and yet it is often hard to define the cause of dissatisfaction.

It is excellent practice to make some certain view, secure a print, and then go back and study the ground carefully. See where you failed and where you succeeded. You will generally find that you could have chosen a spot for your camera that would have given a much better view. Then try it again. It is a good investment to make a half dozen views of one object, striving each time to get the best result possible.

Very many photographs, technically good, are simply good-for-nothing, because they say nothing, tell no story. A publishing firm wrote me: "We want pictures of good farm buildings and farmhouses. These photos must tell their own story, something that will be interesting and instructive. A pretty outdoor view means nothing. If it shows a man at work weeding onions, then it has value." The writer's viewpoint is correct. But we might go a little farther. The man weeding onions may be behind the house when we wish to expose the plate. We must get him into harmony with the rest of the scene, so as a whole it will have the desired value.

The successful photographer must learn to see this value quickly and correctly. To do so we must be familiar with the angle of the lens we are using. We must be able to swing the eye over just about the space that the lens will cover. If it be more or less, the balance and composition of the whole picture will be different. If the lens includes a tree, road, path, or even a stone, that you did not figure on, then you will get something you did not expect and is good only by chance. Of course one can set up the camera and see just what is included, but I much prefer to get this with my own lens and retina than by the proof of lens and ground glass. Then, too, see that the light does the subject justice; that it is strong enough to give sparkle and snap; that there is a sense of balance and harmony. Except in wild, lonely places a touch of human interest adds greatly, and also furnishes a key for comparative measurements.

Will you stand for an experience? A real estate man wanted some views of his development. I took the lens that always seems to do a little more than one can expect of it; the solid old box that I have lugged twenty years—rising front of over three inches, swing-back of about the same latitude, plenty of side swing too, bellows same size all the way; two dozen 8 x 10 plates.



"AN ARTIST"
By S. WITHRINGTON STUMP
ADELAIDE, SOUTH AUSTRALIA

Weight over forty pounds. Used to it. Big, pompous fellow; knew what he wanted; didn't want suggestions.

"See that bungalow? Get up close. Fill the plate. That will show it up."

It surely did. A lot of building débris scattered about. He an' the porch staring the lens out of countenance! Wooh!

"Want this water. Get just the water. This clump of trees next. Get them from right here. Get the station so it shows up big."

And so on for the day. It was not a hard day for me. No gray matter expended.

He was shown a finished set of the prints. He looked them over carefully.

"These are good for nothing," he said.

"Why?" I asked, innocently.

"Nobody would buy property from these pictures. Your work is all right, but there's nothing in 'em. What's the matter?"

"They tell no story," I replied. "Have no feeling, no human interest. You have three views of water. Water is water. It looks pretty much alike by itself. There's nothing in them to interest a city dweller, and this is the class you are after."

He looked at me a moment in silence.

"Miss Roberts, write this man a check."

"The last one I ever get from him," I thought. But I was mistaken.

"Can you meet me at the property Thursday morning?" he asked.

He was on hand. A horse and buggy with driver stood near.

"Mornin'; that man knows the property as well as I do. He goes where you say. I don't want to see you again today. Skidoo!"

But he grinned a grin of understanding. We both knew. This was something like.

"Drive to that bungalow by the lake, John." (The same one we took so as to "show it up.")

"Not too close. That will do."

The beautiful old apple-tree in full bloom will hide the view newness. Let it conceal all but the porch; that hints of comfort. The huge rock a little way back, covered with lichens and vines, works in fine. The shelving sward stretches down to the water. The thick woods make an ideal background.

"John, please drive down by the water and yell to that boat-load of young people to come ashore."

He turned the horse partly toward the camera. I motioned him along till he filled in well. The boat drew near. Some white dresses. When almost ashore the rower ceased his labors and the pretty waves came rippling up the strand.

Bluff said the picture sold the property.

Caught the depot with train coming in, waiting passengers, carriages, autos; I put the old rustic bridge in the foreground, little to one side, the pretty bungalows in the middle distance, showing the fine sweep of the development away off to the softly rounded hills; I found "that clump of trees" had a little winding path, put it to one side of the view just as if it came from nowhere and was going to the same place; asked John to "peel" down to his shirtsleeves, shoulder an ax, and trudge partly away from the camera, *a la* Millet peasant, the barefooted boy led the harnessed horses onto the low bridge and looked earnestly for minnows, a nickel's worth, with the big, drooping willows in the background. And so on.

Don't be satisfied with photographs. Make pictures. They are worth all the trouble it takes to secure them. Climb hills, mountains, stairs, freight cars. Build platforms. Risk your neck, even your camera—if necessary. Don't try to get them in the millionth part of a second. When at work on a busy street people always come up and ask, "Do you give time?" And when I tell them I do and plenty of it when I can, and when I confess I do not know what "instantaneous" exposure is, they leave me with looks of pity.

I was competing with others for a big job not long ago. Without the knowledge of the others, three of us went out different days and photographed the same views. I was the last one and the company had the three sets together. The other two were fine.

MILAN CATHEDRAL
FROM BROMOIL PRINT
BY ALBERT E. SCHAAF
POUGHKEEPSIE, N. Y.

"What did you do with that old black water-pipe on this house?" I was asked.

"Oh! that little tree grew there on purpose to hide it," I replied.

The others showed it, making black, perpendicular lines that looked bad on such fine photographs.

"How did you get the big hotel in such good proportion?"

"Got an express wagon with a big dry goods box. That put me up about twelve feet and gave me a better view-point," I answered.

My work was certainly no better, I thought not quite as good technically as one of the others; but I got the job because my view-point was more carefully chosen.

The professional outdoor worker has no snap of it today. About everyone that he does work for is a "fiend" to a greater or less extent. They generally tell you they could do this themselves (they have probably tried and failed), only they haven't time. All sorts of conditions must be met. In a batch of plates exposed one day last summer, some had one-fiftieth of a second, one had two hours, one was exposed when the thermometer registered over 100° of heat, the next one 12° below zero. (cold-storage plant), and so it goes. It means hard work, lugging, climbing, good judgment, good everything. But it is a satisfaction to save every plate and get a good, fat order and know you deserve it.

THE MODERN PROCESS IN MAKING PHOTOGRAPHS UPON WOOD FOR ENGRAVING

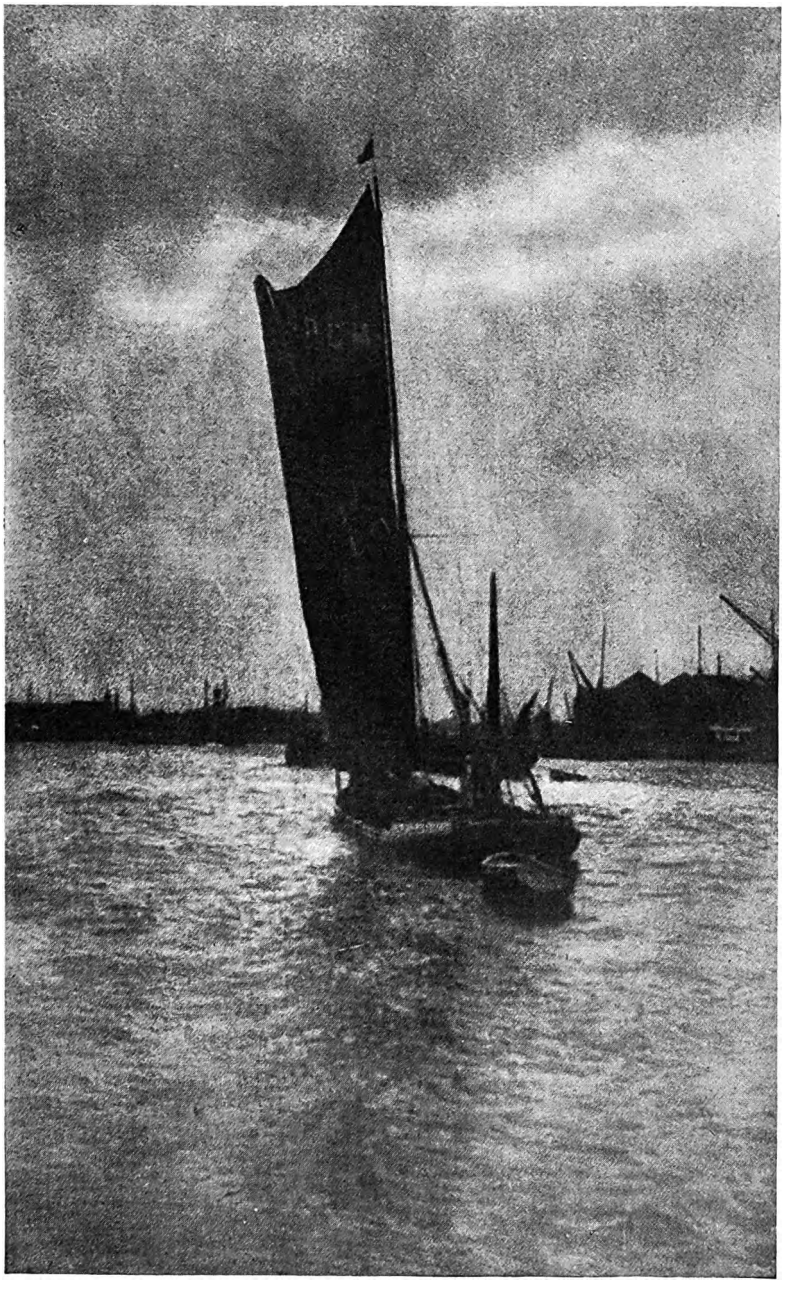
By ALFRED J. JARMAN

THE various processes of making photographs upon a wood block for use by the engraver have always involved the employment of a specially constructed frame to give complete contact between the wood block with a sensitive surface and the negative, which has caused upon many occasions the breaking of the negative, owing to the pressure required to assure complete contact to produce a sharp image in every particular. In every operation is was necessary to dry the block before printing could be attempted.

The process of making a diapositive or transparency by the wet-collodion process, then transferring the collodion film to a wood block, was found to give considerable trouble through the film chipping or peeling during the process of engraving. Although this did away with the use of a pressure printing-frame and its attending inconvenience, the process was uncertain and could not be depended upon for uniform results. Step by step a process has been developed that eliminates all these previous difficulties, one that permits of rapid production by means of a wet method, and dispenses with the use of a printing frame entirely.

The negatives in this process are made by the wet-collodion process, and iodized collodion is employed in place of a bromo-iodized collodion. The reason for this innovation is because an iodized collodion will produce a negative with greater contrast than is made by a bromo-iodized collodion.

A considerable amount of wood engraving is carried on today, and its production is on the increase. The kind of negative that is required for wood-engraving must render the outline of every part of the object, drawing, or photograph perfectly, because it is this outline that is required by the engraver. The formulæ given here is complete for the process from the beginning to the finish.



"GREENWICH REACH"
FROM BROMOIL PRINT
BY ALBERT E. SCHAAF
POUGHKEEPSIE, N. Y.

Iodized Collodion

A

Alcohol, sp. gr. 0.805	4 fl. oz.
Sulphuric ether, sp. gr. 0.725	10 fl. oz.
Pyroxylin (negative cotton)	120 gr.

This mixture must be shaken well until the cotton dissolves.

B

Alcohol, sp. gr. 0.805	4 fl. oz.
Ammonium iodide	50 gr.
Cadmium iodide	30 gr.

Shake this mixture until the salts have dissolved, then add B to A. This preparation constitutes the iodized collodion.

Nitrate of Silver Bath

Distilled water	60 fl. oz.
Recrystallized nitrate of silver	4½ oz. av.
Iodide of potassium	5 gr.

Shake this mixture well, add ten drops of pure nitric acid, shake the mixture vigorously, filter twice through absorbent cotton in a glass funnel; the bath is then ready for use.

Developing Solution

Saturated solution of protosulphate of iron	6 fl. oz.
Distilled water	6 fl. oz.
Glacial acetic acid	½ fl. oz.
Wood alcohol	1 fl. oz.

Fixing Solution

Ordinary tap water	12 fl. oz.
Cyanide of potassium (cryst.)	3 dr.

Albumenizing Preparation for the Wood Blocks

Dried egg albumen	1 oz. av.
Distilled water	12 fl. oz.
Chloride of ammonium	2 dr.
Iodide of potassium	10 gr.

As soon as the above salts and albumen are completely dissolved, shake the mixture well, and filter or strain through a folding of cheesecloth. The iodide in this preparation aids in giving snap to the printed image.

Hardening Solution

Wood alcohol	12 fl. oz.
Formaldehyde (40 per cent.)	1½ fl. oz

This preparation must be well shaken to insure complete admixture. All these preparations must be kept in wide-mouth, amber-colored bottles, and as much as possible away from the action of daylight.

Sensitizing Preparation for the Wood Blocks

Recrystallized nitrate of silver	300 fl. oz.

Dissolved in the smallest quantity of distilled water, then added to

Glycerin	10 fl. oz.

This preparation must be made and allowed to stand for several hours before use. If made at night it will be ready for use the next morning.

The mode of operation is as follows:

As soon as the negative is made it is intensified, dried and coated with rubber cement thinned down with a small quantity of benzine. The coating is allowed to become quite set (*not* by the aid of heat). It is then coated with leather collodion in quite the same way as a negative is coated for reversal in the halftone process. It is then allowed to dry spontaneously, when the film is cut to the size required for the block by placing a straight edge upon the surface and drawing the tip of the blade of a knife across the film so as to cut clean to the glass. The leather collodion is made as follows:

Tough Leather Collodion

Sulphuric ether	6 fl. oz.
Pyroxylin (soluble cotton)	120 gr.
Alcohol, C. P.	6 fl. oz.
Castor oil	1 dr.

As soon as the cotton has dissolved, the collodion must be filtered through absorbent cotton, pressed lightly into the neck of a glass funnel, taking care to cover the top of the funnel with a glass plate to prevent the evaporation of the solvents.

Coating the Block with Albumen

Pour the salted albumen preparation into a glass tray, upon the bottom of which has been placed a piece of clean, pure, white blotting-paper, so that the liquid stands a little above the blotter. Place the face of the block upon this blotter, and permit it to remain for

"SNOW AND SHADOWS"
FROM BROMOIL PRINT
BY ALBERT E. SCHAAF
POUGHKEEPSIE, N. Y.

ten minutes or more, so as to allow the albumen to permeate the surface of the block. Upon removal, sprinkle a small quantity of pure oxide of zinc upon the surface, then brush the surface well and with care, until a delicate, soft, creamy surface, perfectly even, has been acquired. The surface must be allowed to dry spontaneously, or when nearly dry pour over the surface the formalin and alcohol hardening preparation. Return the excess to the bottle, let the surface become dry, then it may be sensitized in the following manner.

Sensitizing the Surface of the Block.

Into another glass tray, the bottom of which has been covered with pure white blotting-paper, pour the glycerin and nitrate of silver sensitizer; place the wood block with its whitened surface face down upon the silver-soaked blotter; change its position once during a period of about ten minutes. Take the negative whose film has been cut to size, place thereon a piece of wet paper, carefully lift the film clean off the plate by lifting the wet paper at one corner, and gripping the film by lifting it at one corner, when it will leave the glass support and remain upon the wet paper. Place the film in position on the wet silver solution on the block, arrange it in position, then squeegee it down firmly upon this surface with a thin piece of cardboard, by drawing the card edgewise across the surface. The negative film will lie perfectly flat, and may now be exposed to either bright daylight, sunlight, or the arc electric light, and the printing continued until a well and fairly dark image has been produced. The inspection of the image during printing is accomplished by lifting the film at one corner, when the depth of printing is easily seen, and the lifted portion of the film will return to the block in a most perfect manner without moving or shifting. It is by this means that the printing frame is dispensed with.

