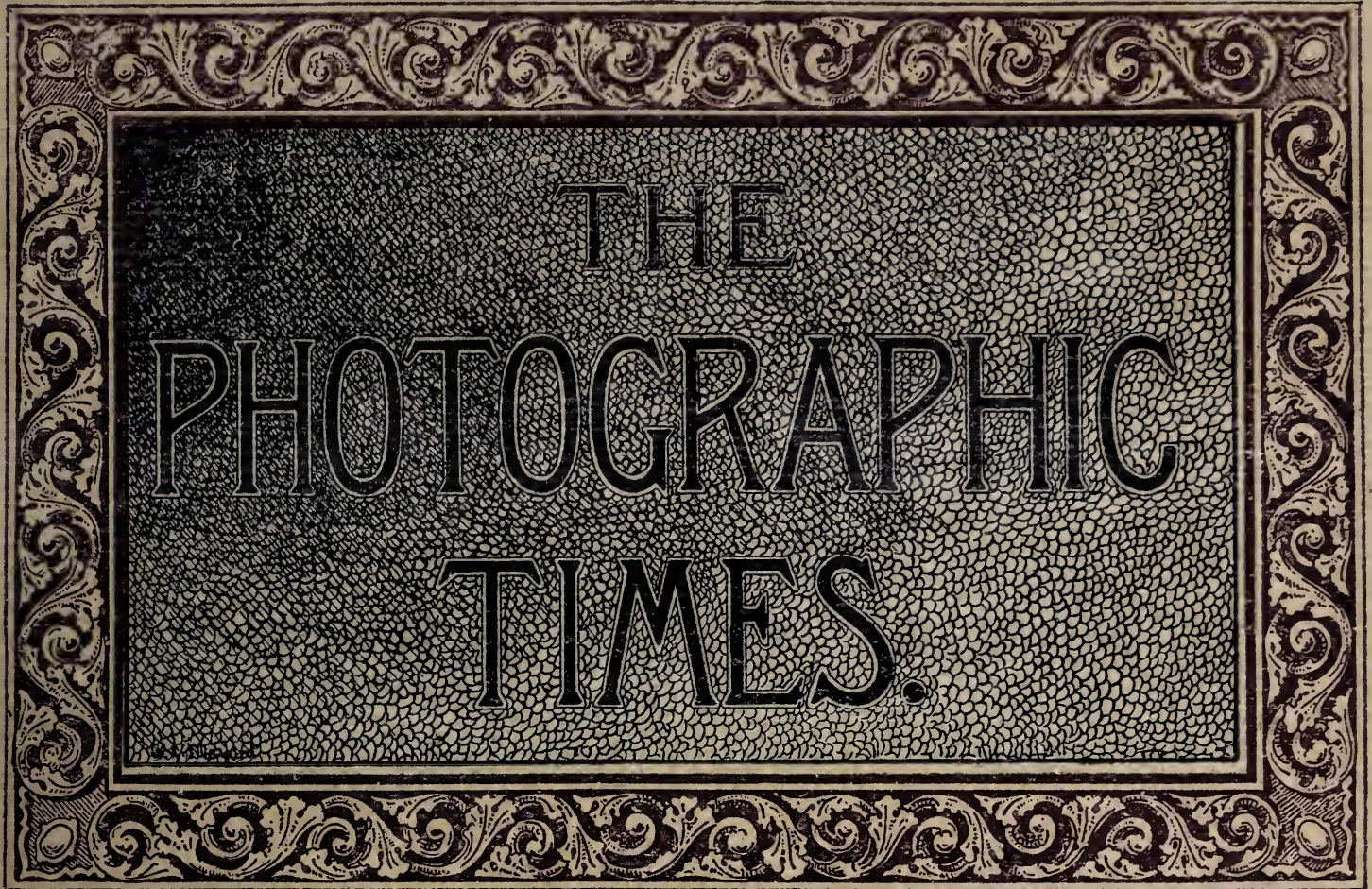


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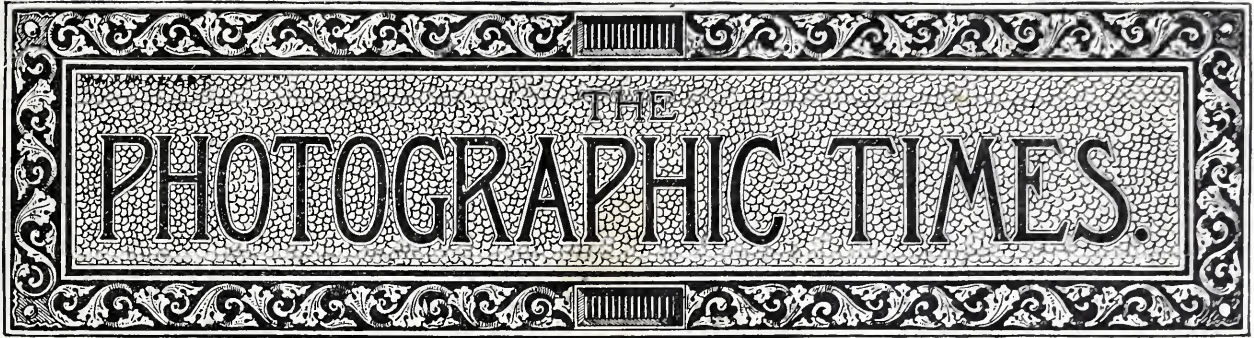


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THE  
PHOTOGRAPHIC TIMES.

VOL. XIX.

FRIDAY, AUGUST 2, 1889.

No. 411.

### H. McMICHAEL.

OUR frontispiece illustration this week is an excellent portrait of the President of the Photographers' Association of America. It is from a negative made in Mr. McMichael's own studio, and, in his own opinion, is one of the best portraits he has ever had made. Beside the interest which attaches to this portrait as being the likeness of the most prominent photographer in this country at the present time, it is an example of portraiture that may be studied with profit by all photographers, and is a fair representative of the photographic work done in Mr. McMichael's own studio at Buffalo. Our readers are already familiar with the superior figure pictures which Mr. McMichael has shown. His superb exhibition at the Boston Convention is, perhaps, the most complete he has ever made.

H. McMichael was born in Norfolk County, Ontario, in 1844. The first twenty-one years of his life was spent on a farm, but from that time onward he has been a photographer. At first following the profession in Hamilton and other Canadian towns, Mr. McMichael soon decided to enter a larger field, and went to Buffalo in 1871, and opened a studio on Main Street, where he has been located ever since.

His connection with the Photographers' Association of America is as brief as it has been brilliant. In 1884 he joined that body, and attended its convention in Cincinnati, but that year making no exhibit. There it was decided to hold the convention of 1885 in Buffalo, and Mr. McMichael was chosen Local and Recording Secretary. At the Buffalo Convention he made his first exhibit, and took the first prize of one hundred dollars.

At that convention he was elected General Secretary, and at the convention following, held at St. Louis, declined the proffered re-election. His management of the office gave the widest spread satisfaction, and the association cleared more money than all the photographic conventions ever

held in America had done before. At St. Louis he took the first prize of one hundred dollars in gold and a silver medal, on his general exhibit. The next year, at Chicago, he took the first gold medal, and one hundred dollars in gold. Last year, at Minneapolis, as is well known, he took the first cash prize for general work, and a medal, and was there unanimously elected President of the Association by acclamation, amid the greatest enthusiasm. In the history of the Association he is the only man who has been thus honored. His management of the association since then is well known to all. It is what all have expected, and the success of the present semi-centennial of photography's birth, is the crowning event in Mr. McMichael's brilliant photographic career.

In addition to the Association medals and prizes which have been awarded to Mr. McMichael, our President has been honored in Canada and abroad. The first gold medal of Canada, in 1886, and again in 1887, was given to him for his magnificent portrait work at the International Exposition at Toronto. In 1887, the first prize offered by the Canadian Photographers' Association was won by him, and in January, 1888, he received one of two silver medals offered by the Photographic Society of India, at its exposition held under the auspices of Lord Dufferin. It was a prize for portraits, open to the photographers of the world.

### THE CONVENTION.

When this reaches our readers, many, we trust, will be making active preparations to attend the convention in Boston. It opens Tuesday morning August 6th, and closes with an appropriate celebration of the Semi-Centennial of Photography, Saturday, August 10th. It will pay to attend this convention, even at a considerable sacrifice. Never before have so great preparations been made to interest and instruct visiting photographers. Educational papers will be read, and instructive discussion will follow which will be of greatest value to photog-

raphers. The exhibition of photographs by our best and most prominent professionals, as well as by many amateurs; the display of latest improvements in photographic apparatus, by manufacturers and dealers; and the attractions of Boston and its vicinity will alone repay any photographer attending. But, in addition to this, he has a chance to win a valuable medal, or the Grand Prize itself—"The Roman Wrestlers." This magnificent bronze group has already been described in these columns, as well as the medals which are offered by the Association. Many valuable prizes have been offered for competition, by the manufacturers and dealers. These, too, and the rules and regulations governing the competitions, have been announced in these columns.

The official programme follows, as well as other information concerning the convention. Take this copy to the convention for reference. It will also be an appropriate souvenir of the occasion.

We shall hope and expect to greet a larger number of our friends at Boston, next Thursday, than has ever been assembled before at a photographic convention. On, then, to Boston! This is our last word until we meet you there!

### PROGRAMME.

#### FIRST DAY.

1. Address of welcome by J. F. Ryder, Cleveland, O.
2. Calling of the meeting to order.
3. Roll call.
4. Reading of the minutes of the last meeting.
5. Report of special and standing committees.
6. Selection of location for 1890.
7. Appointment of committee on nominations.
8. Report of the committees on awards.
9. The President's annual report.

#### SECOND DAY.

1. Reading of communications.
2. Unfinished business.
3. Report of the committee on nominations.
4. Report of special committees.
5. New business.

#### THIRD DAY.

1. The reading of communications.
2. Unfinished business.
3. New business.
4. The election of officers.

#### FOURTH DAY.

1. The reading of communications.
2. Reports of committees.
3. Unfinished business.

4. New business.
5. Announcement of awards.
6. Closing ceremonies.

### LIST OF OFFICERS OF THE P. A. OF A. SINCE ITS FOUNDATION.

1880.—Convention held in Chicago, Ill. J. F. Ryder, President; H. Rocher, Treasurer; A. J. W. Coplin, Secretary.

1881.—Convention held in New York, N. Y. John Carbutt, President; A. Hesler, Treasurer; Gayton A. Douglass, Secretary; Vice-Presidents from every State.

1882.—Convention held in Indianapolis, Ind. Joshua Smith, President; Jno. E. Beebe, Treasurer; J. D. Cadwallader, Secretary.

1883.—Convention held in Milwaukee, Wis. J. Beebe, President; J. A. Read, Treasurer; W. W. Sherman, Secretary.

1884.—Convention held in Cincinnati, O. J. H. Kent, President; W. A. Armstrong, Treasurer; A. Weingartner, Secretary.

1885.—Convention held in Buffalo, N. Y. Jas. Landy, President; G. M. Carlisle, Treasurer; H. McMichael, Secretary.

1886.—Convention held in St. Louis, Mo. W. H. Potter, President; G. M. Carlisle, Treasurer; H. McMichael, Secretary.

1887.—Convention held in Chicago, Ill. G. Cramer, President; G. M. Carlisle, Treasurer; H. S. Bellsmith, Secretary.

1888.—Convention held in Minneapolis, Minn. E. Decker, President; G. M. Carlisle, Treasurer; W. H. Potter, Secretary.

1889.—Present Officers: H. McMichael, President; Geo. H. Hastings, First Vice-President; J. M. Appleton, Second Vice-President; O. P. Scott, Secretary; G. M. Carlisle, Treasurer.

### EDITORIAL NOTES.

WE have received many inquiries concerning the location of the Convention of the P. A. of A. for next year, as well as the probable candidates for office. Though we are in a position to hear all the latest news and gossip concerning photographic matters, we do not always deem it proper to communicate all that we hear to the readers of THE PHOTOGRAPHIC TIMES. In regard to the location for the next Convention, however, we may repeat what we have already said in these columns. Washington seems to be in much favor, though Kansas City, and even Denver, have been advocated by Western photographers, who are in hopes that the Convention will be held west of the Mississippi next year, because it was located so far east

this year; and Washington is not nearly so popular now as it was a few months ago. Rochester is spoken of, and, latterly, the beautiful city of Hartford, Conn., where photographers would be sure of a hearty welcome and the best of treatment while there. Providence, R. I., also is strongly advocated by a number of photographers, as it is a very accessible city.

Several prominent photographers have been mentioned in connection with the Presidency of the P. A. of A. for the ensuing year. Charles Stuart, of Hartford, is very strong with Eastern photographers, and so is George Barker, of Niagara Falls. W. H. Jackson, of Denver, Col., is a popular Western candidate; and many seem to think that our present Vice-President, J. M. Appleton, is worthy of promotion. It is impossible to say, of course, who is the strongest candidate. That remains to be seen after the photographers have actually been assembled in Convention. One thing is certain, however, and that is, that the Photographers' Association of America cannot make a mistake by electing any one of the candidates here mentioned.

THE publishers of "The American Annual of Photography and Photographic Times Almanac" announce that the entire edition of eight thousand copies of the 1889 issue has been sold; not a single copy is left to fill the urgent orders which continue to come in. There are a few copies in the hands of dealers, we understand, but these are going very fast. Those dealers who have any copies left will confer a favor upon our readers by notifying us to that effect, that we may inform those who are in search of copies, where they may procure them. We understand that a few copies of the second edition of the 1887 and 1888 "Annual" are left, but they are growing every day more scarce. The publishers also inform us that the issue of 1890 is in active preparation and will be superior to any of the previous numbers. Several very fine negatives have already been decided upon for illustrating this issue.

### PROGRESSIVE PHOTOGRAPHY.

#### CELLULOID POSITIVES.

PERHAPS no greater improvement in photography can be chronicled for 1888-9 than the introduction of sheet celluloid as a substitute for glass. In supporting the film of gelatino-bromide for making negatives, its acceptance was spontaneous, and especially acceptable to those traveling long distances, as the saving of both weight and bulk is very great, while the quality of the

negatives fully equals those made on glass plates, and where halation would be met with on glass, the celluloid film is singularly free from it.

Now that the celluloid films for negatives has got firmly established, we have turned our attention to the use of the same material in a modified form on which to produce positives by contact and exposure to a lamp or gas flame for a few seconds, and subsequent development.

The celluloid for positives is opaque, one grade is of a delicate sea shell pink, another white, and a third of the tone of ivory. On this material coated with a suitable and special emulsion positives of great beauty are easily obtained, and after drying and varnishing with the new papyroxylene varnish may be considered among the most permanent pictures the photographer can produce, as the image is hermetically sealed from the action of gasses in the atmosphere. Specimens of the new positive process will be on exhibition at Boston, and can also be seen at the warehouses of The Scovill & Adams Company, New York.

It is to the production of these positives we now ask the reader's attention.

To meet with success in the making of these beautiful positives, it is necessary that the following conditions are carried out. 1. That the back of the negative is cleaned from all extraneous matter, and that a glass for the printing frame is free from specks and bubbles. 2. Clean developing trays, and fresh, clear hyposolution for fixing. As we recommend Hydrochinon for developer, it is necessary that neither trays that have been used for Pyro, nor Hypo solution that has fixed Pyro developed negatives be used, if you wish your positives to be free from stains and discoloration.

The positives may be produced either as vignettes, or with a margin of clear film; the first is secured by placing a vignetting mask, attached to glass of printing on the outside; the Weymouth vignettes answer the purpose. To produce the positives with full background and clear margin, a mask with suitable opening is placed between negative and film, and as exactitude is required to produce the best result, we will describe in detail our mode of securing a uniform width of margin to the positive, we will take a very popular size, the Cabinet; for a mask we use thin label paper of vermilion red color, 6x8 inches in size, with a Robinson trimmer and guide cut out the opening,  $4 \times 5\frac{1}{2}$ , either oval or round cornered, or, if desired, square at corners with rule and knife, on the white side of the paper draw a line on top and one side half an inch from edge of opening take two strips of card board  $\frac{3}{8}$  of

an inch wide and 3 inches long, fasten to mask just allowing pencil mark to show; this will form a right angle into which the positive film will register and duplicate exposures can be made and a uniform clear margin given to each picture; turn the mask over, and on it lay the negative, and when in position attach mask to negative, *temporarily*, with narrow strips of gum paper, so that the same mask may with care be kept and used on other negatives; lay the negative and mask in a deep  $6\frac{1}{2} \times 8\frac{1}{2}$  printing frame, lay a 5x7 Carbutt Positive Film on negative and in register with the guides, place a piece of felt or cloth over and secure the back, expose to the light of an Argand lamp or gas flame, at a distance of four feet, for 5 to 8 seconds; for developer either use Carbutt's one solution hydrochinon and water, equal parts, and a few drops of bromide of sodium (after using place in separate bottle for future use), or 1 ounce of A., 1 ounce of B., and 4 ounces of water, of the following formula.

- a.* Warm distilled water..... 20 ounces  
Sulphite soda crystals..... 4 ounces  
Sulphuric acid..... 1 drachm  
Hydrochinon..... 360 grains  
Potassium bromide... .. 30 grains  
Water to make up to..... 30 ounces
- b.* Caustic soda in stick..... 1 ounce  
Water to make..... 30 ounces
- ACCELERATOR.
- c.* Caustic soda..... 1 ounce  
Water to make..... 10 ounces
- RESTRAINER.
- d.* Bromide of potass.....  $\frac{1}{2}$  ounce  
Water..... 5 ounces

*Developer.*—Take of *a* 1 ounce, *b* 1 ounce, water 2 to 4 ounces—the first for instantaneous and short exposures, and the latter for time exposures. For lantern transparencies 1 ounce *a*, 1 ounce *b*, water 4 ounces, *d*  $\frac{1}{2}$  drachm.

These proportions we have found to give very fine results on properly timed exposures. To correct errors in exposures, or inequalities of light and shade existing in the negative, we may have to resort to a little dodging, which can be worked as follows: it is as well to anticipate these things, for your picture may be lost, if these auxiliaries had to get ready at the time they were needed, therefore you have ready in a small glass a little of the full strength single solution, or a small quantity of the double solution, in another glass have a 10 grain solution bromide of sodium or potassium, and two tufts of absorbent cotton, place on a piece of *glass*, not on your developer stained table or shelf, now if your picture shows signs of the darkest portions developing out too strong before the high lights have got their half tones, pour off the developer,

and with the tuft of cotton dipped in the bromide go over the *dark* portions of the positives and arrest the development, allowing it to continue in the high lights, judgment must decide whether to help on the high lights with the other tuft of cotton and the developer used, or the stronger developer, these corrective measures are given because we believe they will be found useful, but with a first-class negative, proper exposure and well proportioned developer, results that cannot help but satisfy will be the result. After thoroughly washing off the developer, place in the clearing and hardening solution for from three to five minutes, Alum 2 ounces, water 30 ounces, citric acid  $\frac{1}{2}$  ounce; and after again washing for not less than three minutes place in fixing solution ten minutes, Hyposulphite soda 5 ounces, water 20 ounces, to insure perfect clearance from bromide—and hyposulphite of silver—for it is the latter that discolors the films of both negatives and positives after exposure to light. The fixing should be followed by a thorough washing in running water for one or two hours; then immerse for five minutes in water 25 ounces, glycerine 1 ounce, before removing from this bath go over the surface with tuft of absorbent cotton, then quickly pass the film through a dish of clean water and hang up with metal clip by one corner to dry, when dry lay on piece of card so that the lower side overhangs the card, hold to card by upper corner with a metal clip, so that the clip just catches it, then flow over the surface, Kristaline varnish, remove from card and hang up until varnish is dry and your positive is finished.

*John Carbutt.*

WAYNE JUNCTION, Philadelphia.

### A QUICK DEVELOPER.

THE following formula was given me recently by a professional friend, who remarked that it gave the best results he had ever obtained, especially with instantaneous, or very quick, exposures:

*A.*

- Sulphite of soda..... 6 ounces  
Water ..... 64 ounces  
Bromide potash ..... 1 ounce  
Aq. ammonia F..... 2 ounces  
Soda biborate..... 100 grains

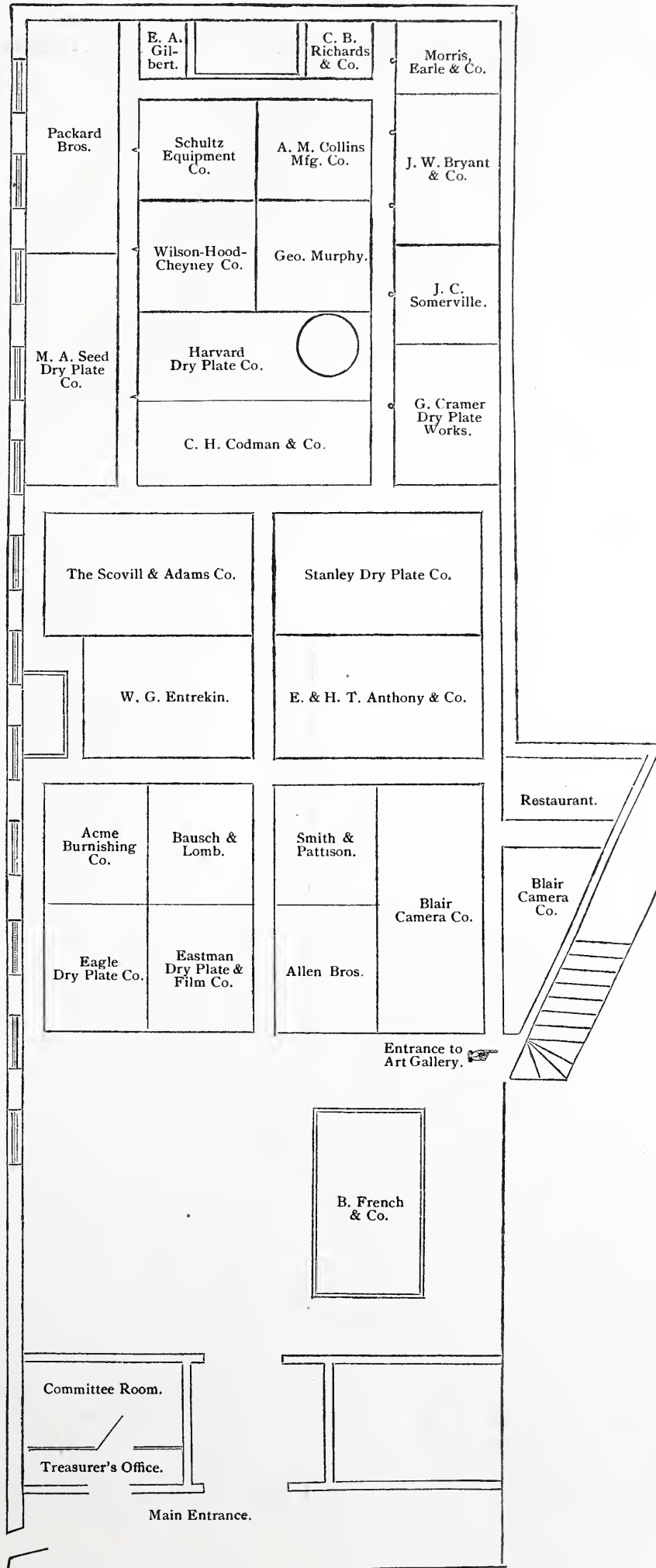
*B.*

- Pyro..... 1 ounce  
Sulphuric acid..... 20 drops  
Water..... 6 ounces

For use take of

- A.*..... 1 ounce  
*B.*..... 2 drams  
Water..... 3 ounces

DIRECTORY OF THE MANUFACTURERS' AND DEALERS' EXHIBITION.



It is best to begin developing with half the quantity of *A* called for, gradually adding the remainder if the image does not come up in the usual way.

The combination was new to me in the additions of borax to the alkaline solution. I have not seen the formula published, although you may be familiar with it. I have for years been a potash man, but confess that with this developer I have obtained, with quick exposures especially, better negatives than I ever got before, and would recommend it.

It is much quicker in its action than either potash or soda, and those of us who have become accustomed to the gradual and somewhat slow appearance of the image under the use of those alkalies, must be cautious, beginning with half the amount of *A* solution.

The negatives are good prints, and generally of the desirable slate color.

It is well not to have the solution too cold, a temperature of from 60 deg to 80 deg. being best.

*Geo. L. Sinclair.*

HALIFAX, N. S.

### ON ALLOTROPIC FORMS OF SILVER.

(Continued from page 367.)

PROPERTIES POSSESSED BY ALL THE VARIETIES IN COMMON, AND DISTINGUISHING THEM ALL FROM NORMAL SILVER.

All these forms have several remarkable properties in common.

1. *That of drying with their particles in optical contact, and consequently forming a continuous film.*—If either is taken in a pasty condition and is spread evenly over paper with a fine brush it takes on spontaneously in drying a lustre as high as that of metallic leaf. C, when so treated, would be taken for gold leaf, but this property is much better seen by brushing the pasty substance over glass. When dry, an absolutely perfect mirror is obtained. The particles next the glass, seen through the glass, are as perfectly continuous as those of mercury amalgam, and the mirror is as good. A and B form bluish-green mirrors; C, gold or copper-colored mirrors.

2. *The halogen reactions.*—When any of these allotropic forms of silver are brushed over paper, and the resulting metallic films are exposed to the action of any haloid in solution, very beautiful colorations are obtained. The experiment succeeds best with substances that easily give up the halogen, such as sodium hypochlorite, ferric chloride, iodine dissolved in potassium iodide, &c. But indications are also obtained with alkaline salts,

such as ammonium chloride, &c., though more slowly and less brilliantly. With sodium hypochlorite the colors are often magnificent, intense shades with metallic reflections reminding one of the colors of a peacock's tail. Blue is the predominating tint. These are interference colors, caused by thin films; but whether of a normal silver haloid or a hemi-salt cannot be said. When silver leaf (normal silver) is fastened to paper and a trial made the contrast is very striking. This matter will be more particularly examined in the second part of this paper, and is mentioned here as one of the reactions distinguishing allotropic from ordinary silver.

3. *The action of Acids.*—The stronger acids, even when much diluted, instantly convert the allotropic forms of silver into normal gray silver; even acetic acid, not too much diluted, does this. It is important to remark that this change takes place absolutely without the separation of gas. I have more than once watched the whole operation with a lens, and have never seen the minutest bubble escape.

4. *Physical condition.*—All these allotropic forms of silver are easily reduced to an impalpable powder. One is surprised to see what is apparently solid burnished metal break easily to pieces, and by moderate trituration to yield a fine powder.

#### A.—SOLUBLE ALLOTROPIC SILVER.

A solution of ferrous citrate added to one of a silver salt produces instantly a deep red liquid (ferrous tartrate gives the same reaction, but is less advantageous). These red solutions may either exhibit tolerable permanency, or may decolorize, letting fall a black precipitate. It is not necessary to prepare the ferrous salt in an isolated form, a mixture of ferrous sulphate and sodic citrate answers perfectly.

When, however, concentrated solutions are used with a large excess of ferrous sulphate and a still larger one of alkaline citrate, the liquid turns almost completely black. It should be stirred very thoroughly for several minutes, to make sure that the whole of the precipitated silver citrate is acted upon by the iron. After standing for ten or fifteen minutes the liquid may be decanted, and will leave a large quantity of a heavy precipitate of a fine lilac-blue color. It is best to adhere closely to certain proportions. Of a ten per cent. solution of silver nitrate 200 c.c. may be placed in a precipitating jar. In another vessel are mixed 200 c.c. of a thirty per cent. solution of pure ferrous sulphate, and 280 c.c. of a forty per cent. solution of sodic citrate. (The same quantity of ferrous sulphate or



of sodic citrate in a larger quantity of water will occasion much loss of the silver product). I think some advantage is gained by neutralizing the ferrous solution, which has a strong acid reaction, with solution of sodium hydroxide, as much may be added as will not cause a permanent precipitate. To the quantities already given add about 50 c.c. of a ten per cent. soda solution. The reaction takes place equally well without the soda, but I think the product is a little more stable with it. The mixed solution is to be added at once to the silver solution.

The beautiful lilac shade of the precipitate is rather ephemeral. It remains for some time if the precipitate is left under the mother water; but when thrown upon a filter it is scarcely uncovered before the lilac shade disappears, and the precipitate takes a deep blue color without losing its solubility. It may be washed either on a filter or by decantation with any saline solution in which it is insoluble, and which does not affect it too much. On the whole, ammoniac nitrate does best, but sodic-nitrate, citrate, or sulphate may be used, or the corresponding ammonia salts. Although in pure water the precipitate instantly dissolves with an intense blood-red color, the presence of five or ten per cent. of any of these salts renders it perfectly insoluble. I have usually proceeded by adding to the precipitate (after decanting the mother water as completely as may be, and removing as much more with a pipette) a moderate amount of water; for the above quantities about 150 c.c. Much less would dissolve the precipitate but for the salts present; this much will dissolve the greater part but not the whole, which is not necessary. A little of a saturated solution of ammoniac nitrate is added, just enough to effect complete precipitation.

As the material appears continually to change, the amount of washing needed must depend on the object in view. If wanted for analysis, the washing must be repeated many times until ferric salt ceases to come away, but no amount of washing will entirely eliminate it. After seven or eight solutions in pure water, and as many precipitations, the material is to be thrown on a filter, the liquid forced out as completely as possible with a pump, and then the ammoniac nitrate washed out with ninety-five per cent. of alcohol until the filtrate leaves nothing on evaporation. The substance at this point is still soluble, though much less so than at first. During the washing the solubility slowly but steadily diminishes, a fact rendered noticeable by less and less ammoniac nitrate being required to precipitate it from its solution.

*Analysis.*—The product, after thorough washing,

as above described, with alcohol, was dried at ordinary temperatures or a little above, and was then reduced to very fine powder, and washed again with water as long as anything dissolved. It was then dried at 100 deg. C. in a water bath. Three silver determinations were made:—

A <sub>1</sub> .....	.9731	per cent. silver.
A <sub>2</sub> .....	.9718	“ “
B.....	.9721	“ “

A<sub>1</sub> and A<sub>2</sub> were made with different portions of the same material; B with different material prepared in exactly the same way.

The substance, therefore, contained on an average 97.27 per cent. of silver. The nature of the residue would decide whether the material was silver with a certain amount of impurity firmly attached to it, or whether we had to do with silver in chemical combination with other elements.

The filtrate from the silver chloride in analysis A<sub>2</sub>, was evaporated to dryness, and was found to contain chiefly iron and citric acid. The iron was thrown down as sulphide, redissolved in nitric acid, precipitated hot, washed with boiling water, and gave 0.8947. The residue, therefore, consisted of ferric oxide and citric acid, probably in the form of ferric citrate, and attached so strongly that even the very careful and prolonged washings given failed to remove them. Stronger means would be required than could be used without altering the condition of the substance. The conclusion, therefore seemed to be justified that the material consisted of uncombined silver mixed simply with impurity.

To verify this conclusion by additional evidence, the substance was examined as to its behavior when heated. For if any other element were chemically combined with the silver, it would only be (in view of the high percentage of silver) hydrogen or oxygen. We might have to do with a hydride, analogous to Wurtz's hydride of copper; or possibly an oxide; but not probably, as Ag<sub>2</sub>O would contain only 96.43 per cent. of silver.

The presence of either hydrogen or oxygen in combination with silver seems to be pretty certainly negated by the action of dilute sulphuric acid on this (and the other two substances, B and C, to be described farther on). They are all converted into gray metallic silver without the slightest escape of gas. This seems tolerably conclusive in itself, and the result of exposing a great number of specimens of all the forms A, B, and C to the action of heat was equally so. As the object was to expose the fresh and moist material to a gradually increasing heat, from that of boiling water to a low red

heat without interrupting the process, the following arrangement was found convenient :

A piece of Bohemian glass tube about six inches long was sealed in the lamp at one end ; the other closed with a rubber cork, through which passed a small gas delivery tube ; and another tube passing into a small test tube partly filled with water, and having another tube through the cork passing under the surface of the water, thus preventing regurgitation. The material was thus first exposed for some hours to a heat of about 150 deg. C., in a chloride of calcium bath ; this was next removed, and the heat continued to low redness. Only traces of gas were evolved, and this was found to be in all of the many trials made, carbonic acid, derived from the citric acid, adhering. This treatment was repeated many times with all the different varieties of the substance, and with the same result. The temperature was always raised sufficiently high to ensure the complete conversion of the material into normal gray silver, but in no case was oxygen or hydrogen set free.

It could not be overlooked that in all these trials the material had passed into an insoluble form before the silver determination was made. There remained, therefore, this possibility, that the silver, so long as soluble, might be in combination with citric acid, and that its change to the insoluble condition was caused by its separating from the citric acid. It seemed desirable that this view should be tested. As the object was to determine the condition of the silver in the substance as originally formed, avoiding, as far as possible, to change that form by attempts at purification, the only course available was to determine the ratio between the silver on the one hand and the citric acid on the other, either excluding from the determination, or else removing, that portion of the citric acid which was combined with sodium (sodic citrate being used in excess) or with iron. The first attempt was to exclude without removing it, by using Wolcott Gibb's ingenious method of precipitating the base by hydrogen sulphide, and determining the acid thus set free in a solution originally neutral. It was ascertained by careful experiment on weighed quantities of pure anhydrous citric acid that exact filtration could be made with the aid of phenolphthalein. The silver was next redissolved and estimated as chloride. A large number of determinations were made, but the method proved unsatisfactory. It was found that portions of the same material operated upon separately gave different (even widely different) results. In fact, this very discordance was in itself

a proof that no stoichiometrical combination existed between the silver and the citric acid.

*M. Carey Lea.*

(*To be continued*).

## THE CHEMISTRY OF PHOTOGRAPHY.

### CHAPTER XII.—(*Continued*.)

#### POTASSIUM HYDRATE (CAUSTIC POTASH).

Formula,  $KHO$ . Combining weight, 56.

Caustic potash—or “potash,” as it is sometimes termed—is formed when metallic potassium is placed in water. It is usually prepared by adding slacked lime (calcium hydrate) to a rather weak hot solution of potassium carbonate. Chalk is formed, which sinks to the bottom, and the clear liquid is decanted and evaporated to dryness, when the caustic potash remains as a hard, white, brittle solid. Lastly, it is fused, and cast into sticks, in which state it is usually sold.

Potassium hydrate is a powerful alkali, burning the skin, and neutralizing acids. It is largely used in soap-making. Since it is very deliquescent the sticks should be kept in a stoppered bottle. Caustic potash dissolves in about half its weight of water. Caustic potash works admirably with hydrochinon as a developer for gelatine dry plates.

#### POTASSIUM IODIDE.

Formula,  $KI$ . Combining Weight, 166.

Prepared by digesting iodine with water and iron filings, and then adding potassium carbonate. It crystallizes in cubes which are very soluble in water, slightly soluble in alcohol. The pure salt should be neutral, but as usually met with, it has an alkaline reaction. The aqueous solution dissolves iodine freely.

#### POTASSIUM META-BISULPHITE.

Formula,  $K_2SO_3, SA_2$ . Combining Weight, 222.

This salt may be obtained by passing sulphurous anhydride in excess into a solution of potassium carbonate, and adding alcohol. Care must be taken to keep the sulphurous anhydride in excess, or else the normal sulphite will be formed. The meta-bisulphite of potash was introduced in 1887 by Messrs. Mawson & Swan as a preservative of pyro when in solution.

#### POTASSIUM NITRATE.

Formula,  $KNO_3$ . Combining weight, 101

Nitrate of potash, familiarly known as “nitre,” or “saltpetre,” forms a surface-deposit on the soil of many hot countries, as Bengal, Egypt, etc. It is also prepared by mixing solutions of sodium nitrate and potassium chloride.

Potassium nitrate is soluble in five parts of cold, and in its own weight of hot water. It contains nearly half its weight of oxygen, with which it readily parts when heated with any combustible substance. For this reason nitre is much used in the manufacture of gunpowder and fire-works.

Potassium chloride is frequently present in ordinary nitre. Its presence may be detected by the white precipitate produced by the addition of a few drops of silver nitrate.

#### POTASSIUM NITRITE.

Formula,  $\text{KNO}_2$ . Combining weight, 85.

Potassium nitrite can be produced by heating the nitrate until part of its oxygen is driven off. This decomposition takes place more readily when some oxidizable metal, such as lead, is present.

Nitrite of potash forms small, white crystals, which deliquesce in air, and are insoluble in absolute alcohol.

The use, in photography, of  $\text{KNO}_2$  depends mainly on the fact that it is a halogen absorbent. Bromide paper, treated with a solution of potash nitrite, forms an excellent actinometer. The paper should be soaked for ten minutes in a ten per cent. solution, and allowed to dry slowly in the dark. In strong sunlight, such paper will attain its deepest color—indigo blue—in twenty-five seconds.

#### POTASSIUM OXALATE.

Formula,  $\text{K}_2\text{C}_2\text{O}_4 + 2\text{H}_2\text{O}$ . Combining weight,  $176 + 36 = 212$ .

The *neutral* oxalate of potash (which is the salt employed by photographers) is prepared by neutralizing oxalic acid with potassium carbonate. It crystallizes in transparent prisms, which dissolve in three parts of water. When heated, the crystals part with their water of crystallization and become white and opaque. The binoxalate, or acid oxalate of potash, can be distinguished by the sour taste of its crystals; its formula is  $\text{C}_2\text{HKO}_4$ . It is also known as *salt of sorrel*, from its occurrence in that plant.

The neutral potassium oxalate is employed in the preparation of ferrous oxalate, which is largely used as a developer for paper negatives and transparencies, and—on the continent—for gelatine dry-plates also.

#### POTASSIUM PERMANGANATE.

Formula,  $\text{KMnO}_4$ . Combining weight, 158.

Permanganate of potash is made by pouring boiling water on potassium manganate, and filtering through asbestos or glass-wool. Its prismatic crystals are red by transmitted, but black by reflected light. It is soluble in sixteen parts of water, and

the solution—sold as “Condy’s Fluid”—is a well-known disinfectant. Potassium permanganate is a useful oxidizing agent.

#### POTASSIUM SULPHATE.

Formula,  $\text{K}_2\text{SO}_4$ . Combining weight, 174.

Potassium sulphate is largely produced, as a by-product, in the manufacture of bichromate of potash and other substances. It forms colorless crystals, which dissolve in ten parts of cold or four of boiling water.

#### POTASSIUM SILVER CYANIDE.

Formula,  $\text{KAg}(\text{CN})_2$ . Combining weight, 200.

This substance crystallizes in feathery tufts or hexagonal prisms. It is soluble in four parts of water, and is unaffected by light.

#### POTASSIUM SULPHIDE.

Formula,  $\text{K}_2\text{S}$ . Combining weight, 110.

Potassium and sulphur combine in several proportions, of which the mono-sulphide,  $\text{K}_2\text{S}$ , is perhaps the best known. It can be made by dividing a saturated solution of caustic potash into two parts, passing sulphuretted hydrogen through one part and then adding the other half. It is an alkaline, caustic body.

#### POTASSIUM SULPHO-CYANIDE.

Formula,  $\text{KS}(\text{CN})$ . Combining weight, 97.

Prepared by heating yellow prussiate of potash with carbonate of potash and sulphur, and boiling the mass with alcohol. It is a transparent, crystalline substance, very soluble in water. When five parts of the salt are dissolved in four parts (by weight) of water, a temperature of  $-4$  degs. Fahr. is produced. Sulpho-cyanide of potassium has been used as a fixing agent, especially for positive pictures, in place of hyposulphite of soda. It is present in human saliva, a fact which may affect the permanency of photographs that have had the tongue passed over them (a common practice), in order to induce the glossy surface to take tints or colors more readily.

#### PRUSSIAN BLUE; $\text{Fe}_4(\text{FeCy}_6)_3$ .

There are several varieties of this useful substance, which is largely employed in painting. When a ferric salt is added to potassium ferrocyanide a blue precipitate of *soluble Prussian blue*,  $\text{Fe}_4\text{K}_2\text{Cy}_{12}$ , is produced. This substance dissolves in pure water; but is insoluble in saline solutions. By adding ferric chloride to a solution of soluble Prussian blue a deep blue powder is precipitated, which is *insoluble Prussian blue*,  $\text{Fe}_7\text{Cy}_{18}$ , and this is the ordinary, or commercial article. It is sold in cubical

dark-blue lumps, and is insoluble in water, and in weak acids. It is soluble in oxalic acid, forming a dark-blue liquid, which is used as an ink.

PYROGALLIC ACID; (PYROGALLOL).

Formula,  $C_6H_6O_3$ . Combining weight, 126.

Pyrogallic acid—as the name implies—is prepared from gallic acid by the action of heat. The gallic acid may be placed in a porcelain crucible, over the top of which a piece of blotting-paper is then tied, the whole being covered and surmounted by a paper cone. With a Bunsen burner, or spirit-lamp, the temperature is then raised to 350 deg., when the gallic acid is decomposed into pyrogallic acid—which rises through the pores of the blotting-paper and settles on the inside of the paper cap—and carbonic acid gas, which escapes. The great draw-back to this—and indeed to most methods of preparing the substance—is that a large part of the gallic acid is decomposed into metagallic acid,  $C_6H_4O_2$ , so that only about one-fifth of the gallic acid is converted into pyrogallic acid.

An improvement introduced by Liebig is to mix powdered pumice with the gallic acid, and pass a slow stream of carbonic acid gas over the mixture so as to remove the pyrogallic acid before it has had time to become over-heated. By this method the yield is nearly doubled, but is still less than half the possible amount. For an experiment on a small scale the best method is that devised by Prof. Thorpe, of heating gallic acid in glycerine (150 grains to each ounce) in a glass retort. The temperature of the liquid must not rise above 400 deg. Fahr. The heat drives off carbonic acid gas, and a solution of pyrogallic acid in glycerine is left behind, which will “keep” for months. For preparing “pyro” on a large scale, an aqueous solution of gallic acid is heated to 400 deg. Fahr. in a closed vessel for thirty minutes. The solution is then boiled with animal charcoal, filtered and evaporated to dryness. The solid residue so obtained is then distilled by gently heating it in a vacuum. In this way nearly all the gallic is converted into pyrogallic acid.

Pyrogallic acid has not the characteristic properties of an acid—it has a bitter, not a sour taste; and it does not redden blue litmus—hence chemists do not consider it a true acid, and in chemical textbooks it is now termed “pyrogallol,” but it is familiarly known to photographers as “pyro.”

Pyrogallol forms brilliant crystalline plates, which break up into a fine feathery powder, so light as to be scattered by a breath. It is extremely soluble in water, alcohol and ether. It melts at 239 deg. Fahr., and when the liquid boils it

gives off a colorless, irritating vapor. Aqueous solutions of pyro abstract oxygen from the atmosphere, and from the air dissolved in the water, quickly turning brown and becoming useless to the photographer. The addition of a little citric or nitric acid retards this change. A solution in glycerine and alcohol keeps fairly well. When the solution of pyro is rendered alkaline, it becomes first yellow and then brown, a fact which distinguishes it from gallic acid, which undergoes no such change. With solutions of pure ferrous salts pyrogallol gives a fine blue tint, which the least trace of a ferric salt changes to green.

Pyro is an active reducing agent, absorbing oxygen so eagerly that it decomposes most of the salts of the “noble metals”—gold, silver, and platinum. For this reason it has been in constant use in photography for the last forty years, and its price has been reduced as the demand for it became greater, from 10s. to 15s. per ounce, to a shilling or even less. Owing to its power of absorbing oxygen, pyrogallic acid is always used for that purpose in gas analysis.

*W. Jerome Harrison.*

*(To be continued).*

### THE RETOUCHER'S POINT.

I watched her pencil glide about,  
I also watched the hand that hid it,  
I paused a moment, half in doubt,  
Then boldly asked her how she did it.

She laughed, and gave a gay retort,  
As still her fingers kept their pace,—  
Yet while she crushed my heart in sport,  
She deftly rounded out my face.

And cleared my brow of every care,  
And put such fire in my eyes!  
And squared my chin and smoothed my hair,—  
I gazed upon her in surprise.

And when 'twas done I said to her,  
“An easy thing 'twould be to live  
If shown by some philosopher  
That Life is like a Negative.”

Then, smiling, cried the pretty maid:  
“I'll prove it to you very pat;  
There's naught in life but 'light' and 'shade,'  
Though sometimes we pronounce it 'flat.’

“And then again we find it 'sharp,'  
Or 'blank' or 'clouded'—men have rhymed  
Of youths the gods take to their heart,  
And then you see its 'under-timed.’

“And then—” “I yield the palm to you;  
Your doctrine's sound at every point.”  
She tossed her head—“That's nothing new;  
*Retouchers often make a point.*”

*Jennie R. Skidmore.*

**ON PHOTOGRAPHING CHILDREN.**

HOWEVER unresponsive the dumb world may be to the charms of amateur photography, there is one chord which never fails to vibrate when we strike it with the question, "Don't you want me to take a picture of your beautiful baby?"

"If I had a camera," a friend said to me the other day, "I would take nothing but Tommy. He is so sweet asleep in his crib, crowing in his bath, riding in his carriage, playing with his rattle and shaking his hand for good-by, but when I get him in a gallery, he looks almost as commonplace as other infants, all white dress and gummy smile. If I had a machine, I would take him a dozen times a day!"

Now, although this wish for Tommy's portrait is not a love of art for its own sake, it expresses a maternal instinct too wide spread to be ignored. Hence these most primitive suggestions about photographing children.

The first requisite is a love of childhood, else patience and temper will disappear faster than plates. Tact, also, is, of course, needed, and a certain happy faculty in talking to the restless subject. Perhaps the best way is to get ready before the model fully grasps the situation, and then to be decided as to required pose. I have made myself too agreeable, diverting my sitters so much, that the importance of the occasion was ignored, and have found to my cost, after development, that every figure in the group laughed save two life-size wax dolls! I may here remark in parenthesis that dolls rarely laugh, which fact perhaps excuses amateurs for spoiling so many pretty pictures by the introduction of these staring images.

The second requisite is a quick plate and a drop shutter, and to use them to their best advantage bright sunlight. This last requirement is an essential element in taking Mary with her little lamb, Jack on his pony or the baby scratching the kitten's eyes out; and for all such subjects where a four by five picture gives satisfaction it seems wisest to use a detective camera. The third necessity is both negative and positive, absence of the mother, presence of the nurse. The former hinders by her confusing and interested suggestions; the latter helps by her passive indifference, and is particularly useful when the subject is inclined to use the tripod for a hobby-horse or to make a football of your lens. It was my misfortune once to attempt to photograph a friend's little cousin when twenty-two people were present to warn, to comfort and command, and again, I wasted much good material in taking a child, through the refusal of a

mother to permit me to use as a background the garden of an undesirable neighbor. Reference has been made to detective pictures, but to me those of larger size give the most pleasure because greater opportunity for placing the figures as a central interest is thus secured. Of course sea-scapes, or landscapes are pleasing, when dotted with tiny groups, but when one wishes to tell a story or illustrate a poem as was recently suggested in *THE PHOTOGRAPHIC TIMES*, it is well to take at least a half-size plate. When such a composition is planned, place the subjects in the shade and take the view early or late in the day. No sky need be shown on the plate, although its accessory light is needed. Critics tell us to choose a cloudy season for portraiture, but young faces unlined by yesterday's cares can bear considerable sunlight. Here, may I, a blunderer, add a word of caution to beginners about development. Use old developer at first, adding fresh, if necessary, for density and detail. Parents insist their darlings' faces must be white, that their features must show distinctly and that their curls are of more interest than distant foliage; therefore, use a small stop focus carefully, and work up these points of interest as far as possible. Strong alkali, generally known as No. "2," will so hurry matters that fog will cover the whole plate before sufficient strength is gained, and, as a result, we may get a negative with something discernible upon it, but never a silver print and hardly a "blue." Now, if you wish merely to please the average parent—this is no easy matter!—place their darlings in a row, facing the camera, and take the picture. If you fulfil all the necessary requirements you will succeed in getting a view of children having their photographs taken, nothing less and nothing more, but if you are a trifle ambitious and wish to do something "Robinsonian," you must make up your mind to sacrifice some faces in the group, and to carefully study foreground and background before you draw the slide. If the figures are to be in height at least two-thirds the width of your plate, or its length, keep the background simple, introducing, perhaps, an opening somewhere in the distance for "a way out," as the artists say. Remembering the tendency of lenses to enlarge objects in the foreground, we will avoid placing Titanic toys before diminutive infants, and, in a somewhat overcrowded plate, permit nothing but low growing grass along the bottom edge of the view. It may hardly be necessary to urge the vast importance of getting in the whole of your figures, but I have seen hundreds of people without feet, and one pyramidal group with a headless woman at its apex!

Sometimes a restless child may be placed with

his back to the camera, in which case, if he happen to have a good figure and a homely face, the picture is better off without his likeness. Always, in a group, place those who seem most likely to move, sideways, or wrong side foremost, thus breaking up stiffness and gaining much in naturalness of pose. As said before, get the whole of every boy and girl fully in, but do not be afraid to half a tree or show part of a summer-house, as such bits are suggestive, and like Sam Weller's love letter, hit the mark if they make one wish for more.

My heart misgives me that illustrating poems and making Christmas cards is not pure photography, yet I own a few aptly chosen lines under a print serve the double purpose of pleasing a literary taste and diverting a critical eye from technical imperfections. For such uses groups of children serve admirably, and we need not look far for verses.

"How do you like to go up in a swing—  
Up in the air so blue?  
Oh, I do think it the pleasantest thing  
Ever a child can do!"

Be sure to use the detective for this, or else tie the swing by small cords, or a blurry negative will be the result. One needs an orthochromatic plate to take

"The friendly cow, all red and white,  
Who walks among the meadow grass,  
And eat the meadow flowers."

Or the gardener who digs

"The flowers, green, red and blue,  
Nor wishes to be spoken to."

And surely brightest sunlight for the little shadow

—"That goes in and out with me,  
And what can be the use of him  
Is more than I can see.  
He stays so close beside me,  
He's a coward you can see,  
I'd think shame to stick to nurse  
As that shadow sticks to me."

As a last suggestion, why not use a few bars of music to explain our pictures? Schumann must have watched children at play when he composed his little sonatas, and I think we can do nothing better than to compose groups to illustrate his well-known pieces: "The Children's Party," "The Soldier's March," "The Gipsy Dance," "The Wild Rider," and "The Cradle Song." We have besides a chance to add another ray to the glory of photography if we preserve its folk-lore by taking

groups of children playing their every day games, such as

"London bridge is falling down,"

Or

"'Tis you nor I, nor nobody knows  
Where oats, peas, beans, and barley grows!"

At home or abroad we will not lack for subjects, and we will always make ourselves and our camera taking if we heed the cry,

"Please take my beautiful baby."

*Adelaide Skeel.*

### "A FAIR PARISIAN."

FROM the pictorial standpoint the study is a striking one. It is treated in the broad style, but very effectively. The pose is natural, not entirely graceful so far as the arm and hand are concerned, but with a nice poise of the head. The view of the face is almost, so to speak, a back one—just enough of the profile is retained to make a likeness, perhaps a characteristic one. The lighting is emphatically a painter's; the best appointed skylight of the photographer would be sorely taxed to secure similar illumination. These artists have a way of falsifying the lights when it suits their purpose—perhaps the retoucher can take this part of the work on his own shoulders, to keep out the photographer.

We are not yet accustomed to very large process blocks in this country. They are more common abroad; the illustrated papers, especially those published in France, use them quite regularly. Every year the various catalogues of the Salon utilize typographic reproductions of the important canvases, some of them quite as large as the pages of our own familiar illustrated weekly papers; but these papers themselves have not done so, except, perhaps, in a very experimental way; the magazines, with their smaller pages, have done more, though not always successfully.

Consequently, seeing the familiar name of "Mosstype" below this attractive picture, one of the first impressions is that of the size of the block, which is an encouraging token of progress. And how well the work is done, what soft gradations, what faithfulness of detail, what delicacy of modeling! It is a triumph of technical skill, and speaks volumes for the capabilities of the process. If it can do this, and so successfully, surely it need fear to attempt no task.

This may be called unqualified praise; now for a bit of qualification; not of the especial process, but applicable to all—those in which the effect is obtained breaking up the surface into lines. This



Reproduced by the "Moss Type" Process, directly from a photograph taken from the oil painting.

