
CLOSE-HAULED

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THE

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GEORGE W. GILSON, - - EDITOR

CONTENTS.

THE MONTH.

Mr. Geo. G. Rockwood, a well-known photographer, of New York city, writing lately of the assertion that husbands and wives who live long and happily together come at length to resemble each other in features as well as disposition, says:

"In my forty years' experience under a skylight, during which time I have photographed over a quarter of a million people, this fact has not been noted often enough to warrant the statement of its being at all universal. On the contrary, I think it is exceptional. And then, again, the resemblance is more temperamental than physical, and is more apparent to the eye than to the photographic instrument. What I mean by that is that the resemblance, when it exists, is more often in the expression than in the forms. This confirms my proposition that it is temporamental and not physical.

"The strong resemblance, whether physical or mental, occurs only between two very passive natures, in whose make-up there is what the phrenologists term 'a lack of combativeness.' The love of peace, and

perhaps the love of each other, prevents the exhibition of assertiveness on the part of one or of the other. This resemblance never occurs where there is a strong dominating spirit on either side.

"Of course my statements are opinions, and not ipse dixits. My impression is that, where one nature strongly dominates another, the weaker one grows less strong and further away from the mate, than where the natures are more equal.

"The marital relation as existing between strong characters has been one of great interest to me. I have noticed that great representative men who have delayed marriage until mature judgment could be formed, and where they have selected with what one might call wisdom, have chosen for their wives very passive, domestic natures. In such cases there is no physical resemblance between parties.

"Returning to my first point, my observation would lead me to say that only passive temperaments, living quite uneventful lives, will resemble each other, both mentally and physically to a degree. But this is so rare that it cannot be noted as a dominating quality in the human economy."

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Toning Platinum Prints.—At a meeting of the North Surrey Photographic Society, Mr. E. Cecil Hertslet, after explaining Hubl's method of toning platinum prints with ferridcyanide of iron, toned several prints and then invited some of the members present to do the same. The operation worked with great rapidity and smoothness, the prints acquiring colors varying, in accordance with the length of their immersion in the toning bath, from a pale slate to a bright sky blue. In order to show how completely the print could be restored to its original black, if so desired, Mr. Hertslet considerably overtoned one specimen, after which he easily removed the whole of the acquired color by immersing it in a bath made strongly alkaline by carbonate of soda. The print was, when rinsed, placed in an acid bath for a few seconds and then toned again to the proper color. At the conclusion of the demonstration, Mr. Hertslet passed around for inspection a number of prints which he had previously toned, in order that the members might be able to judge the different shades of color when dry. He said that as the tone would yield to alkalies, it was not to be expected that the color would be permanent, unless the prints were framed and glazed, and mounted with a solution which was strongly acid.

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Copying Paintings. — Mr. G. R. White, who has been lately occupied over a period of several months in photographing the Cosway miniatures at Windsor, and otherwise copying paintings by means of the camera, has, in consequence, given the matter of isochromatic photography his particular attention. His conclusions and experiments, which were very fully put before the members of the Croydon Camera Club on January 8th, point to the fact that isochromatic plates have been considerably overrated. In many cases ordinary plates are perfectly capable of rendering the correct tone values of a paint-

ing without even the aid of a screen; in some cases the rendering may be superior to where an isochromatic plate is used. When a screen is employed with an isochromatic plate, Mr. White considers that it must needs be so dark that the time of exposure requires multiplying several thousand times what would be sufficient were no screen used.

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Dr. Leo Balkeland, of the Nepera Chemical Company, says: "The most ridiculous mistake in many photographic hand-books is a statement that sulphocyanide of ammonia, or potassium, should be an extremely poisonous compound, whilst the real fact is that all the authorities on this matter state, as a peculiarity, that the sulphocyanides of potassium or ammonia are not poisonous at all. There is certainly a confusion here with cyanide of potassium, which really is one of the most active poisons known."

OUR ILLUSTRATION.

Some time ago we were able to show to our readers a sample of work done on glossy Velox toned purple (issue of September, 1895). The frontispiece of this month is made now on Velox matt, manufactured by the Nepera Chemical Company. The negative was kindly loaned by Mr. T. H. Collins, of Portland, Maine. As an example of the enormous possibilities of this wonderful paper we can state that all the prints needed for this whole issue were printed and developed in two days, notwithstanding the fact that just during that time the city of New York was favored with some of the ugliest, dark weather it had seen in a long time. The head printer of the Nepera Chemical Co. test-room, having adjusted the negative and determined the correct time, gave the whole matter into the hands of two entirely unskilled employees who never made a photograph in their life, and who were broken in purposely at this occasion. One of them did the printing, which was about eight seconds by an arc light (a Welsbach gaslight, ordinary gaslight or daylight can be used also), and the other employee took successively each print and put it flat on a wooden table, then spread the concentrated developer over it by means of a brush. Development took only a few seconds and was done by full gaslight. As soon as a print was developed it was thrown into strong hypo-alum, where it remained at least five minutes for fixing, after which the prints were washed, then dried between blotters. The developer used was:

Warm water.....	27 oz.
Metol.....	40 gr.
Sodium sulphite, cryst..	1½ oz.
Potassium bromide ...	5 gr.
Potassium carbonate..	5 dr.

This method of printing and developing prints is so easy and so quick that we have no doubt that before long it will be very popular with photographers in the country, whether professional or amateur, especially in winter. The Nepera Chemical Co. guarantees that Velox prints developed black are much more permanent than printed-out papers, whether gelatine or collodion, even when the latter are toned with gold or platinum.

TRY AND BOOM YOUR BUSINESS.

By C. L. WEED.