As soon as the printing is complete the film is removed and either preserved or cast aside. The block is washed under the faucet to remove the adhering sensitizing solution; then, for final fixing of the image, placed for five minutes, face down, so that the block floats, into a bath composed as follows:

Fixing Solution for the Wood Block

Water	80 fl. oz.
Hyposulphite of soda	16 oz. av.
Common salt	4 oz. av.

After fixing in this solution the excess of white that overlaps the edges of the block is scraped off by a piece of freshly broken glass. The block is then washed under the faucet in running water for a minute or two (not longer), then wiped dry all around the sides and bottom, and the face of the block, containing the print, may be blotted very carefully so as not to rub the image, when the whole is dried while standing upon blotting paper ready for the engraver.

There are times when the collodion negative will require intensifying, so as to give greater density in the opaque parts, which aids in producing prints with greater contrast. A suitable intensifier for this work is made as follows:

A

Bichloride of mercury	120 gr.
Common salt	120 gr.
Hot water	20 fl. oz.

As soon as the solution has become cold make up the following:

B

Potassium iodide	40 gr.
Water	10 fl. oz.

Add A to B (not the reverse). A dense red precipitate of red iodide of mercury will be produced, known as scarlet vermilion. Let this subside. Pour off the top liquid, add twenty ounces of water. Make up a solution of hyposulphite of soda, half an ounce in three ounces of cold water. Add some of this solution, a few drops at a time, to the red-iodide mixture, stirring well during each addition, until the iodide has nearly but not quite dissolved.

"HIGHLANDS"—FROM BROMOIL PRINT BY ALBERT E. SCHAAF

Intensifying the Collodion Negative.

Place the negative into this solution in a tray, allow it to remain until it turns a brownish-green in color, then wash it under the faucet and apply a solution of

Monosulphite of sodium .	½ oz. av.
Water	5 fl. oz.

Pour this on and off until the collodion film is blackened through. Return the solution to the bottle. Then wash for one minute in a gentle stream of water, and place the negative in a rack to dry. After this the operation of rubbering and collodionizing may take place.

HOWEVER gloomy and disappointing your present outlook is, you have no reason to be discouraged. There are few skies so dark but they have some silver in their lining.

EFFORT means struggle, and struggle means gain.

A MAN who shows temper is a fool because he gives his best card away to the other fellow.

DON'T judge rashly, but after your mind is made up, act.

HONORS should be taken like after-dinner coffee; to be sipped with enjoyment, but not as a substitute for a meal.

IF you feel that you are in the right, stand your ground. A failure means little, but every strong man despises a weakling.

OVER FIFTY YEARS OF PHOTOGRAPHY

By DAVID BACHRACH

AT the outbreak of our Civil War I was apprenticed, as a boy, to one of the better class of photographers, and it was considered that the main thing to be accomplished by the photographer was to know how to make the bromo-iodized collodion, which was a solution of a modified form of gun cotton in alcohol and ether with suitable forms of iodides and bromides; how to make up a bath composed of a solution of silver nitrate and keep it in working order. It was also necessary to know how to mix up the proper solution for developing the plate—a solution of protosulphate of iron being mostly used, and also how to make up a proper fixing bath.

It was also necessary to know how to make up solutions for sensitizing the photo-papers, a very careful process, and how to print, tone, fix, and wash them, which was a rather complicated operation all through. The mounting and finishing was another pretty good portion of the work, and when a man had pretty well mastered such as I have given he was considered a good man.

But this did not include any knowledge of lighting and posing, and it took a long time to find out even how to build a good light for the work. It would not have taken so long to do the latter part of it had the men who had studied art taken hold of the thing. Unfortunately, the man who combined both of these talents was rare, and, when found, was the successful one in a business sense.

I had been but two years at this work when a young man associated with me in the work, Mr. Norval H. Busey (a well-known portrait painter for the last twenty years), first took an interest in lighting and posing, giving very little attention to the other part. This showed me the importance of that part of the business—the artistic part—which the mere chemical technique had almost obliterated. The result was that he was a successful man with a high class of trade before I was awakened to the real importance of that part of the art or profession.

The advent of Napoleon Sarony into the business brought into it the real artistic element which was then commencing to revolutionize the profession. We all learned this part very slowly; how to make the process yield results that were not an outrage on the name of pictures, which about nine-tenths of the products were. At first, in fact up to twenty years ago, a sharp, clear-focus picture was considered most advisable; high gloss and full of detail were essential.

But another revolution came to hand in the early 80's, when the present very sensitive dry gelatin emulsion plates took the place of the old collodion wet plate with all its dirt and bother. This brought in with it a new element, a lot of amateurs, men with artistic taste and talent among them, who followed in the footsteps of the old men and went after results not dreamed of before. We then did away with the old head-rests, the cause of so many of the old stiff portraits, and were enabled to make pictures of children and moving objects not dreamed of before. The things we do now every day would have been considered pipe dreams back in the 70's.

Coincident with all this advance, photo-engraving, which I helped to introduce here, came along, and later on the great modern system of illustration, the "halftone" work, was developed.

In trying to show up the general advance made by photography, which must make up this first article on the subject, I wish to call attention to the fact that most of these advances were made without any attempt to patent

"THE WILLOWS"—FROM BROMOIL PRINT BY ALBERT E. SCHAAF

them, one photographer making some improvement, then another bettering it, etc. Especially is this the case with the most important of all these—the gelatin-bromide dry plates—which at first were very much discredited, until they were gradually perfected. An English amateur photographer was the first who published a formula for the same. The things that have been and are patented are none of them of prime importance—not even that of film photography.

As a sample of the uselessness of patents, Mr. Louis E. Levy and myself took out, in 1875, the first American patent on photo-engraving. Within eighteen months it was really obsolete, as other improvements made it in reality almost useless. It was an improvement on the old obsolete process of Paul Pretsch, of Vienna, which made it practicable—the old swelled-gelatin method. The new one, of printing on zinc or copper plates and then etching, did away with the entire process, and this latter method is now used in the halftone work.

With the exception of some old daguerreotype work made by Mr. D. O. Hill, of Scotland, the work made up today by the better class of photographers so far outdoes everything done prior to the 70's that it is almost unbelievable. The factory work, in the way of paper, plates, etc., has almost taken the last part of technical chemical work away from the business.

Before concluding this portion of the article, I must give a brief description of the first practice of photography—the daguerreotype—to the reader. Daguerre discovered, 1836-1839, that a highly polished plate of silver, galvanized on copper, when fumigated in the dark with iodine, would be sensitive to light in the "camera obscura" used at the time, as to leave an image on the plate when the latter was developed with the evaporation of mercury and the plate afterward fixed with hyposulphite of soda. Later on, the plates were made more sensitive with bromide. Almost at the same time, Mr. Fox Talbott, of England, developed the photograph, which was then an image on paper made by first sensitizing the paper with iodides and then making it sensitive by coating the paper on a solution of silver nitrate. This was the

real starting point of photography, which has made the real future of picture making after the discovery of gun cotton and the making of collodion.

Having given this brief outline showing the general practice of photography, in my next article I will give some of my experience during the Civil War.

(*To be continued*)

SHOWCASE SPECIMENS—THEIR VARIOUS AND AVOIDABLE DEFECTS

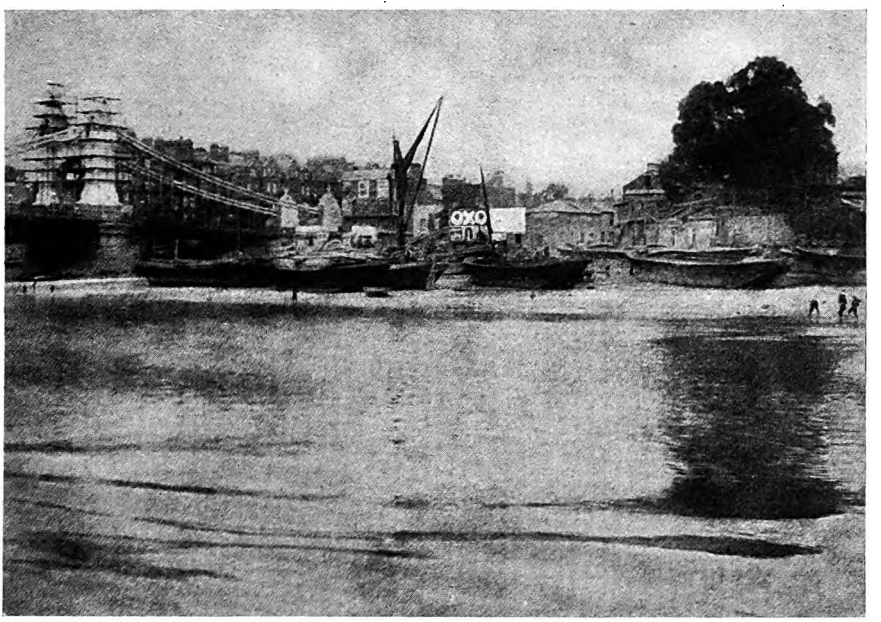
By ALFRED JARMAN

PHOTOGRAPHIC specimens that are used in showcases should be an exhibition of the best work that the photographer can produce, being as it is a means of advertising the product of the establishment. In some instances this is carried out to perfection, while in others the deplorable condition of the samples or specimens is such that they cause a repugnance in feeling by the sight of fading and yellow examples of bad and defective work. In many instances the sulphurizing of the prints is plainly visible with the black variety, and many times, too, with the so-called sepias. We cannot be certain that these sulphided sepia prints are as permanent as they are supposed to be. The actual product of the bleaching and sulphiding is not metallic silver, but an organic compound of silver. The writer has seen many show-case specimens in so-called sepia that were rapidly changing color, from a rich brown to a bilious yellow, and commencing to bronze with a graphite lustre in all the deposited parts. This sort of print during its exhibition always counts for harm, because of its untasteful effect upon the person examining it, which oftentimes causes the person to go elsewhere for a photograph where the specimens, bright and clean, have attracted him.

The cause of much of these bad productions is due to rush—there not having been time enough given to carry out the work in a perfect manner. In this case the hyposulphite of silver has not been effectively washed out. Whenever this product is present the whites of a print will soon become yellow. Another cause is the fixing of too many prints in the hypo-fixing solution. This brings about a considerable quantity of silver hyposulphite, owing to the fixing solution having become nearly saturated with silver. The remedy for this is to use two fixing baths (there are a number of photographers who practice this), so that by a second fixing the hyposulphite of silver is cleaned out of the print and the hyposulphite of soda held in the pores of the paper is easily washed out. Prints treated thus will last much longer than those that are contaminated with the hyposulphite of silver.

Specimens in showcases should be dipped into a protective lacquer or varnish, to resist the action of both damp and sulphur, employing a clear, thin varnish of the alcohol variety, or amyl acetate collodion. This material, being colorless and transparent, will not affect the print so as to cause detriment. It will improve the quality of the print by adding brilliancy without producing a gloss.

Another way to protect showcase specimens, in many instances, is to mount them upon a clear sheet of colorless glass by means of a thick solution of gelatin; then by framing these specimens, no glass is required for the frame. The writer fitted a showcase with seven prints as described, and after six years' exposure—outdoor



"CHELSEA"—FROM BROMOIL PRINT BY ALBERT E. SCHAAF

for one year and indoors for five years—there was no visible sign of fading.

Moisture condensed upon the inside of a showcase is very detrimental to the specimens under ordinary conditions, but when they have been treated with amyl acetate collodion they become damp-proof, resisting at all times moisture that would injure other prints permanently.

Platinum prints form the exception, providing they have been treated well in the acid clearing solutions and washed well after this operation. Even platinum prints will turn yellow in the whites if they have not been carefully treated in all the various operations because the trace of iron salt remaining in the body of the paper becomes oxidized into a lower oxide of iron; hence the yellowing effect. It may be taken for granted that the quality of the prints and the general appearance of the showcase is our index to the conduct of the business they represent; so from an advertising point of view the showcase specimens, whatever they may be, should reflect the quality of the work turned out by the establishment. The protection of these specimens should be cared for by thorough protection both as an advertisement and for the trade they may bring.

ARTISTIC MOUNTING

By H. MILLS

THE mounting of a photograph in a tasteful manner is a process which is very often performed in a perfunctory manner. There are many photographers who merely stick the picture onto a sheet of tinted paper, or papers of different colors, irrespective of the color or contrasts in the photograph. This should not be so; it is unfair to the print and to the ones who have to have the pleasure (?) of looking at it.

A good print requires and deserves a suitable surrounding. A lady of fashion looks out of place in a clay pit, so do some very good photographs on their respective mounts I have seen during the course of the many lectures I have given on the subject of artistic mounting and also in the portfolios I have been privileged to judge.

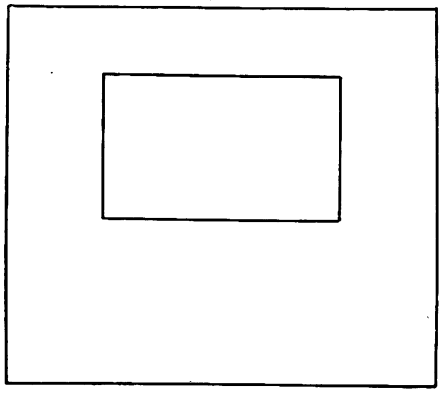
The mounting of photographs then requires some care and thought, as well as a certain amount of taste.

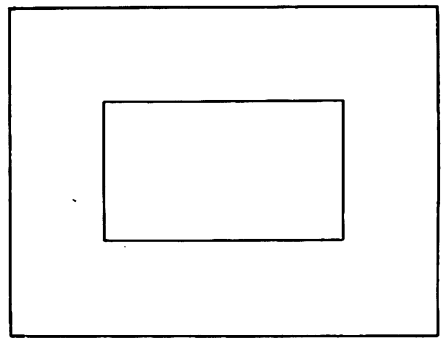
There are two methods of setting out a print. The simplest way is to paste the photograph, after the necessary trimming of course, onto a sheet of paper—gray or white for black-and-white prints, and neutral tints corresponding to the color of the photographs (*i. e.*, light browns or fawns for brown, bluish-gray for blue prints, and so on) for prints in a monochrome color. If now two or three series of pencil or crayon lines are drawn round the photograph — one, close to the print, say ⅛ inch away, and the other two close together but farther away—the picture will have a simple but tasteful surrounding.

The novice, following the above advice, and always keeping to the lighter tints of mounting papers, will find that, providing the technical part of the work is carried out neatly, his picture is suitably mounted. Simplicity is the keynote of good taste, and whatever goes to make up the scheme of work, the result must give the impression of simplicity.

Many photographers employ the multiple method of mounting with excellent results; but the more paper used the more difficult it is for the average amateur to produce an effect of simplicity. The mount then commences to compete with the print for interest, and thus, instead of enhancing the value of the print, as its duty is, it detracts from it. As a rule it is not wise to employ more than two, or at most three, tints for building up a multiple mount: A light tint for the mount proper and the wider border or borders, and a *rather* darker one between, trimmed to very narrow dimensions to give the effect of lines. With

ABSORBING "WILSON'S"
BY S. W. STUMP, ADELAIDE, SOUTH AUSTRALIA





only two tints, it is surprising what a variety of styles of schemes may be composed.

A print may be appreciably lightened or darkened according to the tone of the mount. Thus a dark photograph will appear darker on a very light mount than it would on a dark mount and *vice versa;* so that in the hands of a careful and thoughtful worker certain imperfections in his prints may be minimized by judicious mounting.