A FAIR PARISIENNE.





is prompted by a comparison with a wood engraving from the same original, which was published in *Harpers' Bazar* some months since.

In this case, no doubt, photography played a most important part in the transfer to the block. But where the art and skill of the engraver appear is in the general direction of the parallel lines, so related in all cases to the contour or outline as to give modeling and texture.

Thus, in the cheek, these lines are at an angle of about 45 deg. to the horizontal; on the forearm and wrist they run in a direction at right angles to this; and are nowhere strictly parallel, but vary slightly in distance. All this gives rotundity and softness.

In the process print the lines are all parallel to each and every other; this gives a certain hardness. But when we consider that the work of the engraver would occupy the better part of two weeks' time, while the process block could be turned out, under pressure, inside of twenty-four hours, we feel that we can well afford to sacrifice a little softness.

*C. W. Canfield.*

#### OUR CHAUTAUQUA LETTER.

My day dreams regarding the future of the school of photography, seem actually to be nearing realization. There is a constant influx of new scholars, and it appears that we shall this year again almost double the number of the previous year. But it is not the number of students alone, which is so encouraging, it is also the intellectual standing and attainments of the students who seek instruction in our school—instruction in the theoretical part of photography, as well as technical and practical work. Among the students of the present class are graduates from Vassar, from Cornell and Yale, all well informed in chemistry and in physics; and, as they wish to make photography assistant in the pursuit of their studies in natural science, it can be easily understood how diligently they apply themselves to our work. They are apt scholars and advance rapidly. Chautauquans are earnest people and all come here for a purpose—to learn something.

We have now twenty-five scholars, all young people, half of them ladies, the other young men of various ages; some are beginners, others are quite well advanced. But they all study and work hard, and seem to enjoy the instruction received.

The mode of instructing is the same as in former years. I have now one scholar in his third course,

who, induced by the sight of photographic chemicals, made by members of the New York class, has taken much delight in the study of chemistry. There is an artist, who learns to make portraits only, another photographs botanical specimens only, but the majority of them follow landscape work, for which our beautiful lake views offer peculiar attractions and facilities. As you are aware, I have a good assortment of various brands of plates with me. Our old reliable, the Carbutt B, proves, as of old, the most useful for beginners, and the Keystone Eclipse holds its own steadily among those more advanced. The Waterbury detective camera is a favorite among all, and seems to be much preferred to other apparatus of similar description now on the grounds, and which are of much greater pretensions, and more costly.

There is much printing on bromide paper done just now; many of the scholars are induced to adopt this method of printing, because some of the graduates have exhibited very beautiful work of that kind, among them is noteworthy "The Falls of Minnehaha," a winter view by student No. 225, and others by students No. 207 and No. 216. One of the exhibits is most attractive to visitors, it is that of student No. 210, aristo prints in various tones and Cyanotypes colored a bright green with catechu and borax. The latter is highly interesting to prominent chemists now here.

The many competitors for the premiums offered by generous friends of the school to the graduating class, inquire frequently of the date of our commencement day, when the prizes are to be awarded. Application has been made to designate day and place for celebration, but it is yet too early in the season to determine anything definite. We cannot very well expect to have our day before the Recognition day of the C. L. S. C., and our exercises will probably be held in the Children's Temple or in Normal Hall a few days later.

*Charles Ehrmann,*  
*Instructor School of Photography.*

CHAUTAUQUA ASSEMBLY GROUNDS, July 20, 1889.

#### STRANGERS' DIRECTORY TO BOSTON.

OPEN TO THE PUBLIC.

NEW ENGLAND CONSERVATORY OF MUSIC.—Franklin Square. Take South End cars to Newton Street. 9 to 8, except Sundays. Free.

BATTLE OF BUNKER HILL.—No. 401 Tremont Street, (near the bridge).

FANEUIL HALL.—Merchants' Row and Faneuil Hall Square. Historical Paintings. 9 to 4. Free.

NATURAL HISTORY ROOMS.—Boylston and Berkeley Streets. 9 to 5. Wednesdays and Saturdays, 10 to 5.

BOSTON PUBLIC LIBRARY.—Boylston Street. Open every day and evening, including Sundays. Free.

GENEALOGICAL ROOMS.—18 Somerset Street. Library and Rare Engravings. 9 to 5. Closed Saturday at 2.

INSTITUTION FOR THE BLIND.—Broadway, So. Boston. Thursday at 11. 15 cents.

MUSEUM OF FINE ARTS.—St. James Avenue and Dartmouth. 9 to 5. 25 cents.

PEABODY MUSEUM.—Cambridge. American Archaeological Ethnological Collections. 9 to 5, except Sundays.

AGASSIZ MUSEUM.—Cambridge. Natural History Collection. 9 to 5.

BARNUM NATURAL HISTORY COLLECTION.—Tufts College, Somerville.

WOMAN'S EDUCATIONAL AND INDUSTRIAL UNION.—74 Boylston Street. Open from 9 A.M. to 9 P.M.

OLD SOUTH.—Washington Street, corner of Milk. Loan Historical Collection. 9 to 6. 25 cents.

OLD STATE HOUSE.—Washington and State. Historical Collection. 9 to 5. Free.

STATE HOUSE.—Beacon, head of Park.—Statuary, Battle Flags, War Relics, etc. Free.

BUNKER HILL MONUMENT AND MUSEUM.—Charlestown. 25 cents.

U. S. NAVY YARD.—Charlestown. Museum of Naval Curiosities, etc.

Y. M. C. UNION ROOMS.—18 Boylston Street. 8 to 10 daily.

Y. M. C. ASSOCIATION ROOMS.—Boylston and Berkeley Streets. 8 to 10 daily.

#### PRINCIPAL HOTELS OF BOSTON.

ADAMS HOUSE, 553 Washington Street, European plan. Rooms \$1.00 upwards per day.

AMERICAN HOUSE, Hanover, near Washington, European plan. \$1.00 upwards per day.

BRUNSWICK, Boylston Street, cor. Clarendon, American plan. \$5.00 and upwards per day.

CLARENDON, 523 Tremont Street, American and European plan. Rooms \$1.00 per day.

CRAWFORD HOUSE, Scollay Square, European plan. Rooms \$1.00 and upwards per day.

LANGHAM HOTEL, (formerly the Commonwealth), Washington Street, cor. Worcester and Springfield Streets. \$3 upwards per day.

PARKER HOUSE, School Street, European plan. Rooms \$1.00 upwards per day.

PARK HOUSE, Bosworth Street, off Tremont. Rooms \$1.00 upwards per day.

QUINCY HOUSE, Brattle Street, American and European plan. Rooms \$1.00 upwards per day.

THE BOSTON TAVERN, 347 Washington Street, within. Rooms \$1.00 upwards per day.

THE THORNDYKE, Boylston Street, cor. Church, European plan. Rooms \$1.00 upwards per day.

TREMONT HOUSE, Tremont Street, cor. Beacon, American plan. \$4.00 per day.

UNITED STATES HOTEL, Beach Street, American plan. \$2.50 and upwards per day. Rooms only, \$1.00 per day.

VENDOME, Commonwealth Avenue, American plan. \$5.00 per day.

YOUNG'S HOTEL, Court Street, European plan. Rooms \$1.00 and upwards per day.

## Correspondence.

### PHOTOGRAPHY FOR HORSEMEN.

To the Editor of THE PHOTOGRAPHIC TIMES.

Dear Sir: Can you, or any of your readers, tell me how to carry a camera on horseback? The question is brought to my mind by an allusion in the photographic romance beginning on page 287. I have often thought of it, however, and, indeed, have had my own experience in the matter, as I have carried a Scovill 5x8, with plate-holders and tripod, several hundred miles on horseback, in a rough, mountainous country. But if I should ever undertake such a journey again I should want better arrangements. It is a simple matter to strap on the camera for a ride of a day in the country, but I would like to know the best method for an explorer who, as in my own case, may be two months away from civilization and supplies. In any case the camera will be a source of inconvenience, and is sure to get a good shaking about. The ordinary tripod is simply a nuisance on horseback. I fastened mine with a strap to the stirrup-leather just at the junction with the stirrup, and secured the upper end with a loose cord from a buckle on the front of the saddle. I could then dismount, and the concern would hang obliquely along side the horse. In traveling I held the top of the tripod with my right hand, otherwise it would swing about without regard to appearances or comfort.

It is, of course, impossible to carry all the necessaries of an extended trip in a wild country on one's horse. A pack-horse is required to carry heavy weights, glass plates, and bulky articles. The pack-horse can also carry the camera, but as one is quite likely to prefer to go on in advance of the load, it is desirable to have the camera on his own horse. My opinion is that a 5x8 or 5x7 camera is about the best size for a traveler, if he can carry it. Certainly the new "Albion" is far more compact, and could be more easily carried than my own, which is of the older pattern. Perhaps some of your readers have had experience in this mode of traveling, and will favor us with an account of their devices.

R. H.

WASHINGTON, D. C., June 8, 1889.

[We shall be glad to hear from our readers on this subject.—Ed. P. T.]

### A CORRECTION.

To the Editor of THE PHOTOGRAPHIC TIMES.

Dear Sir: I notice in THE PHOTOGRAPHIC TIMES, No. 400, page 357, "Loss of Life Among Photographers of Johnstown with the Flood," among them Geo. Statler. He wrote me June 9th he was saved but injured, and also stated he lost his wife, daughter, aged twenty-four, and son, aged seventeen.

Respectfully,

J. Haworth.

PHILADELPHIA, Pa., July 22, 1889.

### A CRITIC OF E. J. WALL.

To the Editor of THE PHOTOGRAPHIC TIMES:

Dear Sir: A work like this ("A Dictionary of Photography," by E. J. Wall), if complete and authoritative, would be as indispensable in a photographic library as

"Webster's Dictionary" in that of an extensive reader of literature; but the author of the present effort has failed, as I think, to reach the standard of excellence which the nature of the book demands.

The definition of *actinic focus*, for example, gives it to be understood that if a lens be rendered achromatic, the visual and actinic focus will be actually coincident. The fact is, the coincidence or non-coincidence of the two foci has nothing to do with acromatism of the lens.

*Blisters*, he says, are "most likely due to exosmosis action between the water and the fixing solution, the albumen acting as a septum!" If this be correct, then the blister sac *must* be filled either with water or fixing solution. Every dilemma has two horns and no more. Any boy nine years old who has dabbled with blisters, ought to know that they are not filled with water or a solution of any kind.

*Measles*, according to this writer, "are due to imperfect fixation." This is an entirely new, and, I presume, an original definition of measles, which make their appearance in the printing frame the first time the print is looked at.

Very truly yours,

W. H. Sherman.

MILWAUKEE, Wis., July 22, 1889.

### THE DICTIONARY OF PHOTOGRAPHY.

W. I. LINCOLN ADAMS, ESQ.,

Editor of the PHOTOGRAPHIC TIMES.

Dear Sir: I have examined the "Dictionary of Photography," and consider it a valuable addition to your series of photographic books; just such a work has long been needed, to take the place for us moderns occupied by "Dawson & Sutton," twenty years and more ago. While this does not cover the ground so thoroughly, by comparison, as did that, it is nevertheless extremely useful in many ways; and should be welcomed by all as a step toward the work of the future, which, more comprehensive than a mere dictionary, as *the* "Encyclopedia of Photography" is surely coming one of these days—who knows but from an American pen?

Very truly yours,

C. W. Canfield.

NEW YORK, July 11, 1889.

To the Editor of the PHOTOGRAPHIC TIMES:

I have carefully examined the "Dictionary of Photography," by E. J. Wall, which The Scovill & Adams Company have recently added to their excellent series of photographic publications, and I want to say in this public way, in these columns, how highly I prize the volume. It is indeed a valuable addition to photographic literature, and will be especially appreciated by practical workers and writers. The more I use it, the more I like it, and I wish especially to commend it to my students of the Chautauqua School of Photography, and indeed, to all students of photography, wherever they may be.

Yours truly,

Charles Ehrmann,

Instructor Chautauqua School of Photography.

CHAUTAUQUA ASSEMBLY GROUNDS, N. Y., July 15, 1889.

### Notes and News.

**Appreciation.**—The latest numbers of the PHOTOGRAPHIC TIMES have some lovely illustrations. What could be prettier than that photogravure of New Jersey Woodlands, which serves as frontispiece to the issue of July 5? A photogravure in the following number is of an interior taken by flash-light with four exposures, and different focuses. The reading matter is both entertaining and instructive.—*Fremont Journal*.

**A Photographing Phonograph.**—An invention which has already been foreshadowed is exhibited by Mexico. By speaking in a photophone transmitter, which consists of a highly polished diaphragm, reflecting a ray of light, this ray is set into vibration and a photograph is made of it on a traveling band of paper. If the image of this photographic tracing is projected by means of an electric arc or oxyhydrogen light upon a selenium receiver, the original speech is then heard.—*Journal of Invention*.

**Custom-House Examination of Photographs.**—Attention has been drawn to the practice of custom-house officers opening packages of undeveloped photographic plates, and thus spoiling the labors of a trip to the Antipodes. It is suggested that it be sufficient that the owner makes a statement, on oath if necessary, that the contents of the package are undeveloped photographs, and will spoil if opened in daylight.—*Ibid*.

**Negri**, in *L'Amateur Photographe*, says that the addition of citric, hydrochloric, or oxalic acid to the hypo and alum bath is useless, and even disadvantageous for removing yellow spots or coloration from negatives developed by hydrochinon. Alum in the fixing-bath has numerous drawbacks, it produces sulphur compounds that may destroy the keeping qualities of negatives.

**The Cause of Halation.**—G. Alpers, Jr., expresses in *Deutsche Photogr. Zeitung*, the opinion that halation is not solely caused by light reflected from the glass side of the plate; but is mainly produced by enormous over-exposure of the respective parts. If, for example, one minute is the proper time of exposure for a brightly lighted window, and one hour is necessary for the other more or less dark objects, the windows will be exposed sixty times longer than they should be. By this unnecessary long exposure for the windows, light begins gradually to pass beyond the outlines (*überstrahlen*), and produces thus the disagreeable effect.

**Hearing** that Ray Lancaster, the British scientist, was using instantaneous photography in the study of "the limb play of centipedes," a friend sent him the following lines:

A centipede was happy—quite,  
Until a toad in fun  
Said, "Pray, which leg moves after which?"  
This raised her doubts to such a pitch,  
She fell exhausted in a ditch,  
Not knowing how to run.

**Beginning Early.**—A well-known magazine devoted to the wants of those who care for young children, not long ago did a good turn for photographers by advocating

frequent portraits of growing "Young America," which one wide-awake firm has utilized in its advertisements.

But we doubt if the writer had in mind quite so prompt action as is recorded in the following clipping from a Boston paper of recent date:

A Jamestown, Pa., baby was photographed thirty-five minutes after it was born. The happy father took the picture.

If that child doesn't some time get a dose of pyro instead of milk, thereby arresting instead of assisting its development, doesn't get its neck caught in a head-rest, and choke to death, while being "posed," or, when it has begun to toddle, doesn't pull the camera-stand over upon its devoted head, while looking for "the little bird," during the momentary absence of the proprietor—in short, if it ever reaches the age of discretion, it will be able to single out one from the many prints taken at the different stages of its career, and say, with the proud consciousness of one who possesses a rarity that scarcely any other one can parallel, "This is ME, aged half an hour." At all events, the life of this infant will necessarily be strongly affected by photography; who knows but here is the Daguerre of the 20th Century; or, perhaps, his wife! Stupendous thought! That child must be kept watch of.

**A Good Excuse.**—MISTRESS: "Why, Eliza! What is the matter? Sitting here with your feet in the foot-tub at ten o'clock in the morning!"

COOK: "Yes, you know, mum, I am going to have my photograph taken to-day!"—*The Wasp*.

**All in a Half Century.**—The unification of Italy.  
The annexation of Texas.  
The French revolution of 1848.  
The discovery of photography.  
The laying of the ocean cables.  
The discovery of the telephone.  
The emancipation of Russian serfs.  
The discovery of the electric telegraph.  
The overthrow of the Pope's temporal power.  
The establishment of ocean steam navigation.  
The extension of Russian power into Central Asia.  
The Great Franco-German war and the unification of Germany.  
The great Civil War and abolition of slavery in the United States.  
The rise and fall of Napoleon III. and establishment of the French republic.  
The discovery of the sources of the Nile and Niger, and the exploration of interior Africa.—*Boston Record*.

**Character the Key to Success.**—Two fundamental psychological elements to be always studied among any people are character and intelligence. Character is infinitely more important to the success of an individual or a race than intelligence. Rome, in her decline, certainly possessed more superior minds than the Rome of the earlier ages of the republic. Brilliant artists, eloquent rhetoricians, and graceful writers appeared them by the hundred. But she was lacking in men of manly and energetic character, who may perhaps have been careless of the refinements of art, but were very careful of the power of the city whose grandeur they had founded. When it had lost all of these, Rome had to give way to peoples much less intelligent but more energetic. The

conquest of the ancient, refined, and lettered Greco-Latin world by tribes of semi-barbarous Arabs constitutes another example of the same kind. History is full of such. From "*The Influence of Race in History*," by G. Le Bon, in the *Popular Science Monthly* for August.

**A Brief Historical Sketch of The Photographic Times.**—The first and only illustrated journal in the world devoted exclusively to photography, commenced its career eighteen years ago, as a small monthly. It was then edited by Edward L. Wilson, and published by the Scovill Manufacturing Company. The sprightly little monthly grew so rapidly that it soon became necessary to make important changes, and J. Traill Taylor, editor of *The British Journal of Photography*, was engaged to edit THE PHOTOGRAPHIC TIMES, with the assistance of many well-known American contributors. The TIMES rapidly increased its influence, soon became the leading organ of photographers, professional and amateur, in this country. It has always been abreast the first wave of progress. In 1881, when the Photographers' Association of America held its annual convention in New York, THE PHOTOGRAPHIC TIMES appeared regularly every day throughout the entire convention, giving full proceedings of the day previous. In the fall of 1884 the journal made the important change of issuing weekly instead of monthly, as theretofore. With the beginning of the next year (1885) the weekly PHOTOGRAPHIC TIMES enlarged its pages to large quarto; and W. J. Stillman and Charles Ehrmann became associated with Mr. Taylor in editorial work. In 1886 the size of the pages was slightly reduced, for convenience in binding and handling; but the number of the pages was increased from ten to twelve. In the fall of that year, W. I. Lincoln Adams became managing editor, in which capacity he has served the fraternity ever since. THE PHOTOGRAPHIC TIMES has always been illustrated more or less frequently, but, beginning with the current year, it has published regularly in every weekly issue a full page pictorial supplement, making it, as has been said, the only photographic journal in the world that publishes full-page pictures with every issue.

It is published by the Photographic Times Publishing Association, at 423 Broome Street, New York City, and the annual subscription price is five dollars.—*From the Semi-Centennial Souvenir of the P. A. of A.*

**A New York Photographer** told an interviewer that the greatest favorite of early times was Adelaide Neilson. He was asked:

"Do you still sell pictures of Neilson?"

"Yes, many thousands and thousands of them."

"Did you pay her anything for that privilege?"

"Certainly not. The first person I ever paid was Sarah Bernhardt. I gave her fifteen hundred dollars at first, and sold thousands and tens of thousands of her pictures in European as well as local orders."

"How about Patti?"

"Oh, Patti sells enormously, and will until she dies."

"Did you have to pay her anything for the privilege?"

"Oh, yes, \$1,000. But one of the greatest cards of recent years is Mrs. Langtry. We have sold so many pictures of her I should really be afraid to make an estimate, but scores of thousands of her photographs are sold every year. I gave her \$1,500, of which \$1,000 were paid in cash and \$500 in works of art."

**The Chautauqua School of Photography.**—Had I space I should like to describe several of the special schools, but shall confine myself to the school of photography. As so many all over our land are becoming personally interested in this art, I desire to speak of the school here situated. Professor Ehrmann at the head of this school is a native of Germany and a resident of New York city. He is associate editor of THE PHOTOGRAPHIC TIMES, a gentleman of courteous and pleasing manners, who wins not only the respect but the affection of his pupils. It was his good fortune to be the first who gave instruction in amateur photography, although the professor asserts that his pupils are not amateurs, as they often excel those who claim to be at the head of the profession. Professor Ehrmann has had opportunities to photograph under all conceivable circumstances, on sea or land, on the surface of the earth, above it and below it by day and by night. The Chautauqua school of photography has gained recognition, not only in the colleges and other educational institutions of this country, but has earned an enviable reputation for itself and instructor in foreign educational and scientific circles. Last year the Vienna Photographic Association recognized Professor E. by electing him an honorary corresponding member. The three following prizes are offered in his class this year: First. A camera lens worth fifty dollars, for the six best landscape views. Second. D. O. Wilson's eminent work on photography, for the best written examination. Third. Five volumes of standard photographic works for the best essay on photography. There were twenty-six graduates in this school last year, their studies being carried on by correspondence after leaving these grounds. Diplomas are presented all graduates. In the past year twenty-nine States and territories and eight foreign countries have been represented by his pupils. Next autumn a post-graduate course will commence, including chemistry and optics. Professor E. also teaches the preparation of chemicals.—*Chautauqua Letter in Holley (N. Y.) Standard.*

**Daguerre.**—It will on all hands be conceded that in the world of art one of the greatest benefactors was the distinguished man above named. To say that had he not lived or labored some other would have done the same work and accomplished similar results, is only to hold that everything within the reach of human endeavor will by some one, and in some way, be accomplished. Certainly, it is very encouraging to be assured that any desirable object will be attained; but there is always a special interest in the way it is done, by the successful worker and inventor.

When we think of the great degree towards perfection already reached in making pictures by the Daguerrian process, that is, by methods invented or suggested by the labors of Daguerre, it is astonishing to know that it has all been gained in only about fifty years; for it was in 1839 that he was formally recognized as the inventor, which *practically* he really was, of the art ever since designated by his name. For, as we are informed, Daguerre then decided to cede his invention to the State. He addressed himself to several men of science, and knocked at Arago's door. The illustrious astronomer and man of science was thunderstruck at first sight of the Daguerreotype plate, and was boundless in his expressions of admiration. The inventor had found his advocate. Arago sent him to Duchâtel, the then Home Minister, who

offered Daguerre and Isidore Niepce life pensions (modest enough!) in exchange for their secrets. On June 15, 1839, Duchâtel laid before the House a bill relating to the new discovery, preceded by the following reasons for its acceptance:

"You all know, and some among you have already been able to prove for yourselves, that after fifteen years of persevering and costly research, M. Daguerre has succeeded in fixing the image of the camera, and of thus creating, in four or five minutes, by the aid of light, drawings in which the objects preserve their forms, even to the slightest detail, in which lineal perspective and the degradation of tone produced by aerial perspective are reproduced, with a delicacy hitherto unknown.

"It is not necessary to dwell upon the utility of such an invention. It will easily be understood what new facilities it must offer for the study of the sciences; and as to the arts, the services it can render to them are incalculable.

"These reproductions, so true to nature, would be a constant object of study to artists and painters, even the most talented, and on the other hand this process offers them a ready and easy means of forming collections of studies which, if they made themselves, they could only obtain at the cost of much time and labor, and in a much less perfect manner.

"The art of the engraver would take a new degree of interest and importance, when employed to reproduce and multiply these pictures drawn by Nature herself.

"Finally, to the traveler, to the archæologist, as well as the naturalist, the apparatus of M. Daguerre would become a continual and indispensable necessity. It will enable them to fix their impressions without having recourse to the hand of a stranger. Every author would become his own illustrator; he would halt a few seconds before the most extensive view, and obtain on the spot an exact facsimile of it.

"Unfortunately for the inventors of this beautiful discovery, they find it impossible to make a matter of business of it, and so indemnify themselves for the sacrifices which were necessitated by such numerous attempts so long fruitless.

"Their invention is not one which can be protected by a patent. As soon as it is known, any one can make use of it. The most awkward person will be able to make pictures as exact as a practiced artist. It thus follows that this process must belong to all the world or remain unknown. And what just regrets would not be expressed by all the lovers of art and science if such a secret remains impenetrable to the public if it must be lost and die with the inventors!

"In such an exceptional circumstance it behoved the Government to intervene. It is for it to put society in possession of the discovery which it demands to enjoy in the general interest by giving to its authors the price, or rather the recompense, of their invention.

"These are the motives which have led us to conclude a provisional agreement with Messrs. Daguerre and Niepce, for which the object of the bill we have the honor to lay before you is to ask your sanction. Before acquainting you with the bases of this treaty, it will be necessary to give a few more details.

"The possibility of transiently fixing the image of the dark room has been known for the last century; but this discovery promised no useful results. The substance on

which the solar rays pictured the image had not the property of retaining it, and became immediately black as soon as exposed to the light of day.

"M. Nicéphore Niepce invented a means of rendering these pictures permanent. But, although he had solved this difficult problem, his invention still remained very imperfect. He could obtain only the outline of objects, and he required at least twelve hours to obtain the slightest drawing. It was by totally different means, and by putting aside the traditions of M. Niepce, that M. Daguerre has been able to arrive at the admirable results which we have witnessed, namely, the extreme rapidity of the operation, the reproduction of ærial perspective, and all the play of light and shade. M. Daguerre's method is his own; it belongs to him alone, and is distinguished from that of his predecessor as much in its cause as in its effects.

"At the same time, as before the death of M. N. Niepce, an agreement was made between him and M. Daguerre, by which they engaged to share mutually all the advantages they might receive from their discoveries, and as this stipulation has been extended to M. Isidore Niepce, it is impossible to treat alone with M. Daguerre, even respecting the process which he has not only perfected but invented. It must not be forgotten, moreover, that M. Niepce's invention, although it is still imperfect, is perhaps susceptible of being improved, and of being employed usefully under certain circumstances: it is therefore of importance to history and science that it should be published at the same time as that of M. Daguerre.

"These explanations will show you, gentlemen, for what reason and by what title Messrs. Daguerre and Isidore Niepce made parties to the agreement which you will find annexed to the bill."

After reading this document, the Home Minister read a bill which assigned a life pension of 6,000 francs a year to M. Daguerre, and to Isidore Niepce a life pension of 4,000 francs a year, the half of each pension being revisionary to the widows of Daguerre and Niepce.

One is astounded at the smallness of the sums accorded in exchange for one of the grandest of modern inventions, the importance of which was well understood, and from which there was no doubt great results would be obtained. It is true something was added to the value of these pensions by ornamenting them with the name of *National Reward*. But if the government was thus careful of the public money, the nation at least was lavish in bestowing on Daguerre the marks of its great enthusiasm and admiration.

The bill was passed with acclamation by the House and also by the House of Peers. Arago, as perpetual Secretary of the Academy of Sciences, was charged to communicate to that learned Society the description of the Daguerreotype process. This was the name by which the marvellous discovery was to be henceforth known.

August 10, 1839, was the day fixed, and crowds of people curious to hear the secret thronged the approaches to the Institute. On this exceptional occasion the Academy of Fine Arts had assembled at the Academy of Sciences. The seats reserved for the public were filled with those whom Paris counted her most eminent men. Every eye was fixed upon Daguerre, who, in his modesty, shunned the public gaze, and seemed to wish to divest himself of a triumph which the great Arago had taken under his special care.

It would not be necessary to know the Parisian public, so eminently impressionable and easily excited, to ask if the approaches to the Institute were crowded with people. All that Paris contained in the shape of artists, of young students, and inquisitive persons were to be found at the doors of the Mazarin Palace. Arago had spoken; his words were repeated by a hundred mouths; they circulated in the corridors, they burst forth on the quays, where comments flew about more or less explicit. "It is the iodide of silver and mercury," cried one person. "No," said another; "it is the bitumen of Judea." "It is the nitrate of silver, I tell you," replied a third. Such exclamations as these were bandied about, but none had understood anything about Daguerre's secret.

Meanwhile the time passed; the papers appeared containing accounts of the solemn sitting of the Academy; they explained more clearly the Daguerreotype process. The opticians made experiments and exposed cameras and the necessary apparatus for taking Daguerreotypes in their shop-windows; these were at once pounced upon and disputed for by everybody who could afford to buy them, and all Paris had caught the Daguerreotype fever. The artists were seized with astonishment and admiration—Paul Delaroche sought out Daguerre, obtained a Daguerreotype plate from him, and showed it everywhere, exclaiming—"Painting is dead from this day!"

The art of Raphael and Michael Angelo was not killed; on the contrary, it was to find new resources in the inspirations of a great inventor, and Science was about to give her hand to Art!

Soon after the memorable sitting of August 10th, the processes of Daguerre were known to all Paris, all France, and one may even say, for so rapid was the success of the new art, to the entire civilized world.—*The Semi-Centennial Souvenir of the P. A. of A.*

**Composite Photography.**—It was Francis Galton, who, in 1877, made the clever suggestion to blend the portraits of a number of individuals by means of photography, and thus secure the average type of a group.

In the same year he explained his method in an address to a sub-section of the British Association.

A number of portraits were hung, one in front of the other, "in such a way that the eyes of all the portraits shall be as nearly as possible superimposed." He then focused a camera upon the top portrait, and made a picture of it. By successively removing the portraits from the pin which secured them the images of all were impressed upon the same part of the sensitive plate, and a composite photograph of the group was secured.

This method, however, required accurate apparatus of considerable price, and was not, therefore, within the reach of most amateurs. Mr. Stoddard proposed a much simpler plan in *The Century* not long ago, and many amateurs at once commenced experimenting in this interesting branch of photography.

It was a common thing for a graduating class at college to secure a composite photograph of themselves before separating at the close of the school term, and many interesting results were obtained.

A friend was shown a photograph which impressed him greatly. The expression of the countenance denoted a

strong will, yet a gentle disposition. It was the face of a young lady one would like to know.

"Who is the original of this portrait?" it was asked.

"The graduating class of Smith College, Northampton," was the reply.

It was a composite photograph, and the admiring friend awoke unwillingly to the fact that there was no such lady as the one whose face he had been so strongly attracted by, or rather there were forty-nine of her.

Another case is cited of a young lady who, on seeing a composite photograph of a small group of which she was a member, exclaimed, "It is so charming to enjoy the society of somebody who is all one's intimate friends at once."

Composites of small groups do not furnish so valuable an average type of course as those made of larger numbers, though they may have a great interest of their own. Composite photography is, of course, of most value in securing an average type, and generalization of race or class characteristics.

By making a composite photograph from portraits of prominent members of a profession or occupation the average type and prevailing characteristics of the men and women of that profession or occupation may be obtained.

Members of a home circle may secure the average type of their family, and one may obtain an excellent portrait of one's self by combining photographs which were made at different ages and under different circumstances. The inevitable constraint and self-conscious expression is thus avoided, and a somewhat idealized portrait is the result.

There are a number of ways by which composite photographs may be made, the simplest of which, perhaps, is as follows:

Photograph separately each member of the group upon one plate, posing each sitter in exactly the same position, so that the images of all will fall upon the sensitized plate in the same spot, and in such a way that the prominent features are exactly superimposed. By exposing each sitter for exactly the same length of time, and so that the sum of the individual exposures will equal that required for making an ordinary single photograph, the composite negative may be obtained on developing the plate.

Another method is to superimpose one portrait upon another until all the pictures of a group are printed upon one piece of paper from the various negatives. This print is then finished in the ordinary way, and shows the average of all the facial developments and physical peculiarities of the members composing the group.

If all the striking features in a given number of people are totally dissimilar, the composite photograph will result in a blurred mass without many, if any, well defined lines. On the other hand, if it were possible for all the faces of a group to be identical, the result would be a clear and well defined portrait as if made of one person.

It is therefore in proportion as the characteristic features of the faces are similar or unlike that the resulting composite portrait is well defined or blurred. That member of the group which bears the strongest resemblance to the composite portrait comes nearest, of course, to having the average typical face; while he who is entirely unlike the conglomerate mass of portraiture may console himself with the reflection that his face is distinctly different from all others in the combination.—*From a special article by W. I. Lincoln Adams in The Argosy.*

## Photographic Societies.

### THE DULUTH ACTINICS.

THIS young and enterprising amateur photographic club held its regular monthly informal meeting, Tuesday evening, July 16th, at the club rooms, No. 9 Miles Block. The president of the club, Major Quinn, gave a lecture and demonstration on lantern slides and transferences, fully explaining the manner of making them.

It is the intention of the club to make a hundred or more views of the city and its interesting points, and to apply for membership in the Lantern Slide Exchange, which embraces the leading clubs in this country and Europe. This will enable the club to give an exhibition once a month of views from all parts of the country. The Duluth views will be shown by the other clubs.

The excursion committee reported that another outing would be made next week, to which the lady friends of the members would be invited; they also reported the great success of the first outing, and a number of very satisfactory views were shown. The St. Louis River to the first rapids was the subject.

The meetings of the club are made very interesting and instructive by the practical demonstration of the various processes used in the art.

The dark rooms of the club will be finished this week and ready for use. The exhibition board showing views taken by the members is being rapidly filled, and is very interesting. It is the desire to make a collection of the old views of Duluth and its surroundings, and negatives as well as prints are desired, the club being their custodian will insure their protection and care.

Steps are now being taken to incorporate the club and make it a permanent institution of the city. The officers are: Major J. B. Quinn, president; Shed L. Frazer, vice-president; F. S. Daggett, secretary; Charles M. Gray, treasurer; Dr. James McAuliffe, chairman membership committee; L. N. Wood, chairman excursion committee. Meetings are held on the first and third Tuesdays of each month. All interested in photography should send in their names for membership.

## The Editorial Table.

TRAITÉ ENCYCLOPÉDIQUE DE PHOTOGRAPHIE. Par C. Fabre. Vol. I., Part I., pp. 80. Paris: Gauthier Villars. New York: Christern. 75 cents.

This is the first part of the work in the preparation of which the author has been engaged for some years, and which he proposes to issue in 20 parts, making when complete four volumes of 400 pages each.

He says in his preface that "the aim had in view in publishing this Treatise is not simply to make known in all their details the processes now in use, but also to show by what transformations the apparatus has reached its present perfection, and by what successive modifications new methods have become established."

This result is aided, while the value as a text book for modern practice is increased, by the typographical arrangement; the historical portions being printed in a different font from the rest.

The first volume will treat on "Materia Photographica," especially lenses; the second, the negative image; while the third and fourth will be devoted to positive images and enlargements, respectively.

The price for the work to original subscribers will be 40 francs; which after publication will be increased to 60.

The first "fascicule" treats very briefly—"for which relief, much thanks"—on the history of photography, and then takes up the subject of lenses. The style is clear, and the information given in a succinct manner; the work promises to be a contribution to the ever-increasing literature of photography: which will some day be summarized in a compendious form, which shall henceforward become *the* classic and render such treatises as this one superfluous. C.

NUMBER 11 of Volume I of *Sun and Shade* is a notable issue, full of timely and unusually attractive photographs. It contains, among other pictures, "The Disputed Boundary," from a painting by Erskine Nicol; "A Portrait Study," from a negative from life, by George G. Rockwood; "Wing and Wing," from a negative by H. G. Peabody; "Solid Comfort," from a negative by S. R. Stoddard, the Adirondack photographer; "In the Marches," from a photograph by C. M. Fowler, and photogelatine prints of the Eiffel Tower and Exposition Buildings at Paris, and "The Sphinx" (the visit of the Spaulding American Base-Ball party), by a Cairo (Egypt) photographer.

The publishers make the following announcement:

"A year ago we commenced the publication of our novel venture in journalism *Sun and Shade*, a *Picture Periodical without letterpress*, almost as an experiment, with a modest list of less than fifty subscribers. To-day we are printing an edition of 4,000 copies monthly. A sufficiently convincing proof of the wisdom of our hope that there was room for us.

"In our rapid growth the wish has been indicated unmistakably for the higher grade of pictures, and of the higher class—always for quality rather than quantity. Following rather than leading such a wish, we feel that we make no mistake in marking the future career of the magazine to be rather that of an *artistic periodical* than a *photographic record of events*.

"Our efforts shall be directed in the future to make *Sun and Shade* an artistic periodical which shall be not only pleasing but *educational* in its broadest sense. Some of our plans may be briefly referred to.

"We shall reproduce the leading pictures in the great collection of the Metropolitan Museum of Art. Within the covers of *Sun and Shade* will be found from time to time, reproductions of the works of American artists. We shall especially endeavor to encourage the artistic side of direct photography in all its phases. And we shall supplement these special features with examples of sculpture, architecture, and industrial art. If in the future we receive as hearty a response to our efforts as we have received in the past, our task will be indeed pleasant and our road to success a royal one."

"THE SCENE WAS LAID."—A Harlem grocer recently found an egg in a lot just received from the country with a landscape neatly photographed on the shell, but he doesn't know where the scene was "laid."—*Texas Siftings*.

QUITE A COMPLIMENT.—Miss C.: You ought to patronize my photographer. He is an artist.

Brown: Is that so?

Miss C.: Yes, he can throw expression into the most commonplace face.—*Texas Siftings*.

### Queries and Answers.

156 MARSHALL, MICH.—I have several dozens of Carbutt B and special plates, purchased last spring. Do you think they are good enough yet for landscape work?

156 *Answer*.—We can vouch for the B plate. The special you had better try first, before putting them in use for important work.

157 C. H. MILLER asks whether spring water is injurious when used in developing plates?

157 *Answer*.—It does no particular harm unless the water contains chlorides. Calcerous water is injurious to the oxalate developer; and the solution of potassium oxalate should be well filtered, after having been allowed to stand for twenty-four hours.

158 EMILY P. T.—I do not like the hydrochinone developer very much, but have adopted it because it does not stain the fingers. If I knew how to remove these abominable stains, I would return to the dear old pyro.

158 *Answer*.—Diluted hydrochloric acid 1:6 will remove the pyro stains, if you soak the fingers in it for a few minutes. If you moisten the fingers with the same solution before you touch pyro, the chance of staining is reduced to minimum.

159 W. S. PULSFORD would like to know the cause of the very brownish-black color of the platinotype prints which he encloses. He says: "The directions were followed exactly, and the black sized paper of Willis & Clements, used."

159 *Answer*.—We regret that we cannot give the information desired. The making of the Willis & Clements paper is a trade secret, and we are not acquainted with the intricacies of its manufacture, and, consequently, cannot explain difficulties occurring with it. The manufacturers can doubtless do so. We have, however, compared the prints sent, with many others of the same kind, and think that there is little difference, if any, between them and your own.

160 SENEX.—I have heard of gold and lead toning baths. Is the lead salt added to the chloride of gold, to secure greater durability of the print, or merely to assist in toning? As lead salts are used as hypo eliminators, I am thinking they might be useful when added to the toning solution.

160 *Answer*.—Nitrate of lead in the toning bath gives a rich black tone to the print, but makes it fade after a short time.

Mr. E. J. Wall gives the following formula for a lead toning bath: Nitrate of lead 30 grains, chloride sodium 40 grains, hyposulphite of sodium 240 grains, chloride of gold 1 grain, and water 10 ounces; and adds, the bath gives a good black tone, but as it does not keep, it must be prepared immediately before use. The permanency of the print is not guaranteed.

Of the use of the salts of lead as hypo eliminators not much need be said in their favor. With them insoluble hyposulphite of lead is formed, and that remains in the print. It cannot be washed away.



**THE PHOTOGRAPHIC TIMES.**

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

W. I. LINCOLN ADAMS, Editor.

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THE PHOTOGRAPHIC TIMES PUBLISHING ASSOCIATION,  
 423 Broome Street, New York.

**Commercial Intelligence.**

**A BIT OF HISTORY.**

ONE OF THE MORE PROMINENT OF THE MANUFACTURERS AND DEALERS IN PHOTOGRAPHIC GOODS.

(From the *Semi-Centennial Souvenir of the P. A. of A.*)

The Scovill & Adams Company commenced business January 1, 1889, in the old warerooms of Scovill Manufacturing Co., from whom they purchased their entire photographic plant.

As early as 1842, when Daguerre's discovery was made known, the Scovill Manufacturing Company, who had been engaged in the manufacture of metals and metal products from the year 1802, embarked in the business of supplying photographer's wants by manufacturing metal plates for the Daguerreotype. Thus, as manufacturers, they became identified with photography from its infancy.

As photography grew and developed, the photographic department of the Scovill Manufacturing Company promptly met the requirements of the day, and continued to keep pace with the wave of photographic progress, becoming the largest, as they were the oldest, photographic establishment in America, if not in the world.

Mr. W. Irving Adams, president of the new company, entered the employment of the Scovill Manufacturing Company over thirty years ago in the photographic department of its New York branch. His occupancy of the successive positions to which he was promoted, fitted him by experience for undertaking the management of a photographic business that is second to none in the United States. As president of the New Haven factory—known for many years by the firm name of Samuel Peck & Co.—and latterly as New York agent and managing director of the photographic business of the Scovill Manufacturing Company, Mr. Adams has been publicly identified with the photographic business and the photographic fraternity for many years, and in a way that peculiarly fits him for the prominent position he now occupies in the new corporation.

The Scovill & Adams Company was organized under

the laws of Connecticut; and outwardly the business will be continued as heretofore. Mr. Harry Littlejohn, formerly cashier of the Scovill Manufacturing Company, is secretary of the new corporation. The salesrooms will continue as heretofore, at 423 Broome Street; and under the presidency of Mr. Adams, the management of the business will continue the same.

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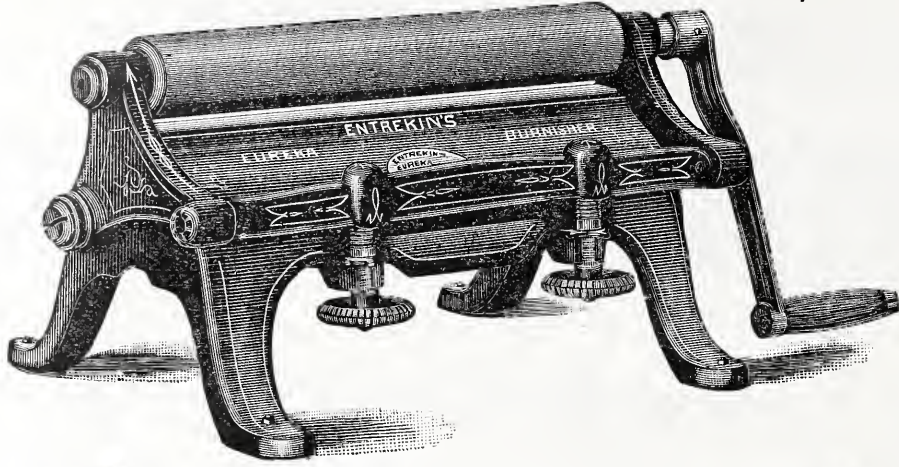
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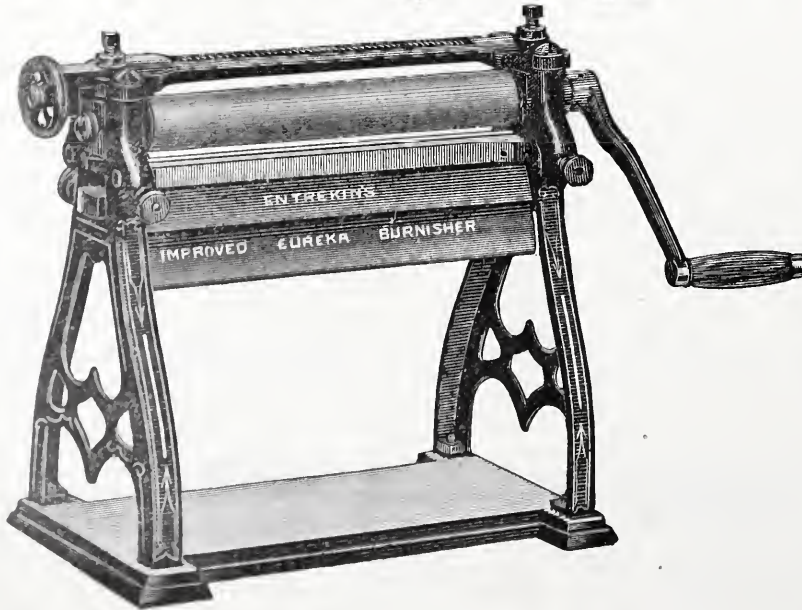
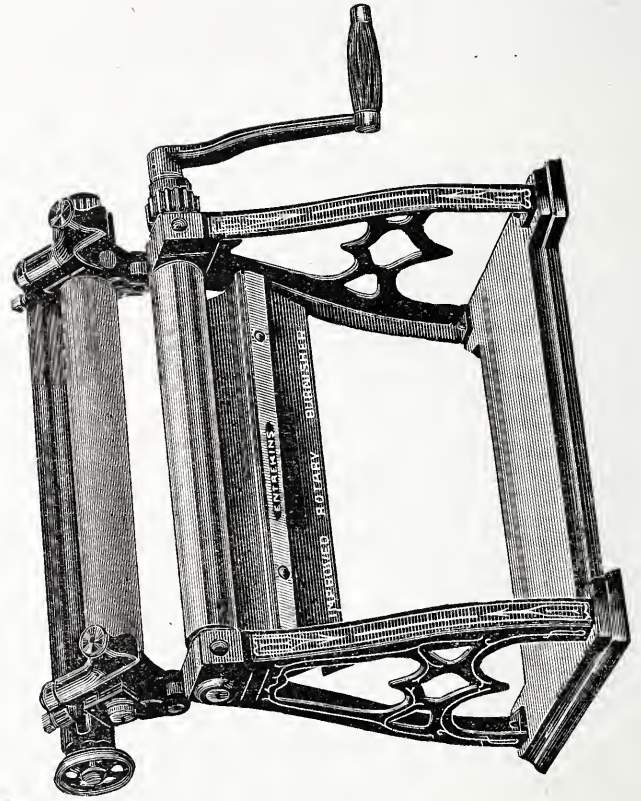
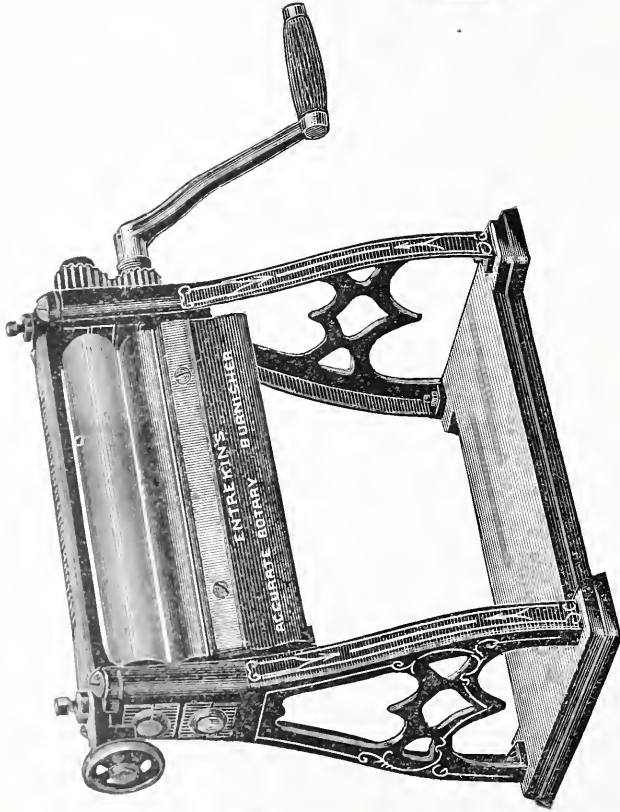
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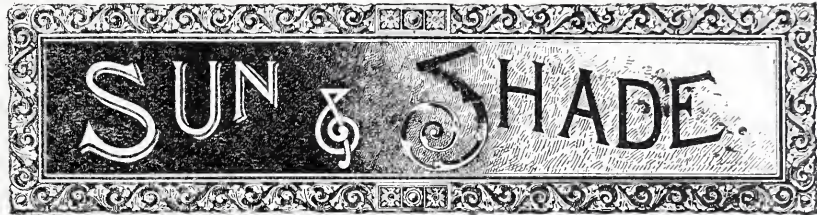
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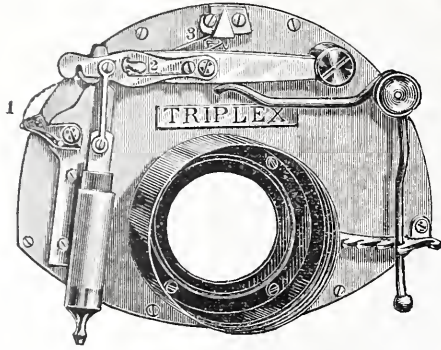
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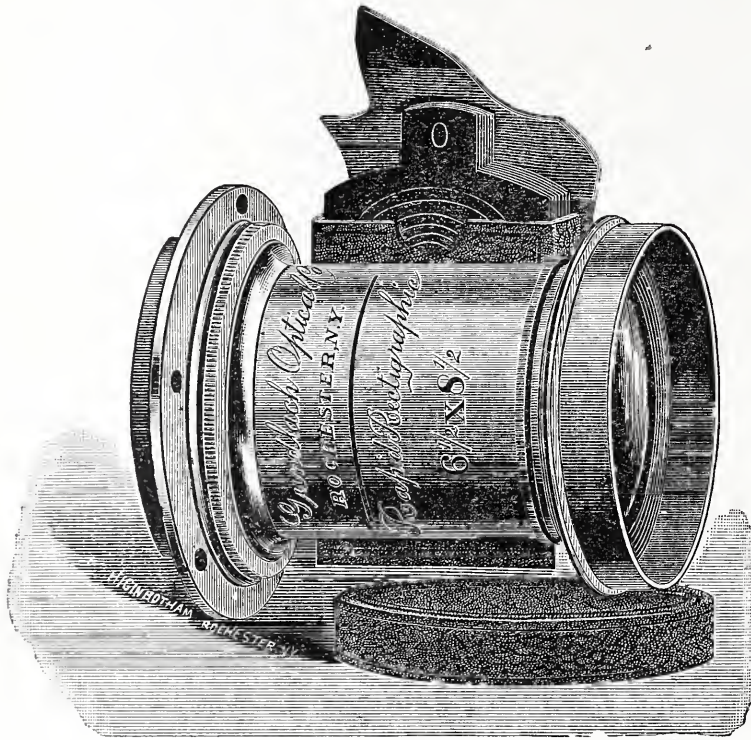
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After experimenting with most of the lanterns in the market, we have come to the conclusion that for parlor or small hall exhibitions, chemical and optical experiments, etc., the SCOVILL LANTERN affords, at a moderate price, the greatest number of advantages, and from its simplicity and non-liability to get out of order, gives, even in inexperienced hands, results superior to all others.

The No. 1 SCOVILL SCIOPTICON when packed for carrying, in its own Russia iron case, measures 15 x 10 x 6 inches, and weighs 12 pounds; the case serving as a convenient stand when the lantern is in use.

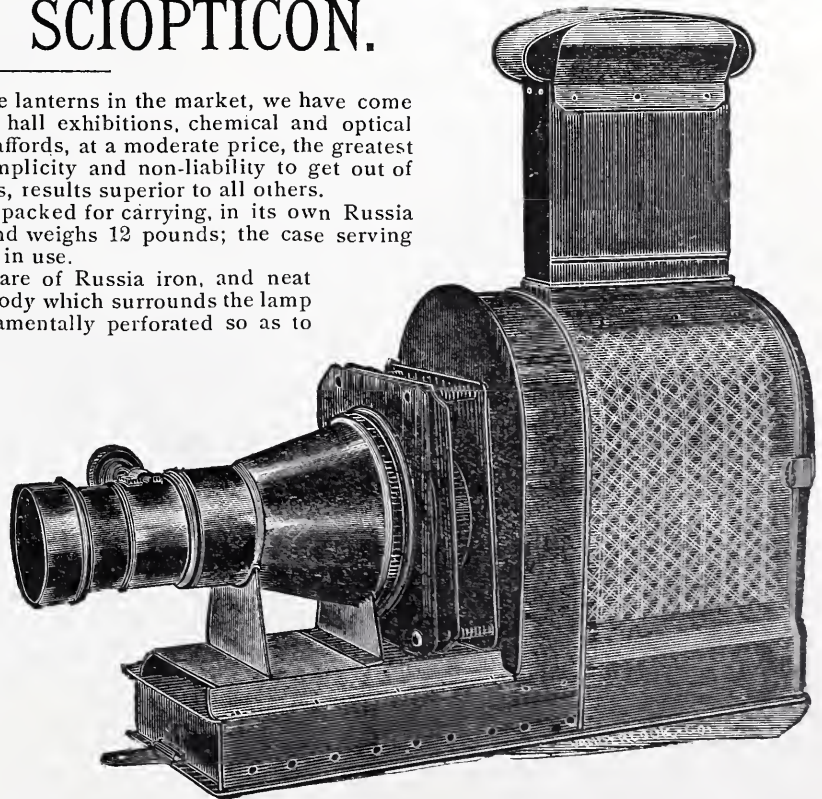
The CASE and BODY of the Lantern are of Russia iron, and neat and compact in form. That part of the body which surrounds the lamp is double, the outer covering being ornamentally perforated so as to allow a constant current of air to circulate and keep down the temperature.