As a general rule March and April are dull months in the photograph business, and the average photographer thinks he must cut prices on his work to stir up trade. Now, what a foolish idea! He will do a lot of work for a short time, and load up his regular customers with work, and may perhaps catch a few people for pictures drawn in by the bait of "cut" prices; but it will take him a whole year to get over the bad effects of a run, and his business suffers from a lot of bad work, necessarily done in a hurry, and as a result his best trade go elsewhere, when they want something good done. Now just step into your reception rooms and look at the work hanging on your walls; look at it good. Isn't it time most of it was consigned to the back room or furnace? If you will just spend a few hours in your negative room and pick out a lot of your best work, and have a lot of new samples made —don't stop at a few cabinets, but get out the best you have got in all sizes; print them on the new mat paper (Aristo Platino), mount on plain white board, and then remount on either terra cotta colored or queen's grey board, with wide margins, and put them up in the reception room, then advertise an opening reception for, say, three days of the week; invite the people in to see what you have been doing the past year. Show them you are up to the times, and progressive. It may cost you a few dollars, but it will be the cheapest "ad" you ever indulged in; it will attract people to your place who never were there before, and instead of cutting prices add a few new mounts, and raise the price of the new styles. You maybe won't do quite as much work as at cut prices, but you can take more pains with what you do, and make a profit on your work. Add an orchestra of three or five musicians, if you can afford it. People like music, and will drop in to hear that if not to see, and they will get interested in your work. Try it; don't cut prices, it will pay you in the end. Again I say, try it.

SPEECH MADE BY S. H. MORA AT THE NORTH-WESTERN CONVENTION.

GENTLEMEN, — Your Secretary, when he requested me to address you to-day, assigned a rather difficult task. It is usual for those who speak at conventions to confine themselves to technical subjects, but notwithstanding the fact that I have travelled extensively, have met most of the bright and shining lights of the profession, and am at all times ready to absorb any new ideas that may be diffused, I was unable to think of any technical subject that would not sound hackneyed and be tiresome to you. I have, however, observed two things, and as it is usual for those who do most of the talking at conventions to tell what they know, or what they think they know, I will, with your forbearance, give you the

substance of my observations. In the first place, in my travels, I have called on all kinds and classes of photographers, from the proprietor of the palace studio in the largest cities to the proprietor of the tent in the smallest towns, and my observation is that the man in the small town often displays the most ingenuity, although he is seldom given credit for it. Owing to the amount of his business being limited, he cannot afford all of the latest accessories and appliances, and is consequently obliged to work under difficulties that would appal his city brother. I have, therefore, great respect and admiration for the small town photographer who, with a limited capital, a limited business, and frequently limited facilities, often turns out work which approaches surprisingly near, if it does not equal, that of the best.

My second observation is, that inasmuch as the celebrated photographer almost always grows from a small one, there ought to be more celebrated men, and the fact that there are not more is due solely to the photographers themselves. In my extensive travels, mentioned before, I have found that all classes of photographers are great admirers of photographs, especially those of their own make, and it has seemed to me that this admiration has kept many an otherwise excellent workman from becoming famous, and accounts for the fact that there are not more celebrated men. The trouble is that we are like the Pharisee, too ready to give thanks that we are indeed better workmen than other men. This admiration of our own work is natural, but deplorable; the more a man admires that which he creates himself, the better he thinks it is, until finally his vision becomes so distorted that he can see only the good points in his work and cannot see the faults, and it never occurs to him that some other fellow may be turning out work that is better than his; in fact he would scoff at your making the suggestion. Do you think that that man, who allows himself to become satisfied with his work and himself will ever be one of the leaders, or will be liable to improve? Would he not be a better workman, and in a position to advance, if, instead of being thankful for the good points in his work, he could see its bad points and say unto himself, "I am indeed a miserably poor workman; John Smith poses better than I do; Henry Jones makes better negatives; Arthur Brown is a much finer retoucher, and Harry Williams can double discount me as a printer. Henceforth I will imitate the points of excellence in their respective pictures, and will not be satisfied until I can produce better work than they." Don't give up because you cannot produce as good work as some celebrated man of whom you have heard; he crept before he walked, and so must you. Choose for your ideal the work of a man which is but slightly better than your own. When your work is as good as his do not become satisfied; you have only climbed one round of the ladder of success, and there are many more. Look up! There is another ideal just above, take that

and climb again, and so continue to climb, always trying to reach the standard of the man on the round just above you, remembering that while there are many whose standard is lower than your own, there are also many whose standard is higher, and that in this age of progress you cannot afford to be satisfied that you are above the men who are below you. If you do, some of them will be sure to move onward, and some day you will wake up to find that while you have been serenely satisfied with your position on the ladder, those who were below you have crept up and passed you, and that you are a back number.

Gentlemen, come off the roof! Leave the self-admiration to the Pharisee, and get down on to the street with the sinner. Acknowledge to yourself that you have much to learn; take "To Excel" for your motto; set your eyes steadily on the goal "Success," and bend every energy to reach it, remembering that when you get there you will be rewarded with a new name called "Fame;" that you will become entitled to wear the crown of glory called "Success," and that with these two desirable attributes you will also become the happy possessor of many beautiful and coveted pictures, framed in silver and gold, of the emblem of liberty—the American eagle.

February 19th, 1896.

Suffered for His Neglect.

"Did you notice Miss Wobble-Moore on her new wheel to-day?" "No, I didn't, and she ran into me in consequence."

COMBINATION DEVELOPERS BY HYDROMETER TEST.*

Having had my attention drawn to the hydrometer as the proper means of determining the strength of alkali in the developer, I concluded to make a series of tests to determine the most suitable combination developer for use in one-solution form. My tests were made on the basis of a combination developer, as my experiments have led me to believe that this is the most advantageous form of developer, as both density and detail can receive proper consideration in a solution composed of two reagents, one giving density the other detail.

I took as a basis "Metol Hauff," now considered the greatest detail-giving developer which allows of reasonable density.