Some photographers, again, often leave a white margin round the photograph (by masking the negative during printing). When mounted the effect is at once seen to be rather startling, particularly if the mount happens to be rather dark. The white oblong is too striking, and is therefore not allowable. For the same reason, black is very rarely necessary, as sufficient contrast in the mounting papers may very easily be obtained by a tint somewhat darker than the next one to it. The reader has only to place a sheet of, say, light fawn or gray upon a sheet of medium brown, leaving only a thin edge of the latter showing along the edge of the former, to appreciate this. Strong contrasts in mounts are to be deprecated.

A word as to the place the print should occupy on the mount. Very often this is a central position, both as regards top and bottom and sides. This is, of course, wrong, as may be seen from the two diagrams. Where the print is centrally mounted it appears to be lower down on its mount than it really is, and has thus a "slipped-down" appearance.

The most pleasing position is where the widths of mount visible round the print are about the ratios of 2:3:4. That is, if we have a photograph 6 inches by 4 inches, the width of mount at the top will be 2 inches, at the side 3 inches, and underneath 4 inches. These numbers are by no means to be taken as absolute rules. Variations of these ratios according to the proportions (shape) of the print may, with benefit, be employed; but the reader will find that if he keeps the underneath portion of mount the widest, and that at the top narrowest, he will get quite a satisfactory result.

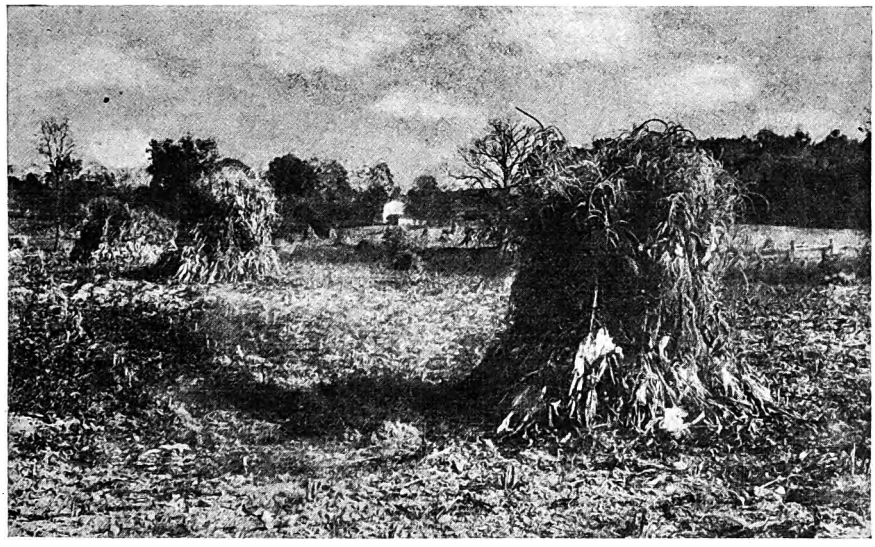
A final word as to the placing of prints (usually portraits) more to one side than the other. This is not to be recommended, as it is an expression or confession of weakness in the composition of the print. Who ever saw an etching or engraving with uneven side margins? This decentralization of the photograph, when done by the novice, is an exhibition of eccentricity and therefore to be discouraged; but when done for a purpose — that purpose to supply the lack of balance in the composition of the photograph — this is both morally and artistically wrong. If the picture lacks balance it requires either trimming or remodelling. No scheme of mounting can satisfactorily compensate for errors of composition.

STUDIO WORK IN MOTION PICTURES

THE work of the motion-picture photographer in photographing interior settings in a studio is closely related to that of the portrait worker in "still" photography. The worker in still photography can learn some very interesting things as applied to his work by observing the methods used in a modern motion-picture studio. Some of the effects obtained by the expert motion-picture photographers are fine examples of good composition and technique, and it is a good plan to occasionally visit a good motion-picture theatre to observe some of the results they obtain. One of the facts to be learned through observing the work of the motion-picture men, is that it is possible to make instantaneous exposures of very short duration and still retain the most minute detail. From a technical standpoint this is possible through the use of lenses of comparatively short focal length, thus greatly increasing the depth of focus and making possible the use of very large apertures. A motion-picture lens of two-inch focal length used to give a picture one by three-fourth inch in size gives a perfectly accurate rendering of perspective even when enlarged to fifteen by twenty feet. This would seem to be a very good argument for the adoption of small cameras for studio work, resorting to enlargement to obtain the desired size of the picture, for the motion picture has demonstrated very conclusively that it is possible to make an enlargement of almost any size from a well-defined negative. The advantages of lenses of short focal length for exacting work in the studio are very obvious, since such a lens has a great depth of focus at a very large aperture. The adoption of miniature cameras by newspaper and illustration workers has been in full appreciation of the advantages of using a small camera with a lens of short focal length for work under trying conditions of light. It is interesting to note that studio workers too are in many cases reducing the size of their equipment and installing enlarging lanterns instead. The problem of artificial and daylight lighting for large groups, as well as individual portraits, has been carefully studied by the producers of motion pictures, who, on account of the competitive nature of their business, must keep their product up to the very highest standards of photographic, as well as dramatic, excellence. The use of mercury vapor tubes and flaming arc lights is very general, while skylights are also used to a good extent. On account of the constantly changing attitudes of his subjects, the motion-picture photographer usually adopts a flat form of lighting, although for special effects the other forms of lighting are occasionally used. It is well worth the time spent to occasionally visit an exhibition of good motion pictures for the purpose of observing the methods adopted by the cinematographer for obtaining striking effects of lighting and composition, for studio work in motion pictures is only another form of portrait and group photography.

Do not fear competition. If that were taken out of your business think how common-place your work and your success would be.

IT is foolish to worry about the blunders you have made, but profit by them and see that you do not make the same mistake more than once.



"OCTOBER"—FROM BROMOIL PRINT BY ALBERT E. SCHAAF

ON THE MODERN PHOTOGRAPHER

"WOULD you count photography among the arts?" asked the Man with the Red Tie. "The modern photographer claims to be an artist; is his claim a just one?"

"Surely the men who produce such work as you see in the photographic exhibitions must be counted as artists," said the Plain Man. "I am sure that photography in their hands has become a real art, and the results they achieve with it must be taken in all seriousness; they are certainly quite as deserving of consideration from an artistic point of view as a good many of the paintings one sees at picture exhibitions."

"Yet photography is after all only a mechanical process," broke in the Art Critic, "and the products of a mechanical process are not usually accepted as works of art."

"That is just the point," agreed the Man with the Red Tie; "but cannot a mechanical process be used to produce really artistic results by men who have the taste to apply it in a legitimate manner?"

"Oh yes, that is quite possible," returned the Critic, "and the degree of taste possessed by the man who handles the camera will certainly be reflected in the character of the work he does. The artist's sense will dominate and direct the craft he employs, whatever it may be; and even though he arrives at his results by the use of mechanical devices his productions will be significant because of the artistic feeling that has inspired them."

"But photography has ceased to be a mechanical process," cried the Plain Man. "Every photographer nowadays has his own way of working, and no two of them work alike. You cannot call a craft mechanical which offers so much scope for individuality of expression and yields such a great variety of results."

"You cannot get away from the fact that what the photographer uses to produce those results is a machine," laughed the Critic. "It is a flexible and adaptable machine, I admit, but he cannot do anything without it."

"Surely he does a great deal without it," protested the Plain Man. "What

he gets with his camera is only the foundation upon which he builds something that is entirely personal, something that the machine certainly would not give him. The camera plays but a small part in the modern photograph; it is the clever handwork of the photographer that makes the print he shows us so original and so attractive."

"But is that print to be reckoned as a photograph at all?" inquired the Man with the Red Tie. "Or is it an independent creation, the work of an artist? It seems to me that it ends by being neither one nor the other."

"I should decidedly call it a work of art," replied the Plain Man, "for its qualities are given to it by the handling of a man who has the ambitions and capacities of an artist."

"But tell me, would you recognize the print as a genuine photograph?" persisted the Man with the Red Tie.

"No, of course not," returned the Plain Man. "That is where the modern photographer is so clever. He will show you things that you could not tell from etchings or chalk drawings; he will give you even the most effective imitations of water-color paintings; he can simulate the qualities of almost all the other pictorial arts. . . ."

"Ah, wait a minute!" cried the Critic. "He can simulate! There you give him away. The real artist does not try to deceive you by pretending to be what he is not. He does not seek to disguise the qualities of his medium, but rather to convince you by the way in which he recognizes them and turns them to account. If photography, to be successful, has to deny its own qualities and to depend upon imitation of other pictorial processes, it assuredly can be given only a minor place among the arts. If the photographer is to rank as an artist he must be as other artists are, an independent creator using his medium for all it is worth and respecting the limitations which are bound up with it."

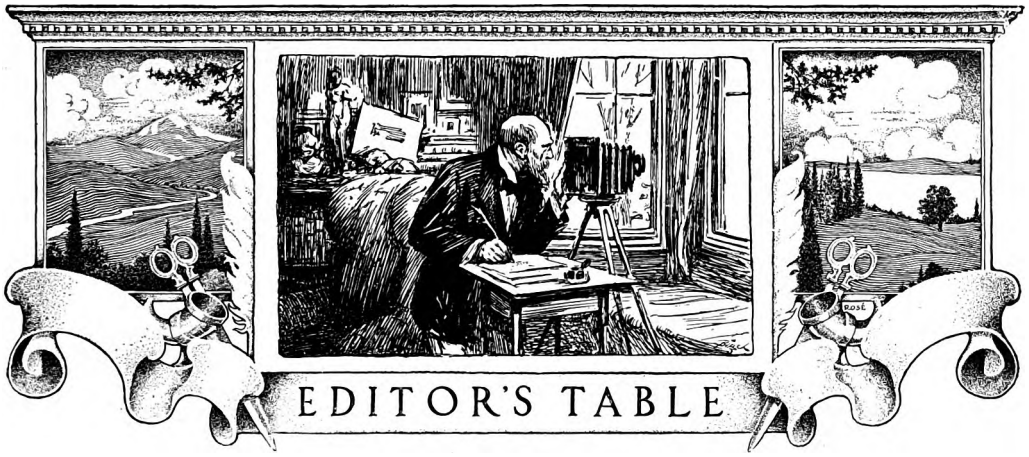
"And what is photography, pure and simple, worth as a medium for artistic expression?" asked the Plain Man.

"A very great deal, I sincerely believe," replied the Critic. "The camera is a piece of mechanism which will, if properly used, record subtleties of tone gradation, qualities of light and shade, and varieties of detail, with an exquisiteness that is wholly impossible by any other means. In the hands of an artist who can appreciate the vast possibilities of such a machine it will do almost anything; and with its assistance and by the exercise of his selective sense he can arrive at results which will have an undeniable right to be regarded as true works of art. But they must be true photographs at the same time; there must be no deception about them."—THE LAY FIGURE, in *The International Studio*.

SOME men chafe at small riches and modest opportunities, feeling that they would be happier if they had more. They do not appreciate the fact that contentment is a state of mind rather than of possession.

TO be sincere with your employer does not mean to worry him with your troubles and plans.

COUNT on making mistakes once in awhile. A thoroughbred knows how to lose as graciously as to win.



HERE COMES CHRISTMAS!

BEHOLD the Christmas season again, with its spirit of joy and friendliness, its feeling of brotherhood, and its atmosphere of good will.

The JOURNAL is wishing you, with all sincerity, a very merry Christmas. May the day itself, as well as the twelve months to come, be filled with pleasure and profits.

Good luck, good courage and good business be with you—and here's hoping your Christmas the merriest ever.

THOROUGHNESS IN BUSINESS

IN photography, as in all things, carelessness in the details of the business leads to serious negligence in more important things. Many of these small items, which are commonly overlooked, cut a considerable figure in the year's expense account, and if carefully attended to would make no inconsiderable saving in the annual expense of running the studio. For instance, ten or fifteen cents spent in cigars or liquors seems a trifling expenditure; or it may seem scarcely worth while to earn twenty-five cents, from the smallness of the amount involved, but footed up in the aggregate these small affairs run into large ones. Does not a wise statesman say, "Many a mickle makes a muckle;" and it is true in photography as in any other business, that "if we save our pennies the dollars will take care of themselves." So much for commercial detail.

In the technical part of photography there are so many important features that it is impossible to cover them all, so we will confine ourselves to but a few special points. It is well for a photographer to become thoroughly acquainted with his subject. This will not only aid him in taking a good negative, but it will also be a great help in bringing out character when retouching. This can best be done by encouraging prospective sitters to talk, by courteously listening to their opinions and completely effacing one's own individuality. When such a one has been aroused to animation, notice any prominent features of the face, and arrange light and camera so that this feature shall be shown.

There is no reason why a photograph should not be as faithful an indication of an individual's best points as is a good oil painting. A good photograph never flatters. A good picture is only the most favorable condition of the sitter caught by a skilful artist. This is the side of photography which requires careful experiment, but in which a successful result repays much work. By many, retouching is merely a matter of removing facial blemishes in an attempt to produce a flattering image at the expense of truth. Such an attempt is neither fair to the sitter nor compatible with that truthfulness of expression which should be the aim of every artist. After having

made a negative, recall the subject and bring out those points which shall best show the character of the individual as expressed in him or her by the face.

Another important point is the study of child-nature. This forms one of the most delightful branches of photography and is a business by itself. Cultivate the friendship of children brought to you for a sitting; put yourself on their level; play with them, getting down on all-fours, if necessary. In this way you win their confidence, and having thus rendered them docile and tractable, the obtaining of a good negative is an easy matter. Child-study is a matter of deep interest to the psychologist and the teacher, as it should be to the true artistic photographer.

We might dwell on this point much longer, but we trust that we have sufficiently emphasized the importance of this branch of the business. When photographers realize that their aim should be something more than a mere attempt to gain a flattering likeness they will have done much toward placing photography in its true sphere as a force in educating mankind. Then the photographer will be something more than a mere mechanic, and then he will take his place among that body who are aiming to help man to attain his true sphere—a homogeneous unit in a harmonious whole. For no true artist can work selfishly; all work embodying thought and loving care reacts on all with whom it comes in touch.

SPECIAL NOTICE

A LARGE number of subscriptions expire with this issue of the JOURNAL, and we would request the readers to renew their subscriptions as early in the month as possible, so as to make certain that they will be on the list when the January number is issued. It is also a great saving to us in office work when a subscription is renewed promptly. Seeing that hundreds of letters reach our office every day during December, our readers can see how much we appreciate the careful subscriber who is prompt in his remittance.

THE WORK OF ALBERT E. SCHAAF

WE take special pleasure in showing our readers this month fine examples of the work of Mr. A. E. Schaaf. These prints are general landscape scenes and are all done by the bromoil process. In some it will be noticed the clouds are natural and slightly embellished, while in others the clouds are entirely artificial. This latter method, of course, is one of the advantages this process has and allows a great latitude, and, while photographic fidelity of outline and form is maintained, the play of light and shade can be altered to suit individual temperament.

This process has other advantages we know entirely apart from this manipulative one. We refer to the color and texture, which are that of an etching and fully the equal of one, the method being precisely similar. In fact, in some respects the richness, due to the heavier deposit of the brush, is even greater than where a print is pulled from a plate charged with ink. In this respect the etching is more likely to resemble the bromoil transfer process, where the result resembles a Senefelder lithograph rather than an etching.

Mr. Schaaf is to be highly commended for the charm and fine quality of these bromoil prints. It is impossible for us to adequately reproduce the true effects of the originals.

LEAVES FROM MY NOTE BOOK

By an Old Hand

GLAZING PRINTS

IT is a curious thing, but there are still a lot of people who admire highly glazed prints; they ascribe to the gloss some peculiar virtue of greater depth and transparency in the shadows and insist on having it. We are none of us in business to sell what we like, but what our customers like—at least that is the leading principle of every good business man. A photoengraver told me the other day that he could make better blocks from a highly glazed silver print than from a developed print. I denied it, and we thrashed the matter out practically and he finally admitted that a well-exposed print on studio or velvet surface was as good as a silver print. The whole secret lies in the fact that too often a developed print is slightly underexposed and overdeveloped, and then a printed-out silver print will beat it easily, for the color of the latter is more transparent in the shadows.