The lamp is of the triple wick variety, and so constructed that the three flames combine, and by the draught of a ten-inch chimney give a brilliant flame.

The CONDENSER is four inches in diameter, neatly mounted in brass thoroughly ventilated, and arranged with screw flange so that the lenses may be separated and cleaned when required.

The CONE, which carries the objective, and the mount of that lens are nickel-plated. The objective is a double achromatic lens of one and a half inch clear aperture and five-inch focus, so that at a distance of twelve feet from the screen, it gives a brilliant picture on disc six feet in diameter. The focus is roughly obtained by sliding the front, carrying both cone and lens; and fine adjustment by a rack and pinion on the objective.

The No. 2 SCOVILL SCIOPTICON measures, when packed in case for carrying, 18½ x 12 x 8½, and weighs 19 pounds. The objective is a double achromatic lens of 1½ inches clear aperture and 5½ inches focus so that at a distance of about twelve feet from the screen it shows a brilliant picture on disc eight feet in diameter. The lamp has five wicks and is correspondingly more powerful than the lamp with the No. 1 Sciopticon.

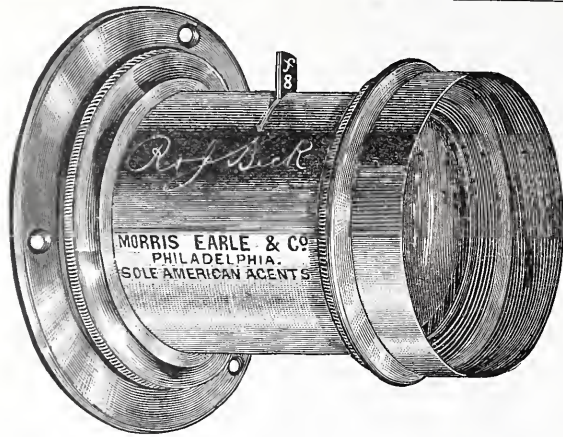


### PRICE LIST.

No. 1 Scovill Sciopticon, complete.....\$30 00 | No. 2 Scovill Sciopticon, complete.....\$50 00

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Send for Circular of Pine's new Flash Lamp, by which ten grains of Magnesium Powder makes satisfactory exposure in an ordinary room.

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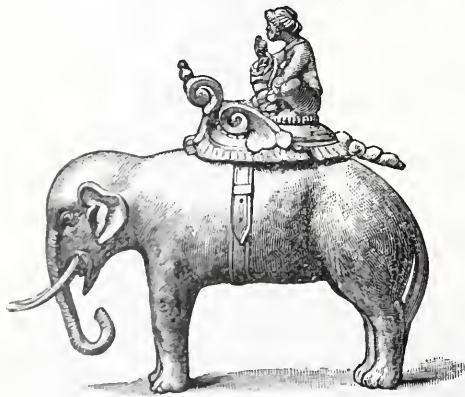
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4 x 5 " "	95	6 1/2 x 8 1/2 " "	2 50
4 1/4 x 5 1/2 " "	1 12	8 x 10 " "	3 60
4 1/4 x 6 1/2 " "	1 30	10 x 12 " "	5 40
4 3/4 x 6 1/2 " "	1 40	11 x 14 " "	7 00
5 x 7 " "	1 65		

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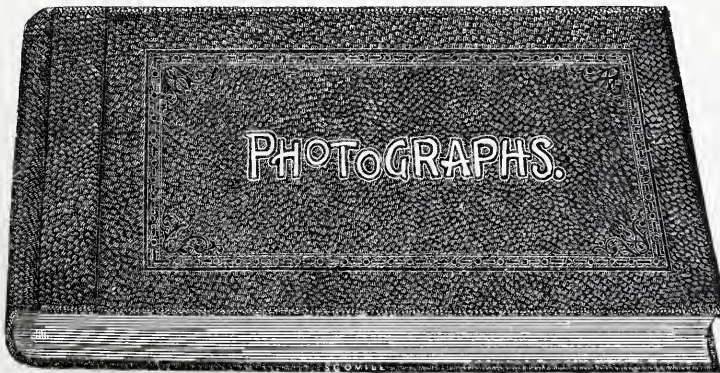
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**PACKARD BROS., Roslindale, Boston, Mass.**

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" 2½.	— 8x10 " " 6½ x 8½ " " .....	2 00	
" 3.	— 10x12 " " 6½ x 8½ " " .....	2 25	
" 4.	— 11x14 " " 8 x10 " " .....	2 50	

## HOWARD ALBUMS.

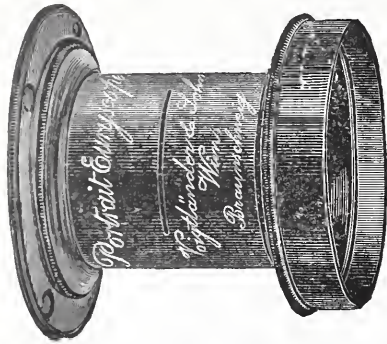
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		With 25	With 50
		Collins Cards.	Collins Cards.
No. 5.	— 7x10 Cards, for 5 x8 Photo's \$2 25	No. 11.—\$3 50	
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" 7.	— 10x12 " " 6½x8½ " " 3 50	" 13.— 4 75	
" 8.	— 11x14 " " 8x10 " " 4 00	" 14.— 5 50	
" 9.	— 14x17 " " 10x12 or 11x14 5 50	" 15.— 9 00	
" 10.	— 16x20 " " 11x14 or 14x17 7 75	" 16.— 11 00	

To each card are attached two small metallic binding loops, so fastened that they act like hinges; through the projection of these loops a binding cord passes, which fastens at the back with a tie; thus each card is bound in the cover independently, and may be taken out and returned or replaced with ease. This method of making an album affords the amateur the best means of preserving the results of his labor, because each picture may be finished before putting the card in the album. The arrangement of the pictures may also be altered at will—if a single card is spoiled the whole album is not ruined. If a picture is taken out, it can be quickly and readily done without injury to the volume.

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Diameter No. of Lens.	Size of Plate.	Equivalent Focus.	Price.	
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5..1 " "	...6 1/2 x 8 1/2 " "	... 6 1/2 " "	... "	
6..1 " "	...8 x 10 " "	... 8 " "	... "	
7..1 1/2 " "	...11x14 " "	...10 1/2 " "	... "	} These 2 sizes will fit into 1 flange.
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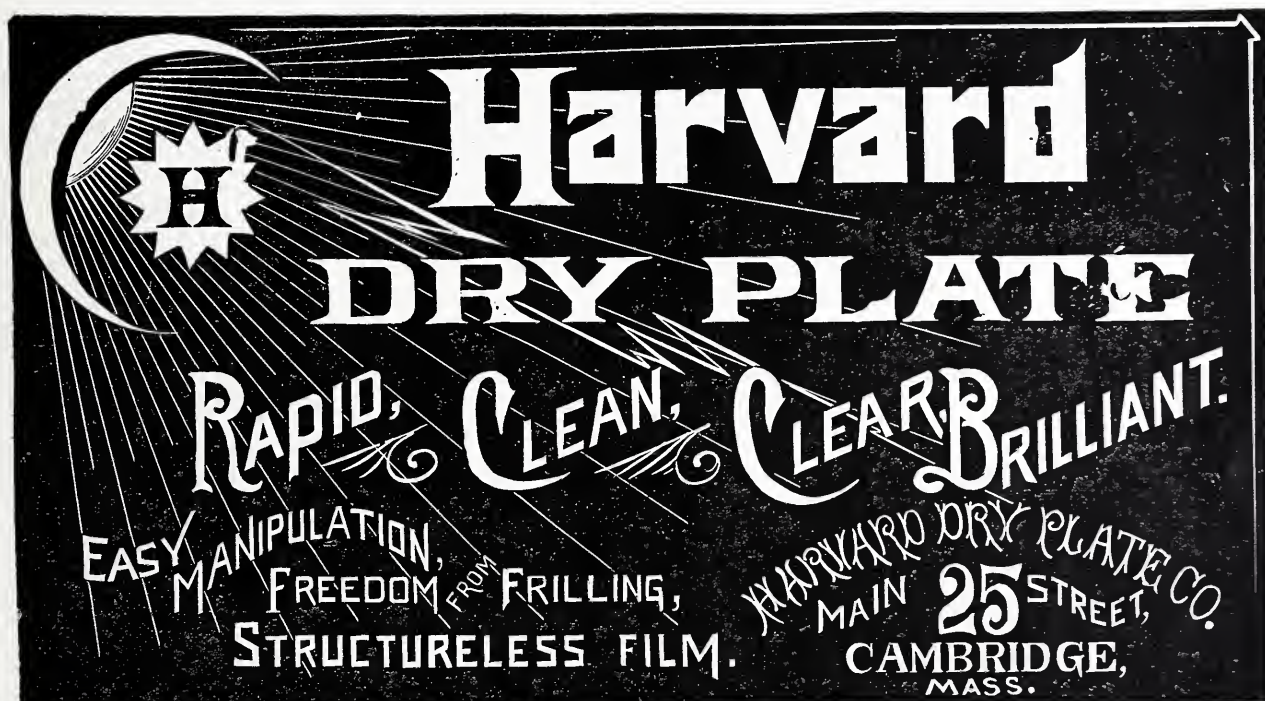
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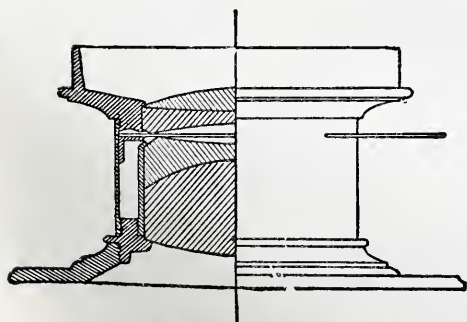
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(Signed),

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MESSRS. ALLEN BROS.

Although circumstances compelled me to give up my projected balloon trip this fall, I have used my 3 A "Suter" for other work; photos. of animals, viewing, etc. I am glad to say that each time I have used it, it has impressed me with a stronger sense of its good qualities. With your lens and a Prosch Duplex Shutter, which is fitted to it, I feel well-equipped for quick work, and feel confident of success in my next balloon trip whenever that is.

Very respectfully,

(Signed),

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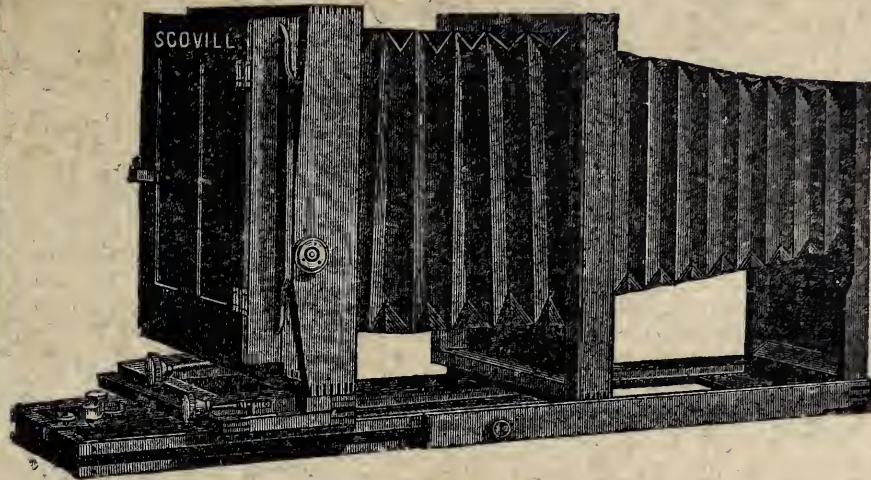
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# AMERICAN OPTICAL COMPANY

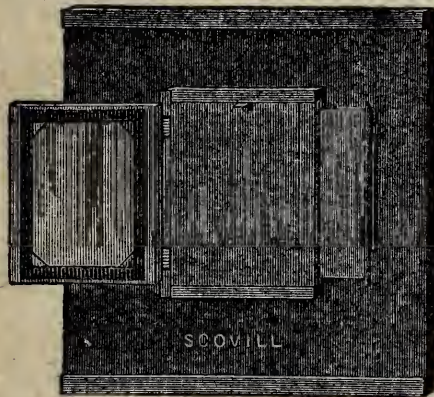
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9....	14x17 "	" " 60 "	do 76 00	15....	25x30 "	" " 80 "	do 170 00
10....	16x20 "	" " 65 "	do 88 00				

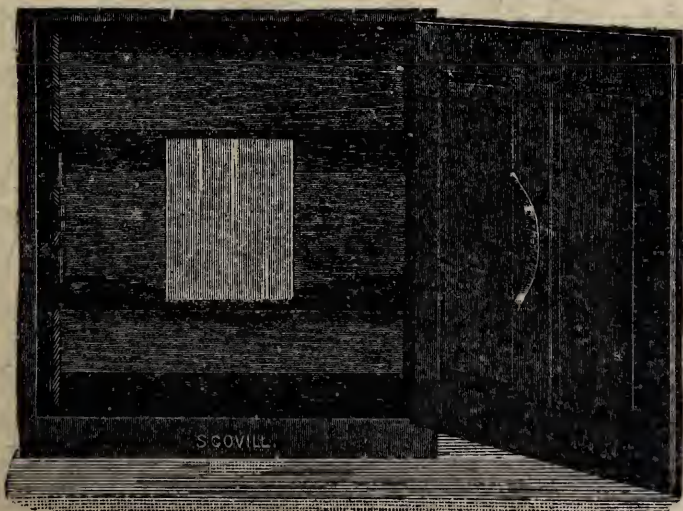
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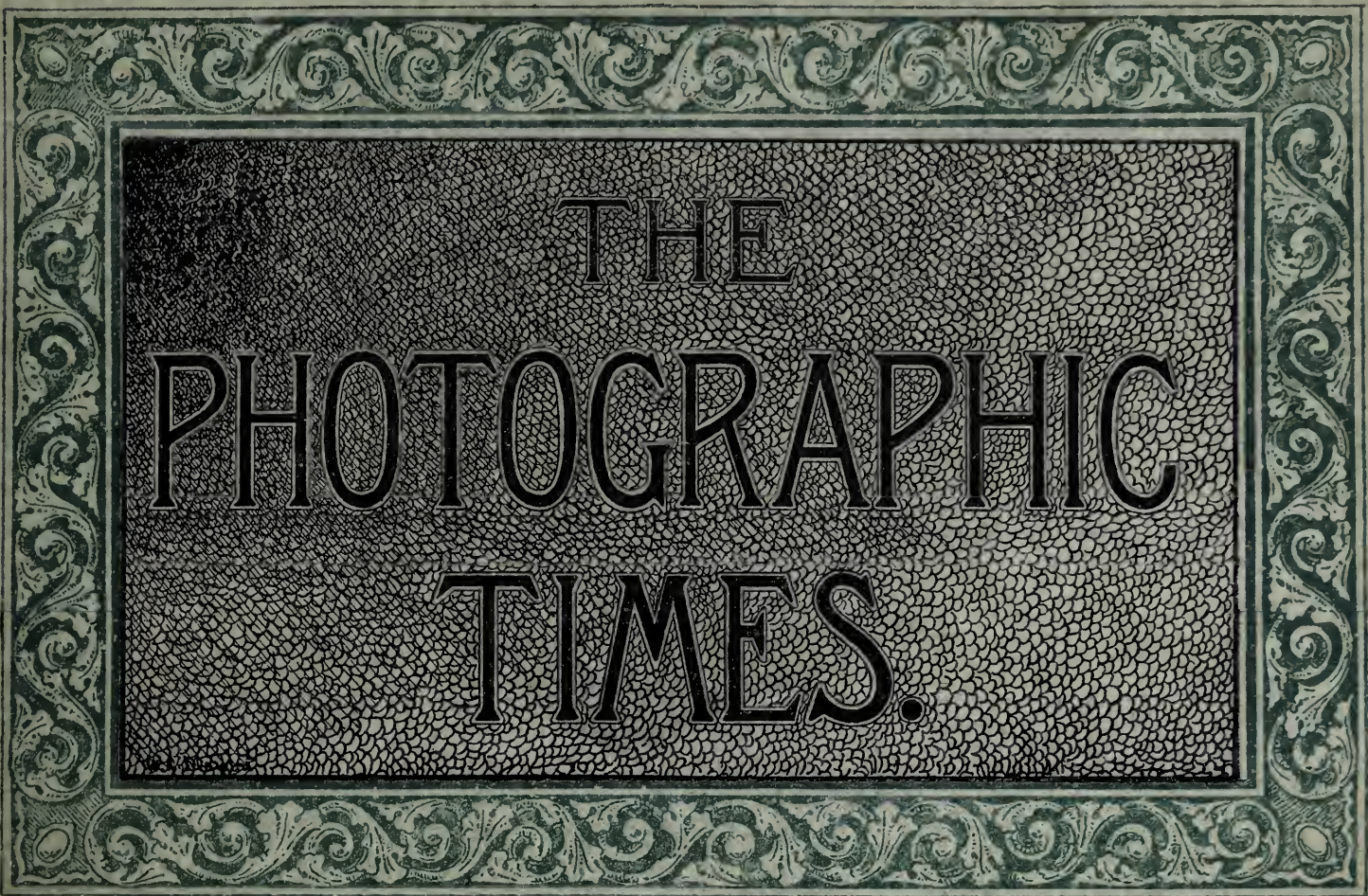
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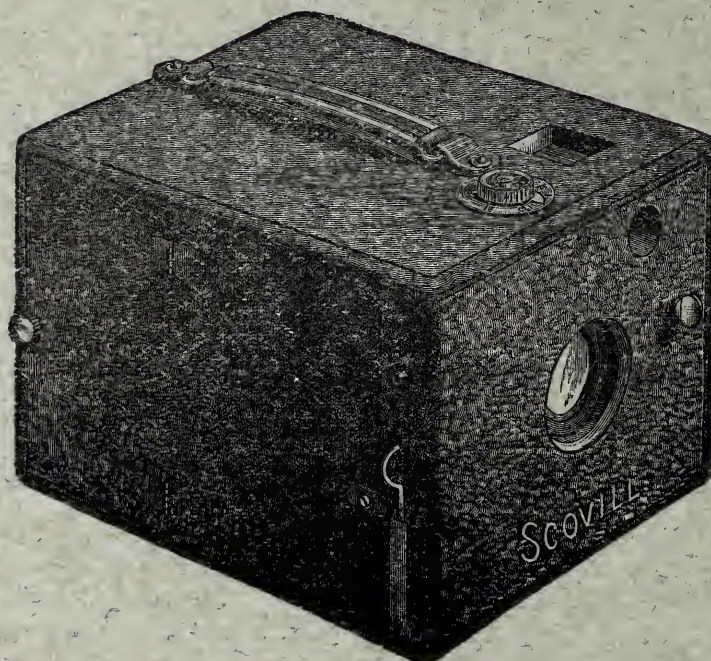


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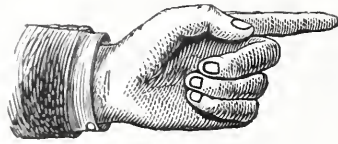
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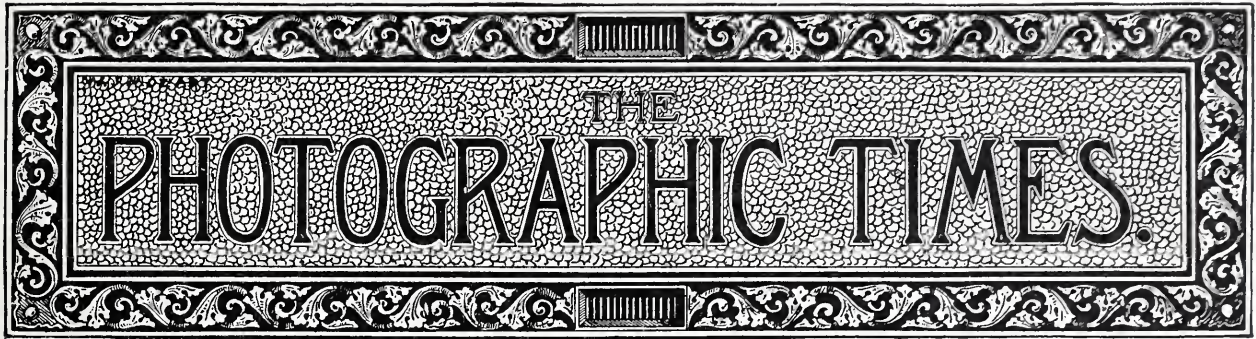
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# THE PHOTOGRAPHIC TIMES.

VOL. XX.

FRIDAY, SEPTEMBER 5, 1890.

No. 468.

## A SCENE IN NASSAU.

WITH this issue of THE PHOTOGRAPHIC TIMES we present the fifth picture of the series illustrating Mr. Toch's "Photographic Trip in the Torrid Zone." The scene is a characteristic one in this picturesque country. In the narrative accompanying, continued in this the fifth chapter, more is said concerning the picture. Next month our illustration will be Coconut Palms, and with it the series is concluded.

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## A PHOTOGRAPHIC TRIP IN THE TORRID ZONE.

### CHAPTER V.

THE sky was serene. Not a cloud to mar the light of the brilliant moon and "all the air a solemn stillness holds." The steady trot of our horses and the occasional talk of the riders was all that broke the "solemn stillness." The road was straight and smooth, and lined on either side with huge palms of wonderful straightness. We passed through a number of villages, and in some we had to show our passports, and in others we were not troubled, but at twelve o'clock we got to a little town and there we were told that the road beyond was a little hilly, wooded, and occasionally dangerous. We had not ridden very far when one of our party noticed some figures ahead slouching along and disappearing into the woods. He kept his eye on the spot, and when we neared it we trotted very hard, by it. Just as we passed it there was a tremendous flash and report from the thicket, and I confess it nearly scared the life out of me. Our horses were scared too, but soon mastering them, we drew our revolvers and fired in the direction of the sound, galloping all the time, and the noise and din we raised sounded like a battle. But it was our safeguard. The bandits heard it and did not return fire, evidently thinking it would be futile to attack so large and well-armed a party. We reported the adventure at the

next town, about ten miles off, but heard nothing of it afterward. Here we rested and refreshed ourselves for an hour, and then rode on until morning, and when we reached Bemba we crawled into bed and slept until midday. We took the train for Cienfuegos, arrived there at five in the afternoon, and at eight o'clock we sailed out to the steamer, leaving our friends on shore. We had hardly arrived on the good ship "Cienfuegos," when she got under way, and two days later we were at Santiago de Cuba. Here it was so hot that photography was out of the question, and besides the country surrounding the city, although it was beautiful was too dangerous, robberies being often committed on the highways in good old fashion. We lived on ship board and went ashore late every afternoon, returning in the "wee sma' hours of the morning." We had nothing else to do, so we enjoyed the public concerts and sailed around on the bay at night, and slept during the heat of the day. I have seen many phosphorescent waters, but the Harbor of Santiago is undoubtedly more so than any I know of. Even in a quiescent state, with the brilliant moon shining on it, it would phosphoresce, and when a boat glided through it, the keel would be illuminated and a streak of flame would be its track. The darting of a fish would often produce a beam of light quite lasting in its effect. If phosphorescence of the sea is due to animalculae, and it is generally accepted as the cause, their propagation is due, in this water, to the enormous amount of filth and excrement which finds its way there. The city reeks with dirt and garbage, and being centrally hilly, the rain washes all this dirt into the water of the harbor.

Our next stopping place was Nassau and here we desired to stay for two weeks, and the beautiful and tropical scenery which greeted us, gave promise of some good pictures.

I soon unpacked my photographic camera and the large barn of a hotel we stopped at had an out-

house that served very well for a dark room. There were two other amateurs on the island, the first we had met in the complete time of the trip, one of them with a  $3\frac{1}{2} \times 4\frac{1}{2}$  detective camera and the other with a  $4 \times 5$ .

We hired a horse and carriage for the time of our stay and had a native negro for our driver who was a very original chap. He had a mouth like a hippopotamus, ears which stood out straight before the wind, and he possessed some of the strangest expressions of speech and of countenance. His age he knew not, and his name was Jymes. I suggested *James*, but no, he said it was Jymes.

After we had thoroughly inspected the Island of New Providence, we settled down to the photographs we would start on, and as our friend Jymes was always on hand with his horse at half-past nine, we had ample time to study the views we were to take.

There is a picturesque road leading to the "Queen's Staircase," (a stairway cut into a gorge into the rock) and this road I photographed late one afternoon. It is given in the Frontispiece and shows the gorge in the rocks. Although this is not a typical street, still it illustrates the nature of the houses and the style of the scenery, as there is hardly any street that is not set off by a cocoanut tree, and some streets in the back of the city contain numbers of them.

The light in Nassau was extremely brilliant, and one cloudy afternoon I photographed the breaking waves instantaneously, and on reaching New York found the picture well timed. I think on a bright, clear day it is possible to get perfect detail out of any picture with a shutter, and that where no diaphragm is used in the North, under similar conditions, a small one could be used in the Bahama Islands.

*Maximilian Toeh.*

(To be continued).

### ENLARGING.

THE making of enlargements is becoming every day of more importance, both by the greater facility of use which the gelatino-bromide papers offer, as well as by the use of hand cameras. But often the first cost of an enlarging apparatus is something of an obstacle.

We find in a recent number of *La Nature* an apparatus of simple construction which enables enlargements to be made with facility either by daylight or artificial light. Before entering into the details of construction of this little apparatus, it may be well to speak of the general conditions governing enlargements.

Let us suppose a space completely enclosed by A B C D, as in Plate 2, Number 1. Let us make in one of the walls an opening, a b, in which we fix a negative strongly illuminated; if at a suitable dis-

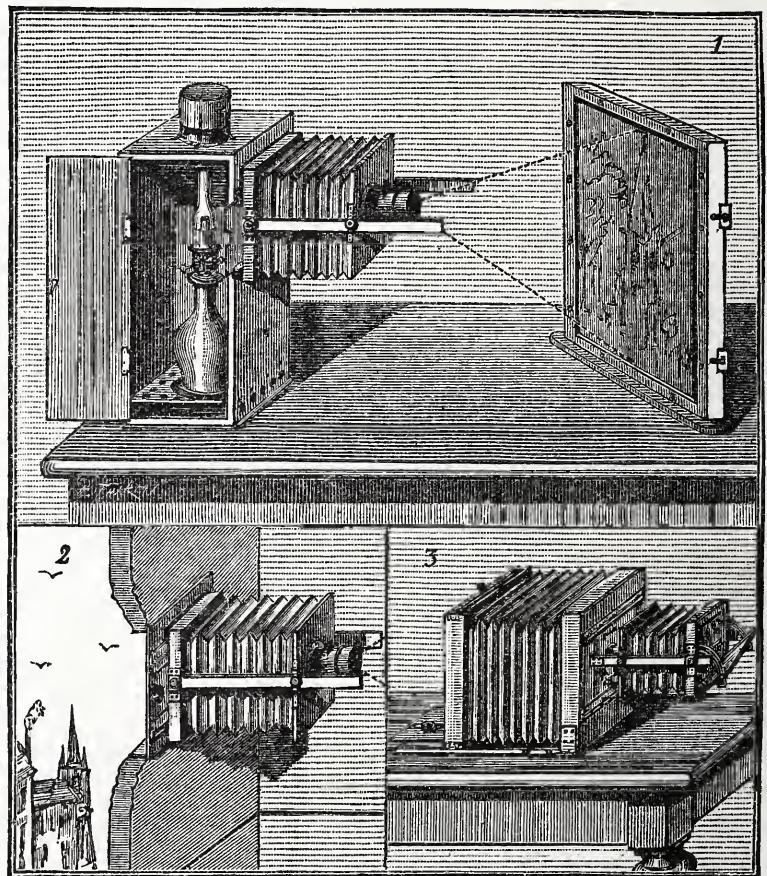


PLATE I.—METHODS OF USING SMALL CAMERA FOR PHOTOGRAPHIC ENLARGING.

1, Arranged as a Projecting Lantern; 2, Arranged Opposite Window of Dark-room; 3, Arranged on a Larger Camera.

tance we place in the interior of the enclosed space a movable diaphragm M N furnished with an objective O, there will be formed on the opposite wall, O F, an image, A B, enlarged and reversed. This image can be rendered sharp by advancing or retreating the diaphragm bearing the objective. This is what is called focusing. The size of the image A B in proportion to the negative a b, and the respective distances D and d of the objective from the image and from the negative, are expressed by a simple formula which permits the values of D and d to be easily obtained.

$$[1] \quad D = f \left( 1 + \frac{AB}{ab} \right); \quad [2] \quad d = f \left( 1 + \frac{ab}{AB} \right).$$



in which  $f$  is the focal length of the objective employed. These formulas will serve to determine the dimensions of the apparatus.

From these general considerations we can draw the following conclusions. The enlarging apparatus may be considered as formed by the union of two cameras, one containing the negative and the objective, the other the sensitive surface. The negative must be strongly illuminated, and all rays of light except those which pass through the negative must be prevented from reaching the sensitive surface.

There are three practical methods for the solu-

camera is supported; opposite, the sensitive surface is supported; the whole forming a sort of projective lantern.

The small camera shown in the illustration can easily be constructed by one having a little mechanical ingenuity, or a camera can be purchased which will answer the purpose. If we suppose the plates to be enlarged measure 9x10 centimetres, the length of the bellows ought to be about 20 centimetres in order to get amplification of four times—that is, 18x22 centimetres,—if a portrait lens of 12½ centimeters focal length is employed. The camera is supported on two strips of wood C, passing through suitable grooves in the sides of

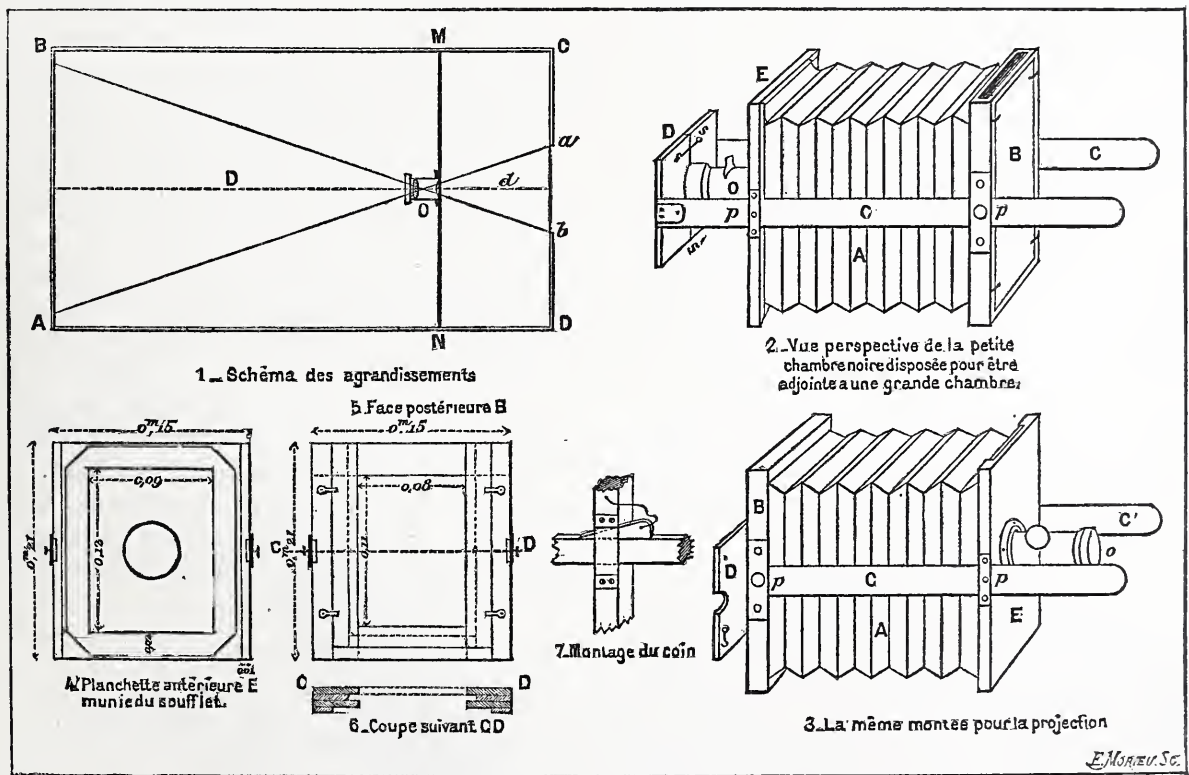


PLATE II.—DETAILS OF CONSTRUCTION OF SMALL CAMERA FOR PHOTOGRAPHIC ENLARGING.

1, Principles on which Enlarging Depends; 2, Perspective View of the Small Camera Arranged for Attachment to a Large Camera; 3, The Same Arranged for Projection; 4, Front View of Camera; 5, Back View; 6, Section C. D.; 7, Wedge Fastening.

fastened to a larger camera, the objective of the first penetrating into the second; the negative being turned toward the source of light, either daylight or lamp-light. Second, a small camera can be fixed on the shutter of a closet or dark-room, an opening being made in the shutter opposite the negative, and the sensitive surface being supported opposite the objective at the necessary distance. Third, the source of light—a lamp, for example—is inclosed in a dark box in one of the walls of which an opening is made, outside of which a small

tion of the problem. First, the small camera can be fastened to the rear board of the camera. These are fastened to the rear board D, and the camera can be pointed in either direction and fixed by a thumb screw at the point P; or if that is not obtainable, by a wedge arrangement as shown in Figure 7. This board D can be fastened either outside a larger camera or on the wall of a box enclosing a lamp, or in the same way on the interior wall of the dark room. The illustrations explain themselves, but for any who may care to construct such an apparatus the dimensions as given in the cuts will be furnished on application.

## EDITORIAL NOTES.

PROF. T. W. SMILLIE, of the Smithsonian Institution, has made an excellent photograph of the Daguerre Memorial as it stands under the dome of the National Museum in a finished state. The negative is an entirely satisfactory one. It is now being reproduced in photo-gravure and will be presented to the readers of this magazine in the next issue. Any one sending one dollar, or more, to the fund for payment of the monument will receive this copy of the PHOTOGRAPHIC TIMES free, or a separate impression of the photo-gravure suitable for framing.

TREASURER G. M. CARLISLE, M. D., of the Photographers' Association of America, is always actively engaged in some enterprise for promoting the interests of the fraternity. He wants the Eleventh Census to give photography the attention which so large a profession merits, and with that end in view, is arranging with Superintendent Porter of the Census to make the date as complete as possible. "Former census bureaus," writes Dr. Carlisle, "looked upon photography as of no great importance, and it is therefore only meagrely represented in their reports. It occurred to me that if I could institute more extended inquiry, it would tend to put the profession on a better footing before the world, benefiting all people connected therewith. At this writing, I have every hope of accomplishing the desired end."

## TYPES OF BEAUTY.

[Read at the Washington Convention of the P. A. of A.]

It would be eminently proper for some scientist before some such Congress to show what photography has done for science, to show what assistance and aid it has given. But it would be foreign from my purpose to do so. I am not insensible, however, of the benefits given by photography to science. In astronomy, Prof. Langley, the head of our Institution, would concede the great indebtedness of his science to photography. Next after original research and discovery, is the necessity for a record thereof; the latter almost equalling the former in importance. Photography makes the record and is entitled to a fair share of the credit for discovery. The lists of similar credits might be extended to a wonderful length. I leave it to your own knowledge and remembrance without attempting to enumerate. It has been of great benefit and use in the study of the races of man, and as a proof thereof, I do but call to your remembrance as I show the great album of Prince

Roland Bonaparte containing the photographs, two of each specimen, a full face and a profile view of each subject, in the various countries which he visited from Lapland in the northeast to French Guiana in the southwest.

I am not a photographer. I am interested in the science of anthropology, or rather in a small proportion thereof, and I am to speak to-day upon the subjects of types or styles.

Anthropology is the natural history of mankind, and the types of which I am to speak are those of human kind. The attempts at the classification of mankind are numberless. They began early and have continued late. One ingenious scientist made a classification which comprised as many as sixty-two different races of men. We all remember how, in our younger days, the standard classification showed five races: the Caucasian or white, the Mongolian or yellow, the Ethiopian or black, the Malay and the Copper-colored. In the present day the two latter have been dropped and now the grand divisions consist only of white, yellow and black.

But there have been divers other schemes and systems of classification, and, if you please, I will speak for a few moments in giving a description of the various types of mankind as at present classified by different scientists. After that of color just mentioned is that type or race of mankind classified according to the shape of his head. It is called the cophalic index, and, not to use abstruse scientific terms, may be determined by the proportionate length and width of the head; the long, short and medium heads.

## ANTHROPOLOGIC TYPES.

By Cophalic Index.

Dolicocephalic, Hermann Welcker.

Mesoccephalic, Broca.

Brachycephalic, "

By Form of Hair.

Ulotrichos (wooly hair) and } Huckel

Lissootriches, or } and

Leiotriches (smooth hair), } Muller.

By Dental Index.

Microdont, 42,

Mosodont, 42 and 44, } Prof. Flower.

Mogadont, above 44. }

By Unity of Characteristics.

Leptorrhine, }

Mesorrhine, } Prof. Topinard.

Platyrrhine. }

In determining the characteristics of the various types of mankind it becomes necessary to have living specimens, and here it is that photography

can aid anthropology. One of the great anthropologists of this century in Paris has been making a collection of the various types of mankind, and he does it by means of photographs. He has discovered, or thinks he has, that the type or origin, the race to which the party originally belonged, is better preserved among women than men, at least that the evidences and characteristics are better preserved among women than among men. So he has made his collection from among women, and to make it more attractive and worthy, he declared it to be his intention to choose only the beautiful women for his types. Therefore, his is a collection of types or standards of beauty, and this is made by a series of photographs.

We have the declaration of the Holy Scriptures that "man is but little lower than the angels." Man has been conceded to be the highest representative of the animal kingdom. Some of the ancient philosophers considered that man and woman, male and female, would constitute but one being in the future world; that man was the representative of strength and wisdom while woman was the representative of love and beauty. I agree with the ancient philosophers and I commend the ancient artists. Throughout all time artists have chosen woman as their standard types of beauty. Most truly she is, for, judging by our standard and looked at with our eyes, we cannot but declare that whatever else the Creator of the world and the Maker of all things might do, he certainly has not made anything more beautiful, more lovely, more charming, more attractive, more to be worshipped on earth, than a beautiful woman.

But here is the opportunity for the anthropologist to call to the aid of our science the profession of photography, and not now, but at some future time when all the signs are favorable, I propose to appeal to the photographers for selection and contribution for a photographic type of that representative woman whom they consider the most beautiful; that is, to obtain from each one his standard of female beauty. And this collection shall pass into this great museum in which you now hold your meetings and stand in future years as the standard types of the photographic beauties of the nineteenth century. *Thomas Wilson.*

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#### DEVELOPING.

[Read at the Washington Convention of the P. A. of A.]

DURING the past year there has been little change in the methods of development. Pyro still stands as the favorite although several substitutes have been used and suggested.

Eikonogen has advanced into favor, many of the

dry-plate makers giving eikonogen formula for use with their plates. I have used it with great success in short exposures, and my experience with it is, that you can afford to give one-third less exposure than for pyro, and I feel sure that one cause of the complaint that sufficient intensity cannot be obtained with eikonogen arises from over-exposed plates and *new* developers, for a plate exposed for pyro development will be over-exposed if developed with freshly mixed eikonogen. This was proved to my entire satisfaction upon some Eastman films exposed in a No. 2 Kodak on Decoration day, when the light was very bad for map shutter exposures.

The first twenty exposures were developed with the potash pyro developers known as Hoover's developer, a developer which I have handled most successfully upon all kinds of exposures, but they proved so hopelessly under-exposed that I put the other part of the roll aside, thinking it was not worth the trouble to develop them, but Dr. Weigal, one of the members of our Camera Club (an ardent experimentalist) brought me some eikonogen developer he had mixed, and I developed the rest of the films, and got at least one-third more out of them than I got on the first twenty with pyro development, and some of them (all things considered) making good printing negatives. Dr. Weigal's formula for mixing the eikonogen developer is: 48 grains of eikonogen is dissolved in *hot* water, add to that 2 ounces each of a solution of sulphate of soda (hydrometer test 60) and carb soda (hydrometer test 45), then add enough water to make up 8 ounces in all. For over-exposure this developer can be restrained with bromide of potassum the same as pyro. For snap shutter exposures this is the best developer I know.

The potash pyro developer (Hoover's) I have referred to is too well known to need the formula being given more, but I would again call attention to the method of using the sulphate of soda. In the majority of formulas it is divided between the pyro solutions and the potash or soda solutions. This is wrong in both theory and practice. If it requires four (4) atoms of sulphate of soda to one atom of pyro to get the best effect from both, then it stands to reason that the whole of the sulphate should go into the pyro solution, if you could always be sure of using exactly the same amount of each solution then it might be divided, but even then there would be no advantage in dividing it, but where different exposures and subjects require first, more soda and then more pyro, the balance of 4 to 1 is being continually upset.

Why is it that so few photographers on this side of the Atlantic use liquor ammonia as accelerator

instead of potash or soda, there are a few, and those few among the best known names who produce high class work, who do use it, but they are the exceptions.

The deposit caused by ammonia is exceedingly fine, the softness and gradations everything that can be wished, and you can get more out of a given exposure by ammonia than by any other alkali, but few photographers like the color of the deposit, which is greenish gray, and they are generally deceived by the apparent thinness of the negative, but I think if photographers would only get over the idea that they want their dry-plate negatives to approach as near as possible in color to a wet-plate they would find many advantages in the use of ammonia. For copies for enlarging upon bromide papers there is nothing can beat an ammonia developed negative.

If photographers want a wet-plate color and effect why do they neglect the oxalate developer. Many German and French photographers of the highest rank have used oxalate from the first, and still continue to use it. With a full bodied plate, that is, one rich in silver bromide, and particularly one which contains a small proportion of sodide of silver the oxalate developer gives fine results, and the old wet plate man can delight his eyes with a negative which very nearly resembles a wet collodion plate. In many cases I have been able to use oxalate upon a plate that with pyro has been hopelessly spoiled by green fog.

*G. Cramer.*

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### RETOUCHING.

[Read at the Washington Convention of the P. A. of A.]

THE little talk I shall make here on the subject of working the negative will occupy but a few minutes. My purpose is simply to say a few words on what I consider the natural office of retouching, with some reference to the enormities with which it stands charged as practiced to-day.

I am glad that the journals have lately been giving this matter a wider attention, and that the management of this association has thought it well to bring it here for discussion.

Some of us remember when this baby was born, twenty odd years ago, and how much it was thought to add to the resources of portrait photography. It was held as a secret in the town of Boston for a little time after its advent, and pilgrimages were made by ambitious men from outlying towns with a view to discovering the methods whereby such phenomenal work was produced. One asked to be allowed to measure the angle of the skylight; and another returned to his own city

and proclaimed that he had captured the idea. His watchful eye had, during his call, caught sight of blue mosquito netting under the skylight, and he reasoned that the meshes corresponded to the stipple that appeared upon the print. This conjecture, it afterwards transpired, was not correct.

A while back I was present at a club supper where a gentleman read a paper on lying. The gentleman was a lawyer, and it must naturally occur to you that he would possess great familiarity with his subject. He considered lying under three heads: the natural liar, the artistic liar and the d---d liar. For convenience of illustration, and because of the close analogy of the subject, I shall make the same classification.

Natural retouching may be said to be such corrective work as will be unobtrusive, supplementing only the shortcomings incident to the process. Photography does not always render a face as we see it; and in order to bring the picture to as close a representation of life as possible more or less work is required to be done; and this needs no excuse. For instance: either from a slight under exposure or heedless development, your image lacks that soft blending of lights and shadows seen in nature; the lines are hard, and a general exaggeration of the defects of the face is the result. It may be said that the most direct and effective way to remedy this is to make another negative. But there are often reasons why you had better not; you may have secured such a fine pose, and withal so pleasing and unconscious an expression (which has eluded you in every plate but that), that it makes one weary to think of renewed attempts. Perhaps the proofs have been shown and the sitter will have that and no other. Clearly then you must make the most of that negative; you must coax the shadows down, soften hard outlines, and try to make the flesh presentable. It is hardly necessary to say that when you have done your best, if you commend it to the sitter it must be with some mental reservations regarding technical value. Still retouching has helped you out, and made respectable what otherwise would have been wholly bad. Or supposing the exposure and development had left nothing to be desired, perhaps the skin of the subject has appeared upon the plate as an exaggeration of blemishes; or patches of color have assumed the form of depression. Such work as will correct this is surely called for. Or again, your sitter has a face full of angularities, which no lighting under heaven (unless accompanied by an over-exposure that will make it flat) can quite keep down to natural limits. Then the pencil is your friend again. Many people sitting in a light

stronger than that to which they are accustomed will scowl a little. The expression can often be made wholly right by a little judicious softening of the lines in the lower part of the forehead. Perhaps the whites of the eyes in the photograph may appear darker than in nature by reason of a tinge of yellowness, often noticed in persons of bilious habit, or the same result may be had from a congested state of the minute blood vessels. Then it is very easy to bring back the relative whiteness by a few touches with your pencil.

Other illustrations of what may be called natural retouching will naturally suggest themselves to you.

Artistic retouching embraces all this and a good deal more; when elaborately done, the entire face and even a part of the drapery has been carefully worked over; the modelling of the face has been conscientiously preserved, the lights and shadows blended, the skin brought to a soft, textury appearance, a tendency to fatness, when present, has been corrected, a high light strengthened here and there to give a little more pronounced effect, and a general bringing of the face into tone and value has been accomplished. I need not say that a negative worked in this way can only be done by an artist.

D—d retouching (if so emphatic an adjective may be used in this presence) aptly describes the treatment that a tremendous majority of all the negatives made in these days receive.

It is of the most heroic character; and when the artist in banded hair has concluded her labors, nothing remains of the original negative but the outline. She proceeds in free and easy defiance of all the laws that govern the production of natural objects of light and shade. All the characteristics of the face go down before her ruthless pencil; wrinkles disappear, depressions are made to rise up; delicate tracings of muscles are obliterated; and when all is done the eyes and mouth are the only features that remain intact; and they are so out of value with all that surrounds them that they appear like floating islands in spherical sea of polished marble. I do not blame the retoucher—she works up to what is required of her, and what she is praised for doing, but this is the photographic portraiture of to-day. The highest ambition of the negative worker is to finish to a smoothness that rivals porcelain; no thought or care for the modelling or all that subtle quality of rendering so vital to the likeness; no feeling for portrait effects—only a phrensy for a smooth mechanical surface and a struggle for rotundity. It is useless to remark how worthless such photo-

graphs are in the eyes of all people of artistic feeling, or even to those who seek a likeness, or how degrading it is to photography! Nothing contributes more to remove us from a recognition as artists, about which there has been such a senseless clamor for the last few years.

The baneful effects of this ignorant and ridiculous work is recognized, I think, by all our best photographers. Adam Soloman, as far back as 1874 (when this monster was but a tadpole) deplored the practice of retouching. Kojlander, the great Parisian photographic artist, writes: "I think the practice of retouching the negative a sad thing for photography. It is impossible for even very capable artists to rival or improve the delicate, almost mysterious gradations of the photograph. I consider a touched photograph spoiled for every purpose." You will notice that he does not qualify these statements at all, or admit that retouching may be employed in any case.

The President of this Association writes, in a recent contribution to a year book: "How often do we make negatives so nearly perfect, and so closely approaching our fancy, that but a few touches seem necessary to complete them; and we feel that if only those few touches could be properly made they would certainly be a "joy forever." But alas! they have only to go through the retoucher's hands to become a lasting reproach.

H. P. Robinson, than whom there is no better authority on either side the Atlantic, says: "A great deal has been said against retouching, and very little in favor of it; yet it is practiced to such an extent and carried so far that individual likeness is almost abolished.

"Highly touched portraits used to remind us of wax-works or marble, but it has now passed that stage of untruth."

It seems to me that the best men on the other side of the water are more outspoken on this matter than photographers here, and as far as my opportunities enable me to judge the evil has been greatly mitigated there.

Perhaps the worst feature of all is that the great mass of people here, old and young, want this bastard work. They have become educated up, or down, to it, and cry out a truthful, legitimate representation: "*Away with it!*" Particularly is this the case with persons past middle life. The unaccountable feeling seems to possess them that to grow old is shameful, and they clamor for photographs that give them young, old faces. He who ponders most to this wretched vanity will be exalted in the market place, and by the fireside.

Well, what shall we do? The public have

elected that a shining puff-ball is the *ne plus ultra* of photographic art; and the artistic world has decided that there is nothing so common and debased as portraits by photography. He who refuses to conform to the standard set up by the public will have to forego their orders. I know whereof I affirm, for I have tried it.

Still there is a cloud in the sky, which if no bigger than a man's hand now, is going to overcast the heavens by and by; and the parched and wearied soul of the true photographer will be made glad by the refreshing rain of appreciation. Already there are many people who are sick of this miserable misrepresentation, and the member might be greatly increased, if men of the better class would drop their weak-kneed policy, and work for the best results instead of the most profits in the immediate present. Truth will prevail in photography as in all else.

I do not wish to be understood as inveighing against retouching, for we all know it is a great help when properly employed. Yet I am of the opinion that, taken as a whole, the photographs made in this country for the last ten years would have been infinitely better had retouching been unknown.

To the conscientious photographer, he who seeks to give present and permanent value to portrait work, the question of working the negative is a more serious and perplexing one.

*D. L. Hurd.*

### THE AUTOMATIC OPERATION OF PHOTOGRAPHIC APPARATUS.

[Read at the Washington Convention of the P. A. of A.]

THE need of automatic instruments has been more keenly felt in the prosecution of eclipse research than in any other department of scientific investigation where photography is an adjunct. I refer of course to the work which goes on during the total phase of a solar eclipse, which is usually only two or three hundred seconds in duration; when the great variety of special problems necessitates a variety of instruments correspondingly great; and when the startling phenomena of the critical moments often occasion the hand to fail in executing a well-rehearsed programme.

At the last total eclipse, visible in Angola the 22d December, 1889, a novel combination of apparatus was for the first time brought into operation, and although clouds prevailed during totality, thus precluding the possibility of photographing the solar corona, the working of the apparatus was so successful that a description of it will not be

without interest, in view of its possibilities in eclipse-work in the future.

In equipping the U. S. Eclipse Expedition to West Africa, I recognized three essentials: (1) a great variety of instruments, (2) large scale pictures of the corona, (3) the necessity of perfect clock-work. I saw no better way to meet these conditions than by constructing an equatorial mounting sufficiently capacious to accommodate all the photographic apparatus. Accordingly a split polar axis was built of six-inch wrought iron tubes, about eleven feet long, and placed two feet apart. The whole was mounted English fashion, on massive cast iron supports, capped with brass bearings. This was built by Mr. Saegmueller of Washington, and I was fortunate in obtaining from him the loan of a very perfect and powerful clock-work to drive it. This latter was in process of construction for the great equatorial refractor of the Denver Observatory, and I found its centrifugal governor, a triple-twist flexible steel spindle, to perform with the highest accuracy. Also, the means provided by Mr. Saegmueller for adjusting the polar axis into parallelism with the earth's axis proved to be very neat; and the adjustment was readily made so close that, with an hour's run of the clock, the declination error on the plate did not exceed 20 sec.

On this axis was mounted all the photographic apparatus for the total eclipse, and a high-power directing telescope to verify the pointing of the whole.

This comprised the following apparatus:

(1) Professor Pickering's reversing-layer spectroscope for photographing a spectrum-trail for fifteen seconds both before and after second and third contacts.