Hydrochinon "Byk" for its density-giving quality, glycin Hauff; to determine a question long in existence as to which of the two density-giving agents (hydrochinon or glycin) had the greatest merit.

My experiments were, furthermore, made to determine which of the two prominent alkalies were the best suited, carbonate of soda or carbonate potass. I proceeded by preparing two solutions, namely:

Solution A.

Metol	30 gr.
Hydrochinon	30 gr.
Sulphite soda solution @ 20° hydrometer test	10 oz.
Carbonate soda solution @ 20° hydrometer test	10 oz.

* An extract from a booklet on "Photographic Developers," issued by G. Gennert, New York.

Solution B.

Metol	30 gr.
Hydrochinon	30 gr.
Sulphite soda solution @ 20° hydrometer test	10 oz.
Carbonate potass solution @ 20° hydrometer test	10 oz.

Having procured a box of one dozen plates of a leading maker, I exposed the entire box consecutively on one and the same (normal) exposure.

On developing two of the plates with the above solutions, I found that there was a decided advantage in favor of carbonate potass.

I next made two similar solutions, replacing hydrochinon with "glycin Hauff." This resulted most decidedly in favor of "glycin."

Having now become convinced that the best results would be obtained from a developer containing "glycin Hauff," metol and carbonate potass, I prepared four more solutions:

Solution C.

Metol Hauff	30 gr.
Glycin	40 gr.
Sulphite soda solution @ 30° hydrometer test	10 oz.
Carbonate potass. solution @ 20° hydrometer test	10 oz.

Solution D.

Metol	30 gr.
Glycin	30 gr.
Sulphite soda solution @ 30° hydrometer test	10 oz.
Carbonate potass solution @ 16° hydrometer test	10 oz.

Solution E.

Metol Hauff	30 gr.
Glycin	30 gr.
Sulphite soda solution @ 30° hydrometer test	10 oz.
Carbonate potass solution @ 20° hydrometer test	10 oz.

Solution F.

Metol Hauff	30 gr.
Glycin	30 gr.
Sulphite soda solution @ 20° hydrometer test	10 oz.
Carbonate potass solution @ 20° hydrometer test	10 oz.

Upon treating four more of the normally-exposed plates and comparing the eight negatives now at hand, I immediately became convinced that D made the richest negative, being full of detail and half-tones and of good density. E was equally good in all points except it was lacking a trifle in density, but I dare say that the exposures could have been reduced with beneficial effect, as the plate acted as if slightly over-exposed. Not wishing to decide too hastily, I reserved the four remaining plates and eight ounces of each of the last four solutions—C, D, E and F—and made further tests.

October 23rd, after my exposed plates and developing solutions were six months' old, I treated the plates exactly as on my first experiments (the solutions not having shown the slightest change in color). My first experiments were fully corroborated in every respect, except that the difference between D and E was not so marked, thus refuting the claim that plates which have become seasoned by age will become more sensitive to light and the developing solutions. Every indication being in favor of D as a developer for normal exposures, I made two snap-shots to determine whether my surmise as to E was also correct. I found upon treating these two instantaneous exposures with D and E, that E had

changed places with D, and that E gave a perfect result while D gave a somewhat harsher result, a trifle lacking in detail.

The conclusions I am led to draw from these experiments are :

1. Carbonate of potass is superior to carbonate of soda.

2. Glycin Hauff in combination with metol is superior to hydrochinon.

3. D is the best one-solution developer for normal exposures.

4. E is the best one-solution developer for rapid exposures.

5. I will never make up developer again without the aid of an hydrometer, as I am convinced that this is the only proper method to prepare developing solutions.

VALUE OF ASSOCIATIONS.*

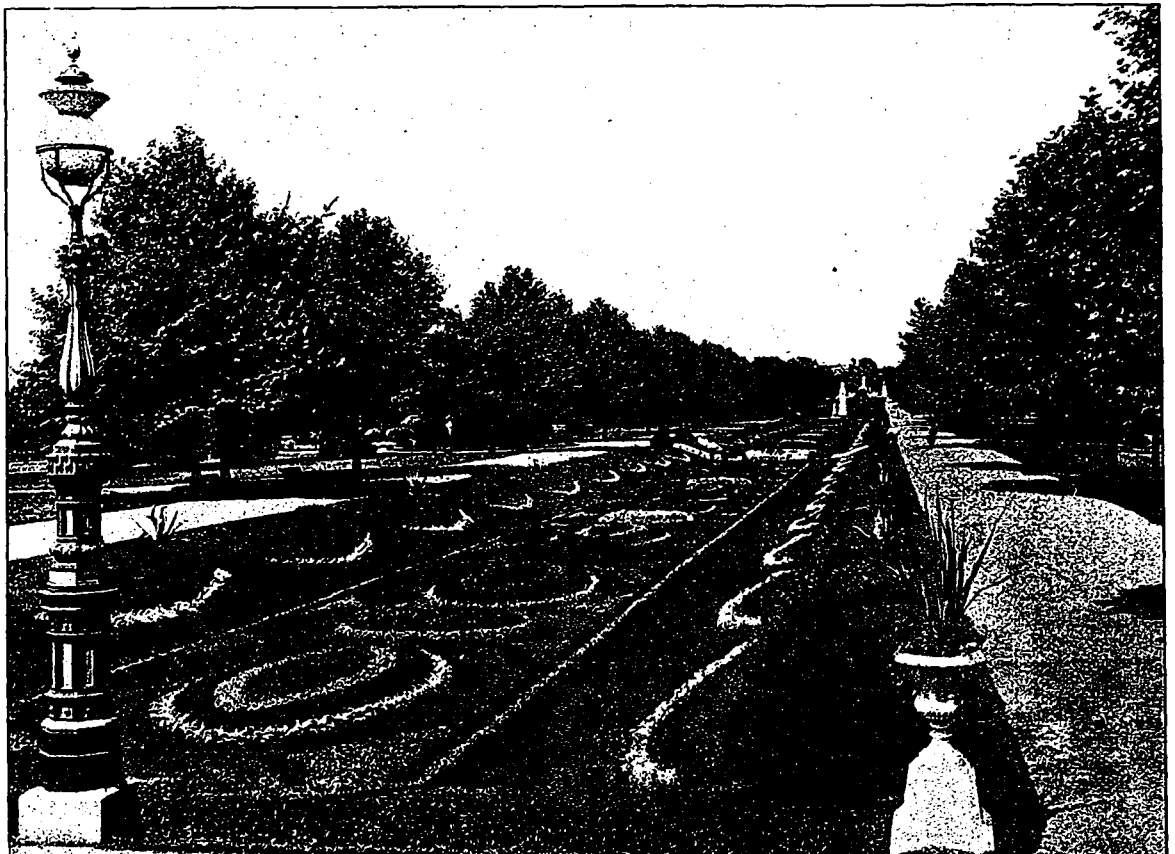
By C. M. HAYES, President of the Michigan Photographers' Association.