Some people seem to have trouble in getting a high glaze on prints, and yet when set about the right way it is as easy as eating pie. It is perfectly immaterial whether it be a printed-out silver or a developed print, there is one certain method.

After the prints have been properly washed, immerse them for ten minutes in a 10 per cent. solution of commercial formaldehyde, wash for five minutes and dry. The drying is the important point.

The glazing surface may be plate glass, ferrotype sheets, or celluloid. Personally I prefer the first and always use it. The two latter are less fragile and cumbersome, and can even be hung up on a string for the prints to dry.

To prepare the glass surface all sorts of wonderful methods have been suggested, but the one essential is to have it really clean. Soak it in a 10 per cent. solution of potassium bichromate, with the addition of 10 per cent. of strong sulphuric acid for ten minutes, give it a good scrub with a hard brush under a stream of running water, and put up to drain and dry. When dry, polish with a clean cloth. An alternative method of cleaning, which is quite as effective, is to make a thick cream of tripoli powder with methyl alcohol or denatured spirit containing 5 per cent. of strong ammonia water. Rub the glass well with this till it begins to dry in patches, then polish with a chamois leather.

Personally I prefer to wax my glass, and use ordinary yellow beeswax dissolved in carbon tetrachloride. About sixty grams of wax should be melted in an old cup or pot, by standing in boiling water; then a liter of the tetrachloride added gradually with constant stirring, and the mixture finally bottled. Some people use turpentine instead, and others again a mixture of spermaceti and benzole. My objection to the turps is that it takes a long time to dry and the benzole vapor is so inflammable, when mixed with air, that it is not safe to use it in the house. Carbon tetrachloride is not inflammable and its smell is by no means unpleasant and it evaporates quickly.

Many people prefer to talc the glass. A little talcum powder is dusted over the glass, well rubbed in, and then polished with a clean cloth.

A little of the waxing solution should be poured on the glass and rubbed all over the surface with a pad of absorbent cotton wrapped up in a bit of old linen, and then the surface polished with a pad of clean linen or cloth till a perfectly even film is obtained. Too much wax should not be used or else it will leave smeary marks that will show on the print surface. This is frequently a cause of failure. Actually the less wax on the glass the better. To avoid this trouble some one many years ago suggested a 10 per cent. solution of common white soap in a mixture of three parts of alcohol and one of water, with a little essential oil, like rosemary or wintergreen, added, and this is efficient and dries quickly.

When the solvent of the wax has evaporated, the prints should be immersed in cold water till thoroughly soaked, and then laid face down on the glass, *without being drained*, and thoroughly squeégeed into contact with a roller squeegee. The roller type with a good thick roller of soft rubber is far superior to the flat squeegee. If the paper shows any tendency to rub, which it should not do, then a sheet of stout hard paper should be placed over the prints before squeegeeing.

There should be no difficulty in stripping the prints thus treated, if they are dried in a fairly warm place; but the operation is greatly facilitated by the use of one of the small electric dryers, as used by hairdressers and bootblack parlors. These can be obtained so that they will deliver hot or cold air, and, if the hot air be turned on with the blower about three feet away from the prints on the glass, there is no danger of the gelatin melting, and the prints in nine cases out of ten will actually fly off the glass of their own accord in about half an hour. If not, one corner may be lifted with the point

of a penknife and the print can be stripped, if it is perfectly dry; if it is not, the surface will stick to the glass.

Since I struck the idea of using these little blowers, which run from any electric light socket, I have installed four of them in my darkrooms, and all my negatives are dried by them with a great saving of time.

ABSTRACTS AND TRANSLATIONS

BY E. J. WALL, F.R.P.S.

Potassium Ferrocyanide as a Fixer

Sulzenburger has discovered that potassium ferrocyanide may be used to obtain chloride prints that are unaffected by light. The process is applicable to any chloride emulsion, either with or without free silver nitrate. For gaslight papers, for instance, after development in the usual way, the prints should be immersed in a 15 per cent. solution of potassium ferrocyanide for two or three minutes and can then washed for four or five minutes and dried. After this treatment the prints are stable to light.—*Atel. d. Phot.*, 1915, p. 45.

Apparently "fixation," in the sense of solution of the silver chloride, does not take place, but probably a complex, stable to light, is formed. This is a curious fact, as ferrocyanide is a chemical sensitizer. Sulzenburger has applied for a German patent for the use of ferrocyanide for this purpose. Robert Hunt (*Researches on Light*, 1854, p. 92) states that if silver iodide paper was treated with ferrocyanide and thoroughly dried it was insensitive, but when damp it rapidly blackened. It seems to me that here we have an anticipation of Sulzenburger's discovery. Not that Hunt actually discovered the effect of ferrocyanide on silver chloride, but he certainly recognized what its action was on a silver haloid. In the face of this is the patent claim valid?

Color Sensitizers

Eder has published the results of his experiments on some of the new sensitizers, which are of some considerable practical value, as he used the newer isocyanines, dicyanine, dicyanine A, pinachrome blue, pinachrome violet, and pinacyanol blue. They are all sufficiently soluble in hot alcohol to enable one to prepare stock solutions of 1 : 1000, which must be kept in the dark.

It is preferable to use the dyes in an alcohol-water bath, as the plates dry quicker and are therefore more free from fog. A typical sensitizing bath is:

Stock dye sol. (1 : 1000 alc.)	20 c.c.
Alcohol	333 c.c.
Water	666 c.c.

This should be filtered through glass wool, not filter paper, as the latter extracts too much dye. The plates should be bathed for four minutes in absolute darkness and dried as rapidly as possible.

The addition of 3 per cent. of ammonia to the above bath increases the total sensitiveness of the plates from two to four times, but sometimes fog appears and this varies with the dye and the plate.

Dicyanine sensitizes strongly up to wave length 840, and a faint action is noticeable up to 880. Ammonia increases the red sensitiveness four or five times, but the plates will not keep more than twenty-four hours; there is a big gap in the green at the Frauenhofer line E.

Dicyanine A also sensitizes strongly for red up to 890, but the gap in the green is much wider and more pronounced. Ammonia acts the same as with dicyanine.

Pinachrome blue gives greater general sensitiveness than the above dyes, but the red sensitiveness only reaches to about 7600; the gap in the green is much less and is scarcely noticeable with a long exposure.

Pinachrome violet does not sensitize quite so far into the red as the other dyes, only to about 7200, but the gap in the green is less than with the dicyanines. Ammonia increases the total and red sensitiveness six or eight times, but the plates have a tendency to fog.

Pinacyanol blue sensitizes much like pinachrome violet, but there is a big gap in the green. It will not stand the addition of ammonia.—*Phot. Korr.*, 1915, p. 271.

Paramidophenol and Hydroquinone

An American patent has been granted for the use of paramidophenol sulphate, either alone or in conjunction with hydroquinone, a sulphite, an alkaline carbonate, and a relatively small quantity of an alkaline hydrate.—*U. S. P.*, 1158011.

The validity of this patent is open to very grave doubt. Andresen, in his original German patent, D. R. P., 601740, January 27, 1891, distinctly claims the hydrochloride or sulphate of paramidophenol and the use of alkaline hydrates and carbonates. The use of hydroquinone and paramidophenol certainly is not new; I have been unable to trace the first suggestion, but a formula was current in England in 1908 (*The Photographic Annual*, 1908, p. 69),

and I feel sure that I used it at least two years before that date. When an alkaline carbonate is added to a salt of paramidophenol the base itself is precipitated and is only soluble in a comparatively large quantity of water; but when an alkaline hydrate is used a phenolate of the alkali is formed, which is very soluble, and this enables one to prepare concentrated solutions, such as rodinal. It is obvious that in the above patent this is the sole purpose addition of the alkaline hydrate. At the present time, when the shortage in metol is so serious, a patent such as this may become a serious matter, for a mixture of paramidophenol and hydroquinone will act very much like metol and hydroquinone.

Filter Formulas

Hnatek gives the most complete collection of formulas for filters that has yet been published, which will be very useful for advanced workers as they cover the whole of the spectrum:

A. Filters with a Transmission of About 1000 Aengstrom's Units

1. Violet–4900		Hofmann's violet	3.0 c.c.	3.0 gm.	red from 6800
2. Violet–4800	(*a*)	Yellowish eosin	2.0 c.c.	4.0 gm.	red from 7000
	(*b*)	Methylene blue 4 B	2.0 c.c.	1.0 gm.	
3. 4500–5600	(*a*)	Chinoline yellow	1.0 c.c.	1.0 gm.	weak red from 7000
	(*b*)	Patent blue	2.0 c.c.	2.0 gm.	
4. 4800–5900	(*a*)	Auramin O	3.0 c.c.	3.0 gm.	
	(*b*)	Naphthol green	1.0 c.c.	1.0 gm.	
		Light green S	1.5 c.c.	1.5 gm.	
5. 5200–6400	(*a*)	Tartrazine	1.0 c.c.	2.0 gm.	
	(*b*)	Naphthol green	2.0 c.c.	2.0 gm.	
6. 5500–6500	(*a*)	Brilliant orange	4.0 c.c.	2.0 gm.	
	(*b*)	Naphthol green	2.0 c.c.	2.0 gm.	
7. 5600–6600	(*a*)	Yellowish eosin	1.0 c.c.	2.0 gm.	
		Tartrazine	2.0 c.c.	4.0 gm.	
	(*b*)	Naphthol green	1.0 c.c.	1.0 gm.	
8. 5900–6900	(*a*)	Fast red D	2.0 c.c.	2.0 gm.	
	(*b*)	Tartrazine	1.0 c.c.	2.0 gm.	

B. Filters with a Transmission of from 500 to 900 A. U.

9. 3900–4500	(*a*)	Yellowish eosin	2.0 c.c.	4.0 gm.	red from 7000
	(*b*)	Methylene blue 4 B	2.0 c.c.	1.0 gm.	
10. 3900–4600	(*a*)	Blueish eosin	1.5 c.c.	3.0 gm.	red from 7000
	(*b*)	Methylene blue 4 B	2.0 c.c.	1.0 gm.	
11. 4450–5100	(*a*)	Filter yellow K	1.0 c.c.	1.0 gm.	weak red from 6800
	(*b*)	Alkali blue 6 B	1.0 c.c.	1.0 gm.	
12. 4800–5500	(*a*)	Auramin O	2.0 c.c.	2.0 gm.	red from 7200
	(*b*)	Methylene blue 4	1.5 c.c.	.75 gm.	
13. 5100–5700	(*a*)	Tartrazine	1.0 c.c.	1.0 gm.	
		Naphthol green	1.0 c.c.	1.0 gm.	
	(*b*)	Acid green J E	1.25 c.c.	.5 gm.	
14. 5600–6300	(*a*)	Tartrazine	1.0 c.c.	2.0 gm.	
		Naphthol green	2.0 c.c.	2.0 gm.	
	(*b*)	Yellowish eosin	2.0 c.c.	4.0 gm.	
15. 5800–4600	(*a*)	Rose Bengal	2.0 c.c.	2.0 gm.	
	(*b*)	Tartrazine	1.0 c.c.	2.0 gm.	
		Naphthol green	1.5 c.c.	1.5 gm.	
16. 6000–6600	(*a*)	Fast red D	2.0 c.c.	2.0 gm.	
		Tartrazine	1.0 c.c.	2.0 gm.	
	(*b*)	Naphthol green	1.0 c.c.	1.0 gm.	

C. Filters with a Transmission of from 200 to 500 A. U.

17. 4250–4650	(*a*)	Blueish eosin	1.5 c.c.	3.0 gm.	weak red from 7200
	(*b*)	Patent blue A	4.0 c.c.	4.0 gm.	
18. 4600–4800	(*a*)	Chinolin yellow	2.0 c.c.	2.0 gm.	red from 6500
	(*b*)	Gentian violet	3.0 c.c.	1.5 gm.	
19. 4700–4800	(*a*)	Chinolin yellow	3.0 c.c.	3.0 gm.	fairly dark
	(*b*)	Naphthol green	2.0 c.c.	2.0 gm.	
	(*c*)	Gentian violet	4.0 c.c.	2.0 gm.	
20. 4800–5300	(*a*)	Naphthol yellow	2.0 c.c.	2.0 gm.	faint red from 6600
	(*b*)	Alkali blue 6 B	1.5 c.c.	1.5 gm.	
21. 4900–5200	(*a*)	Naphthol yellow	3.0 c.c.	3.0 gm.	faint red from 6700
	(*b*)	Alkali blue 6 B	2.0 c.c.	2.0 gm.	
22. 5050–5500	(*a*)	Tartrazine	1.0 c.c.	2.0 gm.	faint red from 7100
	(*b*)	Patent blue	3.0 c.c.	3.0 gm.	

23.	5200–5400	(*a*) Brilliant orange	4.0	c.c.	2.0	gm.	
		(*b*) Naphthol green	2.0	c.c.	2.0	gm.	
24.	5200–5700	(*a*) Martius yellow	4.0	c.c.	1.0	gm.	faint red from 7000
		(*b*) Patent blue	1.5	c.c.	1.5	gm.	
		or					
		(*a*) Martius yellow	2.0	c.c.	1.0	gm.	faint red from 7000
		(*b*) Brilliant green	2.0	c.c.	1.0	gm.	
25.	5400–5800	(*a*) Brilliant orange	2.0	c.c.	1.0	gm.	
		(*b*) Naphthol green	1.0	c.c.	1.0	gm.	
		Patent blue	1.0	c.c.	1.0	gm.	
26.	5700–6000	(*a*) New coccin	1.0	c.c.	2.0	gm.	
		(*b*) Naphthol green	1.0	c.c.	1.0	gm.	
		Patent blue	0.5	c.c.	.5	gm.	
27.	5950–6450	(*a*) New coccin	2.0	c.c.	4.0	gm.	
		(*b*) Naphthol green	1.5	c.c.	1.5	gm.	
28.	6100–6600	(*a*) Bordeaux	3.0	c.c.	3.0	gm.	
		(*b*) Tartrazine	1.0	c.c.	2.0	gm.	
		Naphthol green	1.0	c.c.	1.0	gm.	
29.	6500–6800	(*a*) New coccin	2.0	c.c.	4.0	gm.	
		Naphthol green	0.75	c.c.	.75	gm.	
		(*b*) Gentian violet	1.0	c.c.	.5	gm.	
30.	6500–red	(*a*) New coccin	2.0	c.c.	4.0	gm.	
		(*b*) Hofmann's violet	1.0	c.c.	1.0	gm.	
31.	6750–red	(*a*) Fast red D	2.0	c.c.	2.0	gm.	
		Tartrazine	1.0	c.c.	2.0	gm.	
		(*b*) Methyl green	2.0	c.c.	2.0	gm.	
32.	6900–red	(*a*) Fast red D	3.0	c.c.	3.0	gm.	
		Tartrazine	1.0	c.c.	2.0	gm.	
		(*b*) Patent blue	2.0	c.c.	2.0	gm.	

The dyes were made up into stock solutions of the following strengths:

0.4–100 Acid green.

0.5–100 Brilliant orange, martius yellow, brilliant green, methyl green, methylene blue, toluidin blue, gentian violet.

1–100 Fast red, D, Bordeaux, rose bengal, naphthol yellow, chinolin yellow, rapid filter yellow K, auramin, naphthol green, light green, alkali blue, patent blue, Hofmann's violet.

2–100. New coccin, eosin, tartrazine.

The second column gives the band of transmission of the filter, the fourth gives the number of cubic centimeters that should be added to 7 c.c. of 12 per cent. solution of gelatin, and this is the quantity that should be coated on 100 square centimeters of glass.