(2) Five photographic telescopes, the first a Clark 150—8 doublet, twelve exposures, two being through a Carbutt orthochromatising screen; the second a Dallmeyer 38—6 portrait lens, sixteen exposures; the third a Dallmeyer 24—6 portrait lens, four exposures; the fourth a Ross 42—5 portrait lens, eighteen exposures; and the fifth a Gundlach 22—3.75 aplanatic orthoscope, with one specially prepared plate for the extreme outer corona, and other circum-solar objects.

(3) Two catoptric telescopes by Brashear, with twenty-five exposures for each; the first having the ratio 33—8 with the central 3 inches of the mirror sacrificed to the plate-holder, while in the second, 7—23, the entire aperture was made available by setting the plate-holder at one side of the tube, and tilting the mirror slightly, as in the Herschelian form of mounting.

(4) Five dioptric telescopes, with objectives

uncorrected for the actinic rays, the first a Clark-Merz 96-6.4 objective, twenty-five exposures, of which five were made with the full aperture, and five each with apertures of 5, 4, 3 and 2 inches; the second a Schroeder 22-6 triple objective, one hundred exposures; the third a Clark 72-5 telescope, with the sun's image enlarged to 4.5 inches diameter, four exposures; the fourth a Spencer 36-4 objective, eighteen exposures, divided among apertures varying from 1 to 4 inches; the fifth a Clark 49-3.5 objective, twenty-five exposures. This latter instrument was intended to provide pictures precisely comparable with those of the eclipse of 1889, Jan. 1, taken by Mr. Barnard, and accordingly the aperture of the objective was capped down to 1.75 inches.

(5) Two flint-glass spectroscopes, and one quartz spectroscope.

(6) Two duplex cameras for photographing the polarization of the corona.

(7) A duplex telescope of 75 inches focal length for coronal photometry.

The finder, or directing-telescope, was a  $7\frac{1}{4}$  inch Clark refractor, with a high-power eye-piece.

In all, the apparatus mounted upon the polar axis embraced two mirrors and twenty-three objectives.

The operation of it by hand, as ordinarily, would of course have been impossible. My experience during the elipse in Japan two years previously had suggested the desirability of automatic operation of all eclipse apparatus; and as a result of much experimentation with different electric and pneumatic devices, I finally ventured to adopt the pneumatic valve-system covered by the letters patent of Mr. Merritt Gally.

By means of this unique and ingenious system, which has been largely employed in the automatic playing of musical instruments a very small current of exhaust air, say of one-tenth inch diameter, is made to control an exhaust-current, very many times greater in volume.

A system of forty-eight such valves offered no difficulties of construction whatever, and was built in ten days time under the immediate personal supervision of the inventor. The tubes leading from the valve-ports were of half-inch diameter. The control currents were governed by a succession of one-tenth inch apertures punched in a strip of paper about nine inches wide and seven feet long. This I wound upon the barrel of an ordinary chronograph so that it would unwind at a perfectly uniform rate when the chronograph was set going. As the paper left the barrel it passed over the "tracker" and was re-wound upon a take-up roller. The whole was mounted over an exhaust organ-bellows,

strongly built and with springs of triple tension. This combined apparatus made a perfect pneumatic commutator, having forty-eight air-currents in perfect control. In order to set any current in motion, it was only necessary to puncture the control-sheet at a point whose  $x$  was equal to the time, and whose  $y$  corresponded to the number of the air-port in the "tracker."

From the commutator, half-inch lead pipes were run to the position of the different mechanical devices which were to come into action during totality. Here they were connected with small pneumatic bellows of the ordinary V-pattern.

Each bellows, then, was so connected by appropriate mechanical movements that its collapsing-thrust should perform the various sorts of work required, whether the operation of an exposing shutter, the revolution of a nicol, the variation of available aperture, or the shifting of a photographic plate.

In such a variety of apparatus, it was impossible that one form of mechanical movement should suffice for the whole. The requirements of some of the instruments were best met by shutters which the pneumatic bellows held open against the action of a spring during the full length of the exposure; while others required that alternate actions of the pneumatic should open and close the shutter, or exposing slide. This was easy enough; but the problem of changing the sensitized plates for new exposures turned out to be much more difficult, especially where a large number of exposures was required.

Where the plates were small and the exposures few, a sliding plate-holder was found to work best; here it was only necessary to fasten a ratchet to the back of the plate-holder and then attach a pawl to the vibrating side of the bellows. But some of the plates were of the size  $17 \times 20$  inches, and they could not be advantageously managed in this way. I finally hit upon the idea of attaching them to a revolving crate or barrel, set in motion on its axis by means of a small weight fastened to a cord wound upon a pulley or wheel at one end. The whole was then rigged escapement fashion with detents equal to the number of plates; and each detent so adjusted that when at rest, its corresponding plate lay in the focal plane of the objective. A very small pneumatic then sufficed as a pallet, or as a trigger to set off the mechanical device on the conclusion of each exposure. This simple movement was found to be sure of action, easy of construction and to require a minimum of time for shifting the plates.

Also, the capacities of other devices for shifting

plates were tried. At the focus of one of the smaller instruments a plate was set in a small frame sliding laterally in a frame of twice its own dimension, and this latter again sliding longitudinally in a shallow box of twice the dimension of the outer frame. By means of three pneumatic bellows, appropriately set and fitted with ratchet movements, every part of the sensitive plate was brought to the centre of the focal plane, and the exposure duly made.

For the reflectors, it was found best to employ an endless chain or belt of plates, double-hinged together by means of continuous flexible tapes.

In order to test the utmost capacity of the automatic apparatus, and at the same time to furnish a large series of pictures of the same corona with a given instrument, a quick-acting lens was rigged with a long plate-barrel, sliding automatically forth and back in a frame rigidly attached to the tube. The barrel had ten plate-strips upon it, and the ratchet movements gave ten exposures for each strip. In this manner one hundred exposures, from a half second to two seconds long, were readily obtained with a single instrument.

In order to avoid the construction of a camera box for each telescope, I adopted the the plan of mounting the polar axis near the middle of a large Ducker portable house, one end of which had a removable roof, while the other formed a dark-room. The spaces between all the instruments in the axis were readily stopped, and a partition athwart the house was built up underneath the axis, and down from the rafters of the house. It was then a simple matter to connect the partition with a wooden frame around the exterior of the polar axis, by means of heavy opaque cloth, secured to the partition and the frame, with sufficient slack to allow the necessary motion of the polar axis and all the instruments mounted on it.

It may be further stated that substantially all this apparatus was devised, constructed and tested at sea, during the voyage of the U. S. S. *Pensacola*, from New York to Saint Paul de Loanda.

Notwithstanding the evident impossibility of securing any pictures of the corona, as a thick cloud stood nearly stationary over the sun at the time of totality, the pneumatic commutator was brought into operation and the control-chronograph set going fifteen seconds before the predicted time of second contact. The duration of totality was 190 seconds, and over 300 exposures were made. The automatic movements of exposing-shutters and the other apparatus in the uncovered portion of the house were apparent; while in the absence of pictures on the plates, the accurate registration

of the movable plate-holders was rendered certain by the subsequent examination of marks so placed upon the slides and revolving barrels as to disclose any failure of the mechanism to act.

After many months of experimentation, it may now be said that the automatic operation of a large amount of photographic apparatus simultaneously has been carried beyond the experimental stage. Many of the mechanical applications which operated successfully at Cape Ledo might evidently be covered by letters patent, but their use will not be so restricted. The simplicity and directness of the methods employed leave little to be desired, while the moderate expense of the apparatus puts it within easy reach. Of course, the equal facility of its application to the automatic working of every sort of physical apparatus will not escape notice.

*D. P. Todd.*

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### Notes and News.

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**As We Go to Press** the regular annual Field Day and Dinner of the Photographic Section of the American Institute is occurring at Glen Island. Next week we shall have a full report for our readers.

**Prof. Pickering**, basing his conclusions on a series of photographs of the planet Mars in April, concludes that the southern temperate regions of Mars have just experienced an irruption of polar ice no less remarkable than that which still adds the zest of danger to the navigation of our own North Atlantic.

**Mrs. John Wallace**, one of the most prominent ladies in New York society, was thrown from her horse on Ocean avenue, Islip, L. I., Monday morning, and died a few minutes later. Her skull had been fractured. She was the wife of broker John Wallace, of No. 56 Broadway. She was very well known and a general favorite in society. She was a granddaughter of Commodore Vanderbilt and a sister of Vanderbilt Allen. Her mother was the eldest daughter of Commodore Vanderbilt. Mrs. Wallace was a member of the New York Camera Club and an enthusiastic amateur.

**Dynamite Blast Photographed.**—A daring feat in photography was performed last week by Dr. George H. Bailey of Boston. He succeeded in getting a fine negative of a blast of a ledge near Savin Hill, one of the largest on record, in which 250 pounds of dynamite were used. He did it at the risk of being crushed by some huge rock, and moved himself and camera out of the way just as a boulder several tons in weight was about to land dangerously near him. The picture was taken just as the dust and stones had reached their highest elevation, and is as interesting as it is rare.

**That ever-recurring question**—the shock to the camera resulting from the impact of the instantaneous shutter—has again been recently dealt with by M. A. Goderus in the *Bulletin Belge*. This gentleman points out the conse-



quences that must necessarily ensue from the cause in question—how the front of the camera is liable to kick up when the objective is released, and to be knocked downwards when it finishes its course, and a variety of other results too unpleasant to mention. To read M. Goderus' paper one would think that to attempt to obtain a correct instantaneous exposure must be a perfectly chimerical project. Instantaneous photographs, and even occasionally good ones, are however obtained, M. Goderus notwithstanding. To obviate these evils M. Goderus proposes to have the camera arranged on one stand and the objective on another, and to have them united by an india-rubber tube. This is very good, doubtless, from the theoretical point of view, but sometimes when one wishes to make an instantaneous exposure one is in a hurry, and in such cases M. Goderus' arrangement would lead to profanity of language.—*British Journal of Photography.*

**Background Paint.**—We reprint the following excellent formula from the journal of the Photographic Society of Sweden:

Starch.....	4 ounces
Water.....	12 ounces

Boil the above well, till it thickens. Then with a stiff brush cover the calico which has been stretched upon a frame, the corners braced with cross pieces to keep the frame in proper shape.

After the starch has been applied, the following makes an excellent coloring:

Common whiting.....	15 ounces
Powdered glue.....	5 ounces
Treacle.....	8 ounces
Water.....	3 quarts

When thoroughly mixed add

Lampblack.....	1½ ounce
Ultramarine.....	¾ ounce
Venetian red.....	¾ ounce

Put in the fire until hot, brush over the calico carefully with a broad flat brush (white-wash brush).

**Photographer Terrington's Suicide.**—Henry C. Terrington, who committed suicide on Monday afternoon by jumping from the Washington Bridge, will be buried this morning at 11 o'clock from the flat at 144th street and Bradhurst avenue, where he lived with his wife and two children. The interment will be in Woodlawn. His brother-in-law, Adolph J. Cohn, received a letter at his business address yesterday morning which Terrington had written a few hours before his death. In this he said he was tired of life and had concluded to end his misfortunes. He also expressed a desire that his body be cremated. At 12 o'clock, just an hour and a quarter before he took the fatal leap, he enclosed a few affectionate lines to his wife. Mr. Cohn says his brother-in-law had everything to live for, and he is at a loss to account for his suicide.—*N. Y. Sun.*

**A Sample Letter.**—The following is a fair specimen of many letters which the publishers of THE PHOTOGRAPHIC TIMES and of the TIMES ANNUAL are constantly receiving. This one is from A. J. Whalen, the "freak" photographer of Pittsford, Mich. He begins by saying: "It is my fortune to have a car for my pho-

graphic studio. It is also my good fortune to be the owner of four volumes of the TIMES ANNUAL, and to be a reader of THE PHOTOGRAPHIC TIMES every week. (I do not propose to be without either of them very soon). I send you some pictures from which you are at liberty to select an illustration for your incomparable ANNUAL. I shall be glad to find one of them therein, and shall possess the book as soon as it is out. I shall not be disappointed if none of them appear, but will try again. As you asked for proofs, I could not help showing my good will by sending them.

"What fine pictures you furnish us in THE TIMES! You ought to have every professional photographer as a subscriber."

The letter is dated August 26th.

**The Special Convention Double Number** of THE PHOTOGRAPHIC TIMES has met with words of approval outside of the Washington paper where it received so many flattering notices. The following are a few of the later extracts which we have noticed in some of the leading papers throughout the country.

"ONE of the brightest feats of trade journalism is the special double number issued during the recent national convention of photographers, by THE PHOTOGRAPHIC TIMES."—*Troy Times.*

"THE PHOTOGRAPHIC TIMES sends a double souvenir number for August, which is gotten up with great taste. The frontispiece is a fine specimen of the photographic art, and the text will be of interest to all photographers."—*The Toledo Daily Blade.*

"THE PHOTOGRAPHIC TIMES is the name of a New York weekly devoted to the art, science and advancement of photography. It will particularly interest amateur photographers."—*The Worcester Daily Spy.*

"The last number of THE PHOTOGRAPHIC TIMES contains a frontispiece, an admirable photo-gravure portrait of J. Scott Hartley, the sculptor, which is accompanied by a portrait bust of Daguerre, upon which the artist is represented at work."—*Louisville Courier-Journal.*

"Some of these papers have issued very handsome numbers for the Convention, especially THE PHOTOGRAPHIC TIMES, which published several pages about the halls of the museum and several others about Washington. The portrait of President Appleton, printed in *The Star*, Wednesday, was reproduced from an excellent piece of work in the TIMES."—*Washington Star.*

### The Editorial Table.

DIE PHOTOGRAPHIE MIT BROMSILBER GELATINE. Second Edition. Vol. II. by Ludwig, David & Charles Scolik. Halle, a/S. William Knapp.

The second volume of this work is divided into three parts: Orthosciagraphie (orthochromatic) photography; remarks on failures, their causes and remedies; and a collection of receipts and formulas.

When reviewing the first volume of this well edited and instructive book, we made objection to the inexpressible word "orthosciagraphie," which is not more descriptive of the method of reproducing color values correctly than the words orthochromatic or isochromatic.

The intrinsic value of this volume can hardly be sufficiently estimated. The authors have carefully selected

only those methods, that have been found to be reliable, and have given thorough satisfaction to the unfortunately scanty number of practitioners, who have made researches upon this wide field. Descriptions of the very valuable experiments and researches made in Dr. F. Mallmann and Scolik's laboratory we find repeated here, and we are glad to see that the pioneer work of these renowned gentlemen is thus made known to a much wider circle than "Die Mittheilungen" reached.

To the methods with erythrosine particular attention is paid, and justly so, for that dye is the most reliable sensitizer in commercial work. Ives' chlorophyll process is favorably mentioned, and the interesting history and subsequent analysis of the compound dye consisting of chinoline red and chinoline blue or cyanine is thoroughly rehearsed.

Color tables and reproductions, therefore, also photographs of the line spectrum made by Victor Schumann with various sensitizers illustrates that part of the book. The remarks on failures are written by an expert, the recipes and formulæ well chosen and instructive. A very fine photo-gravure portrait of Her Imperial Highness, the Archduchess of Austria, Maria Theresia, the distinguished artist and photographer, illustrates the book.

A third volume is promised to follow the second immediately. It will treat on instantaneous photography, and will probably be written by Lieut. L. David, one of the editors, and in every way a capable photographer.

Number 23 (the July issue) of *Sun and Shade* opens with a fine photo-gravure portrait of the Right Rev. Henry C. Pottor, Bishop of New York, from a negative by Rockwood. There is a photo-gravure reproduction from Henry Lerolle's famous painting entitled "The Organ Rehearsal." The Gettysburg Series, by W. J. Mozart, is accompanied by a picturesque view of Spangler's Spring. "The Challenge" appears to be a photo-gravure from an engraving. An excellent photo-gravure, from a negative by Mrs. Appleton, entitled "Winter Foliage;" a view of Naples, from a painting; a characteristic scene in Yucatan, and a negative of W. H. Jackson, of Denver. The number is closed by an example of modern colonial architecture.

THE first picture of the Daguerre Memorial comes to us from G. L. Hurd, of Providence, R. I. It is a panel, and appears to have been made by artificial light. We presume duplicates may be obtained by addressing Mr. Hurd at 257 Westminster street, Providence, R. I.

FROM J. Erickson, of 218 Twelfth Street, South, Minneapolis, we have received a couple of "flash"-light pictures of interiors, which are very good specimens of this kind of photographic work. The subjects are both interesting, and, and Mr. Erickson is to be congratulated on his success.

ENTREKIN'S "new palatial photographic gallery" at 1700 North Broad Street, Philadelphia, was opened September 1st. It is claimed to be the largest and best appointed photographic studio in the United States. The invitation card to its opening was certainly a very tasteful affair.

THE Harris Photo Supply Company sends a souvenir of the Detroit Exhibition which consists of illustrations

of the principal buildings and scenes of Detroit—the "City of the Straits"—reproduced from excellent photographs. Among the other advertisements of leading business establishments in Detroit in the souvenir we notice that of the Harris Photo Supply Company.

"**The Photographic Instructor** has reached a second edition and has been thoroughly revised to date. It is very admirably compiled work. The appendix is most complete."—*The Amateur Photographer*.

"It deals with every branch, almost, of in-door and out-door photography."—*The Photographic News*.

THE SECOND EDITION of Scovill's Photographic Instructor is out, and if it were possible, is an improvement on the original publication. Mr. Adams has furnished a perfect *vade mecum* for the amateur and plenty of valuable points for a professional.

Professor Ehrmann's appendix on the nature and uses of the various chemicals used in photography is alone worth more than the price of the book.—*The Photographic Herald*.

THE PHOTOGRAPHIC INSTRUCTOR.—Second Edition. This, as we have stated when noticing the first edition, forms one of "The Scovill (New York) Photographic Series." The fact of a second edition having so soon been demanded speaks well for the popularity of the volume. The topics treated are numerous, and are contributed by various writers on the west side of the Atlantic, including the names of Miller, Spaulding, Klauser Hull, Carbutt, and Mason, in addition to those of the editors, Messrs. Adams and Ehrmann, the latter of whom gives us as an appendix a concise and descriptive summary of the chemicals in most common use in photography. The topics which come in for treatment embrace the dark room, exposing, developing, intensifying and reducing, printing on various kinds of paper, retouching, copying, color-sensitive photography, and other things equally useful. 215 pages. Price one dollar in paper covers.—*British Journal of Photography*.

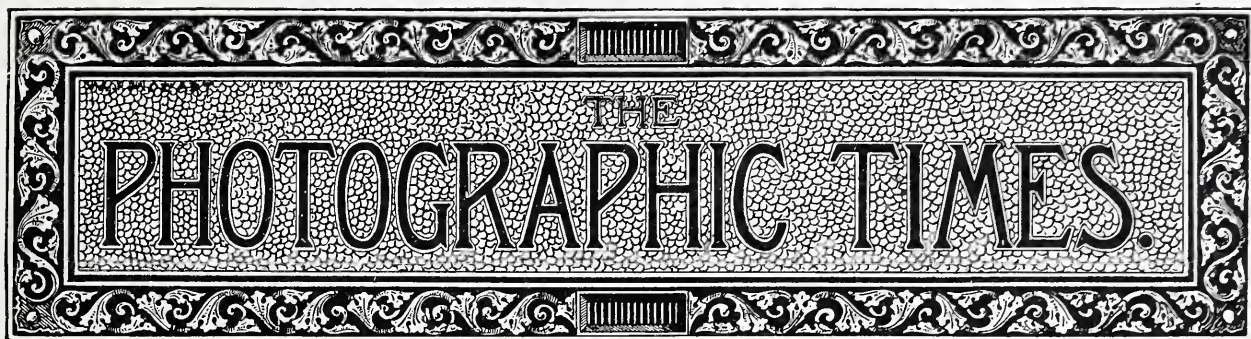
THE SCOVILL & ADAMS CO. are continually adding to their now valuable photographic series. They have just issued a second edition of *The Photographic Instructor*, edited by Mr. W. I. Lincoln Adams, assisted by Prof. Chas. Erbmann, the well-known teacher at the School of Photography at Chautauqua.

Their last work is on retouching, giving a thorough treatise on this important branch of the photographer's work and will be found very useful to those studying this line of work in the photographic studio.—*The Eye*.

THE ART AND PRACTICE OF RETOUCHING. "The improvements, together with the appreciation which has already called for such a number of editions, should give this manual a ready sale. . . . We sincerely commend the book to all desiring instruction on this important subject."—*Wilson's Photographic Magazine*.

**A Good Composite Photograph.**—Selby: They say that husbands and wives grow to look like each other, as they grow older.

Ponsonby: Is that so? What a splendid composite photograph old Plentypop would take, then! He's been married nine times.—*Burlington Free Press*.



# THE PHOTOGRAPHIC TIMES.

Vol. XX.

FRIDAY, SEPTEMBER 12, 1890.

No. 469.

## THE DAGUERRE MEMORIAL.

WE present our readers, this week, with the promised photo-gravure of Mr. J. Scott Hartley's monument to Daguerre. The negative was made by Professor T. W. Smillie, the National Museum photographer, at the Smithsonian Institution, and as all our readers can see, it is an excellent one in every respect. It gives an entirely satisfactory representation of the monument, and the photo-gravure has reproduced it in the best manner. Altogether, this picture makes a fitting souvenir for all interested in the Memorial—which should mean, and probably does, all who are interested in photography.

There yet remains something over a thousand dollars to be raised to fully pay for the monument. That nearly \$5,000 has been contributed within the year, is a cause for congratulation to American photographers. The few hundred dollars yet due will undoubtedly be collected in a few months. Let us make a last effort to complete the fund without delay!

The following letter, received by Mr. McMichael, Chairman of the Daguerre Committee, from a well-known firm, is significant as showing the state of feeling since the unveiling of the monument at Washington:

PHILADELPHIA, AUGUST 28, 1890.

MR. H. McMICHAEL.

*Dear Sir:* We have the pleasure to inclose herewith our check No. 9,435 on the Bank of North America for \$100, which we will ask you to kindly place to the credit of the Daguerre Monument Fund.

It affords us pleasure to avail ourselves of this opportunity to compliment you and your colleagues on the Committee for the artistic results of your thoughtful and arduous work.

We are, with kind regards,

Yours very truly,

A. M. COLLINS MFG. CO.,

EDWARD COPE, *Vice-President.*

The following extract from the *British Journal of Photography* shows how the movement is regarded in England:

“It says very much for the pluck and enterprise of American photographers that they determined to make a monument to Daguerre that would keep his name—as one of the great initial forces in photography—ever fresh before the citizens of the New World. After selecting a design, the cost of executing which was to be somewhere about six thousand dollars, subscriptions were appealed for, and, to the honor of the country, came in rapidly. The memorial was meanwhile being proceeded with.

“The *locale* of the Daguerre monument is in Washington, D. C., in which lordly city the Photographers' Convention has this year been held, under the presidency of Mr. J. M. Appleton. No time was lost in having all in readiness for the Convention, and one day was set aside to be exclusively devoted to giving honor to the illustrious Frenchman. Indeed, the unveiling of the monument thus prepared seems to have been considered as the great event of the Convention. The work (granite and bronze) was designed and modeled by the sculptor, Mr. J. Scott Hartley, New York. It stands sixteen feet high, and is placed in the Rotunda of the National Museum.

“That everything was carried out successfully, the following cablegram from Mr. J. M. Appleton, the President of the Convention, attests:

“‘Daguerre unveiled; grand success. Association sends greetings.  
‘APPLETON, *President.*’

“We have here merely to say that we admire the pluck displayed by our American brothers in doing that which ought to have been done long ere now in Europe.”

The London *Amateur Photographer*, stimulated into activity by the example of its American contemporaries, is promoting a movement to repair the tomb of Daguerre, which is rapidly falling into decay for the want of a small sum. Subscriptions amounting to ten dollars or so have already been received and acknowledged. Our enterprising *confreere* “on the other side” will acknowledge all subscriptions, in a special column, sent to that paper for this purpose. We shall be glad to forward any contributions sent to us to swell this fund, after acknowledging them in our own columns.

Subscriptions to our own Daguerre Memorial may be sent direct to Chairman McMichael, of the general committee, at Buffalo, N. Y., or to this office, as may be most convenient.

As an added inducement, we shall be glad to send a copy of this number containing the photo-gravure of the Memorial; or a separate impression of the photo-gravure, suitable for framing; to any one contributing a dollar or more to this fund. Of course, all contributions sent to us will be acknowledged in these columns. This is the last call. Send on your contributions before it is too late, and thus be numbered with the other photographers who are recorded as honoring the memory of a founder of their art.

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### GROUPS.

NOTHING tries the patience of the photographer more than taking groups, especially family groups. They generally come in late, and the mother spends another hour getting the youngsters ready. There are generally as many different complexions as there are subjects. The larger ones—especially the father and mother, are more trouble to pose and keep still than the small ones. They are so anxious for fear the little fellows will not do just right. The posing must be done quickly, placing the ones with dark complexions in the strongest light. (Let me say right here if any grandmas or aunts are present, require them to leave the room before attempting to arrange the group; their presences are not needed.) Focus on the center of the back row and use the largest stop that will give fair definition. The quickest plate should be used and the exposure as near instantaneous as the light will permit, especially if there are small children in the group. It is useless to attempt to take cats, dogs and other pets with family groups; it generally ends in failure and leads to profanity.

Then there are groups of young people, chums, and school classes to be taken. These are difficult to take and must be posed with great care to show to advantage. Such groups always contain one or two "smart Alects" that want to be getting off sharp sayings to make the others laugh. They must be silenced at the start. Inform them that you are the clown at this show and that, when you need their advice, you will ask for it.

After the negative is taken and retouched it must be varnished on the back with ground glass, varnish and crayon dust, applied with a paper stump, over the faces, hands, etc., that print too dark. As a general thing, group negatives are weak and must be printed through several thicknesses of tissue paper to give the best results.

### ANCIENT AND MODERN ART.

A WORD TO MR. EDWARDS-FICKEN.

MR. EDWARDS-FICKEN wishes no doubt to show that he knows as little of logic as of art, and he succeeds perfectly. I required to know nothing more of the latter point than was shown me in his saying of the old masters what I quoted in my notice of his former article and what he now says: "I would say what I have seen, and so has he (me) examples of all the masters of the 15th, 16th, 17th, and 18th centuries, which for depth of coloring, for truth of coloring, insight of the sitter's character, knowledge of drawing and skill in composition, could not for one moment be compared to the masters of to-day, or some of the works of the very names I quoted, and which he holds so cheap."

I should only say of such an argument, if it is intended as an argument, that it only puts as much ignorance of art before his readers as it is possible to crowd into the same number of words—ignorance which it is hopeless to attempt to instruct because it shows that he has no perception of the difference between art and the imitation of nature; and none of the distinctive character of the art of the four centuries he lumps together as if there were anything in common between them all except that they used brushes and colors to express their ideas, when they had any, which in the latter centuries was not always the case. I do not know what Mr. Edwards-Ficken has seen, but I have never seen any modern work, much less none by the little masters he quoted, which can compare for depth of color to some of the Venetians as seen in the weakest examples we have of them; with Michael Angelo for drawing, for skill in composition with many of the 15th, and even 14th century painters, Giotto (14th century) standing alone in all Christian art, an intellectual phenomenon, which does not belong to any school, and can be credited to none, but after him come Masaccio, Filippo Lippi, Benozzo Gozzoli, Fillipino Lippi, Ghirlandaio, Botticelli, Perugino, Raphael and Michael Angelo, with many minor men who were still greater masters of composition than any of our modern men and beyond all measure of comparison with any of those he named except Alma-Tadema; the only men of any modern school of whom I "have seen examples" who have struck the highest motive in composition being Leys, (Alma-Tadema's master), Rossetti, Burne-Jones, and, but with less of that spontaneity which is the chief virtue in composition, G. F. Watts and J. F. Millet.\*

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\* It is difficult to speak of Millet's power of composition, for his subjects are so simple that they never called out great power of composition, but his work is so perfect that nothing could be better as far as it goes.

When Mr. Edwards-Ficken talks of "truth of color" he shows that he has no conception of the radical difference between the color of art and the imitation of that of nature. The former has as much to do with the latter as the music of the opera has to do with the elocution of "Bob" Ingersoll, or the declamation of a good actor. That this fact has never dawned on Mr. Edwards-Ficken is still more clear from what he says with regard to the "unctuous pencil of Angelico" (but why unctuous, Mr. Edwards-Ficken? a drier painter than Fra Angelico, either in fresco or tempera, never painted) and the perspective of Canaletto (and what conceivable association between them there can be in his mind I cannot see) and from his criticism on Salvator Rosa "who it is doubted ever painted direct from nature." Mr. Edwards-Ficken is evidently unacquainted with the fact that none of the great masters ever painted direct from nature, which is entirely a modern practice, and that even some of our best modern landscape painters have not painted from nature, for instance Th. Rousseau and Turner. Claude never painted from nature, nor Gaspar Poussin, nor if I can judge from internal evidence did the great Dutchmen, Ruysdael, Cuyp, Rembrandt, Vanderveelde, or any of their school, and this is confirmed by all that tradition has handed down of their ways of working. They drew a great deal in chalks, but from Van Eyck to Hobbema not a single tint is, except by chance, true to nature in the sense of the modern painter from nature. The man who does not recognize this is incompetent to criticise art, however much he may know of nature.

I have no intention to put in my credentials as against those of Mr. Edwards-Ficken. He may be a very clever and successful painter for all I know, but that *per se*, does not qualify him for an art critic, and if he has been writing for the newspapers, and has limited his criticisms to the work he sympathizes with, he may have written some helpful things for people who are in the primary stages of the development of their taste, but if he has been attempting to teach art on any general principles he has been wasting somebody's printer's ink and paper, for he is himself only in the first stages of art education.

To a certain extent I can sympathize with him, for I have been painting more or less for more than forty years and writing for the papers—indeed I edited an art journal at one time which received considerable approbation from many of our best writers and artists of the last generation, as well as some of England, including Ruskin, and in the green stages of my development I wrote a great

deal of rubbish for which I hope to atone before I die; and if Mr. Edwards-Ficken will only let it into his head that he does not know all that is to be known of art, but that he is still in fact in the primary school, there is hope for him, though if his painting is worth anything I should advise him to throw his pen to the dogs and stick to his painting, for I never knew an artist to take to literature without ruining his art. I judge from his writing that he must be a very young man, and I should say that the loss of his considerations on art would not be seriously felt by the world, while his art might do great good and can do no harm. The fact that he has written on art for the newspapers is no proof of competence, for not one newspaper critic in twenty knows more about art than I did when I wrote for one forty years ago. I am free to confess that I wrote for twenty years under a complete delusion as to my competence, and therefore I do not think Mr. Edwards-Ficken ought to consider that I am over disparaging when I advise him to study twenty years more before he attempts to teach the most difficult branch of human study, the most difficult because the science of it is not yet established.

But to return to the subject of our differences, I must say that if Mr. Edwards-Ficken insists on pursuing his literary studies I should advise him to begin with a course of logic. It is an important subject for a man who is argumentative in his turn of mind. He says *that I said* that his criticism was "quite correct in principle and in the fact" and that therefore "it would seem unnecessary to touch further upon the point that the face should not be the highest light in the picture," etc. I might retort on Mr. Edwards-Ficken's reference to my logic by saying that he is *not* like the logician in Hudibras, for he cannot distinguish between the west and south-west side, for I distinctly said that while Mr. Duchochois' doctrine was unsound, that of Mr. Edwards-Ficken was equally so, and as both appealed to the masters to prove their positions, I said that the masters had painted portraits with the head in the highest light and with the heads not in the highest light, and that any rule was absurd in the matter. As the question was one which related especially to photography, it was so far one of fact, and on this side I maintain, as I then said, that a head may perfectly well be posed in such a light and in such a costume that the head shall be the highest light, and Mr. Edwards-Ficken's argument that this is an abnormal manner of treatment analogous to the posing an acrobat on his head is so silly that it needs no confutation. I don't know what he means by a photographic

untruth—certainly if he photographs a man in the attitude he describes, it is a truthful representation of the fact that a man was able to take that position. It would be admitted as a scientific bit of evidence in any court in the world. This is quibbling of the most ridiculous kind and does not touch the question in the least. Arranging a head so that the face shall be the highest light is a thing perfectly possible, perfectly natural, and in some cases highly desirable. If I were to photograph a friend who had a very dark complexion which he was desirous should not appear, I should make his face the highest light in the picture—should allow no white about his neck or in his sleeves, but subdue every accessory to a shade or more below the tone of the flesh. If a young girl wants to show off her brilliant complexion she should be photographed in gray, with no lace about her neck and nothing to tone the face down about her. The painters do not so treat the matter generally because they can appeal to color to give the brilliancy, and they want the tone to get depth of color and in fact must have it whether they have white about the head or not, but to do it would not be unnatural, and might be in the highest degree artistic.

When, therefore, Mr. Edwards-Ficken says: "I wrote of an ordinary truth, and a truth that is self-evident to any ordinary observer, leaving all artistic training and study out the question, when I said that the face is never the highest light in nature," he writes an ordinary falsehood and one that is continually shown to be so. It is not the truth with regard to nature, it is not the truth in regard to art and it need not be the fact in photography. Mr. Edwards-Ficken apparently cannot distinguish clearly between the usual and the possible, and that he does not know the difference between nature and art; he has taken the pains to declare in so many words "whatever the century they (painters) cannot make work untrue to nature good art, nor will age hallow bad art founded on distorted views of nature;" in which assertion the logic and the doctrine are equally bad, for the highest and noblest art is continually untrue to the facts of nature, and bad art is quite possibly true to them; but bad art, and art untrue to nature, are not by any means convertible terms. As to Mr. Edwards-Ficken's exception to my instance of Mona Lisa that the neck is more highly lighted than the face, I am unwilling to assert what the case is without the evidence at hand and I am in the midst of the Appenines far from either a photograph or the original, but I am satisfied he is wrong in the fact as he puts it,

but even if the neck were a higher light than the face it would not effect the principle, for when we speak of the head it means the flesh above the shoulders, in contradistinction to the hands and the accessories of background. And since Mr. Edwards-Ficken is a stickler for the history of art he ought to know that the Mona Lisa *is* a portrait, and that the circumstances of painting it are perfectly well-known.

I do not think "I have been rash" in assuming that Mr. Edwards-Ficken knows but little about art, for when any one talks of studying the old masters to learn what to avoid, and selects two young painters in the early stages of art development as example against them, it is difficult to exaggerate his incompetence to talk about art.

*W. J. Stillman.*

NOCERA DI UMBRIA, August 23d.

#### PHOTOTYPE OR PRINTING IN THE CHLORIDE OF SILVER EMULSION.

[Read at the Washington Convention of the P. A. of A.]

THIS process is not new, and yet it is new to many photographers in this country. Photo-paper is coated with an emulsion of chloride of silver in gelatine or collodion, in the presence of a certain proportion of an organic silver salt. Gelatine and collodion papers differ essentially in several points. The latter curls more or less during the operation of washing, thus causing the film to crack and come off the paper. The finished prints are also very easily injured by rubbing. Gelatine, chloride paper may be worked same as albumen paper without any trouble. The most objection to it is the softening of the gelatine film in warm weather. This, however, is easily overcome and the film rendered insoluble by the application of alum. The paper should be jointed and toned same as albumen paper, in a neutral gold bath but not quick or strong as for albumen, and then be fixed in a alum hypo bath. Recently I have tried a formula given by Mr. G. Cramer of St. Louis. The results were surprising: 1 lb. of hypo, 1 lb. of alum and  $\frac{1}{4}$  lb. of bicarbonate of soda are dissolved in one gallon of water and left a few days to clear.

In this bath the gelatine film becomes as hard as leather and appears to be almost indestructible, without showing any tendency to crack when bent sharply. It is also not injured by water after being dry. Such prints are mounted same as silver prints and dried between blotters. Hot burnishing gives glaci finish. This is also obtained by sonelgeling the wet print on a ferrotype plate or on talced glass, which is very convenient for ama-

teurs. The prints remain perfectly flat after glazing and require no mounting. Gelatine chloride paper may also be toned and fixed in a combined bath, such as recommended by Dr Liesegang. This bath should not act too quick. If the prints tone in less time than 10 or 15 minutes, they should have a subsequent fitting in a weak hypo-bath, otherwise they may be placed in above mentioned alum-hypo-bath for about 5 minutes, just as coming from the printing frame; if desired they may be previously marked in 2 charges of water. After rinsing in water they are placed in the combined bath and toned. This last method is one of the best, according to my own experience, to work artists' paper. There is no fear of stains caused by hypo or uneven toning. The film is hardened on the first immersion and the high lights are perfectly clear, the shadows rich and brilliant, furthermore, two colored prints are not obtained, the lightest and deepest shadows have exactly equal color.

The general advantages of aristotype paper are the brilliancy and depth of tone and the preservation of all the fine details and half tones, which are in general lost by albumen. The paper will also not stretch and cause destruction.

One drawback has prevented me sooner to be able to place a perfect gelatine chloride paper on the market, not having been able to obtain the proper paper for the process. The requirements for such paper are to be pure and free from the least trace of form, and to be coated with a very fine substratum, neutral to the above mentioned silver salts. I am pleased to say that thin paper is now in my possession, which enables me to place a fully reliable aristotype paper on the market, which any one may work with ease and to our entire satisfaction.

*Louis Bradfsch.*

### LIGHTING.

[Read at the Washington Convention of the P. A. of A.]

THIS paper is not written with the idea of giving any of the older heads anything new, but as a starter, in hopes that we may hear from some of them, and get more practical ideas than I am able to give.

I was somewhat surprised at receiving a request from our worthy President, calling for a paper on lighting, and no doubt you will be glad to learn it was to be a short one.

The question is: "What is Lighting, and is it best to know it on *scientific principles*, or to train the eye to know *when* the lighting is correct.

Do you ever stop to think, while lighting a subject, why you move the curtain a trifle higher, or

the side curtain a trifle lower, and see how long it would take to give a more satisfactory answer than that, it did not suit your eye, as it was, but by that movement it was satisfied?

Now, how can the eye be tried? Of course, we must know the principles of light and shade first. These I do not propose to speak on, as it would take too much time, there being so many books published on this subject, so I will only give my own experience in study, and there may be a good point in it all somewhere, I hope.

After working at the business some time I found the only practical chance to study lighting was when some one was paying for what they thought a graduate's work (not a student's), and while making my sitting, my thoughts were so busy on all details that I had no chance to give my eyes the necessary training, so I made and placed at a window, a light about three feet long, in the same proportion to the one I was then working with, and used as my subjects, small dolls, and at my leisure, with my little dumb subjects, experimented with light, and in that way spent many a happy and profitable hour, and became quite in love with my models because they never dictated to me, and not one of them ever said they would as soon have a tooth pulled as sit for a picture.

On the floor of my model light, I made a large circle, and found by placing my subjects on, and moving them around the circle, I had produced almost every light that is needed in portrait work. When tired of portrait work, I then tried fancy lightings and groups, trying to reproduce a light I saw in "so and so's" photo, or in a painting, or a lighting in a street car.

Did any of you ever notice the number of different lightings you may see in a car? There are more chances to study good lightings there than many are aware of.

If I had an appointment with a subject where there was a chance to make something nice, I would get my little models and have a practice before the subject came, thereby ascertaining exactly what I wanted, and where to place my subject.

After learning my model light, I always seemed to have an imaginary circle in my operating room, and knew where to place a subject for any light I might want.

There is fully as much in lighting a face as in expression. If you take a subject with a drooping of the mouth on one side, or strong lines about the nose and mouth, and make what some call a "Shadow Lighting" (why they call it so, I have

never been able to find out) you will make the lines very prominent, causing more work in retouching, and not as satisfactory a finished print as if a plain soft lighting had been used.

In lighting white drapery, I advocate posing the figure well *under* the light, and with the use of the head screen and reflector, soften the lights on the face only, leaving the drapery strong and bold. Some operators object to the use of the screen or reflector. I have worked under lights where I found it unnecessary to use either, the light being ground glass, and always soft. I have also worked under a clear glass light, and used no screen because my customers did not see the difference between a black and a white picture, and one full of gradation, and I did not know the difference; so we were both happy, and our eyes satisfied, but as my eyes received more training, I found I had to improve my work, or close my eyes.

I once worked for a gentlemen who posed a subject in a white dress about four feet back of the open light, and got a pretty light on the face by turning it from the light. But the drapery! Well, when I had developed the plate it was condemned, because I had not made good in the dark-room what he had ruined under the light.

Now my brothers in the profession, if you find anything in my paper that is weak, and needs intensifying, just keep it to yourself, and do your own intensifying.

*E. P. King.*

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#### ALBUMEN PAPER.

WHAT can be said of albumen paper, that long-suffering, ill-used servant of the photographer? How often has it been abused in the columns of our periodicals; how often do we hear the cry that it does not fill the requirements of the photographer, and how often have manufacturers endeavored to displace it in public favor by the introduction of collodion and gelatine papers?

Notwithstanding that albumen paper has long outlived its infancy, it is still subject to many diseases incident to childhood, namely, scarlet-rash, measles, spotted fever, and eruptions of the skin, etc.; and then the many cases of general debility and weakness; that impure condition of the blood producing the distressing malady—blisters, which is the worst of all, and by far the most difficult of cure. All this may be true, and yet I know nothing more amenable to kind treatment than the albumen paper.

It will not be necessary to go into the particulars of its manufacture, they are too well known. In fact, nothing that I can say is entirely new. The

whole story is something more than a "Twice Told Tale." With the full knowledge of its manufacture, and with the instructions given in the standard text books, it is difficult to understand why so many complaints appear in the columns of our magazines. One cannot run through a copy of any one of our photo journals without meeting subjects with such titles, as "How to Prevent Measles;" "How to Prevent Blisters;" "What I Know about Blisters," etc.

A photographer from Texas, writing to the *Photographic Bulletin*, says that for ten years he has been trying to find a brand of paper that would blister under his treatment. Another retorts in the next number of the same magazine, that all Brother —— has to do is to come over to this country and he will be seeking for a brand of paper that will not blister. One will advocate plenty of alkali all the way through the manipulations, and a weak hypo-bath with about an ounce of strong ammonia to each gallon of solution, and defies blisters. Another says: not so much ammonia and strong fixing-bath. One says from 30 to 40 minutes fuming, another 20 to 25 minutes. One writes that the water is so hard in his locality that he can't do anything with his prints in toning and fixing unless he first softens the water with more lime or ammonia, and that his prints were covered with a white deposit, which he cleaned off with acid after they were fixed and washed.

It is not my purpose to enter into an argument as to the best method one should employ in the production of silver prints on albumen paper. Any of the methods given in our standard text books are thoroughly reliable, and the mere fact of their being published in these books is a sufficient guarantee of their merit. Therefore, this being the case, it simply resolves itself into the manipulation and the working. There are certain rules to be observed—namely, cleanliness, and an attentive regard to the condition of the chemicals and weather; this done, the intelligent printer is prepared for any emergency, and watches the barometer very much as a physician would watch the pulse of his patient, and can guard against the varying conditions of the temperature, and thereby prevent the ills so much complained of. A little experience and observation will soon teach him that Red Measles indicates weak silver or not an over-strong bath and insufficient fuming; that Black Measles shows that his paper is insufficiently dry before fuming; that rusty brown printing means an acid condition of the silver solution, or a bath very much clogged with impurities, albumen, etc. These two faults will also produce Red



Measles. (At a time like this the bath must be renovated by evaporating and sunning) That prints which come up hard and blue, lacking brilliancy and with a crackling appearance, indicate a very alkaline condition of the bath. Albumen paper will take up the silver solution more readily and evenly, if it is previously dampened in a box built for the purpose, than it will in a dry condition. When it is slightly limp, the tendency to tear in cold weather will be largely overcome, but this will not occur if the sensitizing room is kept at a uniform temperature of 70 deg. Again, prints bronzing too deeply, even in the light shadows, indicates too much strength of silver; and that this same strong silver will also produce measles of a peculiar kind owing to the lack of silver absorption in the sheet of paper.

Do not forget that strong silver has a coagulating effect on the albumen, and that the paper must be floated sufficiently long to permit the complete saturation of the albumen film. If this is not done, the effect will be the same as when the silver is weak. In toning, the intelligent printer will learn that in those prints which evinced symptoms of measles the disease will develop with frightful rapidity, and that the prints are forever ruined. He will observe that the rusty brown prints cannot be improved in toning.

He will also have cause to remember that prints which indicate excess of alkali will, ten chances to one, soften in the toning bath, and the surface is likely to rub completely off. And that a too rapid action of the chloride of gold will cause a precipitation of the metal in the form of minute red spots. In such a case common salt added in small quantities will act as a restrainer. Any one can hinder the toning by too much salt or too much soda, and also thus assist in softening the albumen, causing blisters. All these things will teach the printer that in no case are extremes of strength or weakness, alkalinity or acidity desirable; and that the sure road to success is in the "happy medium" path. Now we must refer again to the diseases of the blood—namely, blisters.

We all know that strong acids and strong alkalies possess a wonderful affinity for soluble matter, and that for which the acid has no liking the alkali is sure to have a deep regard.

There are few things beyond the reach of both. Therefore it follows, that if any substance soluble in acids or alkalies is subjected to the action of acid or alkali solutions sufficiently long, a complete disintegration of the particles will take place. So it follows that a silver bath made strongly alkali starts up the action of dissolution in the albumen

sheet which is supplemented by heavy fuming carrying on the action still further, and by the time it reaches the toning bath, the albumen is quite ready at times to part company with its support. In some cases the whole surface is affected; in others, in spots only. On the other hand, a treatment in which there is too much acid will act in much the same manner. Here, then, to my mind is the cause of blisters in albumen paper.

The above statement being accepted as a fact, there will be no difficulty in avoiding blisters. Each worker must be influenced by the conditions under which he labors. If he is located in a district where the water he is obliged to use is about normal, we may say, then there need be no difficulty in keeping the middle path. On the other hand, if he lives in a district where the water is thoroughly impregnated and charged with lime and salts of magnesia, then he had best adopt the plan of working his chemicals slightly acid, and in some cases it may be necessary to treat the prints before toning with a bath of acetic acid water, thereby counteracting the evil influence of the alkaline water. The actual cause, then, of blisters is the softening of the albumen film in spots that have been the most susceptible to the softening influence. This action has not been continued sufficiently long to effect a dissolution of the film itself, but has only acted in such a way as to loosen it from its support. Once loose, the water and air work their way through the porous back of the sheet, and consequently blisters. If the effect has been produced by excess of alkali, one hardly wants to increase the evil by adding ammonia or soda to the hypo solution. I doubt if softening is ever occasioned by extreme acidity. The prevailing idea is that everything should be worked in an alkaline condition; therefore one would hardly look for excess of acid in a case of blisters. As I said in the first place, it is not my intention to make a long argument, and have dwelt upon the subject of blisters because I think they are the greatest source of trouble.

One other point is the stretching of the paper. This is an important matter, especially in portrait work; for unless the printer is careful to cut his paper all one way of the sheet, a curious assortment of fat and lean portraits will be the result. This is the only way to avoid the difficulty. It can be partially overcome by immersing the prints in glycerine and alcohol; but this, aside from the expense, would require too great an outlay of time for commercial work.

In conclusion, I would say that I have made no mention of any particular brand of paper, I believe

that all the standard makes are good, and can be successfully worked by any of the ordinary methods, providing a proper amount of intelligence is incorporated into the manipulations.

*Charles T. Fellows.*

### THE PRESERVATION OF SENSITIVE CELLULOID FLEXIBLE PLATES.

[A Communication to the Société Française.]

It is recognized that this new substance destined to replace glass, and give a light support, flexible and completely transparent, is about to obtain an important position in photography.

Although spoken of many years ago by M. Fortier, it has only been manufactured commercially for a little more than a year, chiefly in America and England. It has not then been possible as yet to test its qualities of keeping. It will be interesting, we think, to give the result of an experiment which we made with the object of elucidating this question.

In the month of December, 1888, thanks to the kindness of M. Frank La Manna, of the Photographic Academy of Brooklyn, we received a packet of preparations with celluloid of American origin, and called ivory film.

These preparations were tested comparatively with Lumière plates (blue label), recognized as excellent for quality and rapidity.

Then the rest of the plates were stored away in our laboratory at Salpêtrière until February 7 of the present year. These preparations thus remained nearly fourteen months in a place rather humid, and in the vicinity of a chemical laboratory where acid vapors are prevalent. The conditions of the experiment were absolutely unfavorable. We had, however, made it intentionally.

Then we made the exposure under the same conditions as in December, 1888. We made use of a hand apparatus of M. Dessoudeix, making an instantaneous *cliché* at speed II. of the shutter. It was a dark day, at 2.30 P.M. (In the first, made in the month of December, we took the speed I.; for the second, the season being more advanced, we took a greater speed, in order to place ourselves in almost identical conditions.)

In the development, which was made in presence of the Marquis de la Ferronays and M. Q. Rolland, the plate came normally, giving us as satisfactory proofs as possible under the conditions of the experiment. The plate was not changed in any way, nor did the rapidity seem diminished.

From this first experiment we may then conclude that celluloid, as the support of the sensitive coat-

ing, seems to have very genuine qualities of conservation.

It would, however, be well in our opinion, to make new experiments on the various commercial preparations. In effect, the composition of the divers celluloids varying somewhat the duration of conservation might probably be modified in certain preparations.

*Albert Londe.*

### HOW SENSITIZED PAPER IS MADE.

OUR readers will be interested in hearing of what we saw when we called, a few days ago, at the works of Mr. Otto Schölzig, in Clapham.

The building was originally two dwelling-houses, but has been converted by Mr. Schölzig into a convenient factory, without any extensive structural alterations. Mr. Schölzig himself acted as our cicerone, and in the first instance conducted us into the basement, thus beginning, as all good things should, at the base, and working upwards. At the rear of the basement is the furnace-room, where residues are reduced and the metallic silver extracted. When we called there was a crucible just ready for drawing, so we saw it taken out and left to cool. A little later, when the mass of metal had hardened, we saw the crucible slaked and broken off, leaving a lump of metal of about fourteen pounds weight.

In the front part of the basement are the storing and paper-cutting rooms where a stock of albumenized paper, sufficient for about six months' consumption, is kept. For cutting the paper to large sizes, a guillotine of great power is employed; and for cutting cartes and cabinets, a label punching machine with dies combined, in rows, three together for cabinet, and five together for carte. By this arrangement, with sixty sheets laid on the machine, one pressure of the triple-shape cuts out 180 pieces, equivalent to one quire cut to cabinet size, and the time occupied is infinitesimal.

From the basement we proceeded to the first floor, and entered the main sensitizing-room. The room is lighted by daylight filtered through canary medium, and the windows are provided with extra blinds for use when direct sunlight falls upon them.

Each of the girls in the sensitizing-room manages seven dishes, and floats and takes off the paper along the series as rapidly as she conveniently can. This regulates the time of floating to about five minutes, and the girls become so accustomed to the systematic working that their time is as regular as the time of a clock. When taken off the silver bath, the paper is placed between sheets of blotting and passed through an ordinary household mangle, over a continuous web of cloth, into the drying-room. This mangling, instead of blotting off by hand in the ordinary way, is one of Mr. Schölzig's simple common-sense improvements on the usual process. We believe it is not in operation in any other sensitizing works, but Mr. Schölzig makes no secret of the matter, for he says he has recommended the use of the mangle to other sensitizers. Another detail in which Mr. Schölzig's working deviates from the general practice, is in the preserving of the paper. He incorporates the preservative with the silver bath, thus doing away with double floating. Of course, those who float on the silver bath first and on the preservative afterwards, claim that their method is the better

one, but Mr. Schölzig is content to go on with his single bath, which, according to his argument, is the only truly scientific arrangement, and after all, the proof of the paper is in the keeping, in which respect the Schölzig make can fully hold its own.

Each sensitizing-room has two drying-rooms behind it, and a general idea of the arrangement of one of these rooms can be gathered from our second sketch. The proper drying of the paper is, Mr. Schölzig considers, the great secret of success, and he therefore takes every precaution to keep the air of the drying-room at a proper temperature, free from dust and all impurities. The drying-rooms are heated by enclosed stoves, and the air is constantly being pumped out by fans driven from an engine, and replaced by filtered air from without. To test the relative moisture of the air in these rooms, a very sensitive form of hygrometer, of Swiss invention and construction, is used. The sensitive body is a single human hair, which actuates a needle working over a graduated scale, from 0, which represents dew point, or air saturated with moisture, to 100, which represents an absolutely dry atmosphere. This hygrometer works accurately at any temperature, and, in connection with a thermometer gives an absolute knowledge of the condition of the air in the drying-room. With the hygrometer indicating anything over 60, the drying-power is considered satisfactory, but it is kept pretty regularly between 60 and 65.