It seems hardly necessary, at this day and time, that anyone should be called upon to show the value of conventions in any walk in life, but more especially in ours, which combines so much of the artistic with so much of the business phase. The great idea of the times is centralization. We find it in business, in the immense trusts and combines, which are nothing more or less than a perfected convention of the highest type ; we find it in the social world, where the classes naturally adapt themselves along the lines of their personal likes and dislikes, and we find it in the politics of the world and in labor circles as well.

A convention, which in its primary meaning is a coming together, is a part of civilization, a part of progress, and an important part. Every being that has the power of conveying feeling by sound feels the need of associations, and associations are conventions of the simpler type. Men cannot meet without exchanging experiences, and all talk is but the exchange of men's experience, either real or imagined. The wisdom from books is not the practical wisdom of the world. It is the wisdom from experience that makes successful men—men who profit by the mistakes as well as the work and success of others. This, then, is the first object of a convention ; and in this object there is the meat of what is sought after. " In much deliberation there is much wisdom," says some old proverb-maker, and he put in a nutshell the value of conventions. In every word spoken there is a hint ; in every experience detailed a suggestion for the future, and if we can but grasp these potent facts, we must acknowledge that we have received good from the convention, and the amount of good received is dependent largely on each one present.

Men who travel along the beaten track, who get into ruts, as it is called, never either improve or advance ; they crystallize, so to speak, and each year of this crystallization hardens the crust, and makes the man less open to the suggestions that would aid him and, it may be, start him on the road to success. It is not given to any one man to know it all, but in

*Read at the first Convention of the Michigan Photographers' Association, held January 15th to 17th, at Detroit, Michigan.



HALF TONE ON COPPER.

A PARK SCENE.

BY WM. H. RAU, PHILADELPHIA, PA.

these comings together, these conventions, we get in a short time what others may have spent years to obtain.

There is no loss of time to the man who will properly appreciate the value of such a meeting. A simple formula will serve to make all of us get the greatest good out of this meeting, and I would state it in this wise: Mix a little application with a vast deal of comprehensive listening, and to it add willingness to learn. When this is at the right condition, flavor it with a determination to profit by what we hear and see, and then we will find a convention a most delectable dish, and one that will not only increase our appetite for conventions, but also our capabilities for appreciating the value and profiting thereby.

INSTANTANEOUS PHOTOGRAPHY.*

Successful instantaneous photography is easy and simple if a little care and judgment is used in observing the necessary points that apply to this kind of work. The most essential conditions are:

Good light; a rapid plate; a shutter having a high co-efficiency; as full an exposure as the movement of the subject will allow; a large focal aperture; slow development, with a very dilute developer, when the plate is under-exposed.

For instantaneous subjects as long an exposure should be given as the subject will allow. This depends upon the rate of motion and the distance from the camera, both of which affect the movement of the image on the plate during the moment of exposure.

To find the exposure required for a moving object.—This may be obtained simply as follows:

The distance of the object from the camera, measured in inches, must be divided by the number of yards per hour at which the object is travelling, and then multiplied by the focus of the lens in inches.

The result will be the fraction of a second, which is the longest allowable exposure that does not show movement in the resulting picture.

Putting this into a simple formula, we get exposures in fractions of a second:

$$\frac{\text{Distance of object from camera in inches.}}{\text{Yards per hour} \times \text{focus of lens in inches.}}$$

For example, supposing that the object is fifty feet from the camera, and the focus of lens six inches, while the movement of the object is at the rate of twelve miles per hour, we get exposure:

$$\frac{\text{50 (feet)} \times \text{12 (to reduce to inches)},}{\text{12 (miles)} \times \text{1,760 (yards in a mile)} \times \text{6 (ins. focus)}} = \frac{600}{126720} = \frac{1}{211} \text{ of a secon (about).}$$

This does not allow for movement of limbs, etc., which are always more rapid than that of the object itself, and a shorter exposure will be necessary in consequence; on the other hand, if the object is not moving broadside to the camera, a long exposure is allowable.

Below is given a table showing the correct exposure that should be given for various moving objects.

The table is made out for a distance

*Pointers for successful work given by the Thornton-Pickard Manufacturing Co.

from the camera one hundred times that of the focus of the lens, that is, for a 6-inch focus lens at 50 feet, a 7-inch at 58 feet, an 8-inch at 67 feet, a 9-inch at 75 feet, or 12-inch at 100 feet.

	Towards camera.	At right angles to camera.
Man walking slowly, street scenes	1-15 sec.	1-45 sec.
Cattle grazing	1-15	1-45
Boating	1-20	1-60
Man walking, children playing, etc.	1-40	1-120
Pony and trap, trotting	1-100	1-300
Cycling, ordinary	1-100	1-300
Man running a race, and jumping	1-150	1-450
Cycle racing	1-200	1-600
Horses galloping	1-200	1-600

If the object is twice the distance, the length of allowable exposure is doubled, and vice versa.