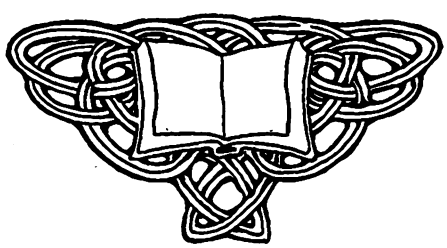
The fifth column gives the quantity of dry dye in grams per square meter, according to Huebl, which is called the density of the dye.

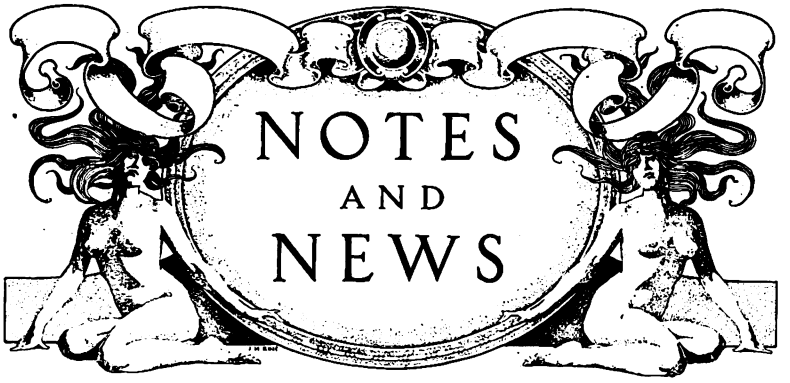
The last column gives useful data as to the transmission of the red end of the spectrum, which for visual work is negligable, but for photographic work must be taken into consideration, when panchromatic plates are used.

Filters 9, 29 and 32 are rather dark, that is to say, they exert some absorption of the region that they generally transmit; 10, 17, 28 and 31 are less dark, but still do not transmit to the full the wave lengths given.

It is obvious that by combination of two or more filters almost monochromatic filters can be obtained, but in all cases the resultant filters are very dark.

The signs (*a*) and (*b*) mean that the dyed gelatin must be coated on two separate glasses and that they cannot be mixed.—*Zeit. f. wiss. Phot.*, 1915, p. 133.





Exhibits by the Photographers' Association, Cincinnati Chamber of Commerce

Elaborate plans for a spring exhibit are already in preparation by the Photographers' Association of the Cincinnati Chamber of Commerce. The two exhibits held during 1915, one in May and the other in October, proved most successful mediums of attracting the attention of the general public to the excellent results achieved by Cincinnati photographers in portrait, home portrait, and commercial photography. The first exhibit was on a small scale, and yet it attracted about 5000 people. The second one, held in October, was on a much larger scale and drew 10,000 people. The class of those attending both exhibits is worthy of comment. Only a very small percentage was of the drifting, curiosity-seeking type. The vast majority were there seeking to be instructed, and it kept the twenty members of the Association busy explaining light and tone effects, modern posing, costuming, and a hundred and one other intimate points of the photographic art. The result of the exhibition in each case was excellent from a commercial point of view. It has greatly stimulated the business of photography. The people who attended the exhibit left with the impression that they owe it to themselves, their families, and friends to be frequently photographed. Orders which have come in since the last exhibit may be traced directly to it. In fact, pointed inquiry in some cases revealed that the business came as a direct result of the exhibit. The members of the Association are elated with the success of their exhibit from the standpoints of both art and business. The exhibits are of an educational nature and the business is the fruit of the thought put behind the exhibits. The show next spring will be much more elaborate and will be participated in by several new members who have been added to the lists of the Photographers' Association since the October exhibition.

Local photographers are much interested in reports on the scarcity of chemicals which come from all over the country. Prices of metol, hydrochinon, and bromide of potassium have advanced to such an extent that it is working a decided hardship on the photographers who are using these chemicals. The chemicals are of German origin, and the American supply is reported as greatly depleted by reason of the large demands put upon it by the motion-picture studios. Cincinnati photographers are of the opinion that unless relief is offered in the way of new supplies the price of photographs will be seriously effected.

A Motion-picture Camera of Radical Design

While engaged in professional work in the jungles of Africa, says *Scientific American*, Carl E. Akeley, of the American Museum of Natural History, employed a conventional type of motion-picture camera with more or less success. Because of its wooden case, great weight, bulky tripod, the necessity of using it in conjunction with its tripod, and other common characteristics, he found himself seriously hampered in the filming of wild animal life. On his return to New York he set upon the problem of evolving a motion-picture camera that would meet the requirements of the explorer or the traveler—in a word, he planned to place the cinematograph camera in the hand-camera class.

The result of his work is a motion-picture camera of radical design. Perhaps its greatest point of variance from conventional practice is the suspending of the camera proper by a ball-and-socket joint. The joint may be freed or tightened, and serves automatically to level the camera, irrespective of the adjustment of the tripod legs. This feature is one of great importance, since much time and trouble are necessary to level the ordinary camera which is rigidly supported at its bottom on an adjustable tripod head.

The new camera and its panorama head are made as one unit, permitting the removal of the camera from the tripod and enabling its employment as a hand camera. It can also be set upon a rock or stump and used with the same facility as the ordinary motion-picture camera mounted upon its tripod.

Being made entirely of aluminium, the camera weighs but twenty pounds. The elimination of the wooden case makes it ideal for use in

tropical climates, where trouble is often encountered in the warping or cracking of wooden camera cases. The panoramic device permits of both horizontal and perpendicular motion. It is simple and positive and does away with the awkward simultaneous turning of two handles, as required in other cameras.

A small spring motor attached to the belt of the operator and connected to the camera by means of a flexible drive, cranks the camera when it is being used in the hand. This insures steadiness to the pictures taken, which would not be possible if the camera were being cranked by hand. The novel suspension of the camera steadies it to such an extent that it amy be used in conjunction with a very light tripod, with full assurance that the pictures will be absolutely steady.

Motion Pictures Cost $275,000,000 Annually

It is estimated by prominent motion picture producers that over $275,000,000 are being spent annually by the people of the United States for the production and maintenance of moving picture enterprises throughout the country. Few people realize that the ordinary feature-film, which produces the evening's entertainment, costs between $15,000 and $30,000 to produce.

Aside from the money actually spent on admissions to the shows all over the country, the greater part of the capital used in connection with the moving picture industry is that tied up by the producers of the embryo features. Over $120,000,000 are tied up in the apparatus and property of the giant syndicates.—*World's Advance.*

Stereoscopic Effects in Photographing Moving Objects

William A. Warman, of Brooklyn, N. Y., presents a photographic apparatus in which two cameras are mounted to allow of sufficient separation to give a desired stereoscopic effect, which cameras are conveniently focussed upon a common object, and suitable mechanism automatically actuates the cameras to expose sensitive surfaces to obtain a series of pictures of the common object from two points of view.

Editor, The Photographic Journal of America:

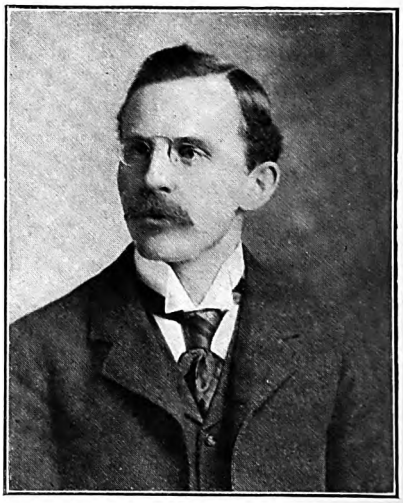
I beg leave to call to your attention an error in the article in the August number by Paul S. Helmick, entitled "Practical Lens Testing," which, while it does not change the final result, yet may have puzzled other of your readers as it did me. I quote from page 372, 12th line; "In the writer's case, with his complete lens, the ten-inch lines were separated by a distance of 1 inch. This makes 'q' equal 0.1 . . ." Inasmuch as "q" in this case equals $\frac{1}{10}$ it should manifestly be 10 and not 0.1 as stated. Moreover $q+1$ squared becomes 121 instead of 1.21, as there given. Of course the fact that the mistake in the numerator is repeated in the divisor, causes the quotient to come out right; but if one compares this with the other example a little farther down the same column, where the other items are nearly the same, the discrepancy between the two values of "q" is very marked.

Yours truly,

W. S. Pulsford.

The Late Maurice G. Gennert

Maurice G. Gennert, for upward of fifteen years senior partner of the well-known photographic material firm of G. Gennert, 24 and 26 East Thirteenth Street, New York, was born at Chattsworth, Ill., January 13, 1868, and shortly thereafter the family came East and settled in New Jersey, where Mr. Gennert resided until 1881, when he went to Germany, and, becoming a resident of Braunschweig, entered the Real Gymnasium there, which he attended until 1884. Returning to the United States, he attended Columbia University Arts Course, his specialty being mathematics and dead languages; he became a member of the Delta Upsilon fraternity. After securing his A.B., he accepted a tutorship in mathematics for one year.



THE LATE MAURICE G. GENNERT

He was then prevailed upon by his father, Mr. G. Gennert, to give up his intention of becoming a professor and entered the firm of G. Gennert in 1889.

Maurice Gennert's cheery disposition, coupled with his fairness in business transactions, added greatly to the prestige of the firm and gained it and him many friends. Mr. Gennert was married in the early nineties, and had recently removed to New York City with his family, consisting of his wife and two daughters, where he resided at 448 Riverside Drive up to the time of his death, October 2, 1915, in his forty-seventh year.

The Pittsburg Salon

The Photographic Section of the Academy of Science and Art of Pittsburg announces an annual salon of American pictorial photography, to be held in Galleries L and M of the Carnegie Institute, Pittsburg, Pa., March 2 to 31, 1916.

In making the above announcement the salon committee desires to acquaint American pictorialists with several features which have been incorporated in the 1916 salon that distinguish it from all its predecessors.

The Photographic Section of the Academy of Science and Art of Pittsburg has brought into being a salon membership consisting of the following workers:

George Alexander,	Wm. A. Guyton,
Elizabeth R. Allen,	Spencer Kellogg, Jr.
Charles I. Berg,	E. I. McPhail,
Katherine Brucherseifer,	S. A. Martin,
Charles Booz,	Angelo Romano,
C. W. Christiansen,	Dr. D. J. Ruzicka,
Alvin Langdon Coburn,	Emil Strub,
Imogen Cunningham,	Everitt Kilburn Taylor,
Stepan deKosenko,	N. S. Wooldridge,
J. H. Garo,	H. W. Schonewolf,
John W. Gillies,	W. H. Porterfield.

Salon members are required to furnish each year a stated number of prints on the occasion of the annual exhibition and membership is retained only as long as these obligations are fulfilled.

New members will be chosen yearly from among the general exhibitors when in the opinion of the salon committee such action is warranted.

Not more than six prints will be accepted from one exhibitor. Any number of prints may be submitted.

Prints must be mounted on light-colored (preferably white or cream) mounts, with liberal margins, but *must not be framed or glazed.*

Prints which have been previously exhibited in the United States are not eligible for this exhibition.

This does not apply to prints which have been shown at camera club print interchanges (current season).

The committee desires to make this and the succeeding exhibitions thoroughly representative, and to that end respectfully solicit the coöperation of all American workers.

Every print submitted will receive equal consideration by a competent committee of selection.

There will be no invited section.

In this exhibition the Photographic Section of the Academy of Science and Art of Pittsburg is making a conscientious endeavor to inaugurate an annual salon which will not only be a permanent institution, but in which it will be an honor to be represented, and fully realize that this can only be accomplished by adopting methods which facilitate rather than interpose obstructions in the way of any one desiring to participate.

The frameless print permits economy in preparing, shipping, and handling exhibits, while the adoption of light mounts insures a uniform and consistent appearance on the exhibition walls.

Prospective exhibitors will confer a favor on the Salon Committee by making their requests as early as possible. Last day of entry is February 10, 1916.

Entry blanks and full particulars regarding the salon may be had by addressing Mr. C. E. Beeson, 19th floor, Frick Building, Pittsburg, Pa.

O. C. Reiter,
S. A. Martin,
N. S. Wooldridge,
Committee.

By W. H. Porterfield, Buffalo, N. Y.
Department of Publicity.

There is no harm in a photographer going to an exhibition in the hope of picking up a idea; but his aim should not be the making of similar things, but different ones and better ones. The more different and the better, the greater will be their chance.

The editor of the *National Geographic Magazine* writes that they are interested from time to time in collections of hand-colored photographic prints of scenes in various parts of the world, more particularly of types of people in out-of-the-way places or street scenes in towns and cities. They cannot use any lithographic or color-print subjects. What they want is actual photographic prints which have been carefully hand-colored or tinted by hand—to reproduce in the *Geographic Magazine.*

Any of our readers who make such pictures and wish to sell them, should send pictures with a view to purchasing.

New Office and Factory

The Prosch Manufacturing Company have removed their office and factory to 313 Pearl Street, New York, where much larger and more suitable quarters have been fitted up with new and improved machinery for the manufacture of their well-known line of flashlight apparatus and supplies. This will enable the firm to not only give their many customers an improved service, but permit it to enlarge the scope of its activities in this ever-growing field.

The Value of the Trademark

Through the photographic journals and their own publications, *Portrait* and *The Ansco Dealer*, Ansco Company recently offered a reward of $100 for the best answer submitted to the question, "What is the value of the Cyko trademark to the manufacturer?"

The contest will close December 31, 1915, and all answers received up to and including that date will be considered in the competition. There are no other rules in the contest. All answers submitted, of whatever length, style, or form, will receive equal consideration by the judges, who will award the prize to the person whose contribution best answers the query.

The Annual Pittsburg Salon will be open to the public March 2 to 31, 1916, inclusive, in the galleries of the Carnegie Institute. Last day of entry will be February 10, 1916. For entry blank and information, write C. E. Beeson,

Secretary, 19th Floor, Frick Building, Pittsburg, Pa.

All prints to be unframed (hung behind glass).

The London Salon of Photography

Word comes that another success has been achieved by the London Salon of Photography. The attendances at the exhibition which has recently closed were above the average of the last few years, and a considerable number of pictures were sold. The right kind of enterprize seems to be behind this institution, accompanied with a liberal supply of originality. The salon's latest innovation, that of dispensing with frames and placing the pictures behind plain glass, has shown that the individual exhibits suffer in no way by this treatment, and the general effect was most pleasing.

Death of a Pioneer in Photography

The British Journal of Photography reports the death of Mr. William Downey, the dean of British professional photographers, who had been a photographer of Royalty for more than forty years, and, since he first photographed the late Queen Victoria in the sixties, he had been in constant attendance upon the reigning monarch and had enjoyed a degree of favor which, in the case of King Edward, was better described as friendship. Born in the North of England, Mr. Downey was the possessor of sound business instincts and foresight; on the advent of the picture postcard he was one of the earliest leading professional photographers to discern its effect upon the established cabinet photograph; and in the height of the picture postcard craze he is reported to have sold two and a half millions of postcards of a theatrical beauty.

Of late years, Mr. Downey necessarily left much of the business in the hands of other members of his family, but his picturesque figure was often to be seen in London. Until a year or two ago, on the occasion of any specially important group of Royalties being photographed, he personally supervised the arrangements. Though his long connection with portrait photography entitled him to regard himself as emphatically one of the old school, his interests were still shown in the most modern examples of photographic portraiture, and we shall never forget the last occasion on which we spent an evening at his house at Kensington. He had also invited a young American photographer, then showing his photographs in London, and his interest in work with which, personally, he could have had little sympathy, was a nice mark of his regard for the feelings of others.