The paper, coming through a hole in the wall from the blotting mangle, is received by a girl standing at a table, who dexterously takes from it the two blotting boards, which she places on the table, and hands the sheet of paper to another girl, who hangs it on a revolving rack.

When dry, the paper is temporarily rolled, and taken downstairs to the ground floor, where it is again unrolled, and each sheet examined, and carefully wiped on the face with a fine soft cloth, to remove any fluff that may possibly have adhered from the blotting. By the girl who wipes and examines it, the paper is handed to another girl who rolls it, sheet after sheet, into a long roll of cloth, in which it is left for some time to make it perfectly smooth and level. From this roll it is taken ready for finally packing.

On the second floor the arrangement of both silvering and drying-rooms is the same as on the floor below, and the third floor is used for storage only.

On the first floor, behind the silvering-room, is an office and laboratory where the acting-manager keeps the working accounts, makes up and tests the baths, and conducts experiments. At the time of our visit the effects of printing under various colored glasses were being tried, and we saw some of the green-glass prints toned in several different toning baths, but all with the same beautiful result.

We here mentioned to Mr. Schölzig that when we were using a large quantity of his paper, some eighteen months ago, we found that although it toned easily and gave beautiful prints when fresh, it did not keep well, but rapidly deteriorated in quality. As we had recently, however, found that it would keep almost indefinitely, we asked if any change had been made in the working. To this Mr. Schölzig replied that about the time stated he had had much trouble with the paper for several weeks, as two or three batches had gone wrong, and the fault only appeared a week or more after it had been sold. A search was at once made for the fault, and it was found that in

one of the drying-rooms the heating had been carelessly managed, and this was the sole cause of the fault. It was after this that the new hygrometers were introduced.—*The Practical Photographer.*

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### Notes and News.

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**Mr. and Mrs. Albert M. Harris** celebrated the twenty-fifth anniversary of their marriage, at their home, No. 438 Third Avenue, Detroit, on the evening of September 15th.

**Miss Catharine Weed Barnes** writes that she is thinking of enlarging her studio. For large work with long focus lenses she finds even her commodious room rather small.

**H. P. Robinson's Collection of Photographs** are on exhibition at the Society of Amateur Photographers of New York, at its new quarters, No. 138 West 38th Street. The collection includes sixty-four pictures, mostly on albumenized silvered paper; but a few are platinotypes.

**Rev. G. M. Searle**, of the Paulist Fathers, delivered a lecture on Astronomical Photography, in his course of lectures on astronomy at the Catholic University, Washington, D. C. A copy of this lecture has been secured for publication in *THE PHOTOGRAPHIC TIMES*.

**James L. Forbes**, the veteran photographer, now representing Wuestner's New Eagle Dry-Plate Works, called on the Editor of *THE PHOTOGRAPHIC TIMES*, while in New York last week, and talked of old times. He is writing an article on Developers for the forthcoming "American Annual of Photography."

**Photographing the Cruiser.**—Isaac Almstead, of Tompkinsville, photographed the exterior and interior of the United States war cruiser, "Baltimore," from which were made the sketches produced in a metropolitan paper.

**Prince Bismarck** has just had some photographs made of himself at Friedrichsruh by the celebrated photographer Bockman, of Strasburg. The Prince has been taken in Cuirassier uniform and also in plain clothes. The likenesses are excellent; and as the ex-Chancellor is in exceedingly good health, he looks much better than he does in photographs taken some months ago.

**Erratum.**—In putting in the illustrating cuts to the editorial on enlarging, in our preceding issue, the type was somewhat displaced, so as to confuse in the reading. On page 443, after the words, "There are three practical methods for the solution of the problem," in the middle of the left-hand column, the last line of the column must be taken up before reading immediately below the cut.

Such accidents are likely to happen "in the best regulated" magazines.

**The Exhibition to be held in India.**—The prospectus of the fourth annual International Exhibition of the Photographic Society of India is in circulation. The exhibition will be held in Calcutta during December. Five gold, fifteen silver, and fifteen bronze medals are offered for competition, of which one gold, five silver, and five bronze are offered to amateurs of the world; one gold,

two silver, and three bronze to amateurs of India and Burmah; and one gold, two silver, and two bronze to amateur members of the Photographic Society of India. In addition to the above a special medal will be given for the best photograph in the exhibition. Copies of the prospectus and full particulars can be had from Mr. J. S. Gladstone, Woolton Dale, Liverpool.

**Fire in a Photograph Gallery.**—A fire broke out on the morning of August 27th, in the three-story brick residence and photograph gallery of Mr. John Getters, 2021 Frankford Avenue, Philadelphia. It originated in the dark-room on the third floor, and is supposed to have been caused by the overturning of an alcohol lamp. Before the flames could be extinguished they had communicated to the floor below. The entire upper portion of the building was completely destroyed, and the contents of the lower part of the house were damaged by water. Among the articles burned were six large cameras and all the negatives, besides the finished photographs. Mr. Getters places his loss at \$3000, upon which there is an insurance of \$1500. The building, which is owned by Henry Lentz, was damaged to the extent of \$500, which is covered by insurance.—*Public Ledger*.

**Photographs in a Murder Case.**—Photographs of scenes in the alleged murder of Mrs. Day of Rochester, N. Y., by her husband, Arthur Day, were taken the other day. One of the photographs represents Mrs. Quigley, a sister of Day, and the principal witness against him, sitting on a rock, where she claims she was resting, and substitutes for Day and his wife, the latter peering over the brink of the precipice and the former just behind her. Another photograph shows only two persons. Mrs. Quigley, in the same position, and Day's substitute at the edge of the precipice, beckoning her with his handkerchief, which Mrs. Quigley alleges Day did after pushing his wife over the cliff. The photographs will be used at the trial.—*Troy Times*.

The Annual field day and dinner of the Photographic Section of the American Institute was held this year at Glen Island, Thursday, September 4th. Special permission had been granted, by Mr. Starin, to photograph about the Island; and as a consequence, many interesting pictures were made.

About half-past four a group of the members and friends were photographed, in accordance with the usual custom. The party then proceeded to the *cafe*, where an excellent course dinner was served. There were present about twenty-five, including several ladies. Cornelius Van Brunt presided, in the absence of President Newton, and among the guests were Secretary O. G. Mason of Bellevue Hospital; Arthur H. Elliott of *The Photographic Bulletin*; Colonel V. M. Wilcox, President of E. & H. T. Anthony & Co., and Dr. Wilcox, his son, C. T. Roach, of the same firm; Professor Charles Ehrmann of the Chautauqua School of Photography; W. I. Lincoln Adams, Editor of THE PHOTOGRAPHIC TIMES; Edward Bierstadt, James L. Forbes, and John H. Hallenback and Louis C. Bennett of the Scovill & Adams Company. After dinner speeches were made by Doctor Elliott, Professor Ehrmann, Edward Bierstadt.

**Our Convention Number.**—We continue to receive words of praise from the public press for our Special

Convention Double Number. *The Business Chronicle* for August says: "THE PHOTOGRAPHIC TIMES' for August 8th contains a fine photo-gravure portrait of President J. M. Appleton, of the National Association, and a uniquely illustrated article on 'The Natural History of the Camera.' This number is better than the average, which is saying a good deal."

"The Special Double Convention Number of THE PHOTOGRAPHIC TIMES," says *The San Francisco Call*, "is an unusually interesting one; one that may be read with profit by professionals as well as amateurs. Two exceedingly fine specimens of the photographic art make the journal still more attractive."

**Inventor of the Detective Camera.**—It was a Parisian who hit upon the novel idea of a detective camera. He made a small camera, which he concealed in his hat. A shutter in front was so cleverly arranged that the joint could not be seen. At first he used wet plates, but he soon saw the disadvantage he was laboring under. About that time the lightning dry plates were put on the market and the Frenchman's hopes rose high. He could take his hat anywhere with him, and no one, at a glance, would suspect its double purpose. Placed on a table facing the person to be taken the little button at the back could be pressed and the exposure made. In some respects the hat camera was immeasurably superior to the toys now on the market.—*New York Evening Sun*.

**Improvement in Photo-Etching.**—The *Papier Zeitung*, of Berlin, announces that a discovery has just been made in etching, and especially in photo-gravure. As usual, the drawing is traced on a plate of zinc, either by an artist or by photography, with any suitable etching ground. This plate, backed with asphaltum, is laid in a bath of dilute acid. It is then put in circuit with a dynamo, the other pole being merely placed in the acid. When a current is allowed to pass, the acid attacks the metal with surprising rapidity. A few minutes suffice to bite the plate, and the depth of the etching can be easily controlled. It appears to us that the action is probably due to the depolarization of the surface of the metal, which in the ordinary method of etching becomes covered with a film of hydrogen, or, at all events, with a number of minute bubbles, which make the biting irregular unless the plate is incessantly rocked and brushed.

**Photographed an Angel.**—A portrait of the late John Taylor, which J. R. Smith has on exhibition in his store, attracts many visitors daily, and has caused a great deal of discussion. The portrait formerly rested on the mantelpiece at Mr. Smith's residence in Mt. Olive. Monday, during a heavy storm, a lightning flash struck it. The frame was demolished, but the flash left on the portrait a clearly-defined picture of an angel with outstretched wings overshadowing Mr. Taylor's head, the arms encircling his neck and the right hand holding a bunch of flowers. The pose of the angel suggests protection and benediction. The dark line showing the lightning's journey along the cardboard turns abruptly just above the face of Mr. Taylor, giving the spectator the idea that the angel changed the lightning's course.

Superstitious people consider it as an indication that Mr. Taylor is in heaven, but Mr. Smith explains the phe-

nomenon by saying that the picture of an angel, exactly like that which appears on the Taylor portrait, was on the back of a photograph nearby. He believes that by some electric freak the picture of the angel was photographed over the portrait. The affair, however, has caused a great deal of comment, and people from miles around come to see the picture.—*Atlanta Constitution*.

**The Amateur Photographer's Romantic Work.**—Everybody—that is, everybody that is in the swim—is having her photograph taken by the amateur, the result being more interesting than artistic. If the artist has any feeling of tenderness toward his subject the picture will be a positive failure; for in his desire to touch her foot, place each hand just so, to turn her face just as he thinks it ought to be—which requires an immense amount of labor—the result is usually one where there is a blurred mass of femininity and a lot of ruffles shown. But just take a jolly party who are in for a good time, and saucy Miss Pert—who, between you and me, is a Yankee—leans against tall Tom Beverley, whose rebel father was killed in the last war, in the position of the Huguenot lovers. Because John Millais fell in love with his wife when he painted that picture, it almost goes without saying that before a week's over the Beverleys will be regarding Miss Pert as a "nice little thing," Jack will be adoring her, and the old story will be worked out with the photograph machine. Common-place, isn't it? Do you think it is? Never while the world goes round!

There is a saucy widow here who thought she'd show some of the girls how they looked when they drank a little too much, so she posed in a hammock, as being in a drunken slumber with a French novel in her lap, and a lot of empty bottles on the ground about her feet—that photograph is equal to fifty temperance lectures, and it ought to be bought up by the W. C. T. U. (and the rest of the alphabet) and disseminated as a warning to the young women of the land. A woman who is a noted housekeeper didn't propose to be left out of the photographic craze, so while the amateurs were at work she sent out, borne by the blackest of Hebes, a tray covered with glasses of foamy egg-nog; this was too good to be lost, so one of the girls was quickly popped into the hammock, and behind her stood the dusky servitor with her snowy beverages. It is unnecessary to say that this came out beautifully, and the effect of it was such that the work stopped, and the people had time to look at each other from some other than the standpoint of the camera. For pure outrageous love-making I would commend the general youth to photographic apparatus; his opportunities are many, and he has little wit if he does not know how to make the best of them.

#### OUR LOVELY SOUTHERN SISTERS.

But here everything returns to woman—she is supreme. And I will tell you why men like Southern women.

Because they are affectionate: they never lose an opportunity to give a kiss, say a pleasant word, or to do a kindly deed for the man who rules their hearts.

Because they do not gossip very much, home, children and husbands usually forming a world big enough for them.

Because while they are intelligent women they don't quite like some of the latter-day books, they don't understand the mystery of Dorian Gray, and they adore a love-story.

It's love, love, love that makes the Southern girl go round—every girl expects to get a husband and to love him, and she's seldom disappointed. Like Lady Amanda, she cries "Gracious heavens!" and throws herself into the arms of Lord Mortimer, and way down South in Dixie Lord Mortimer is always ready to receive her. And he ought to be, oughtn't he?—BAB in the *Chicago Journal*.

**The Photographic Times** comes out with a "Special Double Number" on the occasion of the American Convention. H. P. Robinson's "Keeper's Donkey" is also reproduced as a supplement.

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### Correspondence.

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#### "ARISTO" PAPER.

To the Editor of the THE PHOTOGRAPHIC TIMES.

Dear Sir: In your issue of August 29, 1890, we note Query and Answer 155 in reference to our collodion "aristo" paper, and ask you to make prominent in your next issue a correction of the statement volunteered by your editor of that department, not at all in response to the query of your correspondent, that "The Jamestown Company has at present suspended operations."

So far from this statement being true, this company is turning out more and better "Aristo" paper than ever before.

In our judgment the remedy you give for curling is impractical. Our bath A is a perfect and complete remedy for the curling incident to all collodion paper, and very simple in its application.

Very truly yours,

*American Aristotype Co.*

JAMESTOWN, N. Y., September 1, 1890.

Ethel? A horrid amateur photographer tried to take my picture while I was in the surf to-day.

Maud? And what did you do?

Ethel? I turned my back to him.

Maud? How well you knew how to appear to advantage!

*Town Topics.*

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### The Editorial Table.

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RATHGEBER FÜR ANFANGER IM PHOTOGRAPHIEREN. By Ludwig David. Wilh. Knapp, Halle a/S, publisher.

Lieut. David, who has earned the highest reputation in instantaneous photography, and as an author in connection with Charles Scolik has written this little book of instruction with unusual attention to the wants of beginners. The conscientious worker, who strictly follows the formulæ given, he says, is always sure of success, to such a one a voluminous compendium will do no better than a few simple directions, and accordingly he limits himself to a concise but comprehensive description of all operations, the handling of utensils, and the use and capabilities of the more popular objectives.

The book deserves a place in the front ranks of our libraries, and we cannot recommend it too highly for beginners familiar with the German language.

VIEWS ON LAKE CHAUTAUQUA. By the Albertype Co., 57 & 59 Spring Street, New York.

A collection of very fine Albertypes, views of interesting

points on the Lake from Jamestown to Mayville, and on the Assembly grounds. It is interesting to note that the majority of the pictures are reproductions from negatives made by students of Chautauqua School of Photography.

The collection is in album form and elegantly gotten up, the individual pictures are well reproduced and printed.

With this little work the Albertype Co. has satisfied a long felt demand. It will doubtlessly be received by all visitors to Chautauqua with much satisfaction.

THE twenty-third volume of Alden's *Manifold Cyclopaedia* includes the titles from McCook to Memorial. Among the articles, we notice the biographies of many eminent men and women of early times, as well as those of the present day, also excellent descriptions of many large cities and towns. The volume treats very satisfactorily three states: Maine, Maryland, and Massachusetts; and of foreign countries there are Madagascar, Madeira, Malta, and Manitoba. Interesting subjects in other lines are: Machine Gun; Magic; Magna Charta; Magnetism, 19 pages; Mammalia, 10 pages; Man, 6 pages, Mangel-Wurzel; Manure, 4 pages; Marble; Marriage, 6 pages; and Masons (Frce), about 5 pages. These are named only as samples of what the volume contains. The articles are brought down very nearly to date, many of them are illustrated, the style and arrangement are excellent, and the printing and binding are entirely satisfactory. The one thing about it which it is difficult to comprehend is how so valuable a work can be supplied for so low a price. For farmers, mechanics, teachers, students, and the great mass of general readers, the *Manifold* is far superior to any other Cyclopaedia. Specimen pages will be sent free on application to the publishers. A specimen volume in cloth binding will be mailed for 50 cents, or in half morocco for 75 cents, and the money refunded if the volume is returned within ten days. Agents are wanted in all unoccupied territory. Garretson, Cox & Co., publishers, New York, Chicago, and Atlanta.

FROM E. J. Pullman we have received the excellent cabinet photograph of the Daguerre Memorial which he offers to send to every subscriber of one dollar or more to the Memorial Fund. We hope that a large number will avail themselves of Mr. Pullman's generous offer.

C. D. FREDRICKS, the famous New York Photographer, sends us some specimens made with the 4 x 5 "Advill" camera. These photographs in every way justify the reputation both of the famous photographer and, we might say, no less famous camera.

DOES IT NOT SPEAK WELL for our magazine when a photographer, and a foreigner, too, sends a cheque for twenty dollars to subscribe for four years? It certainly shows a confidence in the future of our magazine.

### Record of Photographic Patents.

430,794. Photographic Camera. Frank Whitney, Chicago, Ill.

431,120. Apparatus for Washing Photographs. Joseph L. Morris, Lawrence, Kans.

*Design* 20,000. Album Photographic. M. F. Harte.  
432,255. Camera Stand. Hamilton D. Waite, Watertown, N. Y.

432,410. Album. Christian Jaeger, New York, N. Y.

432,411. Album. Christian Jaeger, New York, N. Y.

*Design* 20,015. Album Leaf. W. C. Horn.

432,530. Composite Heliochromy. Frederic E. Ives, Philadelphia, Pa.

432,783. Photo-Engraving Apparatus. William E. Bloomgreen, Chicago, Ill.

432,903. Apparatus for Automatically Photographing, Developing, and Delivering the Finished Pictures. Joseph Sacco, Paris, France.

432,974. Plate Holders for Photographic Cameras. William F. Carlton, Rochester, N. Y.

432,990. Roller-Holder for Photographic Films. Geo. Eastman and Philip H. Youman, Rochester, N. Y.

432,990. Photographic Shutter. George F. Green, Kalamazoo, Mich.

433,020. Roller-Holder for Photographic Film. Samuel D. McKellen, Manchester, England.

433,070. Camera. Edgar R. Bullard, Wheeling, W. Va.

433,553. Photographic Camera. George D. Thompson, Cincinnati, Ohio.

433,745. Camera Shutter. William E. Schneider, Washington, D. C.

433,746. Camera. William E. Schneider, Washington, D. C.

433,774. Roller-Holder for Photographic Films. Geo. Eastman and H. Gauman, Rochester, N. Y.

433,775. Roller-Holder for Photographic Films. Geo. Eastman, Rochester, N. Y.

433,963. Photographic Camera. William Sanders, Liverpool, England.

434,046. Photographic Camera. Frank W. Hutchins, Warren, Ohio.

434,090. Photographic Camera. Oscar Plane, Dresden, Germany.

434,188. Photographic Printing Frame. William H. Lewis, Huntington, N. Y.

434,451. Photograph Mounting Machine. Loren C. Madsen, Sleepy Eye, Minn.

434,622. Device for Making Photographic Camera-Beds Rigid. Henry P. Ball, Philadelphia, Pa.

434,807. Photographic Camera. Joseph M. Rhodes, Covington, Ind.

434,812. Stereo-Mount. Robert P. Tickle, West Hampstead, County of Middlesex, England.

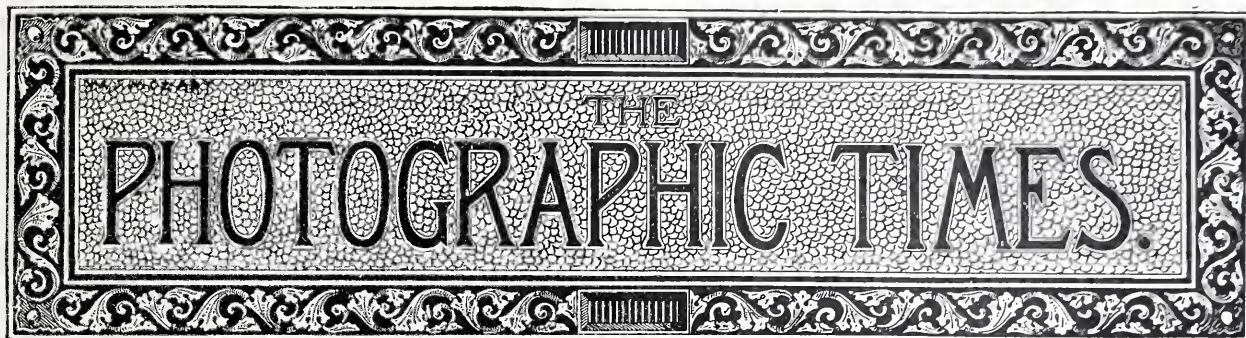
435,056. Photographic Posing Chair. James M. Dow, Ogdensburg, N. Y.

435,080. Camera. William R. Tobias, Perth Amboy, N. J.

435,271. Photographic Objective. Ernst Abbe and Paul Rudolph, Jena, Saxe-Weimar, Germany.

435,335. Lens Tube for Photographic Apparatus. William H. Trueman, Philadelphia, Pa.

435,342. Photographic Camera. James E. Blackmore, Grand Rapids, Mich.



# THE PHOTOGRAPHIC TIMES.

VOL. XX.

FRIDAY, SEPTEMBER 19, 1890.

No. 470.

## THE REAPERS.

IN the beginning of my career, as a disciple of Isaac Walton on several occasions I made trips to streams in the Western part of the Catskill Mountains which were seldom visited except by lovers of the rod.

This section of country became so familiar to me, that, possessed of a camera, I had but to revisit my old haunts to be rewarded by sights of rural landscapes that would wake to enthusiasm any lover of pastoral scenes. On one of my trips I came upon the hillside here depicted.

The morning was bright but hazy and was a pleasing example of a luminous effect of mild diffused light under a thinly veiled sky. Two men were at work "cradling" oats near the crest of the hill.

I selected the spot which seemed to me the one combining the most advantages and hailed the men who by this time were curious to know "what was up." They came down and cut for me a few swaths until the rather monotonous foreground was broken by the beautiful layers of grain on the ground.

They entered with so much vim into the spirit of the occasion that I had little difficulty after everything else was arranged in posing one as if sharpening his scythe and the other in the act of swinging his cradle in the tall grain.

I used a single combination lens. This I use both for landscape and portraits. For the former work my experience has led me to believe that they have many advantages not possessed by the double combination lens.

Including as they do a small angle they do not sweep over much territory; the picture on the ground glass is almost perfection in drawing, showing but little marginal distortion, and, when used at full opening, besides being very rapid, gives good definition and more correct interpretation of values than the double combination lens is capable of.

*R. Eickemeyer, Jr.*

THE paper on "Developers" read before the late Washington Convention of the P. A. of A., and which was published in our issue of September 5th over the name of G. Cramer, we are informed, was contributed by G. Hamner Croughton, but was received from the official stenographer with other papers accredited to Mr. Cramer, as we published it. In fact, all of the proceedings of the Washington Convention were published by us exactly as received from the Association's reporter, and the responsibility for any errors which have occurred, like the foregoing, rests entirely upon the Association itself, and not at all upon the journals which published the proceedings accurately as received.

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## INDUSTRIAL PHOTOGRAPHY.

IT may be said that there is no industry to which the processes of photography are not applied. Lithography, engraving, typography, have been enriched by their means with almost costless and rapid mechanical processes for the reproduction of drawings, oil paintings, portraits and views taken from nature which heretofore required the talent of trained artists, much time and expenses. The ornament of cabinets, of mantel-pieces are now made with engraved plates; tiles and imitations of decorated ivory and wood, from photoreliefs and photo-intaglios, which latter serve also to obtain the *émaux cloisonnés*; and for years engravings and incrustations on glass-plates, enamels on metals, painting *en grisaille* or in colors on window glasses, porcelain, potteries, etc., are produced by processes which require but little practice to succeed.

Lately we have described in THE PHOTOGRAPHIC TIMES the various photo-engraving methods in relief, in line-intaglio and in aqua-tint. We propose now in this series of papers to initiate the reader to the other industrial applications of photography, by the description, together with kindred processes, of the most practical methods to enamel

porcelain, potteries, glass and metals, and to incrustate enamel on precious metals, on glass and metallic plates.

#### PHOTO-VITRIFIED ENAMELLED PROCESSES.

There are two methods employed to fix photographically the vitrifiable colors on glass or any other suitable materials, viz., the substitution process invented by Du Motay and Maréchal, and the dusting processes due to A. Poitevin or derived from his inventions.

#### SUBSTITUTION PROCESS.

The substitution process is very simple and yields as good if not sharper and finer pictures than the dusting processes. It is, however, little employed in the arts, to our knowledge, probably on account of the necessity of making a cliché for each proof, which complicates the process. As to the cost of the materials, it is not so great as to be an objection. The process consists to make an ordinary silver positive photograph on a glass plate, then to transform the metallic silver which forms the image into gold, platinum, iridium, or an alloy of these metals, and to burn it in on porcelain, enamelled copper plates, etc., when a picture colored by the tint imparted by the noble metals in question is indelibly fixed.

The photograph is, of course, a diapositive. It cannot be made on gelatine film, not only on account of the great quantity of carbonaceous matters the gelatine contains, but also because in fixing the film shrinks and thus prevents the adhesion of the vitrifiable substances to the support. The collodion process, wet or dry, should be employed, but the former preferably; a glass plate perfectly cleaned is rubbed dry with a little alcoholic ether tinted to a brandy color with tincture of iodine—no substratum, no talcing should be made—then edged with an india-rubber solution\* and then coated with bromo-iodized collodion, and, when the film is set, coated once more in the opposite direction, which is important, to obtain a film of the same thickness throughout, then sensitized, exposed, developed with ferrous sulphate, strengthened with pyrogallol and silver nitrate, and again, if necessary, after fixing in a *new* and weak solution of potassium cyanide.

When viewed by transmitted light the details should be well defined, the deep shadows black, and the very high lights represented by the clear glass. The general intensity should be regulated according to the object in view, since the image

when burnt-in will present the same opacity, or nearly so. If the picture is to be burnt-in on glass plates, and, therefore, seen by transparency, the intensity must be greater than when burnt-in on an opaque material in order to obtain vigor and brilliancy. Two or three assays should be made to judge how far the intensification should be carried on. No rule, no explanation can be given, the reason is obvious. We need not say that the diapositive should be perfect.

We recommend the following collodion as yielding an intense reduction by the development proper, which is a *sine qua non* condition to intensify rapidly and without fogging the whites (clear glass) of the picture.

Ether.....	250	c.c.m.
Alcohol.....	250	c.c.m.
Sodium iodide.....	3	grams
Cadmium iodide.....	1.5	gram
Zinc iodide.....	0.5	gram
Ammonium chloride.....	0.15	gram
Zinc bromide.....	1.	gram
Pyroxiline.....	5	grams

Dissolve the iodides, bromide and chloride in alcohol, filter, then add the pyroxiline, and lastly the ether by small quantities, shaking after each addition. Let settle for at least forty-eight hours. The pyroxiline should not be of the powdery kind; this is important. The silver bath, 9 : 100, must be pretty well acidified and in excellent order, and the iron developer compounded with 2 per cent. of glucose; thus :

Ferrous sulphate.....	25	grams
Glucose.....	10	grams
Tartaric acid.....	2	grams
Water.....	500	c.c.m.
Acetic acid, No. 8.....	15	c.c.m.
Alcohol.....	quantum suff.	

We have said in the foregoing lines that the diapositive should be perfect. To that purpose and in order to avoid pinholes, black spots and surface markings (superficial metallic reductions) which are the most teasing defects occurring in the wet collodion process, we strongly advise the operator to immerse the sensitized plate for two or three minutes in the following special silver solution, and on its removal from the same to place it before exposing on several doubles of blotting paper until the superfluous liquid is absorbed. Thus prepared the sensitive collodion film will keep moist for a long time.

Silver nitrate.....	20	grams
Gum arabic.....	25	grams
Glycerine, C. P.....	150	c.c.m.
Acetic acid, glacial, C. P.....	2	c.c.m.
Water.....	500	c.c.m.

\* This is necessary to hold the film during the subsequent operations when the collodion is of the contractible kind, otherwise it might be dispensed with, which is preferable.



After intensifying for the second time it is well to dip twice in and out the plate in the fixing solution, then to wash it thoroughly under the tap, and this done the picture is ready for the toning or substitution process. There are different manners of operating. "We immerse the plate for a certain period, say Messrs. Du Motay and Maréchal, who had in view to apply their process to the staining of glass plates, either in a bath of chloride of gold and platinum, or in alternate baths of gold and platinum, or once again in chloride of gold. During this treatment the silver forming the image is partly replaced either by platinum or by a mixture of gold and platinum.

The object of these different baths in which we treat the layer of metallic silver is to either vary the color or the nature of the image after it is vitrified. If one wants to obtain a greenish-black color by the action of the siliceous or boracic flux in the muffle, one immerses first the image in a chloride of platinum solution; if, on the contrary, one desires to produce a black image, the proof is treated alternately by a bath of chloride of gold and one of platinum. When a gilt image is wanted we employ the chloride of gold only.\*

On its removal from the gold or platinum bath, the proof is washed in a solution of alkaline cyanide or in concentrated aqueous ammonia, then rinsed, and when dry covered with a varnish of caoutchouc or of gutta percha and placed in the muffle to burn the organic matters and obtain a metallic image, free from foreign matters. Lastly, the image is covered with a boracic or silicic flux and exposed to the action of an orange-red heat which vitrifies it.†

One does not now proceed exactly as directed by the inventors; other metallic salts are employed to obtain certain colorations and the *modus operandi* somewhat differs. In the following lines we give the formulas. The solutions may be used more concentrated, but there is no advantage of so doing, moreover by employing dilute baths the chemical changes are more regular, better under control and the delicate details well preserved.

The toning or substitution baths should be acid but contain no free hydrochloric acid. The gold and platinum solution is prepared in the following manner:

Platinic chloride.....	1 gram
Auric chloride.....	0.5 gram
Water.....	500 c.c.m.

Neutralize the solution with sodium bicarbonate

\* The reduction to metallic state depends on the temperature at which the plate is fixed.

† Bull. Soc. Franc. Phot., 1865.

—the solution must turn blue the red litmus paper —then add drop by drop pure nitric acid until the test paper just turns red. The proofs treated by this solution are of a fine rich purple-brown when vitrified.

The toning bath of platinum consists of

Platinic chloride.....	1 gram
Water.....	500 c.c.m.

Neutralize as directed above. The burnt-in image is blacks in the shadows with very fine grays in the half tints.

#### IRIDIUM BATH.

Saturated solution of potassic iridium chloride.....	10 c.c.m.
Water.....	100 c.c.m.

The bath of gold and iridium employed by Mr. Watson consists of

Saturated solution of potassic iridium chloride.....	50 c.c.m.
Water.....	360 c.c.m.

to which is gradually added, shaking after each addition,

Solution of chloride of gold, 1 : 60. 25 c.c.m.

Bath of gold, platinum and iridium :

Platinic chloride.....	2 grams
Iridic chloride.....	1 gram
Auric chloride..	0.5 gram
Water.....	1000 c.c.m.

All these solutions keep well and can be used over again. Iridium is employed to darken the tint. Palladium gives a black less intense, added to the platinum and gold bath in very small quantities it tends to produce a purple color. With platinum only the proof is sepia. The following is a good formula :

Platinic chloride.....	2 grams
Palladious chloride.....	0.5 gram
Auric chloride.....	0.2 gram
Water.....	1000 c. c. m.

The next bath gives a black image. After toning and washing the film should be passed in a solution of concentrated aqueous ammonia diluted with one-tenth its volume of water :

Mercuric chloride. ....	1 gram
Auric chloride.....	0.5 gram
Water.....	200 c. c. m.

When, after treatment by any one of the foregoing toning solutions the image must be somewhat cleared or a warmer tone desirable, the proof is treated by an uranium bath consisting of

A Potassium ferricyanide.....	1 gram
Water.....	300 c. c. m.
B Uranium nitrate.....	1 gram
Water.....	300 c. c. m.

For use mix by equal volumes and add per cent. 2 or 3 drops of a solution of auric chloride at 1:100.

The proof should remain but a short time in the uranium bath, for the image is rapidly reduced in intensity. The color in firing tends to a brown or sepia, the tint varying with the toning treatment first employed.

When the proof is to be burnt in on the glass plate upon which it is made, it may be treated before toning by mercuric chloride until the image is uniformly black by reflected light.

Mercuric chloride.....	12 grams
Hydrochloric acid, pure.....	1 c. c. m.
Water.....	500 c. c. m.

This is done in a moment ; therefore one should watch the action attentively, for the image must not bleach at all.

For transferring upon porcelain, enamelled copper plates, potteries, etc., the film must be detached from the support before any treatment whatever, except, of course, the intensifying and fixing, but not the amalgamation which, when resorted to, is done after detaching the film. To detach it the plate is immersed in water acidified with, say, 5 parts of sulphuric acid per cent. This acid causes a contraction of the collodion film which thus loosens its adherence to the plate and may be detached by gently agitating the liquid or lifting the edges. If any difficulty be experienced a solution of hydrofluoric acid at  $1\frac{1}{2}$  or 2 per cent. of water may be substituted for that of sulphuric acid.

As soon as detached the film is washed, image upwards, in water several times renewed by decantation, and when all traces of acid are eliminated, the toning bath selected is poured into the tray.

The image should be toned through in the deep shadows to obtain an uniform coloration of the whole image when it is burnt-in. The time required to effect this necessarily varies with the opacity of the silver reduction and the strength of the toning baths. But the image cannot be over-toned, or very little, for when all the metallic silver is converted into silver chloride the chemical changes are at an end. The following equation explains it :



After toning the proof is washed by decantation, then immersed for, say, half a minute in concen-

trated aqueous ammonia diluted with a hundred volumes of water, then washed and finally transferred *collodion side downwards* on the selected material. For that purpose no organic adhesive substances should be employed, but simply a saturated aqueous solution of fused borax.

Dry, the picture is gradually heated to a full red cherry heat, then removed from the muffle, allowed to cool very slowly and finally glazed. This in our hands has been found an excellent method. Some operators advise to apply the flux (glazing) before firing, which is best done by dusting. Another method recommended by Mr. Thos. Bolas is thus described by himself : " So much of the flux as will lie on a florin is rubbed up in a mortar with fifteen c.c.m. of spirit of wine and then shaken up with the same quantity of non-iodized collodion. After the collodion film has burnt off in the furnace, the picture is allowed to get cold, then the mixture of flux and collodion is flowed over it, and afterwards drained off, and the last drops removed with a piece of blotting paper, for if they were allowed to remain they would cause a light colored spot."

It seldom occurs that the glazing be brilliant enough after the first firing, hence the operation should be repeated once or twice over. More perfect pictures are obtained by thus proceeding gradually, and if some defects appear they may be corrected before the last glazing is done.

The burning-in, glazing and other operations mentioned in the foregoing lines will be further on described *in extenso*.

(To be continued.)

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### COMPOSITION AND ARRANGEMENT.

THERE is one subject which will always furnish an interesting line of thought for either the professional or amateur photographer. It is a subject that may be treated by many writers, each giving his views with clearness and succinctness, it may be studied by the majority of readers of photographic literature, but from the examples of work seen every day, it is still necessary to urge photographers on to greater efforts in regard to composition and arrangement. The editor of a prominent photographic magazine, in order to stimulate the rising genius of young and old photographers, offered not long ago a series of prizes for the best results in arranging and composing groups. While a few of the pictures entered showed careful and painstaking study, yet the majority were very inferior productions, all of which goes to show that although photographic art is advancing, there is

\* This equation does not exactly represent the chemical action, for a certain quantity of metallic silver unites to the gold set free. If the bath of substitution consists of platinum and gold, the image will consequently be formed of an alloy of silver, gold and platinum in various proportions.

still room for improvement in the grouping and arranging of figures.

It is a mistake to think that out of the ordinary every-day family who come to the studio to be photographed an ideal picture can be made, or that twenty or thirty persons who have associated with each other for a short time, such as we find in schools and clubs, can be made to furnish material for, or enter into the spirit of, an ideal, artistic composition, such as the photographer may have in his mind; nor is it within the bounds of possibility for any artist to make a prize picture from such a combination of persons. The subjects for a group which has for its object the illustration of some story, poem, or whatever other romantic idea the photographer may have, must enter into the spirit of his theme, they must be trained not only in expressing the attitudes which are necessary to explain the story, but they must also give expression in their countenances to whatever thoughts the story may suggest. What would be the effect of a picture where the attitude denotes life, action, energy, everything that goes to illustrate a story of active and daring adventure, if the face could not express the feelings which we imagine should be felt by a person in such a position. It would, most undoubtedly, be flat, uninteresting and absurd. I have seen in many photographs evidence of this want of feeling and harmony of expression; while the attitude told you a story, the face belied it.

If we look at the works of celebrated artists we will see that the face and attitude express the same idea. Love, hate, fury, despair, fear, horror illuminate, sadden, or distort the countenance and help with clearness and force to bring the story of the picture vividly before our minds while the attitude speaks, as it were, and gives greater effect to the whole. Take, for instance, one of Meissonier's paintings, "The Sign Painter," in the Metropolitan Art Museum, a reviewer says: "The scene is altogether a transcript from a past generation. If we remark the expressions of these men (the cavalier and sign painter) we see characteristics which reflect their inner and true personality. What amiable self-complacency is betrayed in the satisfied air with which the sign artist awaits the cavalier's verdict upon his work, and how consummate is the cool criticism on the part of the latter. We should not know where to look for a counterfeit presentment of man that approaches to nature herself than this unimpassioned inspector of the tavern sign. He is real to the very creases in his boots and the buttons on his coat." Can the glowing description of the poet or the realistic lan-

guage of the tragedian clothe a scene with more explicit meaning than the pencil of the draughtsman, the brush of the painter, or the camera of the photographer. A mere description can never equal or appeal to us as strongly as when we see it before us in a picture. The painter has a greater advantage over the photographer in being able to dispense with any objectionable detail that might destroy the beauty of his subject as a celebrated writer observes, "the details the prose of nature he omits and only gives us the spirit and splendor. In a landscape he will give us the suggestion of a fairer creation than we know. He knows that the landscape has beauty for his eye because it expresses a thought which is to him good, and this because the same power which sees through his eyes are seen in that spectacle; and he will come to value the expression of nature not nature itself, and so exalt in his copy the features that please him. In a portrait he will inscribe the character and not the features, and must esteem the man who sits to him as himself only an imperfect picture or likeness of the aspiring original within."

The photographer must be satisfied with nature as he finds it, whether it is frowning or smiling he must be content, therefore if the subject is not in entire harmony with his ideas, if he does not enter into the spirit and give his thoughts entirely towards carrying out whatever story the picture is intended to illustrate, the result will be a failure. I would then say to the photographer, be satisfied with representing the character of your group and refrain when you have but indifferent material from trying to adorn a moral, or point a tale. It is also well to remember that a long course of study is as necessary for the photographer as it is for members of any other profession. The greatest painters, poets, and writers, study the works and profit by the experience of men who lived in by-gone years. They would not, or could not reach the highest point of perfection if they had not done so. The works of men who lived away back in the ages which we call barbarous are eagerly devoured, and the creations of their hands and brains are studied by the great men of this and other generations, and why? simply to gather material for the foundation of works which they expect to create. There are rules and reasons for everything, and unless men train themselves to go strictly according to the rules that govern their work and find out the reasons why such rules are applied to it they cannot accomplish much, they will be toilers in the dark, stumbling and groping to the end.

At the present time when the works of the greatest artists are faithfully reproduced and explained,

it is easy for every photographer to study them and gain very great benefits from doing so.

The paintings and illustrations of ancient and modern times are collected and put in convenient shape by the publishers of photographic works, together with criticisms and explanations by celebrated art writers; these will be found to contain many things which are necessary for the photographer to know. Study the works of others, master their details, then give life to your own thoughts.

*B. F. McManus.*

### THE CHEMISTRY OF FIXING.

(Continued from page 404.)

#### "SEA SALT" USED AS A FIXING AGENT BY DAGUERRE.

There is every reason to believe that the first fixing agent employed by Daguerre was simply a strong solution of sea salt, or common salt, simply, if sea salt could not be obtained.

Herschel's generous conduct in at once making public his knowledge of the excellent qualities of hypo as a fixing agent, enabled Daguerre to mention the latter substance in his application for an English patent for his daguerreotype process, but he mentions sea salt first. The following extract is from Daguerre's patent specification dated 14th of August, 1839:

"*Fifth and last process*—To remove from the plate the coating of iodine, and thus to fix the picture, a solution of sea salt may be used, but a weak solution of hyposulphite of soda is preferred. The plate is first dipped into distilled water, then moved about in the saline solution until the yellow color of the iodine is entirely removed, again plunged into water, and finally subjected to the action of a continuous stream of hot water falling on an inclined plane carrying the plate, thus cleansing it perfectly; it is then ready for mounting by being placed in a pasteboard case, and covered with glass, thus preserving the silver surface from being touched, and from tarnishing."

Sea salt is the solid matter left by the evaporation of sea water, of which 100 pounds by weight contains no less than  $3\frac{1}{2}$  pounds. More than three-fourths of this solid residue is common salt (sodium chloride, NaCl), but there is also much magnesium chloride ( $MgCl_2$ ), and some potassium chloride (KCl), and magnesium bromide ( $MgBr_2$ ).

\*These substances are each and all able to dissolve—to a certain extent, and with varying powers—the haloid salts of silver employed in photography. It is doubtful, however, if a photograph, either nega-

tive or print, was ever perfectly fixed by this means. Doubtless Daguerre knew well the imperfection of his original fixing process, and eagerly seized upon that of Herschel.

#### FOX-TALBOT USES POTASSIUM IODIDE AND SODIUM CHLORIDE AS FIXING AGENTS.

The first public exhibition of photographs in England was on January 25, 1839, when Professor Faraday displayed some of the "Photogenic Drawings" made by Fox-Talbot, to the members of the Royal Institution of London. Beyond affirming that the pictures shown were due solely to the agency of light, Faraday said little or nothing. But a few days later—on January 31st—Talbot read a paper giving a preliminary account of his work up to that date before the Royal Society of London; and this paper was printed in the *Philosophical Magazine* for March, 1839.

Talbot's "Photogenic" process consisted in impregnating paper with silver chloride and nitrate. Although pictures *could* be obtained in the camera by a very long exposure (an hour or so) yet it was a printing process mainly.

Referring to the work of Wedgwood and Davy, published in 1802, Talbot writes\*: "The circumstance announced by Davy, that the paper on which the image was depicted was liable to become entirely dark, and that nothing hitherto tried would prevent it, would perhaps have induced me to consider the attempts as hopeless, if I had not (fortunately) before I read it, already discovered a method of overcoming this difficulty, and of fixing the image in such a manner that it is no more liable to injury or destruction.

"In the course of my experiments directed to that end, I have been astonished at the variety of effects which I have found produced by a very limited number of different processes when combined in various ways; and also at the length of time which sometimes elapses before the full effect of these manifests itself with certainty. For I found that images formed in this manner, which have appeared in good preservation at the end of twelve months from the time of their formation; have nevertheless somewhat altered during the second year. This circumstance, added to the fact that the first attempts which I made became indistinct, in process of time (the paper growing wholly dark) induced me to watch the progress of the change during some considerable time, as I thought that perhaps *all* these images would *ultimately* be found to fade away. I found, however,

\* *Philosophical Magazine* for March, 1839, Vol. XIV, pp. 161-196.

to my satisfaction, that this was not the case, and having now kept a number of these drawings during nearly five years without their suffering any deterioration, I think myself authorized to draw conclusions from my experiments with more certainty."

From this we see the extreme importance which Talbot rightly assigned to the discovery of a fixing agent. It was useless to be able to make pictures unless those pictures were capable of being fixed or preserved. Although Talbot's first successful attempts at photography were made as early as 1834, yet—from just doubts as to the permanency of his results—he did not publish his discovery until 1839; and probably would not have done so then had not his hand been forced by the rumors of Da-guerre's doings in France.

In the same paper Talbot continues :

"At the very commencement of my experiments upon this subject, when I saw how beautiful were the images which were thus produced by the action of light, I regretted the more that they were destined to have such a brief existence, and I resolved to attempt to find out, if possible, some method of preventing this, or retarding it as much as possible. The following considerations led me to conceive the possibility of discovering a preservative process.

"The nitrate of silver, which has become black by the action of light, is no longer the same chemical substance that it was before. Consequently, if a picture produced by solar light is subjected afterward to any chemical process, the white and dark parts of it will be differently acted upon, and there is no evidence that after this action has taken place these white and dark parts will any longer be subject to a spontaneous change ; or, if they are so, still it does not follow that that change will now tend to assimilate them to each other. In case of their remaining dissimilar, the picture will remain visible, and therefore our object will be accomplished.

"If it should be asserted that exposure to sun-light would necessarily reduce the whole to one uniform tint, and destroy the picture, the *onus pro-bandi* evidently lies on those who make the assertion. If we designate by the letter A the exposure to the solar light, and by B some indeterminate chemical process, my argument was this : Since it cannot be shown *a priori*, that the final result of the series of processes A B A will be the same with that denoted by B A, it will therefore be worth while to put the matter to the test of experiment, viz.: by varying the process B until the right one be

discovered ; or until so many trials have been made as to preclude all reasonable hope of its existence.

"My first trials were unsuccessful, as indeed I expected ; but after some time I discovered a method which answers perfectly ; and shortly afterwards another. On one of these more especially I have made numerous experiments ; the other I have comparatively little used, because it appears to require more nicety in the management. It is, however, equal, if not superior, to the first in brilliancy of effect.

"This chemical change, which I call the preserving process, is far more effectual than could have been anticipated. The paper, which had previously been so sensitive to light, becomes completely insensible to it, insomuch that I am able to show the Society specimens which have been exposed for an hour to the full summer sun, and from which exposure the image has suffered nothing, but retains its perfect whiteness."

After reading these paragraphs one can only exclaim:—"Bravo Talbot, spoken like a scholar and a philosopher." Davy's failure did not daunt him; and by the aid of mathematics (Talbot graduated with high honors at Cambridge University in 1821) he is able to demonstrate that a fixing agent is not an impossibility, and he goes for it.

*W. Jerome Harrison.*

*(To be continued.)*

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### FAST AND LOOSE.

A PHOTOGRAPHIC SKETCH IN TWO PARTS.

#### PART I.

Two newspaper paragraphs give the overture of the piece. They appeared, without apparent relation to each other, in a page of summer gossip of the sort that makes one realize how provincial even a metropolitan paper may be. This one, whose tower was running up to the skies to reach its fellows of the planetary system, had a correspondent at Laurel Beach ; and it was thence he informed his patrons, that :

"Among the belles of the Ocean House is Miss Minnie Caldwell, of New York. Miss Caldwell is an accomplished dancer, horsewoman, and swimmer. She is also an enthusiastic amateur photographer."

"Archibald Blunt, Jr., son of the well-known Pennsylvania iron magnate, is stopping at the Ocean House."

But there are innumerable things that even a summer correspondent does not know, and among them were the facts that follow.

Miss Minnie Caldwell had a remarkable little head. This fact had been noted by a young painter who said she looked like a Chaplin, but he was referring to externals, such as gold-brown hair and violet eyes. Internally it was even more remarkable, a most clever little head, with its intelligence tempered by a striking sense of humor. And when she looked at people with those infantile orbs of hers, they never dreamed that she was probably having, or arranging and about to have, a lot of fun with them in one way or another.

The long, tow-haired and dignified son of the Pennsylvania millionaire was not one who liked being looked on from the humorous point of view. He took himself very seriously, and expected others to do the like. He did not know that certain wicked women, being thereto instigated by the spirit that is in all women more or less, having heard him spoken of as "the catch of the season," thereafter referred to him simply and briefly as "The Catch," and he knew still less that Minnie had made up her mind from the first day he was presented to her that he was the young man about the most worth going in for in the house. Not that she cared for him particularly; but what fun to capture him and make all the other girls furious by dragging him behind her car!

Ordinarily he would not have approved especially of Minnie. He would have noted a gleam in her eye that forebode mischief, and would have carried his attentions to other girls of a more staid and soothing disposition. He had enough shrewd sense from his Scotch ancestors to make him steer clear of girls who showed a tendency to put him through his social paces. But Minnie was amazingly meek and harmless with him. There are twenty ways in which a girl, in the unconventional life of a summer place, can single out and lead on a man. Miss Minnie employed them all, and as she was a conspicuous favorite, the victim could not but be flattered, and gradually enmeshed in spite of himself. The climax came through the camera. She had crept, alone, through the bars into a field with it, to try for a picture of a dear little calf. The little calf's mother and one or two of the other cows were of an investigative turn of mind, and were making friendly advances which Minnie frustrated with a switch—not being in the least afraid of cows, or of anything else for that matter. But the appearance of Mr. Blunt's cart, with himself enthroned on the high seat, reduced her suddenly to a shrinking bit of beleaguered girlhood, terrorized by awful cows. Mr. Blunt gallantly cleared the fence, leaving his cart in the road, and rescued girl and camera. It was when he drove up

to the hotel with these as the freight of his yellow-wheeled vehicle—the girl radiant on the seat beside him, the tripod sticking up exultant legs from the box behind—that the gossips of the piazza first began to whisper ominously and prognosticate obscure and fateful things about "that Minnie Caldwell," more especially those who had marriageable but lingering daughters of their own.

Things of that sort run rapidly by a summer sea, and it was not a fortnight afterward that common rumor stated an engagement between the two, and predicted a wedding in the fall. It was then that one of the friends of the pair suggested, not in their presence, that the intelligence of the engagement ought to be sent to the photographic press, under the heading "Caught by the Camera." For the iron man's son had developed an immense interest in photography, had ordered a 5x7 Waterbury "detective" camera down from New York, and spent his days largely in going about with Miss Caldwell, and snapping up unconsidered trifles of the pictorial sort all over the place. Miss Caldwell had laid by her comparatively cumbrous landscape outfit, and was teaching Mr. Blunt the use of his, at the same time that she was learning, herself, the tactics of the hand-camera. Ten to one, if you heard a sudden click behind or beside you, it would be from Blunt's Waterbury; and you would turn to behold Miss Caldwell smiling at you, holding the fatal black box, while beside her towered the Pennsylvanian in resplendent flannels.

*Frederic Hart Wilson.*

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## INTERIORS.

FOR many years past I have made the photographing of interiors my special study, which to me has been very fascinating. When at work I never value time when aiming at the best possible result, and in the photographing of interiors one cannot hurry; and to those who pride themselves in producing so many dozens of negatives per day had better not include interior work. Three-fourths of the prints one sees at the present day of interiors are under-exposed, not only under-exposed, but they have not made the best of the exposure in developing, which I shall allude to hereafter. I have actually seen parties exposing in some of our cathedrals (dark interiors, mind you) with an instantaneous shutter, pinning their faith to instantaneous plates, lenses, and shutters; and if one gets into conversation with the owner of these wonderful things, they tell the most extraordinary tales of the wonders of photography. I have been told on many occasions more than I ever knew or heard of before; but I need not say that I never attempted to verify these wonderful statements, being too far above me.

In interior work it is always best to study the subject and think it well out as to the result that one requires to get, and not be satisfied until that desired result is obtained. I never believe in getting what you can. Some

interiors are exceedingly difficult, owing to lighting, etc., others are altogether as easy. It is not always that one can have the lighting as he could wish, but with careful study it is wonderful what can be overcome. Churches, as a rule, stand east and west. I have at times found a few standing due north and south. Providing the church is due east and west, if we require to take a view looking west from the altar, between six o'clock and eight o'clock A. M. is the best; if from west and east, I generally find about one o'clock P. M. to be a good time. There may be certain other circumstances to be taken into consideration, which must be left entirely to one's judgment. It will never do, under any consideration, to attempt to take a picture with the full blaze of light coming through a window full into the lens. The camera to be used should be fitted with a swing back, with plenty of swing to it, rising and falling front, with good range, avoiding a conical bellows camera, which is in the way when the front has to be raised or lowered, and cuts off part of the image. A camera with parallel bellows is the best form, which is all that is required, as far as my experience goes, in any camera. The tripod stand should be one of the sliding-leg order, that can be shortened or lengthened as required. It very often occurs that the legs have sometimes to be of different lengths in some positions, viz., over the backs of pews, tombs, or close up in corners, etc. The ordinary straight-legged stand is but of very little use. I generally use a stand where the camera can be worked from, say, eighteen inches from the ground up to six feet and more, and very stiff and firm. These spider-legged, gingerly looking stands that look so pretty to some are of no use for this class of work; they seem almost as if a fly were to settle on them it would make them shake. I think this kind of stand has something to do with the artistic focus we hear of at times. The head of the stand ought to be of a good size, as large as possible for the size of the camera; small tops to camera stands tend very much to unsteadiness.