Shutter for extreme speeds. When extremely high speed is required, a shutter which fits on the lens will not work fast enough, but our focal plane shutter works up to any desired speed for either a large or small lens. It is by the use of a lens with a large focal aperture and this shutter of high co-efficiency that the best possible results can be obtained.

For the development of instantaneous photographs we use the three necessary constituents only, viz.: Dry pyro, ammonia and bromide in the following proportions: Pyrogallic acid (dry), 2 grains; bromide of potassium, 1 grain; liquid ammonia, .880, 2 minims; water, 1 ounce. (The bromide and ammonia are conveniently kept as 10 per cent. solutions.) If under-exposed, dilute the developer with an equal bulk of water.

In extreme cases we take the above developer and dilute it with five times its usual bulk of water; development will be very slow, but detail should appear all over the plate. In ten minutes add an amount of ammonia equal to 25 per cent. of that already used, to make up for that which has evaporated. Repeat the same at the end of the next ten minutes. After the developer has been used for about half an hour, replace it by another made up as at first, and continue the operation in the same manner. After an hour probably no further detail may be coaxed out. Very often sufficient density is obtained at the end of an hour (and much sooner, except in extreme cases), but, if not, sufficient density may be obtained by applying a normal developer for a short time.

Rock the dish. When using pyro, the developer must be kept moving all the time, or the negative will be covered with spots, etc. We use a simple form of rocking-table, which is kept in motion by a heavy weight. Four or five plates in a large or in separate dishes may be kept going at the same time, and attended to as required.

Cover the dish. During development the dish should be covered with the lid of a larger-sized plate box, or other means, so as to avoid fogging of plate by the continuous light of the dark-room lamp.

The dark-room should be comparatively brightly illuminated with a yellow or orange light; development should take place in the darkest corner away from the light, and in the shadow of the person developing.

Much other valuable information and many beautiful illustrations of work done by the Thornton-Pickard shutters will be found in the catalogue issued by the firm.

THE LENS.*

Although it is quite possible to take photos without any lens whatever, by the use of a pin-hole, yet the lens is the most important part of a photographic outfit. In the pin-hole processes all the qualifications sought for in an ideal lens are obtainable, except that of rapidity; but exposures require to be so prolonged that it has no practical value, and pin-hole photos are simply interesting curiosities. Petzral took the trouble to calculate that the image produced by a lens may be 180 times sharper and 32,400 times more brilliant than that given by a pin-hole, so that in these days of focal plane shutters there does not appear to be much good advocating its general use, unless, perhaps, there be some members, believers in the naturalistic school, who consider fuzziness artistic.

In examining a lens the first thing to determine is its focal length, as upon this depends the angle of view which will be included upon any given size of plate. Perhaps the simplest way to determine this accurately is to take two pieces of paper cut into strips of equal length, say, five inches; paste one on the middle of focussing screen, and after carefully levelling the camera, adjust the other piece on to something perpendicular, and focus it sharply, making the image on the screen exactly the same size as the paper already attached to it. Now measure the distance of the ground glass from the object, and exactly one-fourth of this will be the equivalent focus of the lens.

There are several other ways of arriving at this result, but none, I think, more simple or more accurate. A rough method, of course, is to measure the distance from the diaphragm slot to the ground glass, and generally, for practical purposes, this is sufficiently accurate, though, of course, not necessarily correct, except in the case of symmetrical lenses.

One maker recommends that, having determined the focal length by this means, the optical centre of the lens should be marked on the lens mount; by taking exactly half the distance between the paper and the focussing screen, this point is the zero from which to calculate or measure the distance of the object and the focussing screen, either for enlarging or reducing to a given scale. To find the exact positions of the object and the focussing screen, both measured from the optical centre of the lens, for a given enlargement, add 1 to the number of times you wish to enlarge, which, multiplied by the equivalent focal length of the lens, gives the position of the focussing screen, or indicates the required length of the camera; and its length divided by the number of times of enlargement gives the position of the object that is to be enlarged. Thus, required to enlarge a 5 x 4 negative 4 times (i.e., to 20 x 16) with an 8-inch equivalent focus lens; then to 4 add 1, equals 5, multiplied by 8, equals 40 inches, or the length of the camera or position of the focussing screen; and 40 divided by 4 equals 10 inches, the distance at which to

* A paper read by M. V. Murphy before the Photographic Society of New South Wales.

place the negative from the optical centre of the lens.

For reducing we have only to change the place of the object for the screen, and vice-versa, when the positions are correct for reducing to ¼ scale. I forgot to mention that the term equivalent focus is one applied to double or multiple combination lenses, and is equal to the focus of a thin single lens, such as a spectacle eye lens, which gives the same sized image ; hence the name equivalent.

Having determined the equivalent focus, we may consider definition, flatness of field, astigmatism and spherical aberration, at the same time, and these must be tested in relation to the aperture.

Focus on to a sheet of printed paper. —The lens should produce an image in which the letters are absolutely black, without any trace of greyness or fuzziness, and the larger the aperture with which this can be done, the the less spherical aberration and the greater the definition, also the flatness of field. To prove whether astigmatism be present or not, focus the same object with full aperture, so that the centre is absolutely sharp ; the margin will be more or less fuzzy on account of the curvature, but if by racking in or out a point can be found at which the image at the margin is sharp, the lens is free from astigmatism. It can be seen, when making these tests, whether the lens is rectilinear by the straightness of curvature of the lines.

The less important defects of lenses are bad surface, finish, color, air bubbles and striæ, or irregularities in the density of the glass. The glass should be colorless, as any density interferes with rapidity. It may be examined by looking through the glass when placed upon dead white paper, and comparing the tint.