Valuable Prizes for Eleventh Annual Exhibition of Photographs—John Wanamaker, Philadelphia

You are invited to send your pictures to the eleventh annual exhibition of *Pictorial Photographs*, March 1 to 17, 1916, in Philadelphia.

If you have done good work, you will want show it. If you have mastered the details or technique of the art of photography, and understand composition and the art of picture-making, ideas will come that will clamor for expression. There will be no need to imitate what some one else has done, or to copy some old painting. Photography has its own way of setting forth the thought. Originality counts for much. Entries close on February 19th next. Opportunities are presenting themselves every day. It needs only a little enthusiasm to get started. This exhibition should act as a stimulus.

Both amateurs and professionals may send pictures. Prizes are awarded according to merit, pictorial qualities being preferred to technique. The judges will decide the merit of each picture as they would in an exhibition of paintings or sculpture. Eighteen prizes will be awarded, and as many ribbons of honorable mention as the judges find necessary.

To win a prize, a picture must be posed and exposed by the exhibitor, and must be original, not copied. The developing, printing or enlarging may be done by others.

Previous exhibition of pictures in other places will not exclude their entry, but pictures not previously exhibited will be preferred in awarding prizes. Please note that no prizes will be given for pictures shown at any of our own previous exhibitions.

Only one of the first three prizes will be given to any one exhibitor.

Prizes may be withheld, if, in the opinion of the judges, the pictures are not of sufficient merit.

Pictures winning prizes become the property of the Wanamaker Store, with the privilege of reproduction for illustration. Exhibitors who prefer to keep their winning pictures may do so by waiving claim to the money prize.

For further information inquire at the Photographic Exhibition Bureau, John Wanamaker.

Appointed in Civilian Advisory Board

Among the noted scientists appointed by Secretary of the Navy Daniels on the Civilian Advisory Board for the Navy Department was Dr. Peter Cooper Hewitt.

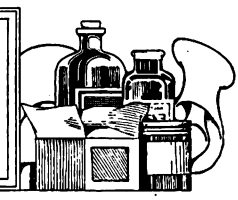
Dr. Hewitt is the son of Abram S. Hewitt, former Mayor of New York City, and a grandson of Peter Cooper, the philanthropist and founder of Cooper Union, in which institution Dr. Hewitt is very much interested, having recently donated a large sum of money toward the erection of the new Hewitt addition.

Among the many inventions of Dr. Hewitt may be cited the Cooper Hewitt Mercury Vapor lamp and other applications of mercury vapor for the conduction of electric current. These embrace the Vapor Converter for changing alternating current into direct current, the Vapor Interrupter for use in wireless work, and his latest achievement is an amplifier for use in connection with wireless telephony. It is on this latter problem that Dr. Hewitt is at present working, and it is expected before long that he will have this apparatus fully perfected. Undoubtedly his long experience and knowledge along these lines will be of great aid to the Navy Department.

During the past few years, Dr. Hewitt has taken out approximately one hundred and fifty patents for different electrical appliances.

THE WORKROOM

By the Head Operator



Some Notes on Photographic Chemicals

Photographers of today are more or less free from a very serious grievance that troubled workers in the past, in that chemicals of a degree of purity sufficient for photographic purposes are now readily obtainable. We are no longer dependent on "washing soda" for our developer, and we need not waste time in picking out straw, old nails, and various oddments from our hypo, including the ferrous sulphate which for some mysterious reason was nearly always present. Moreover, we no longer have to buy sundry chemicals in huge lumps that require breaking up before use, as we can get nearly all in the form of small crystals that can be readily weighed and as readily passed through the neck of a bottle. Nevertheless, it must not be forgotten that the degree of purity necessary for photographic purpose is not absolute purity by any means. While we can generally rely on the absence of dirt or foreign matters of quite a different kind, many of our chemicals still contain certain substances, incidental to the process of manufacture, that can only be removed by special refining methods which are absolutely necessary when the substance is required for accurate chemical work. In some cases, these residual impurities are of no importance at all. In others, they are of no direct importance in photographic work, but, nevertheless, may have indirect consequences in certain events, and it is just as well to consider some of these special impurities and their effects.

The first chemical we may refer to is sulphite of soda. Much sulphite of a very impure kind and not suited for photographic purposes is on the market, and it should be avoided by trusting only to a reliable dealer and by paying a decent price for the product. If we get the best quality it will be quite good enough for photographic purposes in general, but it will have one peculiarity: The sulphite is made from carbonate of soda, and a little of that carbonate remains unaltered in the sulphite. The amount is small, varying from about 2 to 5 per cent., in really good samples, and obviously it can make no difference in the action of a developer. All the same, it can affect the keeping qualities of a stock pyro solution, which should be free from alkali altogether. Occasionally, somebody makes the remarkable discovery that some particular developer will act as a developer with sulphite alone and no alkali, the truth really being that the action is due to the alkali which the sulphite contains unknown to the experimenter. A pyro stock solution preserved with sulphite only is really a very feeble, weak developer, and therefore it is liable to show poor keeping qualities. This is why a little acid is generally necessary. A very minute quantity is sufficient to neutralize the carbonate. A very little more than this will produce traces of acid sulphite, which is a most effective preservative for pyro, and as a general guide we may consider that enough acid to render the sulphite solution just neutral to litmus paper will give a most efficient preservative solution.

Hypo is the next chemical to consider, and while impurities in this are of very small importance, it is as well to remember that the best hypo provided for photographic purposes will not make quite such a permanent solution as the perfectly pure hypo used for analysis. The ordinary hypo solution will show a slight precipitate of sulphur in a very short time, whereas pure hypo will remain clear for a very long time. The cause of the ready decomposition of ordinary hypo is most probably the existence of traces of the calcium thiosulphate from which it was made, this calcium salt being very unstable in solution and decomposing rapidly. The moral is to use freshly made hypo solution, especially for prints, and not to make up big quantities of stock hypo solution to cover several weeks' work. The decomposition is small and slow, but in any case it is not desirable to fix prints in a solution that is depositing sulphur even very slowly.

Another chemical that gives trouble by its decomposing propensities is sodium sulphide. This should be bought pure and bottled in very small quantities. The crystals are rapidly affected by damp, and an opened bottle will quickly deteriorate. If perfectly bottled, it will keep almost indefinitely, and we attribute all cases of failure to bad bottling. A damp bottle or a damp cork has been used, whereas both should be bone dry, while the cork should be well sealed. In solution, the sulphide does not keep at all well, hence we recommend the solution of the crystals just before use. A very weak solution will then serve, two or three small crystals to half a pint of water being sufficient for toning purposes.

The subject of alum we have often dealt with before. The chief trouble with alum is again residues of materials used in the process of manufacture, and the worst of these is an iron compound, which converts the alum into a reducing solution capable of dissolving silver. We have met with samples of potash alum containing so much iron that a solution completely destroyed a P. O. P. image in a few minutes. Even when there is not enough iron to produce such an effect, there may be enough to give rise to blue stains, if any solution containing ferricyanide is applied subsequently to the image. Alum

free from iron is, of course, a very useful chemical, but as for nearly all purposes chrome alum can take the place of the powdered potash alum, we are inclined to recommend chrome alum in preference. One other objection to potash alum is the readiness with which the solution develops fungi. While we have no direct evidence of these particular fungi doing any harm, it is hardly desirable to introduce them to the neighborhood of such a congenial medium as gelatin. Chrome alum seems to be free from all the possible defects of potash alum, and with it we have not come across any instances of trouble due to impurities.

Another chemical very important to the photographer is potassium bichromate. The introduction of chromium intensification has rather upset the reputation that this chemical formerly had for being in a normal state of blameless purity. Whether the process of manufacture has been varied in some important matter, we do not know, but it is certain that some samples of bichromate give rise to bad stains in the intensification process. Other samples work perfectly, and the only guarantee that we have got the right quality is to obtain the chemical only from some quite reliable firm. As iron enters into the initial processes of preparing the bichromate, some of the trouble met with may again be due to iron compounds, but we cannot speak positively on this point.

Gold chloride is a chemical that can be readily obtained in a pure state, if we pay enough for it, and trust only to reliable brands. Otherwise it is sometimes doubtful, though we believe it is correct to say that the defect is generally not so much one of impurity as of deficient quantity, due to something akin to what is sometimes termed harmless adulteration.

The other chemicals used by the photographer need no special comment. While none are absolutely pure, we know of no troubles that can be attributed to impurities. They may, of course, deteriorate owing to oxidation or damp, but this generally involves a simple weakening of their strength, which, in most cases, is a matter of small moment, and can also be guarded against by rejecting doubtful-looking crystals or masses—an advisable precaution with all chemicals in all cases. The photographer does not need much of the strong acids, and as the dealers nearly always stock only the pure and not the commercial varieties, the small quantities he needs are usually reliable.

Spirits and alcohols should be obtained from more reliable sources than oilshops, and special care should be taken when buying collodion to ensure that the dealer does not put it into a damp bottle. Few understand the absolute necessity of perfect dryness in this case, and a small quantity is often spoilt in the rebottling process. The same thing, of course, applies to thinning solution, if any is required.—*British Journal of Photography.*

Waterproof Solutions for Woodwork

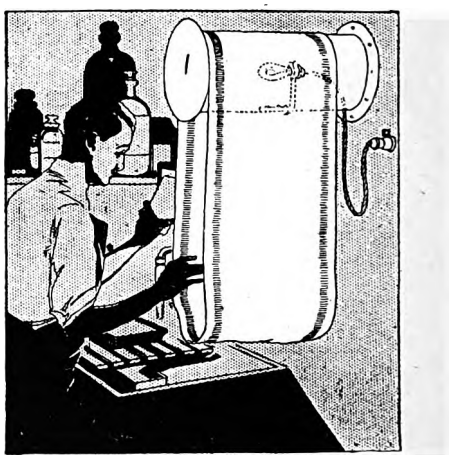
The following formulæ are worth noting in connection with protecting one's work-table, over-sink shelves, etc., from splashings:

1. Bitumen dissolved in benzole or turpentine.
2. Shellac in methylated spirit or naphtha.
3. Sealing wax in methylated spirit.
4. Paraffin wax may be melted by gentle heat, poured on the woodwork, and worked in by a flat iron just warm enough to melt the wax.

In all cases it is essential that the surface of the wood be *clean* and *dry*. If there is any doubt about it being clean, the surface should be well rubbed with glasspaper or planed.

Drying Towels in Dark-room

In doing a large amount of photographic work the towel becomes wet, and to dry the hands on it is impossible. To obviate this annoyance, I made a galvanized-iron pipe about two feet long and eight inches in diameter with a disk or circular piece of metal about ten inches in diameter, soldered on each end to form



flanges. One flange was fastened to the wall of the dark room in a convenient place to support the device. On the inside of the spool, or towel support, an ordinary incandescent electric globe was placed. The heat of the lamp would easily dry twelve inches of the towel, and when the dry part was pulled down for use another wet portion was brought into position for drying.

Those who have tried to handle gelatin dry plates with moist hands will readily appreciate the value of this simple contrivance. The lamp in the spool is connected on the switch with the ruby light, so that it is not forgotten when leaving the room to turn it out.—*Popular Mechanics.*

Positives Direct

It is possible (writes Mr. H. Green in *Photography and Focus*) to develop an ordinary plate in such a way as to get the image of quite a light color, instead of the black or brown generally produced. Such an image, although actually negative in character, will have a positive appearance when seen against some dark surface. Various developers have been suggested, and preparations of a secret character have been sold

for the purpose. A formula which is said to give a very good white image is one in which glycin is used in conjunction with ammonia. Forty grains of sodium sulphite and 20 grains of glycin are dissolved in 6 ounces of water, and when solution is complete 2 drams of strong ammonia and 2 drams of 10 per cent. potassium bromide are added. The image being almost white is barely visible during the operation of development, but shows as soon as the plate is fixed.

Restoring Faded Photographs

When a faded or damaged photograph is brought in to be restored, copied, or remounted, the professional must be very careful how he handles it. There is usually a sentimental value placed upon such a photograph, and if anything happens to it while in the photographer's hands much unpleasantness may result.

It is seldom wise to risk spoiling a faded photograph by attempting to restore it with chemicals. Chemical treatment is always risky; you can never tell exactly how an old print will behave when you subject it to chemical action. No matter by what process the print may have been made, the first thing to do is to get rid of the dirt which has penetrated into the surface of the paper. When you remove this dirt you may find that the print has been so much improved that no further treatment will be necessary.

The most satisfactory way to remove the dirt is to treat it in the same way as a picture restorer cleans up a dirty old engraving before he begins restoring it. Get some cheap flour, mix it with cold water and knead it until it is stiff enough not to stick to the fingers. Don't make it too wet; the dough should be elastic and quite clean to handle. Take the surface dust off the print with a soft rag, or a tuft of cotton-wool. Now lay the print down on a flat bed, and dab it gently with a fair-sized lump of the dough. The speed with which the dough lifts the dust out of the paper will surprise you. Do not attempt to wash the dirt off the surface of an old print because you will only wash it into the cracks and make it more difficult to clean.—*Professional Photographer.*

Clearing Yellow Bromides

This trouble is discovered the next morning, the yellowness not showing by night light. To remedy most cases a handful of hypo is put into an enamelled dish and sufficient boiling water poured on to, say, a tablespoonful of powdered alum in a corner of the same dish. Sulphur separates at once, and is a remedy for the yellowness. Keep up temperature on a gas-ring; prints only want dipping. I generally put in dry. About a minute is the limit of saving, but *deep* stains can sometimes be toned to a light black patch that is scarcely noticeable. After using a time or two the solution becomes a good bromide toner. Forced prints often look brighter after this bath. But apart from its use as a toner, it is better to expose sufficiently, rinse properly before fixing, and not to let prints remain too long before moving in fixer, even if acid. But the above remedy is a help when a change of material, or trouble with light or developer, gives rise to the complaint.—F. N. in *British Journal of Photography.*

An Easily Made Rocker for Developing Dishes

Many assistants will doubtless be willing to go to a little trouble to be able to watch their dishes rock themselves, and incidentally to save stained fingers, and also be sure of the plates, etc., being well covered with solution.

To do this, take two pieces of wood, one 15 inches x 8 inches x 1 inch and another 14 inches

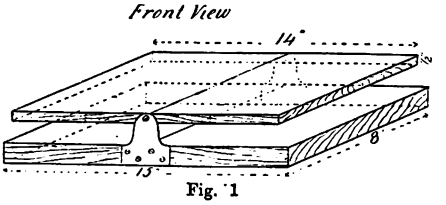


Fig. 1

x 8 inches x ½ inch; divide both pieces into halves, and mark, to ensure correct balance (Fig. 1). Take two small pieces of sheet brass (*p*), drill four small holes in the lower half for screwing on the bottom piece, and then drill a clean hole in the centre of the top portion. Then screw both pieces on, one on each side of the base, care being taken to see that they are opposite one another. Then arrange the top portion to fit in between these pivots, and put a small screw in—to work freely, of course. Now cut a small piece of hard wood (*w*), and fix on the top piece, over the pivot, cutting a small piece away from the pivot, and screw on with two

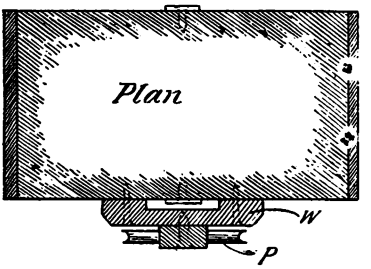


Fig. 2

good long screws (Fig. 2). Next obtain a small pulley block, such as is used for Whitley's exercisers, and screw on to *w*, the pulley wheel being downward (Fig. 3). Make a loop of picture cord and pass it over the pulley wheel, and fix it in a rod or tube about 2 feet 6 inches long, connecting the other end of the tube with the weight. I use an ordinary household iron with the handle knocked off, cutting a small piece out and wedging a small iron loop in the thin end. The cord is easily fixed in the tube by tying a knot of both ends and driving a small wooden wedge in to hold them tight.