*Lenses.*—On no account must any lens be used that does not give straight lines; the single landscape view lens and also some of the portrait lenses of the Petzval form are useless. The rapid rectilinear lens and rapid symmetrical lens are the best to be used when not looking towards the light. If looking towards the light—for instance, a window—I have always obtained the best results by using a Ross portable symmetrical lens. I am well aware that this lens is not liked by many on account of its being slow; in my hands it is slow and sure. For this class of work it has no equal, and another point in its favor is that the so-called flare spot is entirely absent. If lenses of the rapid order are used, they produce halation in its worst form. I have never found the backing of plates of any service whatever. An experiment is very easily tried: Take for the subject the inside of a conservatory, exposing to test plates with the lens of the rapid order, the sash bars are mixed up with the sky; whereas with a lens of the portable symmetrical form the very detail on the inside of the bars is absolutely defined. It is far better to give an hour's exposure with this lens than give ten minutes' exposure with the other form and get a bad result. I look upon this as the most important point in interior work; backing of any kind on the plate I never use. I have been repeatedly asked how it is I never get halation, and my answer always has been by using the proper lenses, as stated above.

Some fall into the error of using a lens of as wide an angle as possible, and I believe if it were possible to use a lens that would look round the back of the camera, under the legs of tripod and seats, some would go in for it, and think it very clever. I have always found that the best result is obtained by using a lens of such an angle as to get sufficient of the subject matter to give a pleasing result. Wide-angle lenses, if improperly used, give the worst possible results by way of distortion. Take, for instance, a room with pictures on its walls on either side, with some of these pictures being higher than they are wide, and by using a very wide-angle lens, if these pictures were at the sides or margin of the photograph, they would be represented as being much longer than they were high, or as if they were turned on their side. Take as another example, say, a railway station, or a long building lighted with lamps of a globe form (perfect spheres), those occurring in the middle of the photograph would be correctly rendered, while those at the margin would be oval in form; and I don't think, on a little consideration, it takes much to see the cause.

*Plates.*—The best plates to use for interior work are thickly coated ones, this is the best kind of backing, as Paddy would have it, on the front. For myself, I much prefer a plate of medium rapidity, the very rapid plates giving a very poor image; and if it is a well-lighted interior I much prefer to use a slow landscape plate, as giving a much finer image.

Having selected the subject, point of view, and proper time of day as regards lighting, etc., focusing is the next operation, which requires the greatest possible care to obtain the best result. It matters not whether the subject be church, chapel, hall, or what not, great care must be paid to get the lines of the picture perfectly upright.

Many pin their faith to the use of a small spirit level about the size of a shilling—I don't; for however correctly the level is made, practically it is of very little service. There is scarcely any interior but what the swing back must be brought into requisition, and the camera be cocked up and out of the level, unless the desired picture can be obtained from a gallery or elevated position, and then, perhaps, it has to be pointed downwards. I always more prefer to use the swing back than the sliding front of the camera, keeping the lens in the centre of the plate to avoid marginal distortion, as before mentioned. In extreme cases the swing back and sliding front have to be used to their utmost. As a golden rule, everything *must* be absolutely sharp in the foreground, not forgetting the middle distance to be tolerably sharp, and the distances beyond, being less and less sharp to the extreme distance, and by this means the artistic result, as far as atmospheric effect can be obtained, is at its best; this is my idea of artistic focusing to obtain atmospheric effect and breadth. I am perfectly aware that this does not meet the optician's idea of perfection, which is to bring everything into absolute sharpness on to one plane, and if that is done the result is soulless and like a map. I think it would be a funny pair of eyes that could see everything absolutely sharp in nature on every plane, possibly like Sam Weller's "forty horse-power double oxyhydrogen gas microscopes."

It is often seen in photographs that the camera has been planted in the centre of the middle aisle of a church, giving a result as if the whole thing had been set out with a pair of compasses—this is the very worst point of sight that can be imagined—instead of going a little on one side

and getting a more pleasing perspective view of whatever the subject may be. The foreground is very often represented as being something like forty-five degrees, which is either anything but pleasing or a truthful representation. So much for taste.

The upright lines must be as perpendicular as possible. In many instances in our old cathedrals, churches, etc., the columns are anything but upright or straight, and when they have to be reproduced into the space of a few inches this defect becomes painfully visible; all that is left to be done is to reproduce them as they really are in nature. This kind of thing is the result of the settlement of the foundation. In Westminster Abbey I have noticed several of those very tall, clustered columns have given in in the middle. In a photograph this would give the appearance of its having been taken with a single-view lens or a portrait lens, in the case of being out of the upright; if one attempts to get any of these columns upright on the screen, if the other columns on the other side are out in the other direction it only makes matters worse.

As mentioned above, a spirit level is but of very little use; a far better instrument is a small plumb rule—it need not be more than six inches long—with a plummet on a fine cord; it is the plane of the focusing screen that must be perfectly upright. It can also be used up the side of the camera to get it upright in the other way. I have often wondered why such a little instrument has not been placed on the market. The tail-board of a camera is scarcely ever to be depended upon for truth, as it is very often pulled and warped out of a true plane by the bolt that attaches the camera to the tripod. A very good plan is to have a few fine perpendicular lines ruled on the focusing screen, which is a wonderful help in getting the lines of the subject upright. I always make it a practice to oil the ground side of my focusing screen, and well rubbing off with an old silk handkerchief, whereby the image on the screen can be far more distinctly seen, and focusing is rendered much more easy in a dull light.

*Exposure.*—Never attempt to use any of these nonsensical tables for calculating exposures, which are only got up by schoolmasters and figure jobbers who have nothing better to do. I have never yet known anybody to succeed with them; they are like some companies' balance sheets—look very pretty on paper, but very untruthful from any other point of view. The only thing to guide one is to look for the amount of shadow and its depth on the screen. Never mind the class of either lens or stop that is being used, it must be judged by the image on the screen entirely, taking into consideration the rapidity of the plate and the color of the stonework or the material that it is composed of; but always expose for the shadows, and give enough, and the rest can be got over by judicious development, which is easily got into by experience and careful observation. The general idea of photography by some people is that they can get the best possible result without exerting the slightest brain-power or thought. For myself, with over thirty years' experience, I find that I am learning something every day, and have still a great deal more to learn if I live long enough; but some people are far too easily satisfied—I suppose it is human nature. I must not forget to mention the use of stops. Never stop a lens down more than is necessary to get the amount of sharpness and effect desired.

*Development.*—As I am not treating on any one special make of plate, I do not intend giving any definite form of

developer, although I have found a good normal developer will, with a little experience, develop all the plates in the market. In my one practice I never use anything but pyro and ammonia, and so long as I get the desired qualities in my negatives that I require, I do not see the necessity of making a change. Many read everything that is written, and try all the new notions that are brought forward, instead of settling on one established formula, and by sticking to it to thoroughly become acquainted with its working, hence the results obtained in dodging about are of the worst possible kind, as they are never content to begin at the beginning, but are continually blaming either the plates, camera, or lenses, never thinking of their own shortcomings.

Developing an interior requires very careful treatment. It is far best to commence gently, using a weak developer to start with, than to attempt to rush the image out; for should the plate be somewhat under-exposed, and a strong developer used at the commencement, the result is a hard, chalky negative, giving a very black-and-white image. A slow progressive development is by much the better way, especially for under-exposure.

It may be found that on certain portions of the image where the action of the light has been great, such parts are too intense to give a pleasing effect when printed; these parts can easily be reduced by rubbing down with methylated alcohol on a soft piece of rag. I have described this method several times in these pages, hence I need not repeat it, as I am quite aware that it is now largely practised. It is also very valuable for removing surface green fog before varnishing.

*William Brooks,*  
*In the British Journal of Photography.*

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### Notes and News.

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**J. J. Higgins, M.D.**, the well-known amateur photographer, has returned from his summer outing.

**A Good Opening.**—We learn that a first-class photographer can find a good opening in Angola, Erie County, N. Y., as there is no other gallery there as yet.

**The Daguerre Fund.**—We have received through Williams, Brown & Earle, of Philadelphia, a contribution of ten dollars (\$10) from Mr. C. B. Moore for the Daguerre Memorial Fund.

**Obituary.**—We learn, with regret, of the death of John Spencer, the Glasgow merchant, which occurred on the 10th of August. John James Spencer, his son, will continue the business under the same name.

**There are** four young women in the Royal Observatory of Greenwich, England, says the *New York World*, in active service. All are graduates of Newham College. Their employment includes lunar observations, photography and exact calculations from photographic studies.

**Height of Luminous Clouds.**—A series of experiments have been conducted in Germany during the last year with the object of determining the height of luminous clouds, and a large number of photographic impressions have been secured. From these a valuable fund of information



on cloud phenomena has been gained. The result of comparing the various results obtained at different observatories goes to show that these clouds have the extraordinary altitude of fifty-one and one half miles above the sea level.—*New York Telegram.*

**The Diploma** for the most tastefully arranged exhibit at the late Washington Convention of the P. A. of A. was awarded to the Baker Art Studio of Columbus, Ohio.

**The John Wilkinson Company** removed on the fifteenth of September to 269 and 271 State Street, Chicago, where they will have more spacious quarters.

**A Smoking Concert** was given, Wednesday evening, September 17th, at the rooms of the Society of Amateur Photographers of New York, in the Metropolitan Telephone Building on West Thirty-eighth Street. The programme consisted of music, recitations, and exhibitions of lantern slides.

**The Scovill & Adams** publications have attained popularity for their sterling worth, and scarcely a month passes but one or other of their photographic series runs into a new edition. This month copies of the second edition of the "Photographic Instructor," and of the *sixth* edition of "The Modern Practice of Retouching," are to hand.—*The Practical Photographer.*

**Mr. S. T. Blessing**, one of the oldest merchants in photographic goods in this country, has recently been spending a few days in New York, and made this office his head-quarters. Mr. Blessing has been in the photographic business over thirty-seven years, his name being upon the Scovill & Adams Co.'s books for that length of time. The firm name was formerly Anderson & Blessing, which dates back to 1853.

**Suicide of Photographer de Silva.**—Abraham M. de Silva took 28 grains of morphine and died from the effects of the drug. He took the dose with suicidal intent, and resisted all efforts to save his life. He was a photographer of wide reputation, and was about to join an expedition up the Congo River with a party of New Yorkers. Domestic troubles and alcoholism were the causes of the suicide.

**The photographers of Iowa** have been holding a State Convention at Des Moines. About a hundred photographers were in attendance from various parts of the State. The convention lasted two days, and will be held annually in the same city. The following were the officers elected for the ensuing year: Frank Kilborn, of Cedar Rapids, President; W. H. Brewer, of Shenandoah, First Vice-President; E. A. Dunlap, of Bloomfield, Second Vice-President; W. J. Reynolds, of Nevada, Secretary, and T. A. Brown, of Marshalltown, Treasurer.

**A Photographer Crosses Niagara on a Wire.**—Samuel Jones Dixon, a photographer, of Toronto, walked a wire cable stretched across the river between the cantilever and railway suspension bridge, Saturday, September 6th.

The cable used was a five-eighth wire, and was erected several years ago by Stephen Peer, who made one trip, and three days after was found dead at the foot of the bank under his cable.

Dixon saw the cable on his recent trip to the Photographic Convention in Washington, and said he could walk it. The proposition was accepted and three weeks ago Dixon went into training at Hamlon's Island, Toronto.

Promptly at 3.30 o'clock he made his appearance at the Canadian end of the cable, dressed in tights.

He appeared somewhat nervous, but taking up his balance-pole, amid the cheers of several thousand spectators, started out.

The trip across was made in twelve minutes, during which he made several stops to rest. After remaining on the American shore a few moments he again appeared, and walking out 200 feet gave a good tight-rope performance. He then crossed on the bridge and gave a similar performance on the Canadian end of the rope. It was the best rope performance witnessed here since Blondin's time. Dixon says he will return and repeat the feat.

**A New Property of Gelatine.**—While studying the action of metallic chlorides on bromide of silver gelatine, we have made the discovery that gelatine will dissolve cold in a solution of barium chloride. The consequences for photography which may arise from this peculiar property have induced us to examine into the matter further. Other bodies which present a similarity from a chemical point of view, such as the chlorides of potassium, sodium, calcium, etc., do not display this capacity for dissolving gelatine, nor do their iodides or bromides. The chloride of strontium is, however, an exception, and possesses the same property as the chloride of barium, though in a much smaller degree.

With a solution of fifteen per cent. of barium chloride the solubility is so great that sufficient gelatine may be dissolved to render the solution sirupy. The liquid keeps well and does not decompose under the action of the air. Allowed to evaporate spontaneously, it leaves behind a solid white substance, which, when examined under the microscope, shows itself to be composed of an amorphous mass of filaments mixed with chloride of barium, but it does not appear that any combination has taken place between the two substances. This solid substance dissolves in water without leaving any sediment behind. When the barium salt is precipitated by means of sodium sulphate, chloride of sodium is obtained in solution, and the gelatine does not then solidify in the cold.

From these observations, we have drawn two conclusions which may be of practical use in photography. These are:

1. The presence of barium chloride in gelatine emulsions should be avoided. We have sometimes found traces of this compound in chloride of silver gelatine, and have then observed that the films have a tendency to detach themselves from the plate.

2. The property we have observed might be employed in treating emulsion residues.

It suffices to add barium chloride to the said residues to cause them to dissolve in the cold. If the liquid be then diluted till it be no longer viscous, the haloid silver collects at the bottom of the vessel, and the dissolved gelatine may be removed by washing and decantation. The employment of heat and acids may thus be avoided without causing the cost of money to be much raised.

Finally, the chloride of barium may be employed for developing carbon prints in the cold, but in this case the image shows a tendency to leave its support.—*A. & L. Lumiere, in Moniteur de la Photographie.*

### The Editorial Table.

WE have received from C. W. Parker, the photographer of Morristown, N. J., a group of young people in theatrical costume, apparently just from their amateur theatrical exhibition. The grouping, as well as the execution, is well done.

FROM L. A. Green, of Little Falls, N. Y., we have received two 4x5 photographs of average amateur merit. One, of an interesting rock formation, entitled "Profile Rock at Little Falls;" and the other, of the pier at Fort Hope, Ontario, Canada.

WITH the compliments of H. L. Bellsmith, a former secretary of the P. A. of A., we have received an invitation to attend the opening of his photographic studio in Denver, Colorado, which occurred on Wednesday and Thursday afternoons, September 10th and 11th, from one to six o'clock. The invitations were neatly embellished by an excellent three-quarter portrait of Mr. Bellsmith in full evening dress.

MR. CHESTER E. FROST, a salesman in the employ of Gayton A. Douglass & Company, merchants in photographic supplies, sends us an excellent photograph of the ruins of McVicker's theatre, caused by the great recent fire. "It was made with a Waterbury Detective camera," writes Mr. Frost, "and five seconds' exposure, from the highest gallery. I was balanced on one leg, with the box on another. The box was tilted at full forty-five degrees, I think." The printing and toning have been well done.

THE MODERN PRACTICE OF RETOUCHING NEGATIVES.—"All the various details of retouching collodion negatives, positives, enlargements, landscapes, and so forth, are given in the various methods, American, German and English. The book contains much useful information for the advanced amateur as well as the professional. The price—fifty cents—places it within the reach of all."—*American Journal of Photography*.

"The sixth edition of a very useful volume of the Scovill Photographic Series contains several additions to what appeared in previous editions, notably two papers on the subject which were published in the American Annuals for 1888 and 1889. It comprises much information in a condensed form."—*The British Journal of Photography*.

### Record of Photographic Patents.

435,681. Device for oscillating Photographers' Developing Pans. Victor H. Buschmann, Baltimore, Md.

436,012. Photographic Camera. Joseph T. Bedford, New York, N. Y.

436,060. Photographic Magazine Camera. James Lalor, Aurora, Ill.

436,098. Photographic Camera. Hermann Heinrich, Berlin, Germany.

436,117. Album. William Borgnor, Baltimore, Md.

436,243. Easel Album. Thomas Kelly, New York, N. Y.

**Shop Talk.**—Photographer (to assistant): "What have you there, James?"

Assistant: "A positive, sir?"

Photographer: "Why, no, you haven't; those are two negatives."

Assistant; "Same thing, sir."—*Judge*.

### Queries and Answers.

156 **HYP0.**—What is the cause of little yellow spots in the negative. With some plates they never occur, with others they are quite frequent?

156 *Answer.*—Very likely nothing but little undissolved patches of bromide of silver. Return such plates to the hypo bath, when the spots will dissolve in a few minutes. You must remember that some plates fix much slower than others, and especially those containing much iodide of silver.

157 **M. MALORY.**—Is it injurious to fix negatives in saturated solution of hyposulphite of soda?

157 *Answer.*—A saturated solution of hypo retards fixing. Make the solution in the proportion of 1:5.

158 **Miss P. B. B.**—How many grains of magnesium flash-light powder should be used to secure full exposures!

158 *Answer.*—That depends much on the focus of your lens, stop, distance from subject, etc. Read "The Photographic Instructor," second edition, page 169-170.

159 **CHAS. HARTMAN.**—Can an alkaline toning bath be restored to its original activity after part of its gold has been spent, and after standing for several days?

159 *Answer.*—It can; add a few drops of hydrochloric acid, reconstitute the amount of gold spent, and neutralise as usual. To tone twelve 8x5 pieces of ready sensitized paper, from one to one and a-half grains of pure chloride of gold is required.

160 **QUANT.**—Has seen acid bi-sulphite of soda recommended for the preservation of hydrochinon and eikonogen in solution. What are its virtues over the ordinary sulphite he asks.

160 *Answer.*—There is no doubt the acid salt will act as preserver, but it is equally certain that it retards the action of the developer very much. We think the ordinary sulphite of soda is quite good enough for all purposes.

To the Editor of THE PHOTOGRAPHIC TIMES.

*Dear Sir:*—On page 374 of the August 1st issue, in reply to Query 136, you say he can use glycerine in his silver bath, and wisely caution him against using nitric acid in the bath. This will make a very slow bath, that will not keep in good working order.

The better plan is to use a bath free from alcohol, and after the plate is coated, flow over it a solution of equal parts of glycerine and water until it will flow smoothly, and not crawl over the plate; after placing in the holder apply to the back of the plate two thicknesses of wet blotting paper. I have kept plates treated in this way two to three hours and got fine results, the exposure requires to be  $\frac{1}{4}$  longer. Another good plan is, after the exposure and before developing wash off all the glycerine and dip in the bath then develop as usual.

*A. Hesler.*

# THE PHOTOGRAPHIC TIMES.

Vol. XX.

FRIDAY, SEPTEMBER 26, 1890.

No. 471.

## A SCENE IN THE TYROLESE ALPS.

MR. W. J. STILLMAN has told our readers so much about art, ancient and modern, true and false, we feel sure that in showing them a reproduction from one of his own specimens of actual art work we are satisfying a very natural and proper curiosity.

The photo-gravure is from a film negative of Mr. Stillman's little picture, and, of course gives a photographer only the composition, the light and the shade. The beauty of color is entirely lost, and, as a consequence, the photo-gravure is but a poor reproduction of the actual picture. But it shows that Mr. Stillman can paint as well as write, and it is because he can paint so well that he can write; though, as he himself says in his recent article on "Ancient and Modern Art," "I never knew an artist to take to literature without ruining his art."

In the same article Mr. Stillman says of himself that he has "been painting more or less for more than forty years and writing for the papers—indeed I edited an art journal at one time which received considerable approbation from many of our best writers and artists of the last generation, as well as some of England, including Ruskin, and in the green stages of my development I wrote a great deal of rubbish for which I hope to atone before I die."

The little picture from which our photo gravure was made was painted from nature in the Dolomitic Alps, Austrian Tyrol. It was painted some time ago. Mr. Stillman paints very little now, his time being so fully occupied with his literary work.

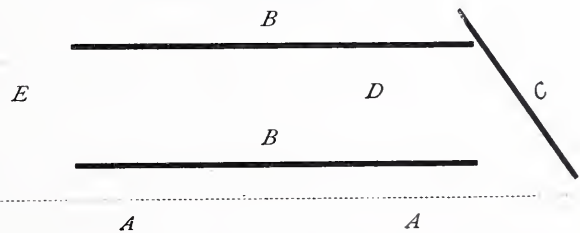
The negative is reproduced by the New York Photo-Gravure Company with their usual taste and skill.

## PHOTOGRAPHIC SILHOUETTES.

Herr E. Stumann recently described in *Photographic Correspondence* how to make Photographic Silhouettes, now so popular in America and on the

continent of Europe. The method is briefly as follows:—

Place two dark back-grounds in parallel position about 4 feet from the sky and side light of the studio and distant from each other about 6 feet. Improvise a dark tunnel by drawing a black cloth, of none-reflecting material, over the two dark grounds, and arrange a white screen, somewhat larger than the distance between the two dark grounds in an oblique position so as to be fully illuminated.



A A. The sky, and side light. B B. Two dark back-grounds. C. The white screen in oblique position. D. The subject. E. The camera.



The subject to be silhouetted must be placed in the centre of the tunnel, one side of the face turned towards one ground, but comparatively nearer to the white screen so that the side of the face turned towards the camera is as much as possible in the shade.

Focus must be taken accurately, so that the outlines of the figure are perfectly sharp.

As it is the object to obtain a perfectly transparent, glass clear silhouette upon an absolutely opaque ground, but a very short time of exposure is required.



Develop as usual and to secure perfect opacity intensify more than usual. Plates of lower sensitiveness invariably give the best results. The Carbutt B, or the plate made particularly for reproductions is well adapted for this kind of work. With ferrous oxalate or hydrochinon developer there is scarcely any need of intensifying.

To obviate the shadows cast upon the floor, by the lower parts of the figure, place it upon a thick large plate-glass, supported by props of five or six inches in height, and spread upon the floor



under the glass a piece of white muslin. The muslin must be free of folds or wrinkles, and be so connected with the white screen, that the division line between is not reproduced upon the plate.

The very feeble shadows of the feet can be easily touched away with pencil.



Single persons or groups of two or three figures can be photographed in this peculiar style with very good effect. For head and busts expose in the usual manner but to obtain silhouettes, similar to those our grandmothers had cut in black paper, and long before photography was thought of, cut an appropriate mask of black paper to cover the part not wanted during printing.



It should be born in mind that in this class of work the white background only is the object to be photographed, hence the necessity of but very short exposures. With longer exposures absolute blacks and whites are impossible.

#### THE PROPER CLASSIFICATION OF PHOTOGRAPHY IN THE ELEVENTH CENSUS.

DR. GEORGE M. CARLISLE, the efficient treasurer of the Photographers' Association of America, ever active in promoting the welfare of the fraternity, has of late been interesting himself in the special classification of photographers and the photographic industry in the eleventh census. He has approached Secretary Noble, of the Department of the Interior, in behalf of photographers, and has received every encouragement from him. The outlook for a special census to adequately report the growth of photography and the photographic business in this country, is at present very promising. In his endeavors to promote the cause, Dr.

Carlisle has received the support of this magazine. We have received the following letter from Secretary Noble, dated September 8th, at Richfield Springs, which shows with what favor the Secretary of the Interior looks upon the project.

"Yours of the 3d instant has been received and for your complimentary notice of my address at the unveiling of the Daguerre Memorial at Washington I thank you very much. I indeed have quite an interest in the success of the art, and will be glad to assist you in any way you may present. I have referred that portion of your letter concerning the classification of photography in the census to the Superintendent of Census with favorable endorsement.

"Yours truly,  
[Signed] "JOHN W. NOBLE,  
"Secretary of the Department of the Interior."

Hon. F. L. Williams, special agent in charge of manufactures in the eleventh census, writes as follows in regard to the matter which Secretary Noble referred to him with "favorable endorsement":

"This office is in receipt by reference of the honorable, the Secretary of the Interior, of your letter of September 3, 1890, relative to photography.

"In reply, I beg to inform you that the statistics relating to photographic establishments are now being collected by the special agents who collect statistics relating to all branches of manufactures throughout the entire United States, and that this industry will be separately classified in the forthcoming census report.

"I beg leave further to add that Dr. George M. Carlisle has been suggested to this office as a suitable person to make a report in relation thereto; he has been consulted about the matter, and I have no doubt conclusions will be reached satisfactory to all parties interested.

"Very respectfully,  
"F. L. WILLIAMS,  
"Special Agent in charge of Manufactures."  
"WASHINGTON, Sep. 13, 1890."

The result of a proper classification of photography in the census, through the assistance of one so thoroughly competent to serve, as Doctor Carlisle, cannot but be beneficial to photographers and all interested in photography. We have never yet received the public recognition which the number of photographers and the magnitude of the photographic industry in this country deserves. Such a classification as now proposed will do much to give us the standing among the other professions and industries which our own certainly deserves.

THE full number of illustrations for "The American Annual of Photography and Photographic Times Almanac," for 1891, is nearly completed, but there are still places for two or three exceedingly good ones. Let those of our readers who have as yet not sent any prints in competition for a place in this volume, do so at once if they desire to compete, for there remains

but a short time before the competition must be closed. All those whose pictures are accepted receive an *edition de luxe* of the volume, and let those of our readers who are writing or have written an article for "The Annual," bear in mind the date set by the editor for closing the columns—September 25th. If received not later than the first of October, however, an article may yet be crowded into this volume.

FROM an article in a recent issue of *Harpers' Weekly* we learn that Nièpce, besides his title to distinction as one of the Fathers of Photography, has also a claim to similar honors *re* the 'cycle.

"In 1816," reads the article, "one of the sights of the Luxembourg Gardens was a two-wheeled machine connected by a perch or beam, on which M. Nièpce, of Chalons, aired himself, getting great speed out of the machine. This contrivance was termed 'célérépère,' afterward anglicised to 'celeripede.' The rider sat on the beam and propelled himself by a walking motion, or pushing the ground behind him."

## INDUSTRIAL PHOTOGRAPHY.

(Continued from page 468.)

### DUSTING METHODS.

The dusting method consists, as most of the readers of THE PHOTOGRAPHIC TIMES are well aware of, to coat a plate with a compound which becomes hygroscopic under the luminous influence or loses its property of attracting moisture by the same reductive action, whereby any substance ground into powder adheres on the parts which become or remain hygroscopic to the exclusion of the others.

The compounds which light renders hygroscopic are prepared with ferric chloride; a negative is consequently employed to impress them; those which are deprived of the property in question are rendered sensitive to light by an alkaline chromic salt, they should be exposed under a diapositive. We will call "Photogenes" all these compounds

### FERRIC CHLORIDE DUSTING PROCESS.

The ferric chloride photogene is prepared according to this formula:

A—Ferric chloride crystallized.....	25 grams
Water.....	100 cub. cents.
B—Tartaric acid.....	12 grams
Water.....	100 cub. cents.

Filter both solutions. For use mix by equal volumes. Tartaric acid is the sensitizer, therefore

intermixed with the iron salt the solution should be kept in the dark.

By increasing the proportion of tartaric acid more vigor or contrast is obtained. It is not advisable of diminishing the percentage given in the above formula unless the cliché be much too intense, else the picture would be flat and the pure whites more or less tinted. A small quantity both of glucose and dextrine may be added to the photogene. It causes a more rapid reduction of the ferric chloride, imparts more brilliancy to the image and renders the process more manageable in cold and damp weather.

Mr. Gobert advises to prepare the photogene in the following manner, stating that the ferric chloride of commerce is seldom sufficiently pure for this and other photographic processes in which it is employed: A certain quantity of ferrous sulphate in concentrated solution is first treated by nitric acid in excess which transforms it into ferric sulphate. This salt is then precipitated by aqueous ammonia and the precipitate—ferric oxide—washed by decantation, is dried and kept for use. To prepare the photogene nine grams of oxide is dissolved in hydrochloric acid C. P. *not in excess*, then water is added to make up one hundred cubic centimeters and, after dissolving nine grams of tartaric acid and filtering, the solution is ready for use.\*

The following photogene devised by the late J. B. Obernetter to obtain diapositive gives also excellent results:

Iron citrate.....	10 grams
Citric acid.....	0.5 gram
Conc. sol. ferric chloride.....	2 c.c.m.
Water... ..	100 c.c.m.

"The citrate is pulverized very fine and the three ingredients are put in a beaker and the water added. The water is then heated to the boiling temperature, stirring continually until the citrate is dissolved and the solution when settled and cool filtered through paper."

All these photogenes should be kept in the dark. They do not keep more than two or three days in very good condition. It is best, however, to prepare them the day before they are wanted for use.

To prepare the sensitive film a plate of glass grounded very fine, such as those employed in the camera obscura for focusing, is soaked in a solution of potassa, rinsed, immersed for an hour or more in nitric acid, rinsed again, dried, dusted and coated with the photogene.

In this as in every other dusting processes it is of the greatest importance in order to avoid white and

black spots on the finished picture to operate in a room free from dust floating in the air, which during the operations are necessarily deposited on the plate. To that effect the room—which, if possible, should be small and have no shelving—must be swept, then sprinkled with plenty of water, say, an hour before coating or developing, and the floor kept damp during these operations. Any draft of air should, of course, be prevented. For the same reason the photogene should be carefully filtered, allowed to stand for a certain period, then decanted for use.

The plate should be coated twice, the second time in the opposite direction, then drained on the filter, then placed on one angle upon blotting paper and allowed to dry spontaneously in a box into which is kept to hasten the desiccation a tray containing concentrated sulphuric acid, or quick-lime, or, better, desiccated and powdered calcium chloride, manufactured for such and other purposes and sold for a few cents per pound.

This manner of operating is good, but the writer prefers to coat the plate grounded or not by means of the turning table at a moderate speed and to dry it held horizontally over a spirit lamp or in an oven, the coating being more even and the plate prepared in a few minutes just before exposing.\* When dry the film should be even and bright. If it appear whitish and dull, it indicates a bad preparation.

The plate is exposed under a negative, neither very intense, nor too soft. If it is not exactly of the right quality, good impression may be obtained by increasing or diminishing the dose of tartaric acid, as before pointed out, or by having recourse to the printing dodges employed in silver printing. I forgot to say that a black cloth should be laid over the plate while printing.

In sunshine the exposure varies from 4 to 6 minutes. In the shade it is about four times longer. No rule can be given to determinate it *a priori*; it is an experience to acquire, and since the progress of the luminous action cannot be followed by viewing the plate from time to time as in the printing paper process, we advise the beginner to use a photometer to regulate the time of exposure.

On the removal of the plate from the printing frame the image is faintly visible on the yellow ground of the film which now attracts the atmospheric moisture on the parts altered by light in

\* We never had any difficulty with the ferric chloride C. P. obtained from Eimer & Amend.

\* Drying in an oven is the most practical manner when working in a certain scale by this or other dusting processes, for the number of plate required for a day's use can be prepared at once and kept quite dry and warm for exposure, which is a condition of success.

It is sold on the market for cooking purposes, a tin oven, about one foot square, heated over a petroleum stove, which is quite convenient for the purpose in question.

proportion to the degree of this alteration, or more properly speaking, in proportion to the more or less complete reduction into ferrous chloride of the ferric salt constituting the sensitive film. Consequently when after allowing the film to attract water for a short period, which depends on the hygroscopic state of the air, the enamel powder is applied on the plate with a camel brush, it will adhere on these parts in proportion to the amount of moisture absorbed and the image appear with its gradation from light to shade. Generally the half tints do not make their appearance simultaneously with the shadows, which is rational and usually indicates a correct exposure, for the moisture is necessarily attracted so much more rapidly as the reduction of the ferric compound is more complete. Consequently, one should proceed by successive applications of the enamel powder, allowing between each one the film to attract more moisture in order to facilitate the adherence of the powder, and breath upon those parts which develop too slowly or do not intensify sufficiently.

The development is followed by placing the plate upon a white cardboard, but the effect should be judged by viewing the picture by transmitted light, moreover by reflexion it always appears stronger than it should be for burning-in.

If it happen that by excess of exposure the image becomes impasted and the whites (high lights) tinged, "it is facile to remedy, in part at least, to this defect by dusting upon the plate (previously well desiccated by heat) some finely pulverized glass, and rubbing with a bung of cotton-wool; the particles of glass remove quite well the enamel powder which fogs the image and the design becomes clear."

The image being well developed, perfect, the non-adherent powder is dusted off and the plate coated with plain collodion.

Ether concentrated.....	60 c.c.m.
Alcohol 95 deg.....	40 c.c.m.
Castor oil.....	3 drops
Pyroxiline.....	1½ to 2 grams

As soon as the film is set, the plate is immersed in a solution of hydrochloric acid at 3 or 4 per cent. of water, which renders soluble the salt of iron and destroys the adherence of the collodion film to the plate. This done the plate is washed under the tap, immersed into a tray filled with filtered water where the film can be easily removed from the plate, and when the last traces of acid have been eliminated transferred collodion side downwards upon the material upon which the

image is to be burnt in. The method of transferring will be explained further on. We must say, however, that as an adhesive medium nothing but a saturated solution of borax should be employed.

(To be continued.)

### THE CHEMISTRY OF FIXING.

(Continued from page 471.)

To continue our quotations from this epoch-making paper of 1839:

"*On the Art of Fixing a Shadow.*—The phenomenon which I have now briefly mentioned appears to me to partake of the character of the marvellous, almost as much as any fact which physical investigation has yet brought to our knowledge. The most transitory of things, a shadow, the proverbial emblem of all that is fleeting and momentary may be fettered by the spells of our 'natural magic,' and may be fixed for ever in the position which it seemed only destined for a single instant to occupy.

"This remarkable phenomenon, of whatever value it may turn out in its application to the arts, will at least be accepted as a new proof of the value of inductive methods of modern science, which by noticing the occurrence of unusual circumstances (which accident, perhaps, first manifests in some small degree), and by following them up with experiments, and varying the conditions of these until the true law of nature which they express is apprehended, conducts us at length to consequences altogether unexpected, remote from usual experience, and contrary to almost universal belief. Such is the fact, that we may receive on paper the fleeting shadow, arrest it there, and in the space of a single minute fix it there so firmly as to be no more capable of change, even if thrown back into the sunbeam from which it derived its origin."

In this, his first paper, Talbot describes his results only, and gives no details as to his methods for obtaining them. But two months later \* he supplied this want in the form of an "open letter" addressed to S. H. Christie, Esq., the secretary of the Royal Society. He says that "the subject naturally divides itself in two heads, viz., the preparation of the paper, and the means of fixing the design."

It is the latter only of these topics which concerns us at present.

"*Method of Fixing the Image.*—After having tried ammonia, and several other reagents, with very imperfect success, the first thing which gave

\* *Philosophical Magazine* for March, 1839, pp. 209-211.

me a successful result was the iodide of potassium much diluted with water. If a photogenic picture \* is washed over with this liquid, an iodide of silver is formed which is absolutely unalterable by sunshine. This process requires precaution, for if the solution is too strong, it attacks the dark parts of the picture. It is requisite, therefore, to find by trial the proper proportions. The fixation of pictures in this way, with proper management, is very beautiful and lasting. The specimen of lace which I exhibited to the Society, and which was made five years ago, was preserved in this manner.

"But my usual method of fixing is different from this, and somewhat simpler, or at least requiring less nicety. It consists in immersing the picture in a *strong* solution of common salt, and then wiping off the superfluous moisture and drying it. It is sufficiently singular that the same substance which is so useful in giving sensibility to the paper † should also be capable under other circumstances, of destroying it; but such is, nevertheless, the fact.

"Now, if the picture which has been thus washed and dried, is placed in the sun, the white parts color themselves of a pale lilac tint, after which they become insensible. Numerous experiments have shown to me that the depth of this lilac tint varies according to the quantity of salt used, relatively to the quantity of silver. But by properly adjusting these, the images may, if desired, be retained of an absolute whiteness. I find I have omitted to mention that those preserved by iodine are always of a very pale primrose yellow, which has the extraordinary and very remarkable property of turning to a full gaudy yellow whenever it is exposed to the heat of a fire, and recovering its former color again when it is cold."

We have quoted Talbot's descriptions somewhat fully, as the original is likely to be inaccessible to most of our readers, and his words have not, we believe, been previously reprinted in any photographic journal. It is always better to get face to face with "the man who did it," and to read his own words rather than a paraphrase of them.

Of course, not one of Talbot's early pictures could have been properly "fixed" in the sense in which we understand the term. Some of the silver was no doubt washed out of the paper, and what was left was prevented from blackening on exposure to light by the presence of an excess of a haloid salt, either potassium iodide (KI) or common salt (sodium chloride, Na Cl).

\* A "photographic print" as we should style it.—W. J. H.

† Talbot's "photogenic paper" was prepared by dipping it first into a weak solution of common salt, and then into a solution of nitrate of silver so as to have a slight excess of the latter substance.

Talbot's first or "photogenic" method must be carefully distinguished from his "calotype" process which he patented in 1841. The former consisted of silver *chloride* upon paper; the latter of silver *iodide*. The image on the former was *printed out*; on the latter it was *developed*.

Talbot also mentions that he sometimes used potassium bromide (K Br) as a fixing agent.

W. Jerome Harrison.

(To be continued.)

### OUT-DOOR PORTRAITURE.

THERE comes a time in the career of every amateur photographer when he feels that he must make a special study of portraiture. There are the members of the family all anxious to have the shadow secured ere the substance fades. There is the baby, if there is a baby, to be photographed in some of its most cunning attitudes, and there is father and mother, and sisters, cousins and aunts. No matter what the circumstances or the surroundings may be, the amateur is sooner or latter filled with an irresistible impulse to make portraits. When the fever takes entire possession there is little to be done in the way of a cure, and the best way is to yield to the inevitable and prepare for business.

Quite a measure of success can be attained in the house, and many hearts are gladdened at the sight of these more or less crude attempts at portraiture in the home, portraits that would never have had a being or existence except for the amateur photographer. What tender memories crowd upon the mind as one looks over a collection of these priceless productions. There are family groups from which you can pick out here and there a face that no longer gladdens the sight in life, a sister, brother, father or mother, or other near and dear relative whose death has broken the golden family circle, and all that you have is this piece of paper and the memories that are awakened by its sight. You remember every circumstance, perhaps, of its taking; the care expended in the arrangement, the long waiting for the sun to get behind a cloud, the hurried exposure for fear some of them would move, and the nervous haste with which you developed the negative, and your pride when it came out clear and crisp, "A thing of beauty and a joy forever."

Some of the group you may never have seen since that day, and may never see again, for

"There is no flock, however watched and tended  
But one dead lamb is there;  
There is no fireside howsoever defended  
But has one vacant chair."



So by all means indulge your fancy for portraiture. No matter if your successes are few and your failures many. One success will repay you in memory and association a thousand times for all your trouble and anxiety, and even your failures will give you pleasure in retrospection.

But I intended to say something about my apparatus for making portraits in the open air. I made some good things in the house, many portraits that give me pleasure every time I look at them, not because they are good specimens of photography, but because of the pleasant circumstances connected with their making. I soon found, however, that I had to have something different for good results, so I made a portable studio, and the process is as follows:

Make three frames out of whitewood or pine, using strips 2 inches wide and  $\frac{1}{2}$  inch thick, each frame to be 4x6 feet.

Cover one frame with light gray cloth on one side and medium dark on the other. This is for the background.

Cover another frame with light gray on one side and black on the other, and the third frame with dark gray on one side and white on the other.

Hinge the three sections together with webbing so that they will fold either way, putting the section covered with the light and medium dark gray cloth in the center.

Make a frame of the same size and cover with white, and use this for the top of the studio, of course having it detached so that it can be moved backward or forward when the studio is set up.

The frames can be put together with iron corners, which can be got at any hardware store.

By having it made with hinges so that it will fold either way the lighting of the face can be controlled easily and great variety obtained.

Set the studio up in the open air, either in sunshine or shadow. If the sun is shining brightly stand the studio so that the black covered wing will be toward the sun. That will subdue the light on that side, while the white wing being opposite will soften the shadow side.

If more shadow is desired, stand the whole apparatus the other end up. The white wing of the studio will now be toward the strong light, while the black wing being opposite will allow that side of the face of the sitter to be in shadow.

After setting up the studio so as to light the face as desired from the side, put the detached white covered screen on top, moving it backward or forward and modifying and softening the top light. If there is too much shadow under the eyes, nose or chin, draw the top screen outward until the shadows

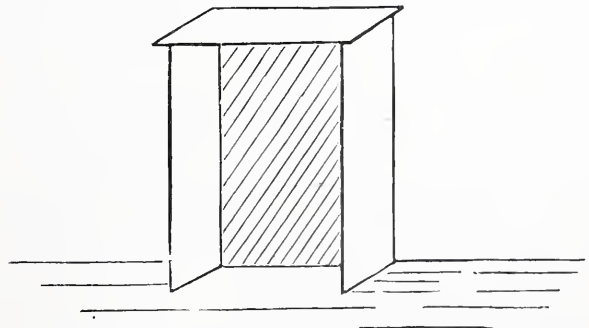
are softened, placing the sitter well back toward the background. If more shadow and solidity is desired, bring the sitter further forward, and push back the top screen.

Another lighting still can be had by using the other side of the apparatus, having the gray wings on each side of the sitter.

This apparatus allows of a great variety of changes. By using one side of it you can have a light gray background and a black screen to the right and a white to the left, or white to the right and black to the left, or by using the other side, the medium dark gray background, you can have dark gray on the right and dark on the left, and by turning the studio at different angles in its relation to the sun, an almost endless variety of lightings can be had.

Any material can be pinned to the middle section and used as a background, from white to black, and either plain or figured. In fact there is hardly a limit to what can be done with this simple device, and most excellent portraits can be made.

As the light is very strong in the open air, medium small stops can be used, and quick exposures made, so there is no necessity for using a head-rest.



The studio when set up and ready for use will look something like the cut inserted above.

*W. J. Hickmott.*

### ORTHOCHROMATIC PHOTOGRAPHY.

[Read at the Washington Convention of the P. A. of A.]

As long as photography is in existence, it has been the desideratum to produce photographs in natural colors; but while this problem is at present still far from being solved, one great improvement has been accomplished as the result of many scientific researches, that is to produce photographs of colored objects in the correct gradations of shade or what is termed "orthochromatic."

It is a well-known fact that formerly this could not be done and that in ordinary photographs of colored objects the violet and blue is reproduced too light, while green, yellow and red appears too dark. For this reason it is noticed in landscape

photography that much detail is lost in the foliage, that the blue sky appears as light as the white clouds and renders the latter invisible; in portrait photography the auburn or red hair comes much too dark, also the freckles much too prominent, and blue eyes, blue or pink dresses, etc., entirely too light. In the reproduction of colored paintings this defect is most objectionable, as the lights are often yellow in the original, and appear darker in the photograph than the half shadows which are painted in bluish tints.

The cause of these short-comings of photography has been carefully studied and it was found that only such rays of light affect the photographic plate, which are absorbed by the salts of silver employed in the preparation of the sensitive collodion or emulsion. The bromide and iodide of silver absorb mostly the violet and blue and little of the yellow, orange and red rays when exposed to the spectrum.

Professor H. W. Vogel observed, by his spectral analytical experiments, that photographic plates can be made equally sensitive to all colors by adding certain dyes which enter into combination with silver and absorb those colors of the spectrum which are not absorbed by the bromide of silver, and his first experiments in this direction date back to the year 1873, when he succeeded in photographing a piece of yellow tissue, decorated with a piece of blue ribbon, with coralline stained bromide of silver collodion plate. A yellow screen was interposed between the object and the lens. The dyes most employed were cyanin, fuchsine, naphthalin red, aldehyd green and methyl violet.

In 1874 Becquerel introduced chlorophyll and Captain Waterhouse the eosine or fluorescein. In 1879 Ives of Philadelphia published his chlorophyll process. Other eminent experimentalists, such as Schumann, Becquerel, Waterhouse, Abney, Attout, Clayton, Carey Lea, Dr. Eder, Scolik, Mallmann and others added their share to the perfection of the orthochromatic process, and many dyes, mostly of the analine group have been employed to obtain the desired result, principally eosin in its forms as Tetrabromfluorescein and Tetrajodfluorescein, erythrosin, chinolin red and chinolin blue or cyanin.

The commercial dry-plates can be rendered orthochromatic by bathing them in a solution of these sensitizers, but plates so prepared do not keep very long. It is better to introduce the dyes into the emulsion or collodion before coating the plates to secure better keeping qualities.

One of the drawbacks in working the orthochromatic plates is the necessity of using a yellow screen through which the light has to pass in order

to subdue the violet and blue colors. Either a yellow colored glass or a yellow pellicle made of colored collodion or gelatine is inserted in the place which the diaphragm occupies between the front and rear lens, the darker shade of the yellow screen giving the stronger orthochromatic effect, but also lengthening the required time of exposure considerably. The colored screen must be very perfect, of even structure and color, and as the focus of the lens is changed by the interposition of a yellow screen, the focusing must be done with the screen inserted, which, owing to the feeble light admitted through it, is rather difficult.

The idea that the yellow screen alone will give the orthochromatic effect, even if any ordinary dry plate is used, is erroneous, as the bromide and iodide of silver are but little sensitive to the yellow and red light, and the effect of the blue will always be predominant in photographs produced with ordinary plates.

It is now the aim of experimentalists to prepare orthochromatic plates in which the sensitiveness to the violet and blue rays are reduced to a minimum and the sensitiveness to the green, yellow, orange and red increased to the highest degree, so that the use of the yellow screens is rendered unnecessary, and I for myself can report progress in my experiments in this direction, so that I hope soon to be able to place on the market an orthochromatic plate of good sensitiveness which can be worked without a yellow screen.

*G. Cramer.*

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### FAST AND LOOSE.

#### A PHOTOGRAPHIC SKETCH IN TWO PARTS.

##### PART II.

HE seemed content to let her do the picture-taking; and would invariably, bending over her, ask "Did you get a good one that time?" And she always assured him she had, usually with truth. They were only too good. That girl had a positive genius for catching people at awkward moments, in absurd circumstances or laughable positions. She caught old Mrs. Lawrence being spilt by a wave, and the Oliphant children fighting on the lawn, and one or two tableaux of two under a parasol that had to be suppressed. Her collection was something awful. Certain people were painfully, alertly, punctiliously polite and obliging to her; for they knew that she had photographic souvenirs of them which would make them absurd if shown. Little Mrs. Mallow, who was sensitive and had reason not to wish all her acts to go on photographic record, quite cut

her, and spoke of her as "that awful girl with the camera." Yet she did it all out of pure high spirits, and set down "naught in malice"—though neither did she aught extenuate; the photograph has not that tendency.

Meanwhile Rumor, as usual, was far ahead of halting Truth in imputing an engagement. The ferruginous millions were not yet laid at Miss Minnie's russet-shod feet, but they were drifting in that direction. Mr. Blunt was coming to like her very much; and also to approve of her, which was even more important, as a girl who properly appreciated him; respected his dignity, and might—so blind are men!—be brought to look reverently up to him and act that desirable part of the soothing, admiring and entirely subservient wife. He had about made up his mind to speak. Having no doubt of the answer, he was in no haste to do so, however. He would think it well over first. But undoubtedly Miss Caldwell would have been afforded the sensation of seeing those iron-wrung dollars laid before her—and then, who knows what she might have done—if something had not happened.

It was the playful custom at Laurel Beach to sit around on the sand a great deal between dips. Alternating surf and sun were found pleasant, and so the beach would be lined with people in every costume, from fluttering ribbon and lace to the jersey and the flannel. Miss Caldwell and her almost fiancé were both in bathing one morning—that is, the latter was really in, the former was sitting on the sand. The inevitable camera was also there, in charge of Miss Caldwell's aunt, who lay in a carefully excavated sand sofa, reading *Looking Backward*. Her good little niece was pouring the sand through her fingers, when a figure at the water's edge caught her eye. It was a long and light-haired bather, with his knees most absurdly bowed and his shoulders curiously bunched up, trying to shake off in the sun the chill of the water. She seized the camera and snapped him, and changed the plate. A moment later he turned, and she knew him for Blunt. He came towards her, blue, his hair in his eyes, his teeth chattering, but trying to smile. The effect was too much for her: the camera was in her lap, pointed straight for him, and she touched the shutter again.

He did not notice it, but passed by her after a word or two and went to the bathing houses. Miss Caldwell, knowing her man, considered a moment whether she had not better pull out the slides and fog those two plates, but her sense of humor got the better of her, and she determined simply to warn the local photographer, who would develop

them, not to make any prints and to give her the negatives. This, however, she forgot to do when the plate-holders were all carried off to him with their contents.

The result was that Blunt, one morning a few days later, called in at the photographer's pine-board studio and took a handful of prints from him. The first thing he saw was the terrific caricature of himself, wet, shivering, and with a ghastly and awful smile on his face, neatly mounted and burnished. Then came the back view, which he also recognized. A very fat woman in the water; a crying child; and an elderly gentleman asleep, with his hat over his nose and his mouth open, completed what Blunt, recurring to his earlier education, very justly called "a gol-darned menagerie." He left the prints in Miss Caldwell's box in the office and went off for a walk. All the weeks of apparent superiority, wherein he had smiled down on the rest of mankind, and she had made fun of everything else for him, and of all but him, showed as a long fraud. Here he was lumped in with all the rest, and his vanity received a blow that scattered his budding affection to the four winds and changed his approval to lively dislike. Some men are so sensitive! It was too much for this one anyhow.

And this story, which opened with two newspaper paragraphs, may close with a third:

"Archibald Blunt, Jr., son of the Pennsylvania millionaire, has left Laurel Beach for a trip through the Adirondacks. His rumored engagement to a charming young lady here is denied by her relatives."

*Frederic Hart Wilson.*

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## Correspondence.

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### THE ENOCH ARDEN PICTURE.

*To the Editor of THE PHOTOGRAPHIC TIMES.*

*Dear Sir:* I have seen my favorite poem, "Enoch Arden," illustrated by eminent artists, and listened to the thrilling story as told by the dramatist. Knowing that photographic illustrations would be exhibited at the convention of photographers, I was interested to see with what success they had portrayed the sad, noble life of Longfellow's hero.

Appreciating that the competitors are all supposed to be men who stand high in their chosen profession, I nevertheless felt that they might gather a few crumbs for future reference from the opinion of an outsider, who is a lover of the art.

I will take the six exhibits in the order in which they were hung, in the small dimly lighted alcove, and consider them merely as illustrating the poetry of the story.

The first exhibit was Mr. Eaton's, of Potsdam, N. Y., and was something curious to behold! For how any one

could have imbued one's pictures with less poetic feeling is a mystery to me.

The next was by Miss Catharine Weed Barnes; quite an improvement on the first, but rather crude in many respects. In the one entitled "Uphold Me Father in my Loneliness," the family group has rather too much the appearance of having been fixed and posed to seem natural. Whereas the poet represents Enoch as stealing upon them *unawares* to catch a glimpse of the dear ones gathered round the hearthstone. The title of the next, "So They were Wed," was rather mystifying, as it in no way applied to the picture. The third was altogether the best in this collection, and was a fair illustration of a worn-out sailor, who gladly sees death dawning on him.

The Baker exhibit, from Columbus, Ohio, showed queer taste in the selection of subjects, as not the wildest fancy could trace a resemblance in the three men. First we see a smooth-faced young man, dressed in a sailor costume, which spoke for itself, "I am an actor!" It showed none of the bold young fisherman with "a purpose evermore before his eyes." My first impression of the next picture was that the shipwrecked sailor on the cliff had sat there so long as to become a part of the rock. The third was good, representing Enoch repairing fishing nets to "earn a scanty living for himself. It was the only one in this collection which depicted in a measure the sad life of the man.

The exhibit of Mr. Hastings, of Boston, next attracted my attention. The preponderance of painted scenery in the first of the series rather tended to detract from the three small figures of the children at play. The second representing "Annie, seated with her grief," pictures the lonely woman by the empty cradle "after the burial of her little one." Although her face is hidden, the attitude tells the story and bespeaks our pity for the faithful wife and mother who watched so long in vain. The third reminds one of Beard's "Lo, the poor Indian," but is hardly the picture of a man who had been cast upon an island for twenty years, with no hope of returning to his native land or seeing again loved ones at home. This certainly is not my conception of the man who returns to find his last hope blighted and see another "reigning in his place." There is no heart-sick, care-worn look upon his face to show the awful agony to which he is doomed. This calm expression bespeaks a peaceful life rather than a calmness which comes from "firm faith" and the resolve "not to tell her, never to let her know."