Surface finish may be determined by holding the lens near a gas-jet, turned low, and examining its surface by the aid of a focussing glass or other magnifier.

Bubbles can be seen without difficulty, and are of minor importance, since they act only as so many opaque spots, and thus reduce the amount of light that will pass through the lens. Irregularities in the density of the glasses composing the lens form a more serious defect, since they interfere with the regular refraction of the rays of light, and spoil the definition. They may be detected by taking the lens into a darkened room, and examining each lens separately by turning it about, first one way and then another, near a gas-jet turned low. Any irregularity in the density of the glass is thus easily detected.

These tests, of course, apply to any photographic lenses, and any good lens will stand all the tests, except, perhaps, bubbles, which seem to have a particular affinity to the new Jena glass.

As regards the choice of a lens, this depends entirely upon the purpose for which it is to be used. For landscape work the most eminent photographers are unanimous in recommending the single achromatic lens ; for, having only two reflecting surfaces, it produces the most brilliant pictures, and on account of its form it has more depth of focus than

a double combination. The light through it falls more evenly upon the subject, and it produces a better defined picture than the double combination. The distortion present in all single lenses is not appreciable unless straight lines be situated at the margins, which, of course, should be avoided. If the stop be placed in front of the lens it produces barrel-shaped distortion, and if behind the lens the opposite kind or pin-cushion distortion; the question now arises whether the necessary correction could not be attained by putting a stop in front and a stop behind the lens. This principle governs the correction of the ordinary double combination. If, instead of the diaphragm being in the centre, we put a lens in the centre and a diaphragm at each end of the lens tube, would it be rectilinear? Of course, we would sacrifice a great deal of light, but theoretically there does not appear anything to hinder the correction of distortion. The further the stop is away the better the marginal definition, or the flatter the field, but curvilinear distortion is increased.

By some the single lens is considered better for portraiture, the advantages claimed for it being its depth of focus and more even illumination, its sharp rendering is not so sharp, and its out of focus rendering is not so blurred as in other forms of lenses.

Where we are to confine ourselves to one lens only, the ordinary rapid rectilinear stands alone, and can be used almost universally, but one point does not seem to be generally understood. Of course, we are all anxious to procure a lens that combines the greatest rapidity with extreme marginal definition. Now, rapidity and flatness of field are governed by optical laws that are directly opposed to each other, and either one or the other must be had at a corresponding sacrifice, but the Zeiss and Goerz lenses seem in a measure to have formed a sort of coalition between these laws.

The largest possible stop should always be used, so as to secure vigor, roundness, and atmospheric effect in the picture. A small stop produces sharpness, but at the expense of the foregoing essential qualities.

Flatness of field and angle of view, and illumination depend upon the separation of the lenses, or their respective distances from the stop. An increase of separation tends to greater flatness of field, but is accompanied by a reduction of angle of view and vice-versa.

It may be here stated that in almost every photographic annual a useful little table, compiled by Dr. Woodman, may be found, in which on a given-sized plate the angle covered by any lens of known focal length may be found almost by inspection; by dividing the base of the plate by the focal length, the quotient found is compared with the nearest number in the table of quotients which represents given angles. To any having a knowledge of plane trigonometry, it will be seen that Dr. Woodman's quotients are merely twice the tangent of half the angle of view, and the same result may be found by referring to the natural tangent in any mathematical table. Many wide angle lenses are made to

cover an angle of about seventy-eight or eighty degrees, and any lens to cover an angle of ninety must have a focal length exactly half of longest side of the plate used.

In focussing it is recommended that an object one-third from the centre of the plate should be selected, when photographing a plain surface, and the lens stopped down close until the centre is sharp. In wide angle lenses the object should be again focussed after the stop is in, as it is generally necessary to rack out the bellows about one-sixteenth of an inch for a small stop.

BLACK TONES ON VELOX PAPER.

It is possible to obtain black tones on velox paper with nearly any developer, provided the developing solution is sufficiently strong and contains just enough bromide of potassium to avoid fogging. Too much bromide of potassium, or a too weak developer, or overtiming, will cause greenish or brown blacks. Too little bromide will cause fogging of the prints. As developers, we can recommend especially oxalate of iron, amidol, metol, or metol-quinol. The exposure can be made near a Welsbach gas-burner, or by diffused daylight, or by arc-light. If kerosene or gaslight is used, the exposure must be considerably increased. The nearer the negative is held to the lamp the quicker will be the impression. A good gas-lamp or strong kerosene-lamp will give a print in about one or two minutes from an ordinary negative, at a few inches distance. Iron Oxalate :

Solution 1.

Neutral oxalate of potash	16 oz.
Hot water	48 oz.

Solution 2.

Proto-sulphate of iron	8 oz.
Hot water	24 oz.
Citric acid	15 gr.

Let both solutions cool off before use, and put them in separate bottles, where they will keep for months in good condition. The iron solution should be kept well corked, and should not be used unless perfectly clear and green. Immediately before use, measure off four volumes of Solution 1 and pour one volume of Solution 2 into it while stirring. (Do not pour Solution 1 into Solution 2, as it will not give a clear solution.) Add bromide as directed and wash prints in diluted acetic acid before fixing.

Amidol :

Water	8 oz.
Sulphite of soda	100 gr.
Amidol	20 gr.

Add bromide as directed.

Metol :

Water	12 oz.
Metol	50 gr.
Sulphite of soda	1 oz.
Carbonate of potash	120 gr.

Add bromide as directed.

Metol-Quinol :

Water	20 oz.
Metol	15 gr.
Sodium sulphite, crystals	1½ oz.
Hydroquinone	1 dr.
Potassium carbonate	5 dr.

Add bromide as directed.