The advantage of the tube and pulley is that

it will always swing in the same direction, remain rigid, and will not knock against the operator's calves.

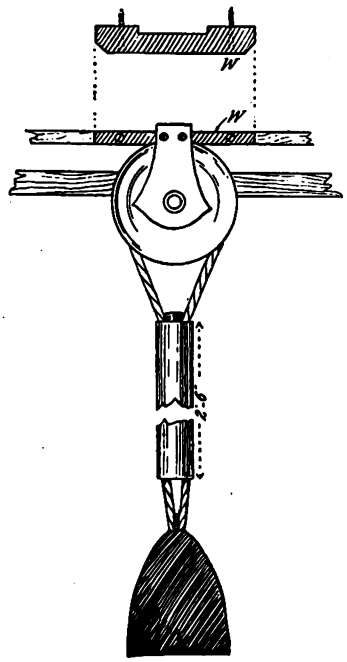


Fig. 3

If the above directions are followed carefully you will have a rocker that will go *fully five minutes* without attention and last indefinitely. I have had mine on the go for years and would not be without it. The trouble saved is well worth the time in making it.—Hy. Ellingworth, in *British Journal of Photography.*

Business that Pays

It isn't a good idea for the average photographer in the small town to try to specialize on any one line of work or to cater to only one class of customers. It's too much like having your eggs all in one basket.

Few photographers specialize in any one line of portraiture, but they do often specialize in portrait photography, probably because they prefer to have the business come to them, as is the case in all portrait work, with the one exception—home portraiture.

But suppose the portrait business doesn't come to you, things are quiet, your helpers are idle, and other overhead expense is going on just the same as when you are busy—what then? Are you going to sit and wait for business conditions to change, or will you go after business of a different nature?

There is nothing to be gained at any time by cutting prices—and there is a great deal to be lost. Forget all about that idea of making a reduction on one of your popular lines of work to stimulate business. It won't work. At least, it won't work to your advantage.

Take a new tack and go after commercial or outdoor work of a legitimate nature when business is quiet inside. You may meet with discouragements in beginning, but there is plenty of good business to be had if you get out and solicit it. And by establishing a reputation for good work you can develop this outside business into a side line that will carry you through any dull season in studio portraiture.

You cannot always determine just what turn this outdoor business will take and it doesn't matter so long as it is profitable. You may learn that Mrs. B. is to have a garden party. There is an opportunity for pictures which may give you a profitable half-day's work and lead to other business. A home wedding is another opportunity which may mean an order for home portraits as well as interiors of the home and its decorations.

In commercial work, a picture of a building that is a landmark and which must give way to a new structure is usually an opening wedge toward pictures of the construction work on the new building. And this work may lead to work for another firm who have a contract for interior finish—the lighting fixtures, tile floors, office fixtures, etc.

We might enumerate a dozen examples, each of which would suggest an opportunity to an ambitious man, but we want to add a more important suggestion.

Make your display case talk to those you cannot see personally. *Display pictures that will let the public know you do other work than portraiture*—pictures that will attract attention to your portrait work, but will also suggest work of a different nature. And change your display as often as you can—every day if possible, and this is very simple. It isn't necessary to change the entire display. If you have made half a dozen negatives on one trip from the studio with your camera, and all the negatives are different, don't display the entire lot of prints at one time—show a new one in your show-case each day, with a neat card of explanation and the suggestion that you make a specialty of such work.

Be as particular with this work as you are with your portrait work and you will be able to get good prices and will find it is business that pays, and pays well.—*Studio Light.*

Removing Varnish from Negatives

If a negative which has been varnished has to be submitted to some such after-process as intensification, removal of silver stain, etc., the first proceeding is to get rid of the varnish. To do this, says *Photography and Focus*, it is necessary to soak the negative in the solvent used in making up the varnish. There are three liquids commonly used for this purpose: (1) Alcohol, when the varnish is composed mainly of shellac; (2) benzole, when gum dammar has been used: and (3) amyl acetate and acetone in the case of celluloid varnishes. If the nature of the varnish is not known, a drop of spirit, acetone, and benzole may be applied in that order to one corner of the negative, until one is found which evidently dissolves the coating

of varnish, that one then being applied. In the case of spirit, the negative can be left just covered with methylated spirit for a few minutes, and be gently rubbed with cotton-wool. The spirit is next poured off and the negative wiped as free as possible from it, and then a second application is given. Acetone can be applied in the same way. In the case of beonzole, a little may be poured on the plate and the surface then rubbed with some cotton-wool, repeating the operation three or four times until all trace of the varnish has been removed. Negatives which have been "unvarnished" in this way should be left soaking in ammonia one part, water a hundred parts, for a few minutes before treating them with any aqueous solution, as this makes the gelatin softer and more amenable, and helps to get rid of any slight traces of greasiness left by the varnish.

Making Plate-markers for Flexible Mounts

Now that flexible board is so extensively used for the mounting of small prints, a method of making plate-markers for these would, perhaps, not be out of place. As they are not particularly cheap, and as it frequently happens that several sizes are required, it is much less expensive and more simple to make them in the following manner: Take two pieces of thin ivory board the exact size of the mount or print to be plate-marked, which hinge together at the top with gummed tape. Draw out on one of these the shape and size of the required impression in the desired position. Then carefully cut this out, and replace it in the position from which it has been taken. In the centre brush a little seccotine. Then fold the two pieces of board together, and put under pressure. The seccotine having adhered, it will be found that the one board has fastened to it the piece that fits the opening in the other. The mount that requires plate-marking is then placed on the board, from which the piece has been removed, face side uppermost. The top board is folded down onto it, and the whole put under pressure—in a hot dry-mounting press if available—after which it will be seen to have left the desired impression on the mount.—*Alpha, in B. J. of P.*

Pictorial Photography and the Rendering of Distance

To convey the idea of distance (writes Mr. Eric Burdett, in *Photography and Focus*, it is more important to get the larger features of the landscape true in tone than to render small details distinctly; in fact, it is the comparative indistinctness with which such details are rendered that helps to convey the idea of space.

It is for this reason that the pictorial worker is often advised to keep the focus of the distance soft. The mere difference between the sharpness of the details near at hand and the softening of those that are afar off helps to give "aerial perspective." But it is perfectly possible to have the distance quite sharp and yet not so distinct as to seem near at hand; and it is this which is the most important fact in dealing with distance by photography. This is brought about by getting the photographic rendering true in tone.

What we need to do is to show the effect of the varying distances of different parts of the subject by the variations in the depth of their tones. the farther off an object is the lighter is its general tone, the shadows being much lighter and the highest lights a very little darker. Hence, not only is the total effect lighter with increase of distance, but the contrasts are less.

Timing Long Exposures

A TIP that many workers may not be acquainted with when timing long exposures with camera or print (says *Amateur Photographer*) consists of painting in (preferably) red on the underside of one's watch-glass a small pointer or arrow-head. It is necessary to have the glass loosely fitted to enable it to turn in the bezel easily by the thumb or finger, but not so loosely that it will drop out at any time. In use, it is simply necessary to set the index to the time of the finish of exposure, and then in the meantime one can in some instances proceed with other work while the exposure proceeds, without the worry of having to carry the time in one's mind.

A Changing Bag

I HAVE had made (writes Mr. R. A. Malby in *Photography and Focus*) a rectangular changing bag measuring 21 in. by 22 in. deep—so that it easily contains the dark-slides and one or two boxes of half-plates. At two adjacent corners there are sleeves some 8 in. or 10 in. long, fitted with elastic. One of these is just large enough to take one arm, the other is of a size that will admit the dark-slides. This wider one readily folds round, and with its elastic becomes light-tight, especially if it is put on the arm and then the coat-sleeve is pulled down over it.

The one point to observe in using the "book form" slides is to prevent the upper part or "roof" of the bag becoming caught in the slide as the latter is closed; and I found a very simple way of obviating this. To a ring secured to the centre of the "roof" of the bag a piece of string or a strap is attached, and this is made fast (at the right height to leave ample working room in the bag) to the tripod, which is erected over one's lap. This is a great convenience, as it frees the "headway" inside the bag and makes changing a very simple matter.

Cleaning Daguerreotypes

THE photographer is sometimes called upon to reproduce or copy a daguerreotype which seems almost faded, or "gone," as they say. The image is not really faded and with care may be restored.

Carefully remove the mat and glass, taking the greatest care not to touch the surface of the plate. The least touch will leave an impression that cannot be got rid of. If this is on paper gummed on the back, remove it with care.

Hold the face of the plate upward, resting it on the tips of the fingers, and allow a gentle

stream from the tap to flow over it. Make up a solution of potassium cyanide, not more than five grains to the ounce of water. Flow this solution backward and forward over the film until the discoloration is gone. If there is an obstinate spot, direct the cyanide more especially to it and pour it off and on like in the development of a wet plate. Be careful not to use the cyanide solution too strong, as the image may be dissolved. Use a weak solution and have patience.

When the stain has disappeared, wash under the gentle tap stream, but let the final washing always be with pure distilled water—tap water will leave a deposit on drying. Dry by holding the plate with a pair of pliers over a spirit lamp. The plate must not be allowed to dry spontaneously as you do a negative. Cause the evaporation to proceed from the upper corner downward in one steady uniform wave, otherwise stains will occur.

PATENT NEWS

Under this heading it is proposed to include each month a list of all the U. S. Patents, and brief abstracts of the more important, and to include also such foreign patents as present special features.

Copies of any patent can be obtained from the Commissioner of Patents, Washington, D. C. Price, five cents each.

Camera-back Fastener. Goddard & Hutchings. 1151781.
Lens and Diaphragm Adjuster. J. Tessler. 1152238.
Motion Picture Camera. H. Casler. 1151566.
View Finder. S. Brown. 1151564.
Tripod. W. E. Burnell. 1152071.
Automatic Printer. Korsmo & Olson. 1151954.
Flashlight. W. Nesbit. 1152288.
Motion Picture Machine. C. A. Butler. 1152288.
Motion Picture Shutter. J. A. Cameron. 1151760.
Motion Picture Projector. F. L. Wright. 1152384.
Transparency Holder. B. J. Falk. 1152156.
Color Camera. J. K. Holbrook. 1151786.
Color Projection Apparatus. J. K. Holbrook. 1151787.
Finder. C. Bornmann. 1152782.
Shutter. 2. ?. Sullender. 1153141.
Stereopticon Lamp. H. M. Hill. 1153161.
Developing Apparatus. G. C. Beidler. 1153017.
Motion Picture Apparatus. C. F. Jenkins. 1152515, 1153163, 1153164.
Motion Picture Apparatus. P. T. Taylor. 1152989.
Film Printing. Carleton & Nelson. 1152599.
Motion Picture Screen. J. B. Flogerzi. 1152620.
Slide Changer. C. F. Jenkins. 1153110.
Camera. T. Kajiwara. 1153392.
Camera. F. E. Ives. 1153229.
Camera Support. J. H. Klenck. 1153320.
Camera. J. S. Green. 1153843.
Flashlight Plug. A. Brody. 1153420.
Motion Picture Camera. W. A. Ryan. 1153341.
Projection Apparatus. Guerzoni & Pechkranz. 1153685.
Film Pack Camera. C. Bornmann. 1154285.
Camera. B. J. Nasief. 1154046.
Film Reel Holder. A. E. Sengstock. 1153963.
Mercury Vapor Lamp. P. H. Thomas. 1153976.
Relief Photo Apparatus. H. B. Byron. 1154232.
Enlarging Camera. A. L. Gates. 1155142.
Finder. S. Brown. 1154996.
Vignetter. S. E. Moine. 1155080.
Cinematograph Apparatus. W. Bauersfield. 1154835.
Printing Apparatus. S. A. Smith. 1154735.
Shutter Operator. B. A. Slocum. 1154892.
Color Screen. C. L. A. Brasseur. 1154607.
Film-fire Preventer. J. T. Wells. 1154952.
Motion Picture in Colors. W. Friese-Greene. 1155056.
Film Printing. G. White. 1154820.
Photomechanical Printing. J. G. Wood. 1155186.
Stereopticon. F. H. White. 1154819.
Camera. H. W. Johnson. 1156362.
Camera Support. J. H. Klenck. 1156296.
Waterproofing Camera. W. S. Stearns. 1156641.
Telephoto Lens. L. B. Booth. 1156743.
Printing Apparatus. T. Harbers. 1156528.
Motion Picture Apparatus. J. J. Connelly. 1156211.
Motion Picture Machine. O. Schwimmer. 1156824.
Motion Picture Machine. G. W. Bingham. 1156457.
Motion Picture Machine. T. P. Hall. 1156596.
Camera. D. Dimentberg. 1156984.
Photographing and Developing Apparatus. G. C. Beidler. 1157611.
Motion Picture Renovator. B. H. Greene. 1156994.
Motion Picture Register. E. Schneider. 1156934.
Color-printing Plate. Walsh and Reed. 1157197.
Composite Picture. J. E. Garrette. 1156896.
Stereoscope. H. E. Richmond. 1157419.
Winding Spool. R. Bowen. 1158025.
Multiplying Camera. J. W. Anderson. 1158019.
Camera and Developing Apparatus. F. E. Oiler. 1158386.
Developer. C. J. Thatcher. 1158011.
Enlarging Apparatus. C. W. White. 1157742.
Printing Camera. J. Trimbach. 1156296.
Developing and Fixing Tank. J. S. Wilson. 1158879.
Flashlight. J. L. Courson. 1159179.
Daylight Loading Slide. J. Donald. 1158902.
Film Developing Apparatus. J. C. Wright. 1158615.
Motion Picture Film. J. Tessier. 1159130.
Motion Picture Film. W. A. Beatty. 1158963.
Plate and Film Numbering Machine. J. B. Stephenson. 1159126.
Motion Picture Printer. J. E. Thornton. 1158587.
Projection Apparatus Holder. C. W. Barton. 1158429.