Next in order comes the exhibit by Mr. S. L. Stein, of Milwaukee. His first picture represents Enoch and Annie sitting in the forest, and with a little more life and expression in both face and figure, might have told a simple touching love-story. The second represents Enoch on the island at about seventy years of age, and is probably the best of the three—although the series is spoiled by choosing a younger looking subject to represent Enoch on his return. He has just stolen "up by the wall" and beheld "his wife, his wife no more." The wild, terrified look in the eye does not express the awful agony of a man praying for strength to hold his purpose and "not shatter all the happiness of this hearth."

Last came the collection by McMichael, of Buffalo, who chose to picture only the latter, stronger events of the poem. The first, as the quotation indicates, represents Enoch on the island after his two last comrades die, "In these two deaths, he read God's warning wait." Both

face and figure express the hopeless doom of the shipwrecked sailor, who but for his "firm faith" surely had died in the solitude. The other two are composition pictures remarkable for their strength without the aid of accessories. One represents Enoch resisting Miriam's plea to "see his bairns before he goes," while he prays for strength "to hold his purpose till he dies." The last scene is death—"So past the strong heroic soul away." The objection to this seems to be that it is too sad, for we read in the deep lines of this noble face, the story of a life sacrificed for others.

In conclusion I would say that although I was pleased to see some very fine conceptions of the author's ideal, I was on the whole disappointed. If more time were spent on the figure and pose, and the accessories and painted backgrounds made subsidiary, I am sure more artistic results would be attained.

Then, too, I would suggest that each and every competitor make a deep and earnest study of the poem—live himself into the spirit of it, and unless he finds he can portray the real deep poetic feeling of the story, let him leave it to his more skillful brother.

Yours very truly,

*Louise.*

WASHINGTON, D. C., September 9, 1890.

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### Photographic Societies.

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#### DEPARTMENT OF PHOTOGRAPHY OF THE BROOKLYN INSTITUTE.

IN the department of photography of the Brooklyn Institute the season of 1890-91 will be one of great interest to the amateur photographer, says the *Brooklyn Eagle*. The largely increased membership has brought together a representative body of connoisseurs and experts in photography as well as a large number of students in this engaging art. In material means the department has prepared to render membership exceptionally attractive. The dark-room of the department is one of the best in the two cities, with facilities for developing any size negatives, bromide prints, etc., while the adjoining sunlight facilitates portraits and copying as well as the making of lantern-slides for use in the stereopticon. There is also in the dark-room a good stock of chemicals, with the necessary graduates, trays, and washing boxes. Large lockers are also provided for the private apparatus of individual members.

But the greatest thing yet, and one which will vastly please the members, is the announcement that an expert photographer, skilled in developing by the dry or wet plate process, will be in attendance daily throughout the season at the Institute, and will be ready at any time to give advice or suggestions to amateurs who may care to avail themselves of his services. Many amateurs have a great deal of difficulty in making stereopticon slides. The department operator will give practical demonstrations in any of the processes, members being required to furnish only glass and chemicals.

The department reading-room will also become a greater attraction than ever this season, from the number of hangings which have appeared upon the walls during the summer, and also the large amount of photographic literature which has been turned in.

It is almost impossible to adequately outline at the opening of the season the character of the meetings for the winter, but that they will be of uniform interest may be confidently expected. Prominent investigators will discuss technical questions, there will be displays of artistic work in experiment and otherwise, and the summer work of members will be exhibited at the fall meetings. The groups of pictures arranged for exhibition with the stereopticon by the Boston and Chicago clubs and others will be shown at special meetings in the large lecture-hall of the Institute. These collections include the White Mountains, new glimpses of California scenery, Chicago, and other western cities.

The fall exhibition of prints, in November, will be one of the most attractive incidents of the season. This exhibition will represent the work of the members in every field of photography, and an award of prizes is to be made, which will doubtless bring forth all the talent of the department.

The success of last season's classes in retouching fully justifies the continuance of such a measure for providing technical instruction in special branches of the photographic art.

The last outing of the department occurs in the latter part of this month.

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### Notes and News.

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**Another Photographic Contest** is announced by the publishers of *Frank Leslie's Weekly*, to close December 1st. It will be open to professionals and amateurs, and one thousand dollars will be distributed in prizes.

**Stereoscopic Photography** seems to be becoming more popular again. O. Pierre Havens, during a recent visit to New York, told the editor of THE PHOTOGRAPHIC TIMES that he is receiving more demands for stereoscopic pictures now than he has for some time past. Similar reports have also been received from others.

**The Denver Times** of September 12th reports the successful reception which Mr. Bellsmith held in his new photographic studio on the afternoons of Wednesday and Thursday (September 10th and 11th). Over four thousand people were entertained most delightfully, excellent music and refreshments being features of the entertainment.

**Fire in the Rooms of the Department of Photography, Brooklyn Institute.**—At about 6 o'clock on the evening of September 12th, flames were seen issuing from the roof of the Brooklyn Institute on Washington Street. Two minutes later two alarms were sent out. Six engines and two trucks responded, and about one hour later the fire was extinguished. The rooms occupied by the Department of Photography being on the top floor, were badly damaged, the lecture room being completely destroyed. The dark-room where the lockers are situated received but little injury, so that little of value belonging to members were destroyed. It is understood that steps will be taken to rebuild at once.

**A Photographer's Disappearance.**—Charles E. Cochran, a well-known photographer and the senior member of the firm of Cochran & Wilson, left Norristown, Pa., for

Boston August 10 to remain two weeks. Nothing has been heard of him since his departure. All efforts to communicate with him have proved futile. He is a middle-aged man of fine appearance and unmarried.

**Exhibition of Mechanical Photographic Processes.**—During the week beginning November 3, the New York Camera Club will give an exhibition in its rooms, No. 314 Fifth Avenue, of the work of the various establishments producing all classes of photo-gravure, photo-engraving, photo-lithographic, and other mechanical photographic processes. Admission will be by cards of invitation which will be sent as generally as possible to photographers, artists, authors, publishers, printers, manufacturers using illustrations, and in general to all persons likely to be interested in the subject.

**The Photographic Daily.**—A London item says: A new daily illustrated paper, *Paris Instantane*, is out. The publishers announce that the editorial, draughting and photographic reporting departments "are open from midnight to noon." There are three process blocks from detective camera pictures and another one larger.

**Woman and the Camera on a Mountain.**—A party of six enthusiastic mountain climbers, including an amateur photographer and a woman, left Seattle, August 4th, to ascend Mount Rainier, one of Washington's mountains. This is the first time a camera and a woman have ascended this lofty mountain. The camera was a *Scovill* 8x10, and was worked by Mr. Amsden, a member of the Seattle Photographic Club. A number of interesting photographs were made, which will be exhibited during the winter.

**D. C. Chapman**, of the United States Coast Survey, at Washington, D. C., on his leave of absence called at the office of THE PHOTOGRAPHIC TIMES. Mr. Chapman is a veteran photographer, formerly a member of the Photographic Section of the American Institute. Mr. Chapman promises an article for the forthcoming issue of *The American Annual of Photography*.

**The suicidal mania** seems to be upon the increase in our country as well as abroad. We regret to have to record in addition to the suicide of Mr. de Silva, of New Haven, which we noted at the time, that of Mr. Henry G. Terrington—about three weeks since—who was employed by Falk, the eminent New York photographer, as "inter-viewer" for the procuring of sittings of notables; and on the 18th inst., Gustav G. Koch, also employed by Falk as crayon artist. In the latter case, the suicide's lady-love shot herself at the same hour.

**Lemuel Gopher** (in a whisper, as the photographer proceeds to focus with his head beneath the black cloth.)—That feller's whole-hearted, Mindy. He must'r knowed we've just been married, to be willin' t' hide his head once in a while, an' give us a chance.—*New York Press*.

**Keeping Qualities of Dry Plates.**—As to how long gelatine plates will keep when properly packed, is stated by the *Beacon* to be thirteen years. Plates were coated in 1877, and when dry packed in pairs film to film, each pair being separately wrapped in yellow paper and then placed in specially good wood boxes. The boxes were tied up

in brown wrapper paper, and in that condition, eight years after being made, the plates were taken across the Atlantic Ocean. Negatives made on them to-day are almost faultless, there being on one edge only a faint trace of the well-known metallic appearance which some plates assume even within a few months of manufacture.

**Toning Aristotype Paper.**—According to Mr. T. C. Porter, in the *British Journal of Photography*, a very pleasant brown tint may be given to the prints by immersing them after the first washing (which should be moderate) for a second or two in a solution made as follows:

Hyposulphite soda. .... 4 oz.  
Water.....16 "

to which add four or five drops of a saturated solution of potassium ferricyanide, then washing in running water for three or four minutes, and toning and fixing as usual in combined toning and fixing bath for such paper. Prints so treated should be in the first place considerably over-printed, as the ferricyanide bath much reduces their intensity. An accidentally over-printed print may be made into a satisfactory picture. After the ferricyanide bath the prints seem to tone more readily than without it.

### The Editorial Table.

A NEW Author's Edition of Emerson has been issued by those publishers of the best American literature as well as older standard works—Houghton, Mifflin & Company, of Boston and New York.

The first volume consists of the series of biographical essays on "Representative Men," the essay entitled "Nature," and various addresses and lectures. The volume is handsomely bound in brown cloth, and, both inside and out, presents an appearance worthy of the incomparable Riverside Press from which it comes.

ANOTHER BOOK recently issued by the same publishers is the fascinating "Life of Alfred the Great," by Thomas Hughes, M. P., author of "Tom Brown's School Days at Rugby," etc. It is a book which will interest at the same time it instructs our young readers, and may be read with perhaps as much instruction and interest by older readers as well. It also comes to us in tasteful cloth binding.

### Record of Photographic Patents.

436,347.—Photographic Camera. Willard H. Fuller, Passaic, N. J.

436,391.—Photographic Camera. Washington I. Adams, Montclair, N. J.

436,404.—Photographic Shutter. Thomas R. Dallmeyer, London, and Francis Beauchamp. Tottenham, England.

436,587.—Process of producing photographic films. York Schwartz, Hanover, Germany.

436,627.—Apparatus for automatic photography. Theophile E. Enjalbert, Paris, France.

436,658.—Shutter Attachment for photographic cameras. Henry W. Hales, Ridgewood, N. J.

436,687.—Photo-engraving frame. John Baynes, Westchester, N. Y.

436,745.—Detective Camera. Miles A. Seed, St. Louis, Mo.

**The Politician's Wife.**—"I want some photograp taken."

"Yes, madame. Cabinet size?"

"No, something small. Presidential size, I think, will do."—*Exchange*.

**A Soft Snap.**—*Button*: I've got a snap position at last, my boy.

*Mutton*: What is it?

*Button*: Manipulating a camera.—*Town Topics*.

### Queries and Answers.

161 FR. W. B.—Can you tell me of a more reliable reducer than that with ferri-cyanide of potassium and hypo? I have experienced much trouble with it of late. Sometimes it gives the negative a blue color but most generally it refuses to act altogether.

161 *Answer*.—You probably fix your negatives in the acid fixing bath. If so, why do you not adopt the acid potassium ferric-oxalate reducer? See PHOTOGRAPHIC TIMES, Vol XX., page 171.

162 J. F. T.—What is the cheapest, and at the same time the most efficient stereo. outfit one may procure?

162 *Answer*.—Take the Scovill & Adams 5x8 Favorite camera, and fit it with a pair of Waterbury A lenses, and add to it a drop-shutter. Stop  $\frac{f}{25}$  will cover one half of a 5x8 plate quite well, with a Cramer 50 or 60 plate you will get a perfect exposure by tolerably rapid speed of the shutter. But you must develop with eikonogen.

163 MISS LIZZIE P.—Lantern slides made on Carbutt gelatino-albumen plates, and developed with pyro-soda, begin to turn of a decidedly yellow color, and more so on the ends of the plates. Can I restore them to their original clearness and how?

163 *Answer*.—You can by immersing them in the acid fixing-bath for a few minutes, when the yellow veil, if resulting from pyro as we suppose, will entirely disappear.

164 MEMPHIS has sent two very feeble prints and also the negatives from which they are made. Why do these fine plates produce such miserable prints, when everybody thinks they should print with much brilliancy and vigor, he asks.

164 *Answer*.—Your silver bath is very probably very weak. For Three Crown paper it should be from forty-five to fifty grains of silver to the ounce of solution, and the bath be in neutral condition; and then your prints have been toned too much. Either you left them too long in the gold bath, or it was too strong.

165 YOUNG PRINTER.—How can I prevent silvered albumen paper from drying in tears?

165 *Answer*.—Silver bath too strong probably. To test the strength do not rely upon the hydrometer, but do so volumetrically. In your climate the bath should not be over forty-five. Then the albumen paper when too hard and brittle will repel the silver solution to some extent, and when drying produce the effect known as tears. Before silvering keep the paper in a damp place for at least twenty-four hours, or still longer if it is old. If no remedy will help, blot the paper off with clean bibulous paper, after it has been taken from the bath, and dry spontaneously.

**THE PHOTOGRAPHIC TIMES.**

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

W. I. LINCOLN ADAMS, Editor.

Issued every Friday.  
Monthly (unillustrated) edition issued on the last Friday of the month.

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FOR many months a premium has been offered for copies of "The Photographic Times Annual for 1889." The issue for that year was 8,150 copies. After these had been sold it was found to be impracticable to publish a second edition. All copies in the hands of photographic merchants and news agents were soon disposed of. The 1887 and 1888 Annuals are frequently called for, and supplied out of the stock set aside for those who wish to have a complete file of these valuable books.

WE expect very soon to hear that some Western dealer has chartered a train of flat cars to convey to customers the latest edition of his mammoth catalogue. These thoughts are suggested by the 1890-1891 edition of Mullet Brothers' Catalogue, which has just been placed in our hands. Of all the mammoth catalogues we believe this is

the most mammoth ever published. What an assortment their store, 518 Walnut Street, Kansas City, Mo., must contain!

If "The Photographic Times Annual" is worth anything it is worth at least one dollar. It contains as much as many books that are sold for \$3 or \$4. The book is really too large and bulky for paper covers. No one will deny that it is worthy of a place in every photographer's library. Even if not kept there for future reference it is used frequently during the year, and can only be well preserved in cloth covers.

The price of the Library Edition is \$1; in paper covers this "Annual" is sold for 50 cents.

THE PHOTOGRAPHIC TIMES ANNUAL has quite often been styled an Encyclopedia, and if it is entitled to that designation with respect to the information it contains, it also deserves to be styled an Encyclopedia or Directory of merchants in photographic stock and appliances.

No live man who has anything to sell to photographers, whether amateur or professional, can afford to have his name, and the merits of what he manufactures, or deals in, omitted from this book of world wide circulation.

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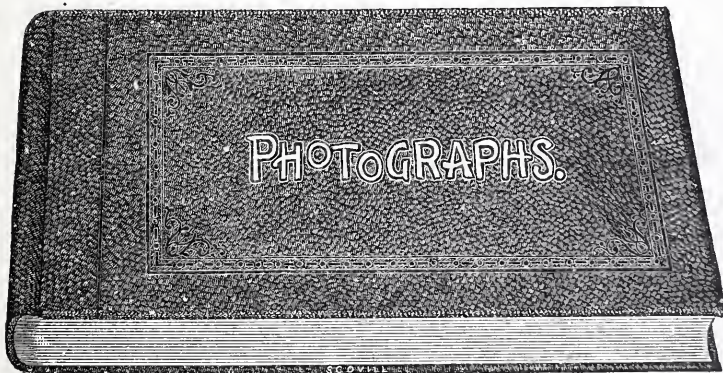
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No. 1. — 6x 7 Cards, for 4 x 5 Photographs.....	\$1 35
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" 7. — 10x12 " " 6½x8½ " " " " " " " " " "	3 50	" 13. — 4 75
" 8. — 11x14 " " 8x10 " " " " " " " " " "	4 00	" 14. — 5 50
" 9. — 14x17 " " 10x12 or 11x14 " " " " " " " " " "	5 50	" 15. — 9 00
" 10. — 16x20 " " 11x14 or 14x17 " " " " " " " " " "	7 75	" 16. — 11 00

To each card are attached two small metallic binding loops, so fastened that they act like hinges; through the projection of these loops a binding cord passes, which fastens at the back with a tie; thus each card is bound in the cover independently, and may be taken out and returned or replaced with ease. This method of making an album affords the amateur the best means of preserving the results of his labor, because each picture may be finished before putting the card in the album. The arrangement of the pictures may also be altered at will—if a single card is spoiled the whole album is not ruined. If a picture is taken out, it can be quickly and readily done without injury to the volume.

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made.

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2..1	"...4 x 5	"... 3¼	"... "	25.00
3..1	"...4½x 6½	"... 4½	"... "	25.00
4..1	"...5 x 8	"... 5½	"... "	25.00
5..1	"...6½x 8½	"... 6½	"... "	25.00
6..1	"...8 x10	"... 8	"... "	30.00
7..1½	"...11x14	"...10½	"... "	40.00
8..1½	"...14x17	"...14	"... "	50.00
9..1½	"...17x20	"...17	"... "	60.00
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The No. 1 SCOVILL SCIOPTICON when packed for carrying, in its own Russia iron case, measures 15 x 10 x 6 inches, and weighs 12 pounds; the case serving as a convenient stand when the lantern is in use.

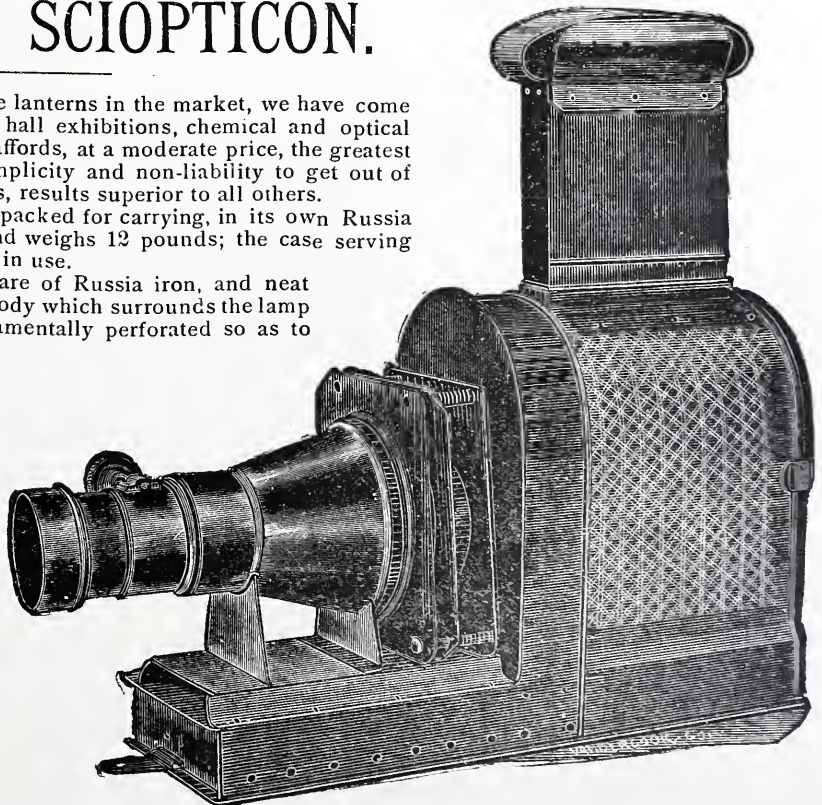
The CASE and BODY of the Lantern are of Russia iron, and neat and compact in form. That part of the body which surrounds the lamp is double, the outer covering being ornamentally perforated so as to allow a constant current of air to circulate and keep down the temperature.

The lamp is of the triple wick variety, and so constructed that the three flames combine, and by the draught of a ten-inch chimney give a brilliant flame.

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The CONE, which carries the objective, and the mount of that lens are nickel-plated. The objective is a double achromatic lens of one and a half inch clear aperture and five-inch focus, so that at a distance of twelve feet from the screen, it gives a brilliant picture on disc six feet in diameter. The focus is roughly obtained by sliding the front, carrying both cone and lens; and fine adjustment by a rack and pinion on the objective.

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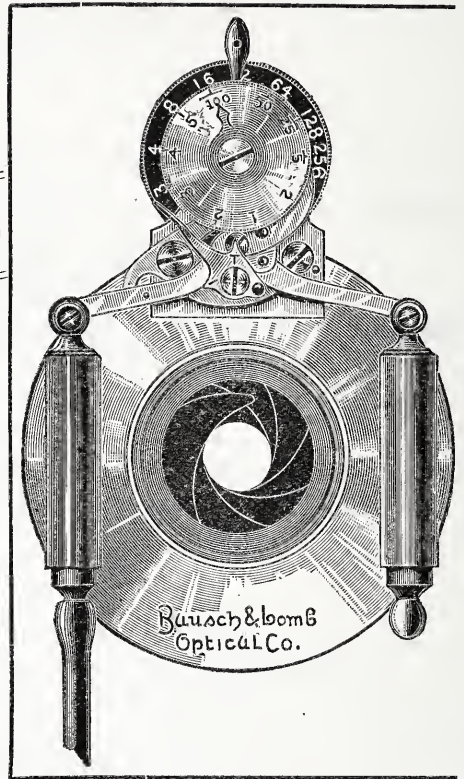
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30	4 1/4 x 5 1/2	75	4	10 x 12	3 80
30	4 1/4 x 6 1/2	90	4	11 x 14	5 00
20	4 3/4 x 6 1/2	1 00	3	14 x 17	9 00
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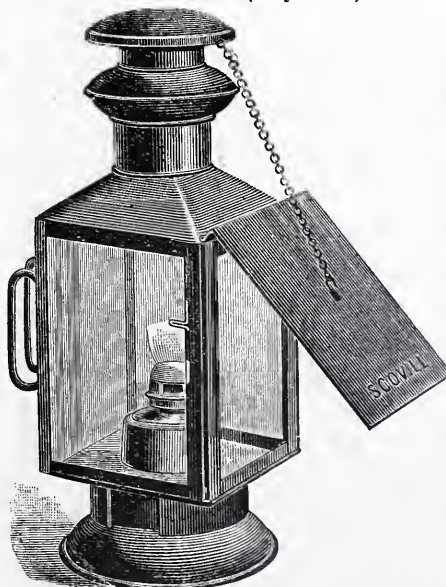
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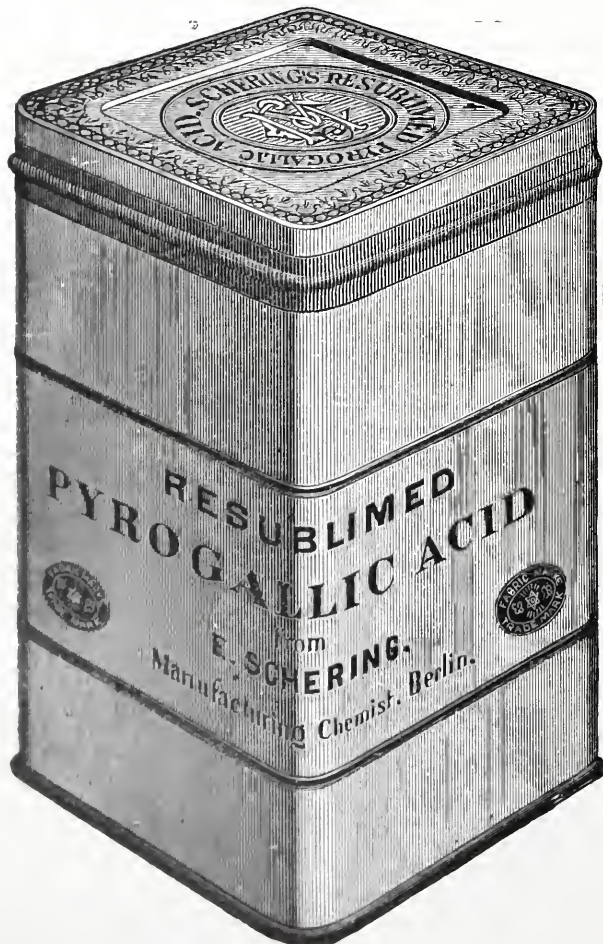
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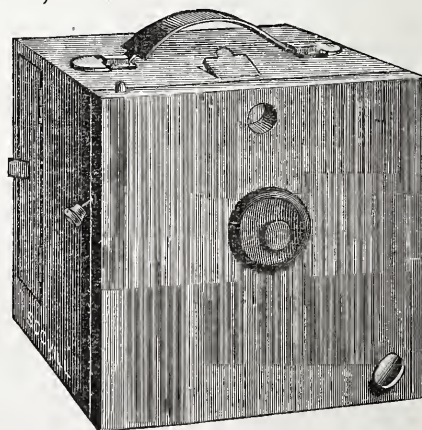
**Is certainly Lighter and more Compact than any other Cheap Detective Camera in the Market, and what is still more Important, has a much more Expensive and more Perfect Lens.**

This Double Combination Instantaneous Lens, with Interchangeable Stops, when bought separately costs as much as the whole camera. We are enabled to make a low price on the complete camera because the cameras and lenses are produced in such large quantities.

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Price—4 x 5 Knack Camera, - - Natural Wood.      \$15.00 Leather Covered.      \$17.50

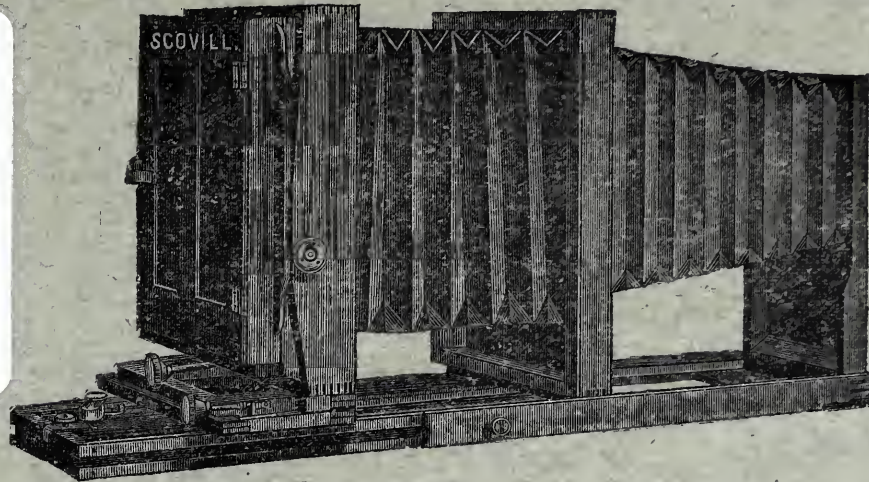
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# AMERICAN OPTICAL COMPANY

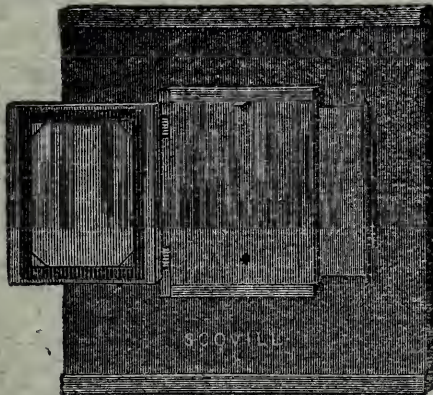
## UNRIVALED PORTRAIT CAMERAS.



The American Optical Company Portrait Cameras are manufactured from the best mahogany, French polished, and have double bellows, vertical shifting front, the V-shaped wooden guide, telescopic platform, and Lever Focusing Attachment, by which the most delicate focus can be adjusted with the utmost facility and ease.

No.	Size.	To cover plate.	With Double Swing-back.	No.	Size.	To cover plate.	With Double Swing-back.
5....	8x10 ins.,	with platform 30 in. long.....	\$38 00	11....	17x20 ins.,	extension platform 65 in. long and vertical shifting front.....	90 00
6....	10x12 "	" " 36 "	48 00	12....	18x22 "	" " 70 "	do 100 00
7....	11x14 "	extension " 48 "	and vertical shifting front.....	13....	20x24 "	" " 72 "	do 110 00
			64 00	14....	22x27 "	" " 72 "	do 120 00
8....	12x15 "	" " 48 "	do	15....	25x30 "	" " 80 "	do 170 00
9....	14x17 "	" " 60 "	do				
10....	16x20 "	" " 65 "	do				

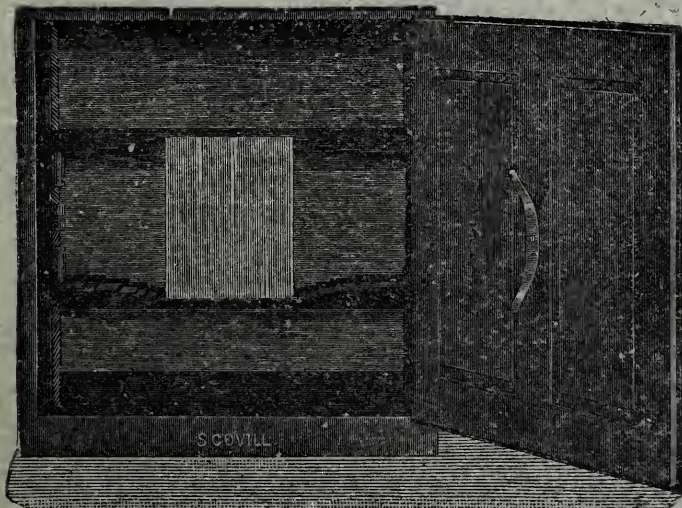
### The American Optical Co. Cabinet Plate Holder Attachment



Consists of a board the same size of the plate-holder of the camera. It is put in place the same as holders, upon pegs, with spring catch at top. In center of board is an opening with hinged ground-glass to receive the holder selected, 4 1/2 x 6 1/2, 5 x 7, or 5 x 8. Can be fitted to any 8 x 10 or larger portrait camera by sending exact size of plate-holder. When wishing to use larger plates, can be instantly removed. By the aid of this attachment and twelve single light-weight holders you always have a supply of plate-holders loaded and ready for use, save the expense of large extra holders and many a trip to the dark-room, and you are sure of always getting your subject in the proper position on the plate.

For	Size	Price
8x10 Am. Optical Co. Portrait Camera with one single Light-Weight Holder.....		\$ 8 00
" 10x12 "		9 00
" 11x14 "		10 00
" 12x15 "		11 00
" 14x17 "		11 00
" 16x18 "		12 00
" 17x20 "		13 00
" 18x22 "		13 00
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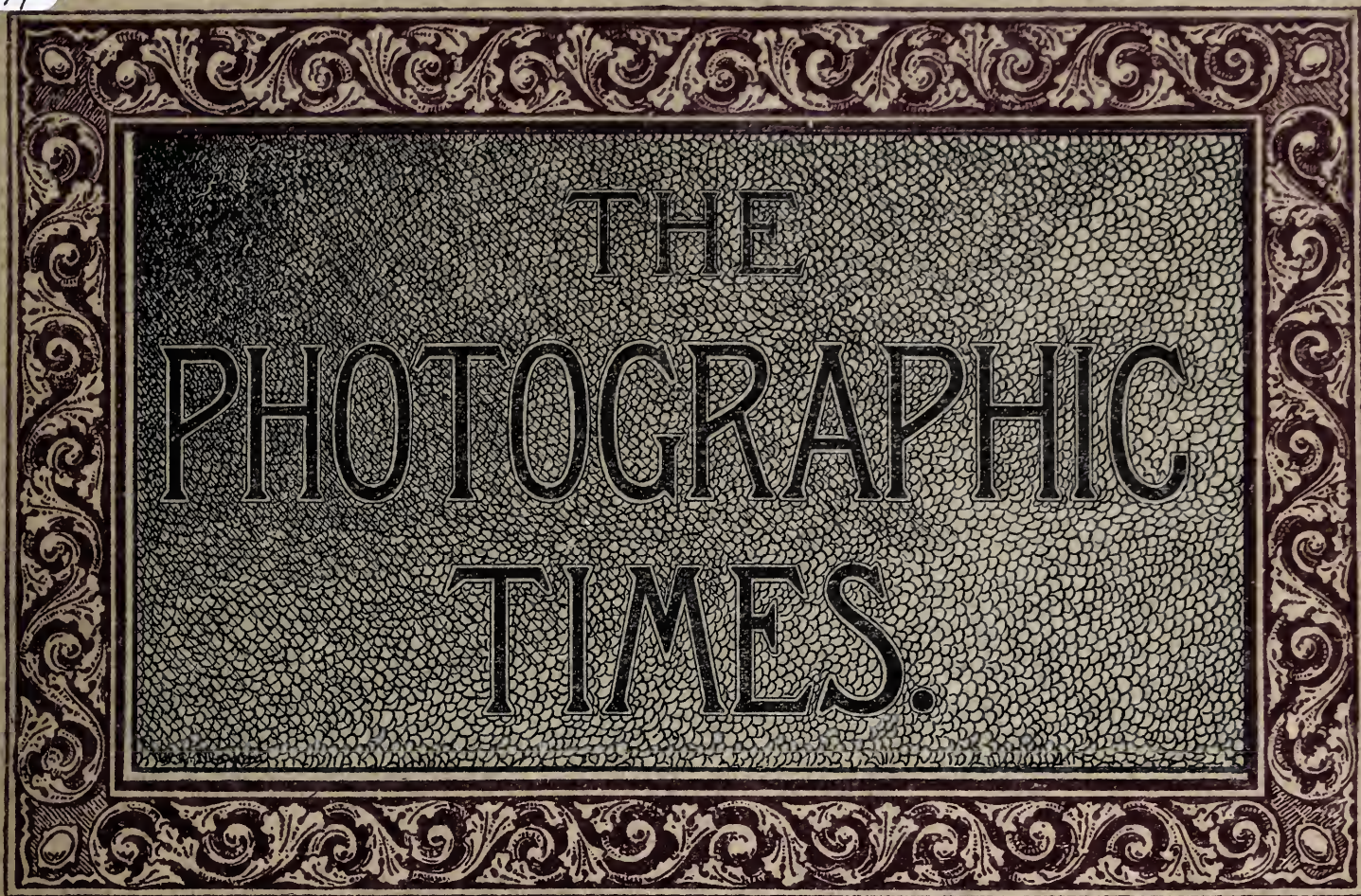
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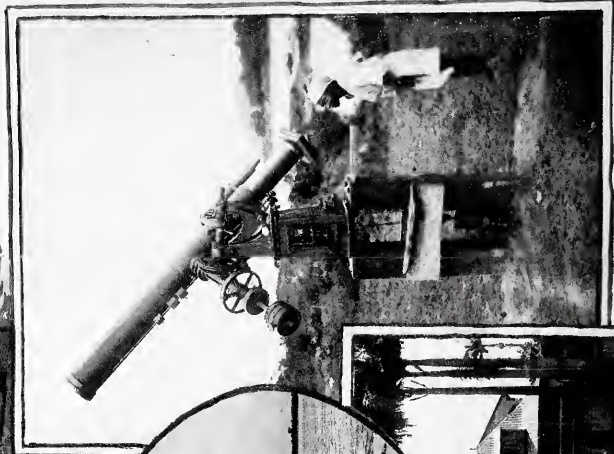
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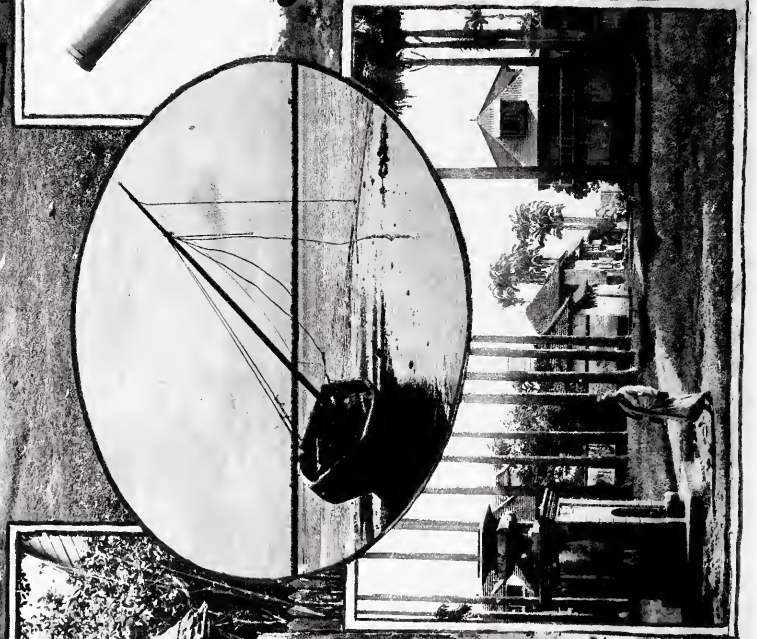
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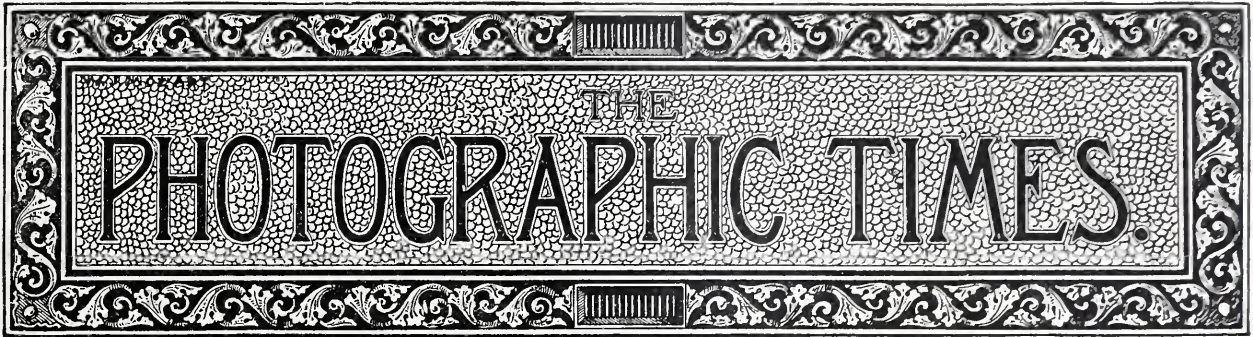




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S. W. Burnham, Photo.



VOL. XX.

FRIDAY, OCTOBER 17, 1890.

No. 474.

### **SOUTH AMERICAN VIEWS.**

WE present our readers, this week, with the promised South American Views made by S. W. Burnham during his expedition to the eastern coast of South America, to photograph the late solar eclipse. The accompanying article by Mr. Burnham describes the pictures in detail. They all "admirably reproduced," as Mr. Burnham writes, "Nothing could be better."

The group was arranged and the plate made by the New York Photo-Gravure Company.

### **A PHOTOGRAPHIC TRIP TO THE WEST INDIES.**

THE photographs reproduced in this number were made on the occasion of my trip to the West Indies and French Guiana last fall for the observation of the total eclipse of December 22d at Cayenne. With the exception of the boat at low tide, which was made in Trinidad, they are all views in Cayenne. The upper picture on the right is a distant view of the observing station, which was located on the rocky point extending out into the sea, and occupied as a battery. The central picture is a near view of the station, with the photographic instruments on the right. The left hand upper picture is taken from the same point of view as the one first named, the camera being pointed in the opposite direction. The picture of the gateway is one of many snap-shots made on the streets of this quaint town. The lower picture is a view in the public square, showing the fountain from which the natives get their daily supply of water. This large square is filled with hundreds of royal palms, making it an object of rare interest to the photographer from many points of view. There is perhaps nowhere else a finer display of these magnificent trees. At one corner of the square is the famous double or forked palm, an entirely unique specimen of its class. Some twenty or thirty feet above the ground the trunk divides,

and the two equal branches run up perhaps sixty or seventy feet higher like independent trees. Ordinarily the trunk of the royal palm is as straight as an arrow, without leaves or branches until the crown is reached at the top of the shaft. These trees were planted about a century ago, and are nearly of the same size and height. They appear to have an average elevation of about one hundred feet. The leaves fallen from the top, lying about the ground, were in some cases fully fifteen feet long. The groups of women and children in their picturesque costumes about the fountain, made attractive subjects for the camera. The lower picture at the right shows an instantaneous view of the six-inch telescope used for photographing the corona, with one of the native children taking a sly peep through the instrument. We were favored with all sorts of curious visitors at the camp, and Prof. Schaeberle and myself secured a good many quaint studies of human nature in this out-of-the-way corner of creation. The central marine view was made at Port-of-Spain, in the island of Trinidad. The water in the harbor, as in nearly all of the West India islands, is very shallow near the shore, and when the tide is out, many of the smaller boats are left high and dry.

These views were all made on 8x10 Seed 26 plates, and were all, with some hundreds of other negatives made on this trip, taken with the shutter. The plates were subjected to an excessively damp atmosphere during the entire time, some three months, but did not seem to suffer any from that cause. The plates which were brought back unexposed seem to be as perfect in every respect as any I have used. An excellent proof of this was furnished by an experiment made on Mt. Hamilton some weeks after my return. Two unexposed plates were put in the bottom of a box containing plates which had been used. When these came to be developed, of course I had forgotten about the others, and they went into the developer in their turn. As nothing appeared, they were left

in the developer on the rocking machine for at least an hour and a half. I then began to remember something about the facts, and washed off the developing solution, and put the plates aside in the dark to dry. On one of these I subsequently made as fine a negative as one would wish to have. The other plate was equally good, but turned out to be rather under-timed.

A word about the West Indies as a place to visit with the camera. There is certainly no point available from the Eastern States where for the expenditure of the same amount of time and money, one can see and photograph so much that is entirely new. The fare from New York to Trinidad by the Quebec S. S. Co., which leaves twice a month, is \$60, and the steamer stops at a number of the intermediate islands, remaining at least several hours at each port, giving ample time to empty any reasonable number of plate-holders, with subjects of an entirely novel character. We landed at the islands of Santa Cruz, St Kitts, Antigua, St. Lucia, Dominica, Martinique, Barbados, and Grenada, with a chance in some instances to go several miles into the interior.

Captain Fraser, of the steamer "Bermuda" is a most genial and accomodating gentleman, and a thorough master of his profession. He makes his passengers feel entirely at home, and everything on the ship is at their service. There are no tabooed places, above or below too sacred for the unconsecrated landlubber. Prof. Schaeberle amused himself by using the Captain's sextant to take noon observations for the place of the ship; he took a "trick" at the wheel for the sake of variety; he diligently explored the lowest depths of the hold on general principles; and he conscientiously ascended to the highest pinnacle of the main-top whats-his-name to see more of the wide waste of waters. Captain Fraser even changed the steamer's course in passing some interesting points to give us a better chance with the cameras. Think of the paralyzing effect on the mind of the average captain of one of the regular Atlantic steamers, of a suggestion to modify the ship's course to accomodate a passenger! A shock of a few thousand volts of chain lightning would be insignificant in comparison.

If the saving of time is an object, the traveller can return on the same steamer, and make the round trip in about a month. This would give him a few days in Trinidad, a large island with many places of special interest, while the steamer was discharging and receiving cargo. The return voyage can also be made direct to New York by taking one of the steamers of Christall's line which

make the passage in eight or nine days. In that case, if he happens to take the "Coban," he will be fortunate in coming in company of another Capt. Fraser, who is as efficient an officer, and as delightful a companion as his namesake of the other line. No one who makes this trip to the West India Islands, with the camera, or otherwise, will fail to be delighted. Everything is absolutely new to one who has not visited the tropics. The scene is constantly changing, and the variety of animate and inanimate subjects for the camera is almost infinite.

S. W. Burnham.

## INDUSTRIAL PHOTOGRAPHY.

(Continued from page 492.)

### TRANSFERRING.

The image can be burnt-in on the plate upon which it is developed, or transferred on the material selected to fix it upon. In the first case the operation is quite simple: The plate is coated with photogene No. 3, dried and exposed under a reversed (stripped) diapositive. In sunshine a few minutes suffices. It is well to cover the printing frame with tissue paper, the exposure is a little longer but the image comes out with softer gradations. After development the proof is fixed by dipping the plate *without a stop* in an alcoholic solution of borax which hardens the film, dissolves the chromium compound and eliminates all traces of bichromate. This done the plate is rinsed with a similar borax solution, allowed to dry spontaneously when it is ready for the muffle.

Borax fused.....	30 grains
Water.....	250 cub. cents
Alcohol 95 deg.....	1,000 " "

Dissolve the borax, pulverized, in water by the aid of heat, add the alcohol and filter when cold. Keep each of the washing solutions separately; they can be used over again.

For transferring, the plate is heated after the development, then allowed to cool and immediately coated with the plain collodion whose formula has been given when describing the ferric chloride process. As soon as the film is set, the plate is immersed in a dilute solution of potassa to decompose the chromium compound which otherwise would impart an unpleasant greenish tint to the enamel:

Potassa.....	20 grammes
Water.....	1,000 cub. cents

On the removal from this the plate after rinsing under the tap is placed in water acidified with 5 or 6 parts of hydrochloric acid per cent., and as soon

as the collodion film loses its adherence to the plate, which is ascertained by lifting up the corners, the plate is transferred in a tray of water, when the film being detached along the edges leaves hold of the plate and should then be rinsed in several changes of water filtered before use.

It may happen that the proof strongly adheres to the plate and that, as a consequence the collodion film cannot be detached. This arises from the photogene having been dried at too high a temperature or from the plate prepared a long time before use. In such emergency the proof may be saved by substituting for the hydrochloric acid a solution of hydrofluoric acid at 2 per 100 of water.

The film may be transferred image upwards or downward. In the latter case when the stripped film is well washed, the water is poured off and replaced by the following adhesive solution.

Seed of quince.....	5 grains
Sat. sol. of borax.....	100 cub. cents
Water.....	1,000 " "

Let macerate for five or ten minutes and filter.

This done the film is turned over with a broad and flat brush so that image is downward, and the plate—enamelled copper, glass, porcelain, etc.—beforehand cleaned by rubbing with whiting wetted with a weak solution of soda, then rinsed, dried and well dusted, is introduced underneath the film and the latter placed upon it under water. Now lifting it with a convenient tool, the plate is removed from the liquid with the film adhering to it and maintained at the very edge with the fingers or a flat brush, then after having adjusted the picture in the proper position and stretched it without any crease, the film hanging down is turned on the back of the plate and on the whole is laid a sheet of blotting paper and over this another of ordinary smooth paper. This done with a bung of cotton or of any soft material, one dabs gently all over the plate to sponge the water and secure everywhere a perfect contact of the image and collodion film on the plate, else the proof will split out or scale in the subsequent operations. Finally the blotting paper is replaced by several doubles of the same, the plate placed under a slight pressure, and when the superfluous moisture is absorbed—which requires from fifteen to twenty minutes—the film is allowed to dry spontaneously. If blisters are formed during the desiccation, which solely occurs by want of care, they should be bursted before drying with the point of a needle and the liquid sponged.

Before firing the proofs transferred by this method, the collodion film should be destroyed. For that purpose, the plate is placed on a glass dipper

and lowered in a vertical glass bath filled with concentrated sulphuric acid. In a short time—about ten minutes—the collodion is destroyed together with the organic substances of the photograph, which is shown by a red brown coloration around the image. Then the plate should be slowly taken out from the acid bath, and placed in a tray of filtered water. The water must of course be renewed several times to wash out the acid, but this should be done by decantation and with extreme care for the picture not being presently held by the collodion film, the least contact, the least abrupt undulation of the liquid may injure it past remedy. Lastly the plate is drained, then dried on the iron plate lined with blotting paper and heated with a spirit lamp. It is now ready for the muffle.

The collodion can also be dissolved by the following solution .

Oil of lavender.....	100 c.c.m.
Oil of turpentine....	3 "
Ether.....	50 "
Alcohol.....	50 "

But as the plate must remain in the solution from eighteen to twenty hours, then rinsed with a mixture of alcohol and ether, the former method is therefore more practical and just as safe in taking the proper precautions.

Another method devised by the writer which does not necessitate to destroy or dissolve the collodion film is the following: When the image is transferred and the collodion film dry, brush over it a thin coating of turpentine oil thickened with lithographic varnish, let this evaporate to a certain extent and when still talcky dust on a glazing flux, let dry, dust off the excess of powder and the plate is ready for firing.

The proofs can also be transferred by a method not requiring the use of collodion. It is due to Mr. Jeanrenaud. In 250 c.c.m. of concentrated ether are dissolved 25 grams of pure India-rubber, cut in very small pieces, and when it is well swelled, which requires ten or twelve hours, 1000 c.c.m of benzole and 15 grams of rosin are added. When the ingredients are dissolved the solution is filtered and sheets of thin paper are for use coated with it, turning the edges to form a kind of a tray, and sustaining the sheets on a wooden board or a glass plate.

For transferring, a piece of this coated paper large enough to cover the whole image is applied on the plate and imbued with a mixture of alcohol in the proportion of 4 to 1 of the latter, then, when the India-rubber is softened, both the paper and the image are pressed into optical

contact by means of a squeegee. The whole is afterwards immersed for a few minutes in tepid water, the temperature of which is then gradually raised to about 40 degs. C, and the proof, which now adheres on the paper, can be stripped off and transferred on the selected material, after having been previously immersed in an adhesive liquid consisting of

Gum Arabic..... 10 grams  
Water.....100 c.c.m.  
Glycerine..... 2 to 3 drops

When the whole is dry, the paper is imbued from the back with benzole, which dissolves the India-rubber, and by being lifted out leaves behind the image adherent to the material. This done, the plate is washed with a little benzole, allowed to dry for a few seconds, then fired as usual. This method is very good to transfer on vases, cups, and generally on uneven surfaces. The following is also effective, but requires more care and working up: Immerse the object in the adhesive solution—the seed of quince mixture—then place the collodion film in the same, then, under the liquid, place the picture face downwards in the enclosure made beforehand with a pencil-mark, then withdraw from the liquid the object with the film upon it and stretch the film and make the necessary alterations to place the image in the right position. Now with a soft brush gently dab the film as it dries before a fire, so that it fits exactly the curvature of the object, and when dry cut off with a pen-knife the edges of the film projecting outside of the enclosure. Do not attempt to destroy the collodion, but bridle it with a flux.

The image is generally transferred face upwards on surfaces plane or nearly so, or whose curvature can be developed (a cylindrical form, for example). The collodion is therefore in direct contact with the material upon which the picture is to be burnt-in, and as in this position it is bridled by the flux (borax)\* no accident occurs when it is fired, there is no necessity of destroying or dissolving the collodion, which is a great boon, and simplifies the operation. To transfer it is only necessary to immerse the stripped proof in a saturated solution of borax and to proceed.

This transferring method or that of Mr. Jeanrenaud should be selected whenever the enamel powder is attackable by sulphuric acid. The enamel colors altered by this and hydrochloric acid are the rose, yellow, green, violet, and generally those compounded with the oxide of manganese.

It should be observed that when the proofs are transferred on glass, porcelain or faience, they must be flowed with a saturated solution of borax and allowed to dry before being burnt-in.

If from any cause the transfer had to be postponed until the next day, the proofs should be collodioned, then immersed in water *slightly acidified*, for not only the reductive action of the light continues for a certain period in the dark, but by keeping the whole film becomes insoluble, and adheres so strongly to the plate as to render the transfer impossible. Hence the necessity, not to wash out the bichromate entirely, but to dissolve it and keep the proofs damp. As said above, the water should be acid, no matter how little, in order to prevent on the film the formation of air bubbles, which, in transferring, may interpose themselves between the image and the plate the result of which is obvious.

(*To be continued.*)

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#### ASTRONOMICAL PHOTOGRAPHY.

(*Continued from page 510, and concluded.*)

But if we place a plate in the focus, the wires will be photographed on that plate; and if a star crosses the field, its track will be marked by a fine line perpendicular to these wires. Now if the plate be moved by proper apparatus, say once a second slightly to the north or south the line made by the star will be broken at the times of these movements, while the pictures of the wires, as the motion of the plate is right along them, will be undisturbed; we can then tell evidently, where the star was at the time of the movements of the plate and of course easily obtain by measurements the moments at which it must have crossed each wire.

But this process is one of the future, rather than of present practical use. F. Hagen, of Georgetown, is now experimenting on it with fair prospects of success.