With any one of these developers development is very quick and takes only a very few seconds. In fact, you do not need a tray, and you can put the exposed print on a glass plate or

on a piece of oilcloth and spread the developer over its surface by means of a brush. The image will jump up suddenly; as soon as it is strong enough throw it into a hypo fixing bath, where the prints should remain five minutes or longer, then wash as usual. We recommend an acid hypo bath, because it has a hardening action on the film and keeps clear for several days. Such an acid bath can be obtained by adding about 1 oz. of alum to every 4 ozs. of hypo. Make the bath between 60° and 80° hydrometer test. If the hypo becomes alkaline, add a few drops of acetic acid. Any superficial stains, either black or yellow, which may appear, can be easily removed by rubbing gently with a tuft of cotton moistened in water containing a few drops of ammonia. A special kind of Velox paper is now made by the Nepera Chemical Co. for black tones, which is somewhat quicker than the usual paper. Extra rough Velox paper can now be obtained, which gives prints resembling old engravings. Try it.

EXTRACTS FROM A MEETING OF THE MANCHESTER PHOTOGRAPHIC SOCIETY.

Mr. Brothers drew attention to the recent remarkable development of photography in connection with the discovery of a German professor in photographing by the aid of the light force obtained from an electric current passed through a vacuum tube, whereby certain substances, ordinarily opaque, are rendered practically transparent to the actinic rays, as when overlapping strips of tinfoil were photographed on to a dry plate as if they had been semi-transparent. In another instance, a photograph of a human hand exhibited the actinically opaque skeleton, which was photographed through the flesh of the hand, the flesh only presenting an appearance similar to halation. This discovery is still in an early stage, and much is expected of it when further investigated.

Mr. H. Smith gave a description of his process of photo-crayon for positive prints. He first prepares a gelatino-chloride print by stripping from finely-ground glass, which gives a slightly rough surface, and then retouching the print thus obtained as he would retouch a negative, only using colored crayons kept very sharp. Faber's or Hardtmuth's pencils in cedar were found the best, and can be had in almost any color. The coloring should be done very lightly with a slight circular motion, being careful not to block the detail, so that the work will form a delicate stipple. A jug is then filled with hot water, and the print is held face downwards over the steam, which will soften the gelatine and make the colors fast, being careful not to steam too much, or it will approach in character to an enamelled print, which is not desirable. The print can be left as it is, or stripped from plain or ground glass or flashed opal by the aid of sheet (bon-bon) gelatine, which is cut a little smaller than the print, soaked in water and laid on the plate; the print is then placed in contact and all air-bubbles forced out; it is backed

with stiff paper, and, when quite dry, stripped and mounted in any suitable manner. Mr. Smith showed some flower studies by this method, the prints having the appearance of delicate water-color drawings.

Mr. F. Edwards read a paper on his method of intensifying gelatine dry plates. Many photographers have an aversion to intensifying their negatives when too thin to give satisfactory prints, and they try to get over the difficulty by printing in a weak light or through colored glass. He (Mr. Edwards) never scrupled to strengthen his negatives when necessary, and by these formulæ never had a case of fading, or the negatives altering at all by keeping.

A.

Perchloride of mercury.	50 gr.
Potassium bromide ...	50 gr.
Water	10 oz.

B.

Nitrate of silver	50 gr.
Potassium cyanide (pure crys.)	50 gr.
Water	10 oz.

After the negative has been well washed to free it from hypo, bleach in A, and, after another good washing, proceed to darken in B. Mr. Edwards thought that this bleaching gave a purer white than the plain mercury solution, and solution B gave a good blue-black. In many cases the negative only requires slight intensification, in which case the bleaching need not be carried to any extent; and Mr. Edwards' method is to bleach the negative in the proportion of density required, it being a fallacy to always whiten through to the back of the negative. Mr. Edwards then gave a practical demonstration of the process, cutting a negative in two and intensifying one half, when the two were compared; the one treated was greatly improved.—British Journal of Photography.

TELE-PHOTOGRAPHIC HINTS.

The following useful hints on the use of the tele-photographic lens are given by Mr. J. H. Dallmeyer, and will be read with interest by those who have a negative element attached to their rapid rectilinear lens:

1. Rigidity of apparatus is a sine qua non in tele-photography. This cannot be too often insisted on, as the least tremor in the camera or the tripod-stand will be found detrimental to perfect definition, and the greater the magnification the more will this become evident. In very long extensions of large-sized cameras it is frequently advisable to use a small secondary stand for the support of the front of the apparatus.

2. Bear in mind the necessity of extremely accurate focusing, preferably with a focusing-glass. The rack and pinion on the lens mount must be utilized for this purpose, but the final adjustment of the focus may be advantageously performed by means of the camera pinion, this acting in the same way as the fine adjustment of a microscope. Always focus with the actual stop used.

3. In Systems I. and II. the notched-back cell of the portrait lens is adjustable and permits of perfect correction for outstanding spherical aberration (i.e., want of sharpness) for all planes. This back cell should be kept unscrewed for all tele-photographic