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JANUARY 1915

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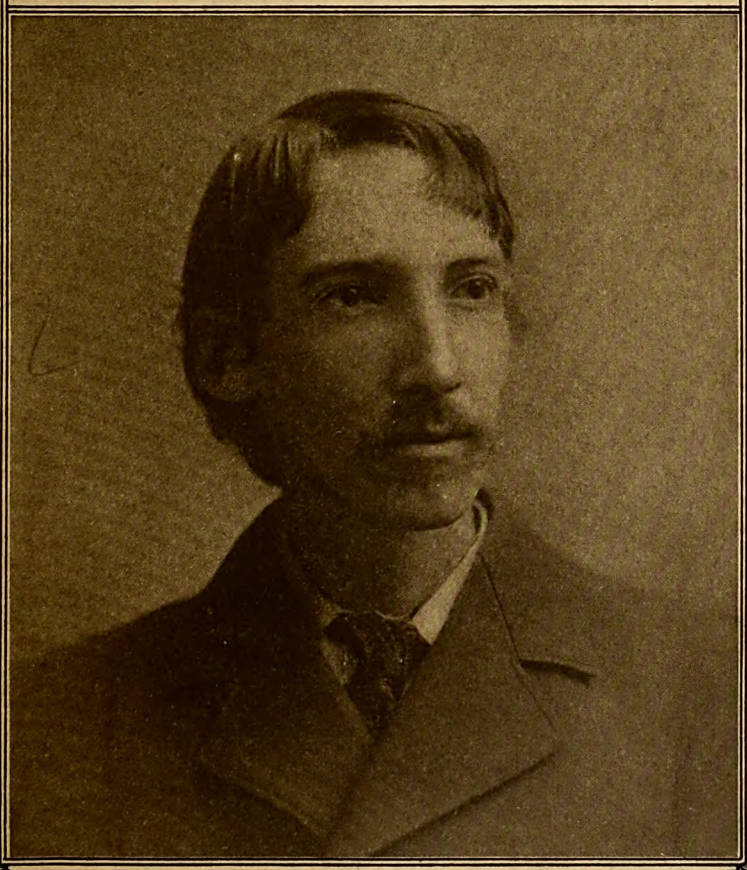

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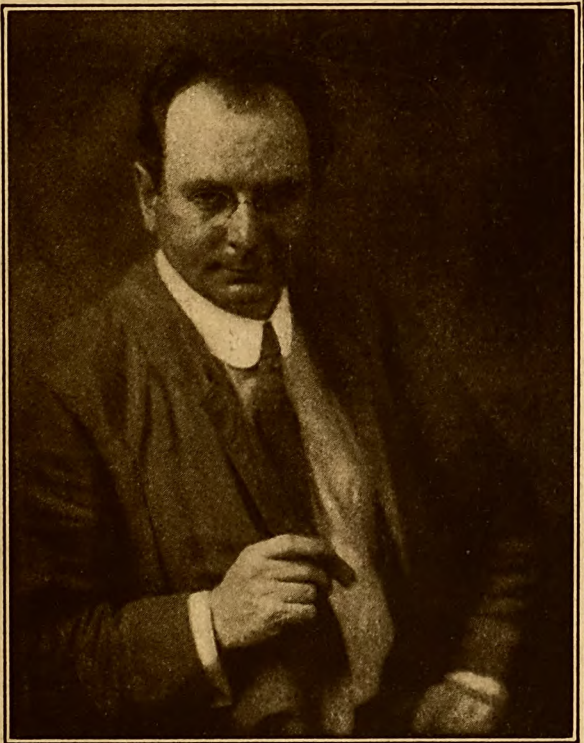

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IRA L. HILL NUMBER

What is the value of the Cyko trademark?

WE MEAN the tangible value, both to the consumer and the manufacturer. The consumer knows by experience—experience of 16 years—that when he uses CYKO he gets the best prints obtainable from his negatives, that he cannot determine the value of his negatives until he sees a print on CYKO.

His work need only be done once. He has no waste either of paper, time, or reputation.

What is the tangible value of the CYKO trademark to the consumer?

The manufacturer of CYKO has put in 16 years studying the best methods of compounding and mixing emulsions, purchasing secret formulas, buying and devising machinery, collecting data, and paying hundreds of thousands of dollars for experience.

In addition, the manufacturer has spent in 16 years hundreds of thousands of dollars showing the consumer the quality behind the trademark CYKO—demonstrating, teaching, advertising CYKO quality.

Yet CYKO is sold at about the same price as other papers.

What is the value of the CYKO trademark to the manufacturer?

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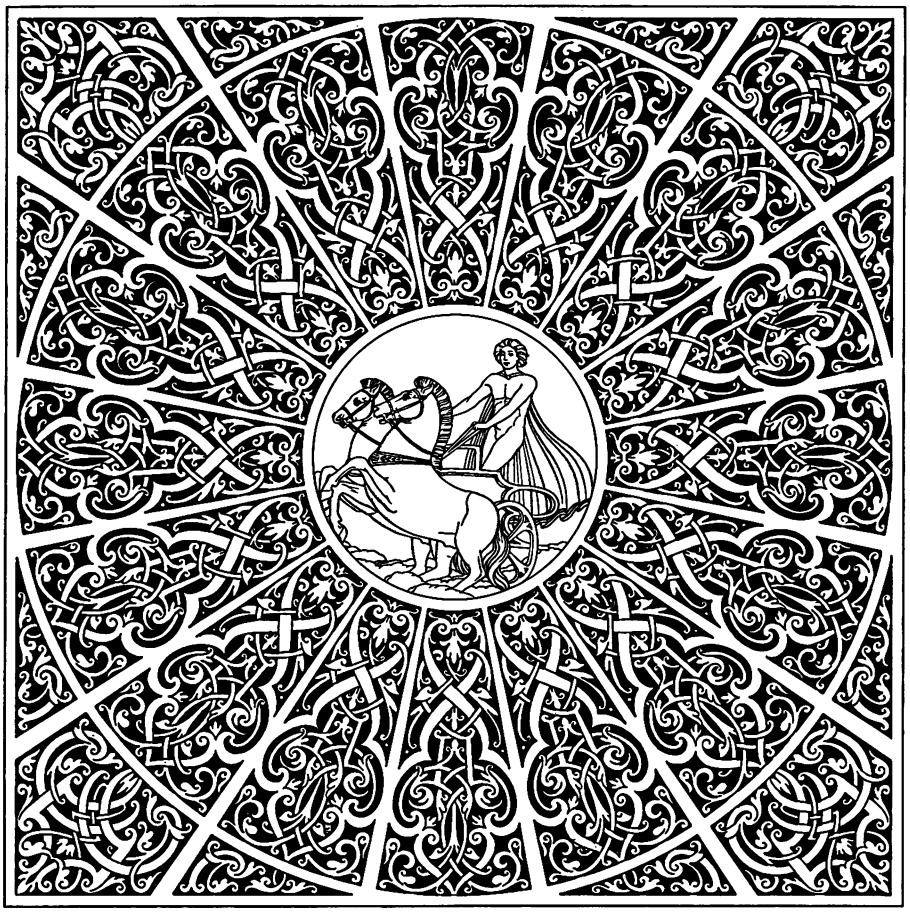

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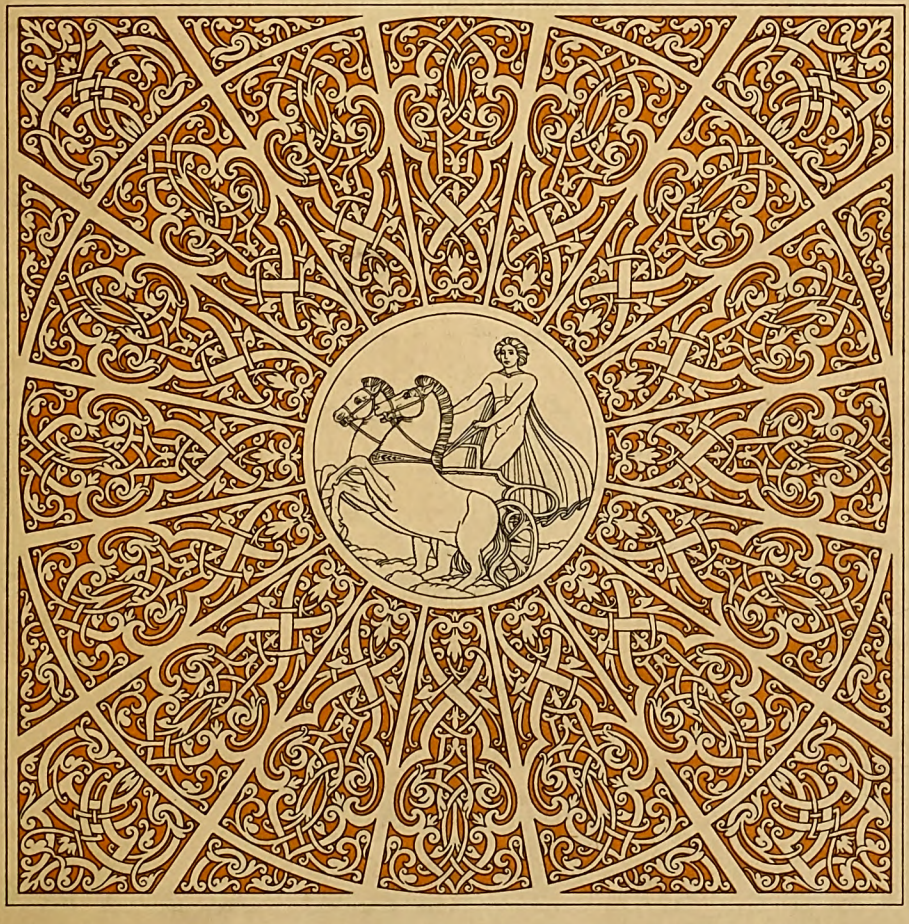

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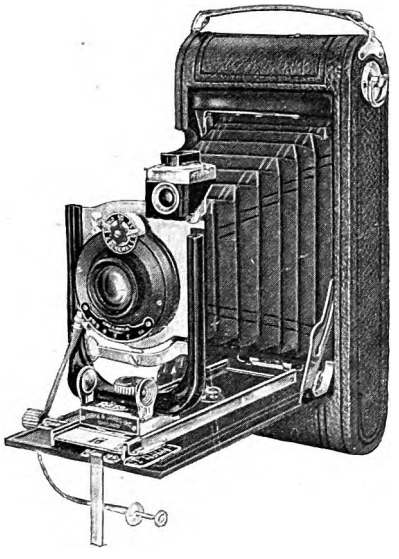

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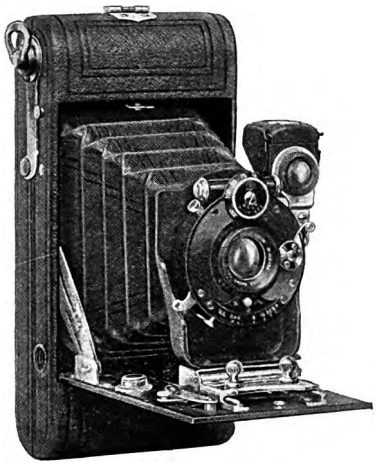

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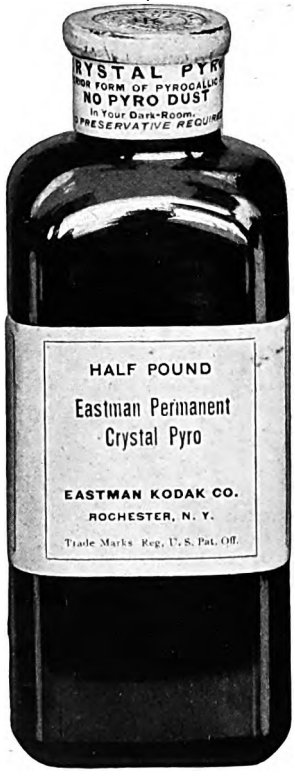

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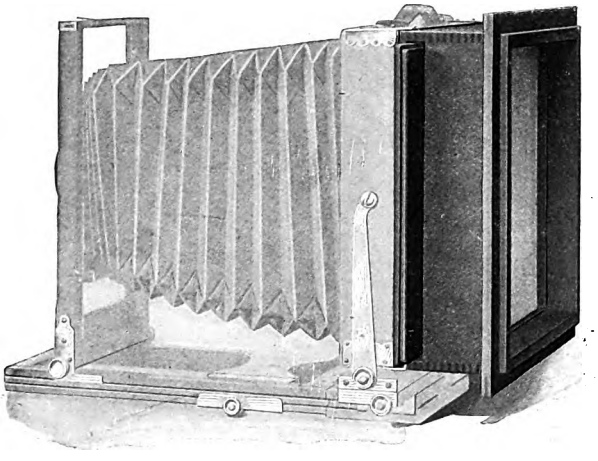

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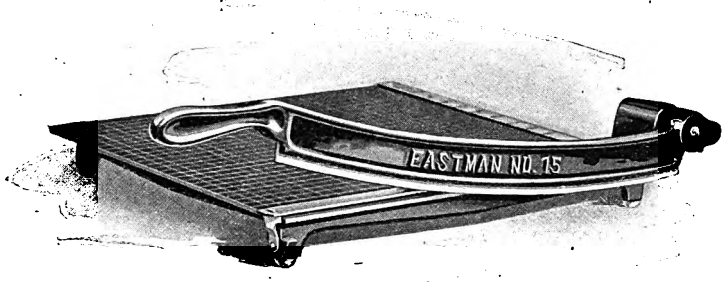

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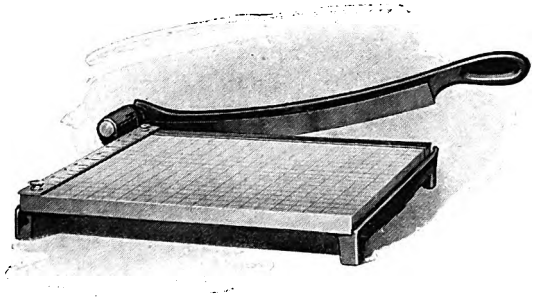

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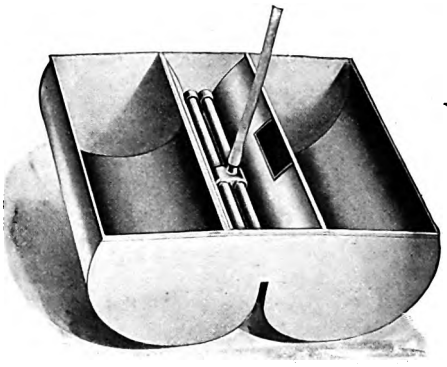

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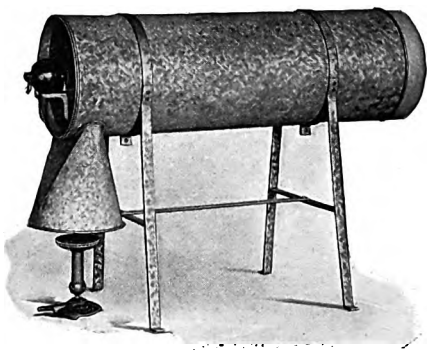

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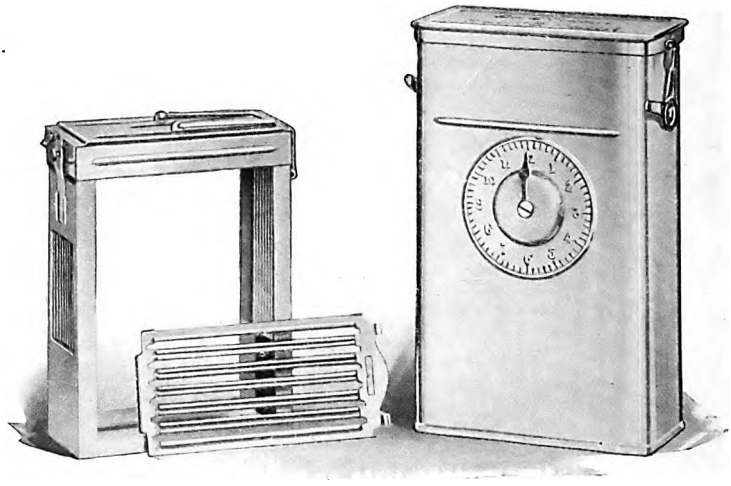

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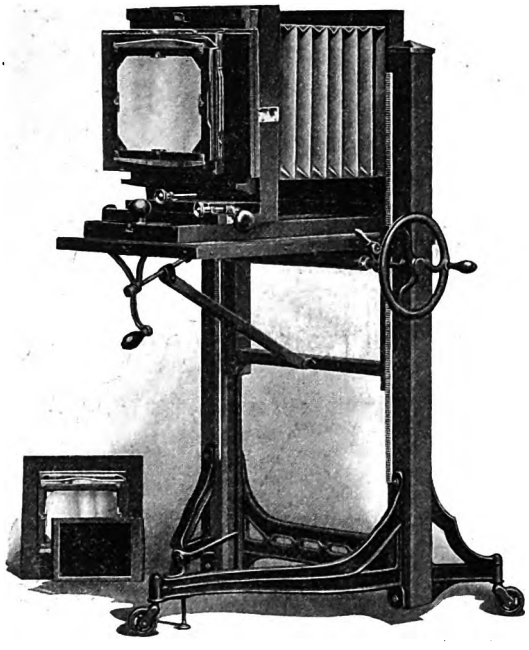

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