The most remarkable application of photography to astronomical science, the one which up to the present time has given the most striking results, is the use of it in connection with spectroscopic work. I have shown you on a previous occasion photographs of the spectra of various stars obtained at Cambridge, where this work is being carried on very thoroughly and systematically, especially with the slitless spectroscope by which we see the spectra of all the stars in the field at once; on a small scale it is true, but still well enough to notice their prominent characteristics. And whatever we see we can of course photo-

\* By excess of precautions some operators advise to varnish the plate when dry with a solution of fat oil of turpentine in the ordinary oil, about 3 per cent.

graph; sometimes indeed we can photograph more than we see. Evidently the complete classification of all the stellar spectra visible with our instrument can be much more rapidly done in this way than by separate examination of each; and specially remarkable ones can be found simply by examination of our negatives.

A very interesting discovery has been recently made in this way. You remember that I said not long ago that by the displacement of the spectral lines in Algol it had been found that this star was revolving in a small orbit, only three million of miles separating it from its companion, which seems to be dark, and to cause the variation of light in the bright star by coming between it and us at each revolution.

It has lately been found that some other stars show a similar phenomenon; and in a very remarkable way. They show periodically a doubling of the prominent spectral lines. A memoir on a very striking case of this kind, that of the star  $\beta$  *Aurigae* has lately been published by Prof. Pickering. This star shows a doubling of this kind, recurring every two days about. In the interval the lines close up, and appear as one.

Now what is the explanation of this? Only one suggests itself, and that almost irresistibly. It is this; that the star is really a very close double star, like Algol; far too close to be separated by ordinary optical means; that a revolution of the components round each other is accomplished in about four days. It would appear that we lie pretty nearly in the plane of that orbit; of course, in that case, the two stars, if we could see them as separate objects, would seem to pass over each other, oscillating from side to side. When they are most widely separated, of course one would be receding from us, the other approaching; and any spectral line which they have in common would be displaced in different directions in the two; in the receding one toward the red end of the spectrum, in the approaching one toward the violet. It would therefore present the appearance of a doubled line. But when one passes in front of the other, there would be no difference in the two lines; as neither components would be either approaching or receding, or at least both would be moving to or from us at the same rate.

The separation of the lines in this star is very considerable; and indicates a relative velocity in the components of about 150 miles a second, or if they are moving with equal rapidity, one approaches and the other recedes at the rate of 75 miles a second. Now of course we can get the size of the orbit from this: and if we assume a distance of the

star corresponding to a parallax of  $0''.05$  (it does not seem to be more than that) it would result that the apparent separation of the stars from each other is at its greatest not more than  $0''.004$ ; a quantity quite imperceptible to any magnifying power we can practically use. But the separation in the lines of the spectrum is as much as  $20''$ ; the use of the spectroscope gives us that a quantity to work with about 5,000 times as great as we should otherwise have; or as Professor Pickering remarks, it increases the magnifying power of the telescope 5,000 times.

This discovery actually resulted from the photographing of the spectrum of this star at different times, and was made by Miss Maury, one of the ladies who are employed at the Harvard Observatory in the examination of the photographic negatives obtained.

Another curious use which has been made of photography at Cambridge is the location of the north pole of the heavens by photographing the region in which it lies. In this case we do not put on our clockwork, but keep the telescope perfectly still; the result is of course that the stars near the pole describe little circles on the photographic plate. The common centre of these circles is of course the pole itself; and evidently its movement among the stars, the large circle which it describes once in 25,000 years round the pole of the ecliptic or sun's track, by virtue of the conical movement of the earth's axis known as precession, with the little irregularities in this movement known as nutation, and also its apparent displacements due to the aberration of the stars themselves, which makes the pole seem to shift among them, though it is really they that are shifting; evidently, I say, these can and must necessarily be represented visibly by successive photographs of this kind.

On the whole, it would seem that the great, at least the immediate future of astronomy lies in the judicious use of spectroscopy and photography, rather than in the increase of optical power by the construction of large telescopes. Give a small telescope with a plate attached to it time enough, and it will see as much as a big one will show to the most sensitive eye. And as dry plates will retain their sensitiveness as long as can be desired, there is no need of limiting our exposures to a few hours; there seems to be no reason why the same exposure cannot be continued for days if we wish, shutting off the light of course when the object has sunk too low in the west, and recommencing when it shall be high enough in the east again.

Still the time has not yet gone by for the use of the old instruments of precision; it is by them

that we must solve the problem, if it is ever to be solved here, which we have to treat in our next and concluding lecture, as to whether the great and innumerable hosts of stars which we see in the sky are moving on any definite plan or system, or merely wandering about vaguely under the influence of their mutual attraction.

*G. M. Searle.*

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### THE NEW METRIC STANDARDS.

[Read at the Washington Convention of the P. A. of A.]

ALL persons, actively engaged in your profession, must have a natural interest in the subject of weights and measures. Members of most professions have to do with operations of weighing and measuring—some with measuring more than weighing, and some with weighing more than measuring—but all with both of these processes to a greater or less degree. Methods of weighing and measuring have improved constantly from the earliest times and have kept pace with the advance of other technical processes. It is, therefore, believed that you will be interested in a few remarks concerning some of the more recent advances in relation to the establishment of decimal standards of length and mass in this country. Before speaking of this, I will refer very briefly to some facts which may not be very generally known regarding our customary system of weights and measures.

Although the yard is universally accepted as the unit of length, and the pound as the unit of mass, it is not generally understood, I believe, just in what respect the yard is the unit of length, or the pound the unit of mass. That is to say, it is not generally known in what degree these units have been legalized by Acts of Congress. Doubtless, many of you are familiar with the facts which I will briefly recapitulate.

The Constitution of the United States authorizes Congress to establish a system of weights, measures and coinage. The establishment of a system of coinage, as you know, was one of the first acts of the government, and the system then adopted is certainly one of the most perfect, if not the most perfect, that the world has yet seen. But, although Congress had the power to establish a system of weights and measures, it has never yet seen fit to exercise this power; that is to say, Congress has never yet passed a law declaring that the yard shall be the standard of length throughout the United States and that the pound shall be the standard of mass. In what way, then, have these units acquired the recognized legal standing which they unquestionably possess? To this question I will reply, that it has come about almost exclu-

sively through the action of the State governments, as encouraged and assisted by the National Government. In the early part of the present century, the subject of weights and measures was involved in great confusion throughout the whole country; the States did not agree among themselves, nor were the same units or standards of weight and measure used exclusively in any one State.

It soon became evident, however, on account of the very important and extensive operations of the general government in the survey of its boundary lines and coasts, and also in the collection of duties upon imported goods, that it was important for the government to select or establish a unit of length and a unit of mass, which might be used in these operations, and in others in which the government was engaged. The business of surveying the coasts and of collecting the duties was then, as it has been almost continuously, under the direction of the Secretary of the Treasury. The establishment of a unit of length was virtually entrusted to Mr. Hassler, the first Superintendent of the Coast Survey, who selected a certain number of inches, or rather certain particular inches, from a scale known as the Troughton scale, which is now in the archives of the Coast and Geodetic Survey. Ten or fifteen years later (about 1828), what is known as the Troy pound, which was brought to this country under the direction of Albert Gallatin, during the Presidency of John Quincy Adams, was selected as the unit of mass for purposes of coinage. This was done by definite Act of Congress, and not by the mere direction of a department official, and in this respect this standard of mass takes a higher rank than does the standard of length. This Troy pound was adjusted to agree as closely as possible with the British standard, by the celebrated Kater, and was brought to this country sealed, and shortly after its arrival the seals were broken with considerable ceremony by President Adams. This standard is at present, and has been during most of its life, deposited in the Mint at Philadelphia. It is an imperfect standard in its construction and in its form, and is by no means up to the requirements of modern metrological science. But, in 1836, in order to encourage uniformity in weights and measures throughout the whole country, Congress passed an act providing for the construction, by the Bureau of Weights and Measures, which has always been under the direction of the Superintendent of the Coast and Geodetic Survey, of accurate copies of these standards, together with capacity measures of various kinds, which were to be distributed to the various States in the Union.



The effect of this distribution has been to insure practical uniformity in weights and measures throughout the country. In the absence of positive legislation by Congress upon the subject, nearly, if not quite all of the States have enacted laws in which they have adopted the standard yard, or rather, each its own copy of the Treasury standard, as the standard of length for the State, and a standard of mass which is, also, a copy of, or derived from the Treasury standard.

From this bit of history with which, doubtless, many of you are already familiar, you will learn that, while Congress has never really legislated to provide these very important and necessary standards for the use of the whole country, practically the same result has been attained through the adoption by the State Legislatures and general assemblies of the distributed copies of the Treasury originals. It is to be regretted, however, that this leaves us in the condition of having, in this country, a multiplicity of standards—forty or fifty, perhaps—instead of a single standard, which would have been theoretically, if not practically, more desirable. It is an interesting and important fact that the first standards of length and mass, which were really legalized by Act of Congress for the whole country, were the metric standards. In 1866, an act was passed, making the use of the metric system permissible in the United States, and establishing legal equivalents among the various units and denominations of that system and the customary system. By Act of Congress it was also provided that each of the institutions of learning, known generally as the land grant colleges, should be provided with a set of metric standards, including a meter and a kilogramme, with the multiples and submultiples of the latter, and also with the metric measures of capacity. As Congress had acted upon the matter, no State action was necessary to legalize the use of this system, and, I believe, that none was had by any of the States. The Bureau of Weights and Measures is in possession of many interesting and accurate copies of the meter of the archives, and from these the standards thus distributed were obtained.

The next important step was taken in the year 1869, when the French Government issued an invitation to various countries to send delegates to an International Commission to meet in Paris in the summer of 1870. The object of this Commission was to consider the question of constructing an international standard meter which should represent with all possible accuracy the actual length of the meter of the archives, and which should be more in accordance with the demands of modern

metrology. At the short session which was held in 1870, it was agreed by this Commission that a committee should be appointed to make experimental researches, especially with the view of determining the best form for the international prototypes and the best material for their construction. The United States was represented upon this committee, which began its operations early in the year 1872. In the autumn of that year the International Commission met again, and at that meeting twenty-five nations were represented by forty-three delegates. It was there determined that the international meter should have the length of the meter of the archives at zero centigrade, and that it should be composed of an alloy of platinum and iridium, 90 per cent. being platinum and 10 per cent. iridium. It was also agreed that the composition of the kilogramme should be the same as that of the meter; that its mass should be derived from the kilogramme of the archives in its actual present condition, and that it should be determined with reference to its weight in a vacuum. It was also decided to enlarge the scope of the Commission by the establishment of an International Bureau of Weights and Measures, and this proposition having been submitted to the various governments, a treaty to that effect was signed at Paris in 1875. Previous to this time, the experiments of the committee, charged with construction, had led to the production of what is known as the alloy of 1874, which was cast in a single ingot weighing 250 kilogrammes.

Although upon analysis, this alloy was found to contain such impurities that it was thought best by the International Commission to reject it, yet certain standards or units were prepared from this alloy, and one of these is in the possession of the Office of Weights and Measures in Washington. It was not until about the year 1882 that the difficulty in the way of preparing raw material for the construction of these standards was overcome. The method of preparing this alloy is described as follows: For the kilogrammes pure platinum and iridium in a finely powdered state was weighed in the proportions sought, and well mixed in quantities of ten kilogrammes at a time. Each of these quantities was compressed into a cake and heated to a red heat in a covered platinum crucible. Each cake was then put into a furnace of pure lime and melted with an oxyhydrogen flame and then poured into moulds, also made of pure lime. After various other processes, the ingots were forged under a powerful hammer. After forging, the metal was passed between polished steel cylinders and reduced to plates about two millimeters thick. Finally, all

the metal was melted, as before, for a third time in May, 1884, and cast in a single ingot weighing sixty-five kilogrammes.

The metal thus obtained, was heated in a specially constructed lime-furnace, then forged under a hammer into a square bar 52 centimeters long by 7 centimeters thick. This, in turn, was heated and rolled between steel cylinders into a cylindrical bar 200 centimeters long and 44 millimeters thick, and at this stage pieces were cut off the ends and analyzed, and found to be pure. This bar was cut into forty cylinders for the standard kilogrammes.

The metal for the meter-bars was prepared in about the same way. After the several meltings, the mass was divided into five lots. These having been examined and found to be pure and homogeneous, were each divided into three parts. These were then arranged in groups made up from each of the five lots, melted together and cast into ingots, each of which contained sufficient material for one standard. The bars after having been forged, were passed between rollers until they assumed approximately the shape desired. This operation required 3 days, 16 hours each, for each bar: *i. e.*, two bars a week were planed, saving accidents. The bars were then cut to exact length (1.02 meters), their edges were made straight and the neutral surface was made plane. The polishing and tracing was then done at the Conservatoire des Arts et Metiers.

Great care was taken in ascertaining the coefficient of expansion of all of the bars after their preparation, one being selected and studied by the usual method for determining this constant and the coefficient of the other bars being determined relatively to this one by comparison at various temperatures. Thirty bars were prepared and very carefully compared with each other, and it was found that none of them differed as much as three one-thousandths of a millimeter from the meter of the archives. That one which was closest in agreement and which was altogether the best for the purpose, was selected by the committee and set aside as the international standard meter, thus taking the place, as a matter of fact, of the meter of the archives. The remaining bars were distributed by lot to the various contributing countries. Forty-two kilogrammes were constructed. Their densities were determined by the most accurate processes, the weighings being made in a balance especially constructed for this work, which was capable of weighing in vacuo, although the actual weighings were made in air. The actual construction of the balance permitted the transposition of the standards and a manipulation of the weighings

without approaching the balance nearer than about 4 meters.

An analysis of the material of which these standards are composed, showed that it was almost exactly in accordance with the original plan, that is to say, that it contained 90 per cent. platinum and 10 per cent. iridium. There were traces, however, of rhodium and iron. The two meters which came to the United States in the allotment, were Nos. 21 and 27, and that of the alloy of 1874, is No. 12. Of the kilogrammes, we obtained Nos. 4 and 20. The equation of these standards is given below:

EQUATION OF THE UNITED STATES PROTOTYPES.

METERS.—MICRON.

$$\begin{aligned} \text{No. 21} &= 1 + 2.5 + 8.665 T + 0.00100 T^2 \\ \text{" 27} &= 1 - 1.6 + 8.657 T + 0.00100 T^2 \end{aligned}$$

ALLOY OF 1874.

$$\text{No. 12} = 1 + 3.3 + 8.634 T + 0.00100 T^2$$

KILOGRAMMES.

	Mg.	Density.	Volume, ml.
No. 4 = K	— 0.0357	21.5436	46.4176
" 20 = K	— 0.0398	21.5509	46.4017

These values of the national prototypes were determined at the International Bureau of Weights and Measures by a very elaborate series of comparisons between them and the international prototypes. In the above equations, the "micron" is the one-millionth part of a meter; T is the temperature in degrees Centigrade.

With regard to the cross-section of the meter, the form shown in Fig. 1, was selected as having the greatest rigidity for a given amount of metal, and at the same time because, allowing so much of its surface to be exposed, it was believed to be capable of assuming most readily the temperature of the surrounding air. The surface upon which the defining lines are engraved, is the neutral plane of the bar.

The following comparison between the new prototypes and the Metre des Archives, sets forth the advantages of the former:

Rigidity.		Superficial area of Transverse Section.	
New Prototypes.	Metre des Archives.	New Prototypes.	Metre des Archives.
		Sq. Mm.	Sq. Mm.
25.9	1	150	100

The construction of these standards was completed in the autumn of last year, and those allotted to us were received by Dr. B. A. Gould, our representative in the International Bureau, and were by him turned over to the United States Minister at Paris, Mr. Whitelaw Reid. Meter No. 27 and kilogramme No. 20, and also Meter No. 12, of the alloy of 1874, were received from the United States Minister by Professor George Davidson, Assistant in the United States Coast and Geodetic Survey, who brought these standards from Paris to Washington, where they were deposited in the Office of Weights and Measures. The utmost care was necessary and was shown in the transportation of these standards, and I am glad to say that they were received at the Office of Weights and Measures in excellent condition. On January 2, 1890, the meter No. 27 and the kilogramme No. 20 were carried to the Cabinet Room in the Executive Mansion, where the ceremony of breaking the seals upon the boxes was performed in the presence of the President of the United States, the Secretary of State and the Secretary of the Treasury, together with a distinguished company of scientific men, including the presidents of the engineering societies of the country, and all leading exponents of the science of metrology.

A formal certificate, declaring the condition of these standards on the opening of the boxes, was signed by the President, and witnessed by the Secretary of State and the Secretary of the Treasury. A somewhat similar certificate was signed by all the other gentlemen present at the ceremony of breaking the seals. By this official act of the President of the United States, meter No. 27 and kilogramme No. 20 are placed in a rank above that of any other standards which we now possess and they will, therefore, be guarded as our national prototype meter and kilogramme.

Meter No. 21 and kilogramme No. 4 remained in the possession of the United States Minister at Paris until a few weeks ago when they were brought to this country by Assistant O. H. Tittman, of the U. S. Coast and Geodetic Survey, a special messenger from the Office of Weights and Measures.

In conclusion, I beg to call attention to the models of the new standard meter and kilogramme, which I have upon the table before me. The model of the meter is made of wood covered with aluminum, so that it resembles very much the platinum of the original, and as to dimensions, it is a very exact copy. It will enable you to see the form of the standard, and especially the interesting form of the cross-section which has been selected after much study and examination. The

model of the kilogramme is hollow, made of brass and plated with nickel, so as to resemble the platinum original. It resembles the latter, of course, only in form, but in that respect, is a very exact copy, and will enable you to see that this kilogramme is a cylinder, the diameter of which is equal to its altitude and the edges of which are very slightly rounded.

In thanking you for your kindness in granting me the privilege of discussing this question before you this afternoon, allow me to say, that the Office of Weights and Measures will always be pleased to do anything in its power to further the interests of exact measurement in any operations growing out of the practice of your profession. We can determine the errors of your standards of length, if you desire it, and of your standards of mass also. We have recently published a two-page table for the transformation of the customary system of weights and measures to the metric system, and I have placed a number of these upon the table, which I should be pleased to have any of you appropriate when an opportunity is offered, if you so desire.

*T. C. Mendenhall.*

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### Notes and News.

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**Mr. Althans**, formerly of the Cramer Dry Plate Works, has severed his connection with that company, and sailed for Germany.

**John Carbutt** has returned from his European trip, evidently in fine health and spirits. One of the first things he did on landing was to send a cheque for one hundred dollars to Chairman McMichael of the Daguerre Memorial Committee, writing in regard to the monument as follows: "The fine photo-gravure in THE PHOTOGRAPHIC TIMES of September 12th made me realize how great must have been the satisfaction to those present at the unveiling of the monument."

**Mr. B. J. Edwards**, of London, England, a well-known authority in orthochromatic photography, has arrived in New York on his way to St. Louis, where he will give expert assistance in his particular branch, to Mr. Cramer. Mr. Edwards showed us specimens of his isochromatic work, and they were certainly very fine; nearly, if not quite, as fine as similar work by Mr. Carbutt.

**Obituary.**—Mrs. Daisy Forwood Gatchel, wife of Albert D. Gatchel, and daughter-in-law of W. D. Gatchel, the well-known photographic merchant, died of typhoid fever, in Birmingham, Ala., Sunday, September 28th. *The Louisville Post*, in announcing her death, speaks as follows of this charming lady: "The grim destroyer has seldom taken a lovelier victim than Mrs. Gatchel. Beautiful in person, amiable in manner, she won the admiration and esteem of all who met her. She was faithful in all her duties, both in church, society and home, and many sorrowing hearts will mourn her departure."

**A. D. Gatchel** has notified the trade of his absence for two or three months, during which time Mr. J. A. Hoerter will manage his business.

**N. C. Thayer**, the well-known photographic merchant, of 257 State Street, Chicago, recently sustained a loss by fire. The conflagration broke out at nine o'clock Monday evening, October 6th, and destroyed many thousand dollars' worth of goods; but the insurance more than covered all losses, and Mr. Thayer has resumed business at 265 Wabash Avenue. Smith & Pattison, also photographic merchants, sustained a slight loss by smoke and water.

**Advance in the Price of Frames.**—At a meeting of the moulding and picture-frame manufacturers, held October 1st, at the Leland Hotel in Chicago, the following resolutions were adopted and signed by all the manufacturers.

1. Owing to the increase of duty on Schlag Metal, and advance in price of alcohol, shellac and lumber, silver and gold leaf, and other materials used in the manufacture of these goods, an advance of 15 per cent. be made on all mouldings and picture frames.

2. The boxing and cartage to be charged at exact cost.

At a meeting of the Society of Amateur Photographers of New York, held Tuesday evening, October 14th, Mr. T. C. Roche gave a demonstration on the carbon process, which was followed by a discussion on the eikonogen developer, and an exhibition of apparatus.

**The Johnstown (Pa.), Amateur Camera Club** has organized with the following officers: President, Roger Davis; Vice-President, Doctor S. A. Peden; Secretary, J. Frank Condon; Assistant Secretary, John A. Statler; Treasurer, William Heslop.

**The San Francisco Camera Club.** The exhibition of the Camera Club Tuesday evening, September twenty-third, at Union Square Hall was very largely attended, the hall being crowded to the doors, and even standing room hardly obtainable. The rush was so great that the club decided to forego the special business meeting that had been called before the exhibition and defer it to some future date. A large number of slides of accepted views in the neighborhood of San Francisco were first thrown on the sheet and received general commendation. Then followed a lecture illustrated by lantern views, or rather views with descriptive remarks by Dr. C. H. Steele, entitled "Glimpses of London." It proved most remarkably interesting. Every object of historical, literary and architectural interest in and around the great city was shown. The views were very clear and artistic, while the lecturer's remarks were pertinent and fully explanatory. During the recesses vocal solos were rendered by Miss Vincent and Miss Emily Sol-dene, which were received with hearty applause.

**Our Daguerre Frontispiece.**—*The New York Times* for Monday (October 13th) in its column devoted to photography, states that a photo-gravure, taken from the fine negative by Prof. T. W. Smillie, of the Daguerre Memorial, "is to be published in THE PHOTOGRAPHIC TIMES." Our readers, of course, know that this photo-gravure was published in the issue of September 12th and long before any of our contemporaries had brought it out.

*The New York Daily News* of Thursday (October 9th), referring to this photo-gravure, says: "THE PHOTOGRAPHIC TIMES of September 12th contains a magnificent photo-gravure of the Daguerre Memorial recently erected in the National Museum at Washington. As a specimen of photo-gravure work it is a magnificent success."

**Eikonogen Developer.**—Wuestner's New Eagle Dry-Plate Works recommend the following formula for instantaneous exposures: Dissolve in 300 c.c.m. (or 10 ounces) distilled or ice-water; 20 grams (or two-third ounce) sulphite of soda crystals; 10 grams (or one-third ounce) carbonate of potash. And then add 10 grams (or one-third ounce) eikonogen.

**In Putting Photographic Views in a Scrap Album** use a paste made of arrowroot and water. Cover the back of the photograph smoothly with the paste, then press the picture down. Use a soft cloth and smooth from the centre to the sides. Place two or three folds of paper between the leaves and press with a cool iron.

**An International Photographic Exhibition** (Salon in Vienna) will be held under the patronage of Her Imperial and Royal Highness, the Archduchess Maria Theresia, from April 30th to May 31st. The admission of pictures will be subjected to the decision of a competent Jury of Artists and Photographers, which admission is an honor, and will be certified by special diploma bearing the signature of the Patroness of the Exhibition, Her Imperial and Royal Highness the Archduchess Maria Theresia.

The Jury has the privilege of recommending competitors for special good work for the Vermeil Maria Theresia Medal, which will be awarded by Her Imperial and Royal Highness. The number of these medals is not to exceed ten, and must be awarded unanimously.

The approval of two-thirds of the Jury is required for admission.

No scientific section can be admitted this time.

All photographs of artistic merit will be admitted, including: Landscapes, studies of flowers and of animals, genre pictures, portraits, etc., besides diapositives, lantern-slides and stereoscopes.

Every picture, not smaller than 12 centimeters by 9 centimeters must be mounted on a separate cardboard, with or without a frame. Suitable frames will be supplied by the Club free of charge.

The subject and artist's name must be on each picture.

Pictures already exhibited in Vienna 1888 cannot be sent in again.

Application must be made not later than the 15th of January, 1891, and Exhibitors will kindly forward their photographs before the 1st of April, 1891, to a London address, which will be made known in time, whence they will be forwarded and returned at the expense of the Club and no further charges, as for wall space, etc., will be incurred by exhibitors.

The names of the Jury will be published before the 1st of January, 1891.

No exhibits will be allowed to be removed before the close of the exhibition. The Jury will decide finally where the pictures are to be fixed.

The Committee reserves the right of issuing further rules, if necessary. All communications to be addressed to the President of the Club, Carl Srna, Esq., VII. Stif-gasse 1, Vienna.

## Photographic Societies.

### CAMERA CLUB OF ROCHESTER.

THE first regular meeting of the club this fall was held on the evening of Sep. 19th. Owing to the inclement weather but fifteen members were present, but these were amply repaid for coming. After the usual routine business, Pres. Crouton introduced Mr. B. J. Edwards, of London, Eng., the celebrated manufacturer of Isochromatic plates. For over an hour the members listened to a talk on this subject which was of unusual interest. Mr. Edwards had with him a number of prints showing vast difference between the ordinary and the Isochromatic plates in photographing paintings, flowers, portraits and landscapes. Among these were several prints of oil paintings taken in the National Gallery in London, which for years have baffled the photographer's art. The results were startling in their difference, ordinary plates scarcely showing an outline in many cases, while his plates brought out most of the detail.

Mr. Edwards recommended the yellow screen in photographing oil paintings, and sometimes with flowers, but ordinarily preferred not to use it. Views of the Paris Exposition were also shown which were admired by all. A vote of thanks was given Mr. Edwards, and he was unanimously elected an honorary member of the club.

President Crouton reported that our enlarging lantern is now fitted up with large 16 inch condensers, and is very complete, also that the Committee on Illustrated Rochester have nearly completed their work, and an exhibition will soon be given of their slides.

Yours very truly,

*J. L. Willard,*  
*Secretary.*

### THE RIDGEWOOD CAMERA CLUB.

The Ridgewood (N. J.) Camera Club have given their initial reception at their new club house. The rooms were profusely and tastefully decorated with bunting, tropical plants, and here and there great banks of roses. Smilax hung from the chandeliers, and great bunches of bright golden rod filled the niches. Some eighty guests were present including the leading residents of the town. A superb orchestra furnished music during the evening, and an elegant supper was provided between 9 and 11 o'clock.

The most interesting feature of the occasion was the exhibition of the photographic work of the different members, many specimens exciting the surprise of professionals. Mr. H. W. Hales presented some remarkable bromide prints, delicate in their execution; Mr. F. Levien, excellent landscape views of the immediate vicinity remarkably well done; while many of a similar character offered by Mr. J. F. Carrigan were taken in different parts of New York State. Messrs. Robert B. Walton, W. Lefetva, Andrew Carrigan, and Arthur Alexander had on exhibition some superb specimens of local scenery, forest views, and buildings. Although in its infancy, the club has lost one of its most enthusiastic members, the late J. Henri Smith. Much of his work, however, was on exhibition and greatly admired. A view of the house where Burr was married, one or two animal views, and particularly his blue prints, elicited great praise.

The entire club were lavish in their attention to their guests, and made the evening one of unsurpassing pleasure. Among those present were Mr. and Mrs. Henry Patton, Mr. and Mrs. F. J. Walton, Mr. and Mrs. Thomas Watlington, Mr. and Mrs. R. W. Hawes, Miss Hawes, Mrs. Fannie Walton, Mr. and Mrs. Willard, Miss Brinsmaid, Mr. and Mrs. P. H. Bruyn, Miss Lucy Hawes, Miss Walton, Mr. and Mrs. William Harding, the Rev. Dr. Mull, Mr. and Mrs. S. Dennis, the Misses Mastin, Mr. E. Westbrook, Miss Millie Westbrook, Dr. and Mrs. Suckert.

The managers were Mr. and Mrs. H. W. Hales, ably assisted by Mrs. Suckert, Mrs. F. Levien, Mrs. P. H. Bruyn, and Mrs. J. F. Carrigan. The club is composed of the following members: J. F. Carrigan, Edgar Watlington, Andrew Carrigan, W. Lafetva, J. Patton, Arthur Alexander, Dr. J. J. Suckert, John Hauks, Miss Jennie Bruyn, and Miss Emma Buttre. The officers are: Peter O. Terhune, President; H. W. Hales, Vice-President; Robert B. Walton, Secretary; F. Levien, Treasurer.

### THE PITTSBURG AMATEUR PHOTOGRAPHERS' ASSOCIATION.

We had a two days' outing this week with tripod and camera which was most delightful.

The trip was taken over the Pittsburg and Western Railroad and extended to Cuyahoga Falls, Ohio. Among those composing the party were Mr. W. S. Bell, wife and son; Mr. C. C. Craft, wife and daughter; Mr. T. L. Kennedy and wife; Dr. R. L. Walker and wife; Mr. Chas. Davis and son; Mr. and Mrs. W. S. Clow; Mr. A. M. Martin, wife, son and daughter; Misses E. and M. Darlington; Miss B. A. Backofen; Miss Bailey; Messrs. E. S. Dickson, G. B. Ewart, T. K. Gray, J. H. Hunter, W. P. Beattie, O'Hara Darlington, W. T. Becker and Mr. Pierce.

Nearly the entire route was full of attractions to the photographer's eye. The beauties of stream and wood along Pine Creek, the romantic scenery of the Connoque-nessing, the deep gorges of the Beaver and the final stop at Cuyahoga Falls afforded a constant succession of views to delight the excursionist. Notwithstanding the somewhat unfavorable weather—the overhanging clouds rendering photographing in the deep glens and among the rocks rather uncertain—the interest was constant and the efforts at catching the reality and spirit of the scenes unceasing.

The evening of the first day found the party at Cuyahoga Falls in the charge of landlord Marvin of Clifford Inn. In the morning the cameras were loaded into carriages with the party and a start made for the glen. Dismounting at the entrance they found their way blocked by a guardian who claimed ownership and demanded a tribute before the party were allowed to enter. He had evidently heard of the arrival and was found early at his post otherwise deserted. After he had been propitiated the tripods were unstrapped, the cameras mounted and the real work of the day begun. Sky, woods, rocks, stream and waterfalls never had a greater bombardment of cameras. At every turn one could see the glaring eye of a Darlot, Prozmowski or Dallmeyer peering over a tripod, or the apparently innocent detective pointed at some specially alluring spot. The scenery was peculiar in its attractiveness of landscape. The yellow maple leaves, the bright glow of the sumachs, the variegated colors of festooning ivies, the russet of the chestnut and the green of the leaves not yet ripened, lent an

indescribable charm to the scenery—subtle beauty that could be only feebly shadowed in the picture fixed on the photographer's plate. Added to this were the tall rocks, some dripping moisture from their overhanging ledges, surmounted by full grown trees, and at times caverns extending into their sides, below the deep gorge in which the Cuyahoga runs now a steady stream, then a foaming rapid among pointed rocks, and again leaping in a beautiful cascade over a ledge. The amateur artists were constantly unconsciously forming picturesque groups that were being as constantly and consciously captured on the sensitive plates by others of the party. Stairways and steep winding paths lead to attractive points, a swinging bridge crosses the river just below one of the highest falls, from which an extended view takes in a vista of a succession of falls and a winding gorge, a rocky pathway guides along the river for a mile and then there is a sharp descent to the road.

Another mile in carriages brought the party to the Old Maid's Kitchen, a homely hole in a wall of rock, and below the Cuyahoga falls over a succession of broken ledges and is compressed into a rapids below the tubulent and yellow caps of foam.

After dinner another carriage ride took a portion of the party to Silver Lake and a hurried return to get to the train before starting. While waiting at the depot the cameras where piled in the foreground, the owners grouped back of them and the ever active lens on a tripod was brought into requisition to perpetuate the memory of the occasion. On the train, after the sun had disappeared the flash-light was utilized and the party pictured in a last farewell group.

Before parting there was an enthusiastic meeting at one end of the car and resolutions were passed thanking the Pittsburg & Western Railroad Company for their kindness in furnishing a special car free of charge for the party, through the general passenger agent Mr. Charles W. Basset; to Mr. W. S. Bell, the President of the Association, for planning and so admirably carrying out the excursion; to Dr. Walker sympathising in his loss of a young terrapin which he had captured on the rocks, and after carrying it in his vest pocket and with his plates during the day, had finally escaped.

*A. M. Martin.*

Pittsburgh, Pa., Oct. 9th, 1890.

### Record of Photographic Patents.

437,290. Photographic Camera. Arthur E. Colgate, New York, N. Y.

437,629. Art of Photographing without a Dark-room. Charles Spiro, New York, N. Y.

437,630. Means for filling Photographic Plate-Holders without a Dark-room. Charles Spiro, New York, N. Y.

437,631. Photographic Developing Apparatus. Charles Spiro, New York, N. Y.

437,655. Photographic Shutter. William H. Lewis, New York, N. Y.

436,855. Photographic Camera Shutter. Frederick A. Hetherington, Brooklyn, N. Y.

437,104. Coin Operated Photographic Apparatus. H. C. Föge, care H. Griese and Joseph L. F. Raders, Hamburg, Germany.

437,170. Method of Producing Photo-Mechanical Printing Plates. Ricardo Aramburo, Seville, Spain.

**Four Fellow-Craftsmen:** Country hotel barkeeper: Phat do yees wurk at when yer in the city?

First Customer: Photography.

Second Customer: Typography.

Third Customer: Stenography.

All three: And you?

Barkeeper: Same as here. Egg-nography.

*New York Tribune.*

### Queries and Answers.

176 "B." Vt., writes: (1) "I have a Steinheil Lens, Series II, No. 4, having six stops not numbered, diameters are 1.36, 1.16, .91, .68, .43, .19, in hundredths of inches. Distance from diaphragm slot to front of ground glass when in focus for 500 feet distance =  $10\frac{3}{8}$ ". What should be the F numbers of these openings? Is the  $10\frac{3}{8}$  the equivalent focus of this lens? (2) Can you give a table of comparative speeds of the various sensitometer numbers of the best known [American] plates? (3) I find on my negatives small blue spots not larger than a pinhead sometimes—seven or eight, or again, only two or three. I use pyro and potash, filter it carefully, take care to keep it clear of any mixture of hypo in any of the dishes or by carrying on my fingers. The spots show but very little in the print, but would like to know their cause? (4) I make prints on ready sensitized paper, use Chautauqua toning solution, get fair tones, but the bath turns milky. Is this insufficient preliminary washing? (5) My prints are also full of black spots of various sizes, mostly on the back, but many on the face. They are all quite small spots \* \* but perfectly black. \* \* I work in machine shop on iron and steel, but change my clothes, in fact leave off coat and vest when trying to make prints, brush out my hair thoroughly, and wash my hands well and roll up my sleeves. It may be iron in both cases, but if it is I shall have to give up, I guess, the making prints other than blue ones."

176 *Answer.*—(1) The measurement is not correct. The equivalent focus of the lens is 9.50 inches, according to which the focal valuation of your stops would be  $1.36 = \frac{f}{7}$ ,  $1.16 = \frac{f}{8}$ ,  $.91 = \frac{f}{10.5}$ ,  $.68 = \frac{f}{14}$ ,  $.43 = \frac{f}{22}$ ,  $.19 = \frac{f}{26}$ . (2) It is next to impossible to satisfy your request. Were we informed of the different methods of determining degrees of sensitiveness that are adopted by the respective manufacturers, it might, perhaps, be done. But as American manufacturers have not decided upon a uniform method, and every one of them seems to have chosen one of his own, it happens, for example, that plates of different makes rated at 19, 27, 30 and 40 degrees, are virtually of the same sensitometer number, or nearly so. (3) We cannot imagine where blue spots can come from, unless—as it appears from your letter that you are working ferro-prussiate paper to some extent—your other chemicals have come into contact with those used for the blue print process. (4) The milkiness of your gold bath is undoubtedly caused by nitrate of silver not thoroughly washed away from the prints. (5) The black spots may possibly be caused by iron dust, but we doubt it, and rather think that pyro or some other reducing agent floating in the air is the cause. We should like to examine these spots as well as those of blue color on your negatives.

**The New York Photo-Electrotype Company** has been obliged to enlarge its facilities on account of increase of business, and now occupy six floors in Nos. 92 and 94 Fifth Avenue, New York City.

**THE PHOTOGRAPHIC TIMES.**

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

W. I. LINCOLN ADAMS, Editor.

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All literary contributions, correspondence, "Queries," etc., should be addressed to THE EDITOR; all advertising matter to the Publishers,

THE PHOTOGRAPHIC TIMES PUBLISHING ASSOCIATION,  
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**Studio Changes.**

New Orleans, La. Mr. Thomas Pye has moved to Jackson, Miss.

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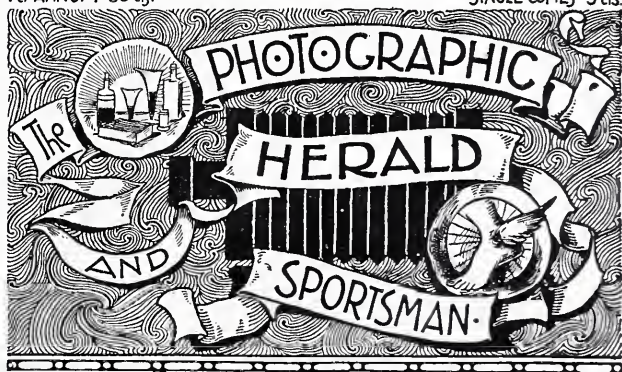
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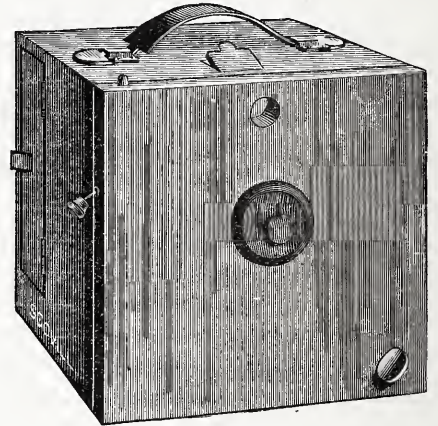
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To meet the demand for a cheap Detective Camera within the reach of the youth, and of those who want to make but a moderate investment in photographic appliances, we have introduced the

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## DETECTIVE CAMERAS

which is made in two styles, *i.e.*, finished in the natural wood or covered with leather. The whole front of this camera is hinged, which is a great convenience. The camera has a Recessed Finder, an Instantaneous and Time Shutter with Speed Regulator, Cap for timed exposures, and one Double Dry Plate Holder, and

**Is certainly Lighter and more Compact than any other Cheap Detective Camera in the Market, and what is still more Important, has a much more Expensive and more Perfect Lens.**

This Double Combination Instantaneous Lens, with Interchangeable Stops, when bought separately costs as much as the whole camera. We are enabled to make a low price on the complete camera because the cameras and lenses are produced in such large quantities.

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**Price—4 x 5 Knack Camera, - -** Natural Wood. **\$15.00** Leather Covered. **\$17.50**

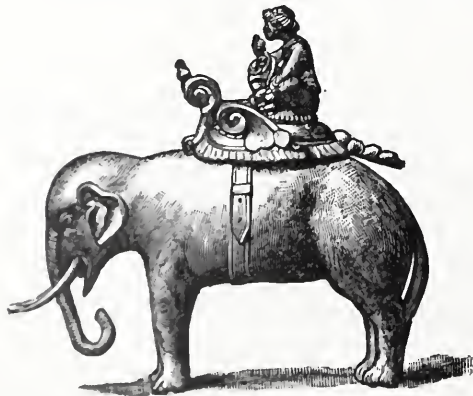
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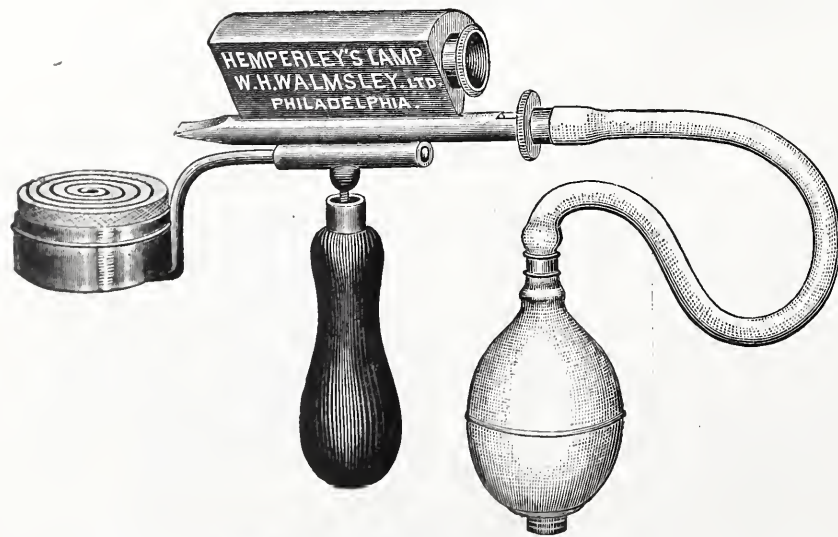
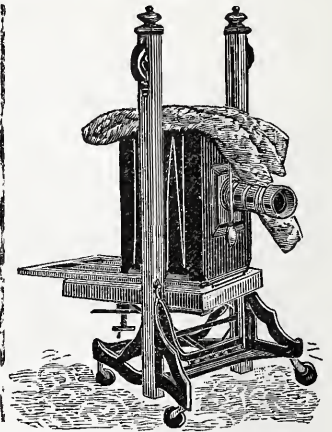
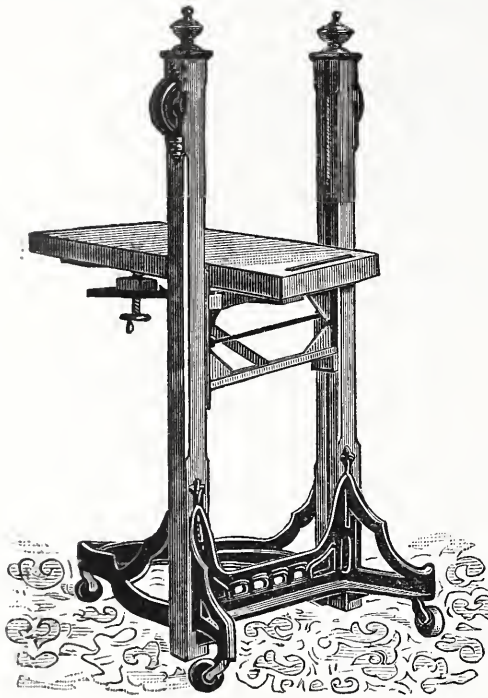
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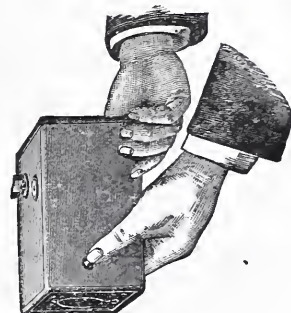
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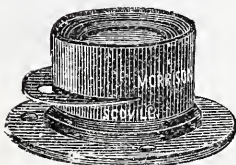
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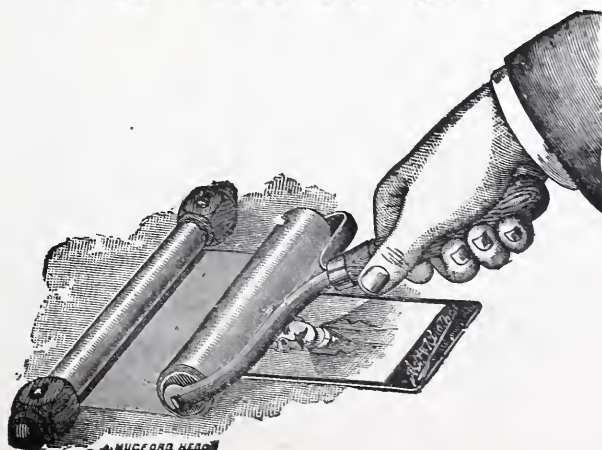
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Nos. 1 to 6 are all made in matched pairs for stereoscopic work. The shorter-focused lenses are especially adapted for street and other views in confined situations. For general purposes, a pair of No. 5 lenses will be found most useful.

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Consists of a spring roller, to which is attached a handle, and upon which is wound a band of fine cotton cloth, one end of the band being fastened to a rod, which is screwed to the mounting table. After the pasted print has been placed upon the mount, the roller is drawn over the print, as shown in the cut, the spring roller drawing the cloth band perfectly tight, and re-winding it when the roller returns. The uniform pressure of the roller removes all the air from under the print and presses it securely to the mount. It absorbs the moisture from the surface of the print, leaving it perfectly smooth. The band is of sufficient length so that when, in time, a portion of it becomes soiled, it can be wound upon the removable rod, which is fastened to the table thereby exposing a clean surface. When the entire band becomes soiled, it may be removed, washed and replaced. It will be noticed that in drawing out the roller it is made to revolve, not by friction on the print, but by the tension of the cloth, one end of which is held by the rod and screwed to the mounting table. Therefore, any amount of pressure can be used without moving the print in any direction. Beware of imitations in which the rollers are made to revolve by friction on the print. Where two rollers are employed twice the amount of friction is produced by the double rollers, causing the print to be misplaced. The Adt Mounter is the simplest, strongest, cheapest, and only practical mounter made. It will mount all sizes of prints. No complications or getting out of order. **Price. \$1.60 each.**



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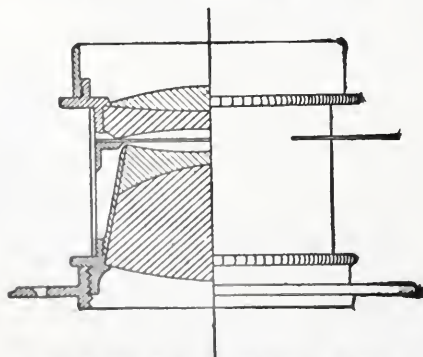
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After experimenting with most of the lanterns in the market, we have come to the conclusion that for parlor or small hall exhibitions, chemical and optical experiments, etc., the SCOVILL LANTERN affords, at a moderate price, the greatest number of advantages, and from its simplicity and non-liability to get out of order, gives, even in inexperienced hands, results superior to all others.

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The CASE and BODY of the Lantern are of Russia iron, and neat and compact in form. That part of the body which surrounds the lamp is double, the outer covering being ornamentally perforated so as to allow a constant current of air to circulate and keep down the temperature.

The lamp is of the triple wick variety, and so constructed that the three flames combine, and by the draught of a ten-inch chimney give a brilliant flame.

The CONDENSER is four inches in diameter, neatly mounted in brass thoroughly ventilated, and arranged with screw flange so that the lenses may be separated and cleaned when required.

The CONE, which carries the objective, and the mount of that lens are nickel-plated. The objective is a double achromatic lens of one and a half inch clear aperture and five-inch focus, so that at a distance of twelve feet from the screen, it gives a brilliant picture on disc six feet in diameter. The focus is roughly obtained by sliding the front, carrying both cone and lens; and fine adjustment by a rack and pinion on the objective.

The No. 2 SCOVILL SCIOPTICON measures, when packed in case for carrying,  $18\frac{1}{2}$  x  $12$  x  $8\frac{1}{2}$ , and weighs 19 pounds. The objective is a double achromatic lens of  $1\frac{1}{2}$  inches clear aperture and  $5\frac{1}{2}$  inches focus so that at a distance of about twelve feet from the screen it shows a brilliant picture on disc eight feet in diameter. The lamp has five wicks and is correspondingly more powerful than the lamp with the No. 1 Sciopticon.



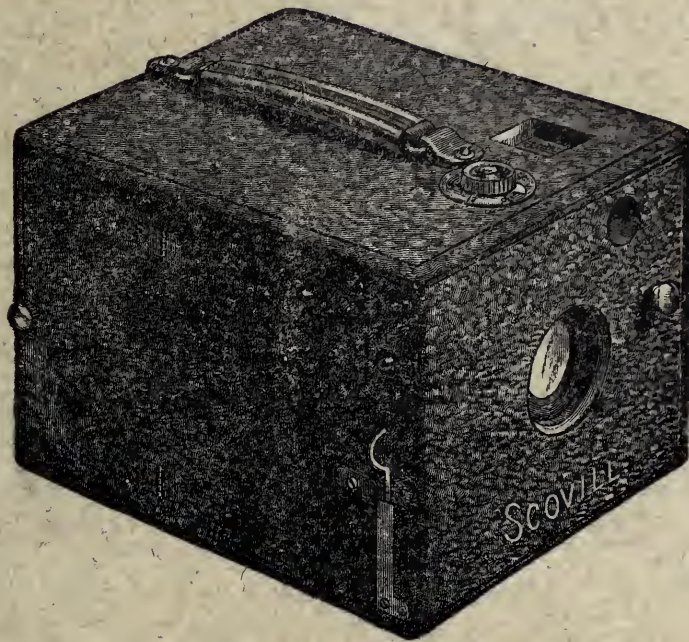
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## The Improved Waterbury Detective Cameras.

### *Points of Superiority :*

**Timed and Instantaneous Photographs.** This is the only Detective Camera which is as well adapted for making timed views as for photographing quickly moving objects. The negatives produced are of such sharpness that they may be enlarged to almost any size. It is

**The only Detective Camera** made with plate for tripod, and with ground-glass the full size of the plate, just as in an ordinary view camera. This ground-glass is where it cannot easily be broken.

**The Recessed Finder** is fitted to the WATERBURY CAMERA, and it differs from finders ordinarily supplied in that it shows *exactly the same image* as is included on the ground-glass, though diminished in size. Without this accurate finder, one cannot be sure of what is taken in or left out of an instantaneous photograph.

**In addition to the foregoing special advantages,** the WATERBURY DETECTIVE CAMERA is certainly as light as any hand camera made, and more compact. You can have the negatives developed and the finished pictures

made directly, without waiting in uncertainty about the results.

**The Instantaneous Lens** in this Camera is not of the "universal focus," distorting, nondescript character, but works with such rapidity and is of such uniform excellence that it has added greatly to the popularity of this Camera.

**The Focusing Scale** is where it may be readily seen, but the focusing device is placed where it will not attract attention and be in the way.

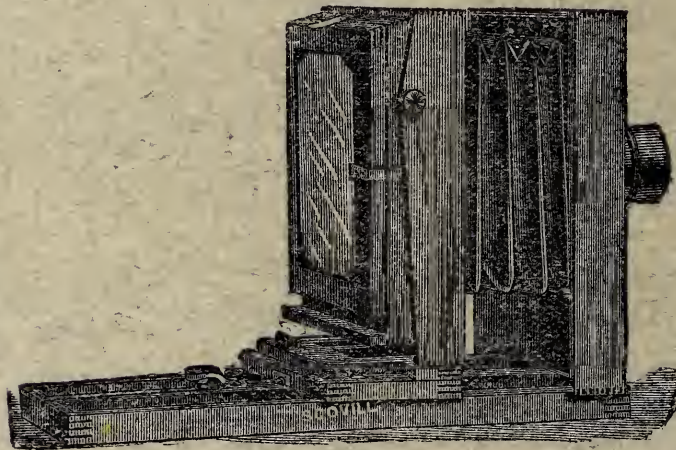
**With this Camera** there is greater certainty of securing good pictures than with any other of the class designated as "Detective" cameras.

#### Price List.

	Leather Covered.
4 x 5 Waterbury Detective Camera, with 2 Double Holders.....	\$25.00
5 x 7 Waterbury Detective Camera, with 2 Double Holders.....	40.00

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# "Peerless" Portrait Cameras.



THESE Cameras are made of seasoned Mahogany, well polished. Above 10 x 12 size they have the Telescopic Extension Platform, Double Swing Back, and are classed among the finest instruments that are made at our New Haven Factory.

These Cameras are either fitted with Bonanza Holder with Dry Plate Rail in addition to the Wet Plate Trough, or they are fitted with plain Rabatted Holder.

The Price List is as follows:

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8 x 10	with Plain Platform,	\$30 00
10 x 12	" " "	42 00
11 x 14	" Extension Platform,	60 00
14 x 17	" " "	70 00
17 x 20	" " "	84 00
18 x 22	" " "	90 00
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