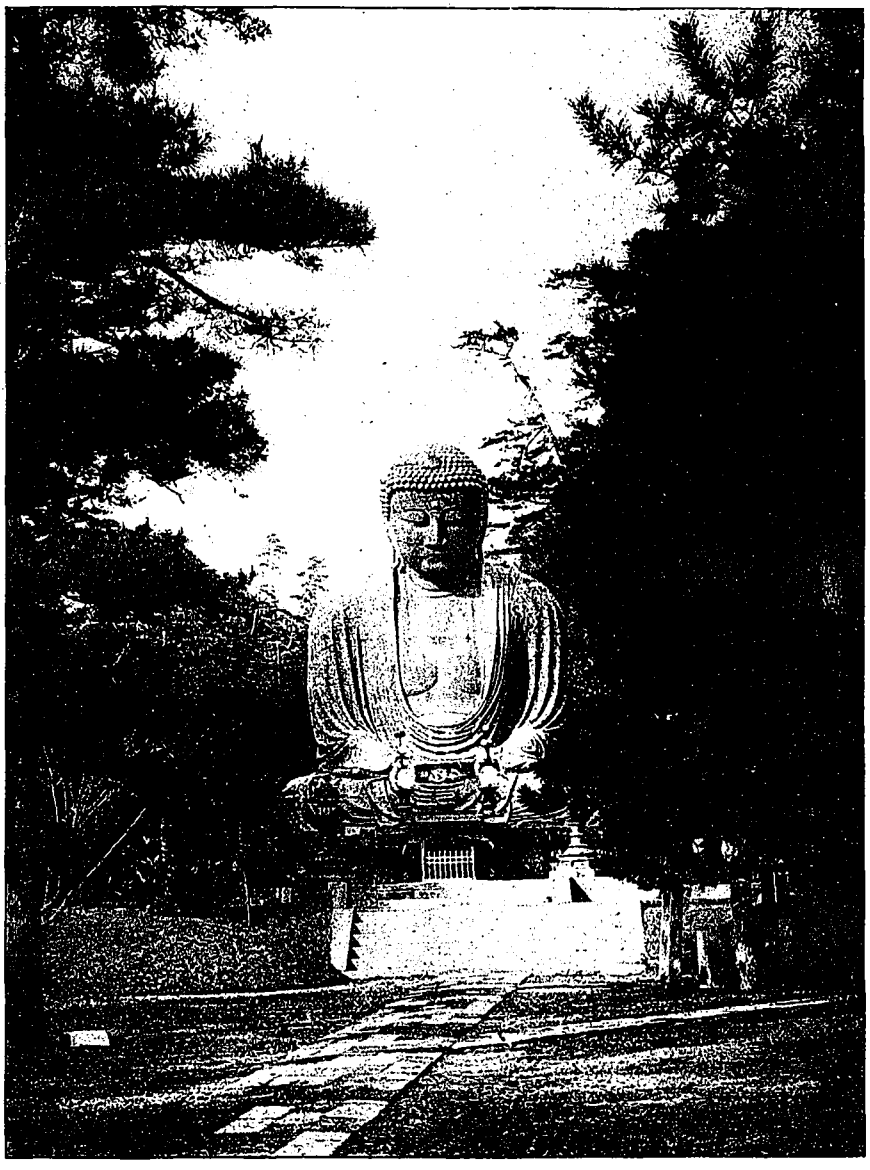


Photo by Prof. E. Warren Clark. Negative on a Carbutt Half-Tone Process Plate.

DAIBUSTU; OR, GREAT BUDDHA, KAMAKURA, JAPAN.

work. When using the high-power negative, unscrew half a turn ; with weaker negatives, one turn to one and a half turns. In portraiture the lens may be used intact.

4. See that your plate-holders are in perfect register.

5. The tele-photographic lens has proved itself of great value, even under adverse atmospheric conditions ; but, naturally, if there is time to choose these, the clearer the air the better. For distant mountain scenery an orange screen may be with advantage employed.

6. The focusing screen itself will readily show whether a given size of plate be covered or not.

7. The increase of exposure as compared with positive lens alone may be found by applying the rules for determining intensity. It is remarkable, however, what little increase will be really found necessary in proportion to the actual intensity ratio. The view ordinarily taken will be that of a distant object, where under-exposure will be the rule to secure the necessary contrast. With a little experience the operator will easily be able to determine for himself the exact amount of exposure necessary.

8. Develop slowly, and use such developers as tend to give great density and clear shadows. Hydroquinone is most useful ; but if pyro-ammonia be employed it is advisable to take an excess of pyro, adding the ammonia gradually. As the best results are obtained by slow development, the plate should be carefully protected from light during the process. — Anthony's Photographic Bulletin.

SULPHOCYANIDE TONING.

A Demonstration by MR. GREGORY.

At a recent meeting of the Southwick and District Photographic Society, England, a demonstration was given of toning with the sulphocyanide and gold bath by Mr. Gregory, which, whilst containing no new points of importance, may be interesting to many readers of these pages who constantly use gelatino-chloride papers, the prints used in the present instance being on Solio paper.

After a few opening remarks, Mr. Gregory proceeded to wash the prints. While doing so he gave the following formula as used by him : One ounce of sulphocyanide of ammonium is put into a two-ounce stoppered bottle with 1 oz. of water ; this will make as near as possible 2 oz. One drachm of the above solution will therefore contain about 30 gr. of ammonium sulphocyanide, to which quantity add 16 oz. of water (distilled or boiled), and after shaking well add 2 dr. of gold solution when made up as follows: Put 15 gr. of gold in 15 dr. of water. Mr. Gregory said : "I generally mix up the bath at dinner-time, and let it stand till 6 or 7.30 p.m. I find that if it stands longer the gold is sometimes precipitated, owing to impurities in water. Before toning I give the prints a thorough washing, say, for ten minutes, in several changes of water, the first change to be made as quickly as possible ; at the last wash there is very little, if any, silver left in the water.

"I usually print rather darker than the finished print is desired, as they are better to tone in this condition ;

if too dense when toned I leave them rather longer in the fixing bath, which will reduce them to the proper shade. I find that toning in this bath takes generally about ten minutes ; in summer, perhaps a little less than the latter time is required. I reckon it takes me about one hour to wash, tone, fix from twenty-eight to thirty 6 x 4¼ prints. I tone till nearly all the red has disappeared ; when looking at the prints by transmitted gaslight they ought to be of a warm color. After toning they are put into a bath composed of about 1 oz. of common salt in a quart of water. (The Eastman Company give salt, 1 oz.; water, 32 oz.) When I have finished toning I throw away the bath. I mix only sufficient toning solution for the number of prints I wish to tone at one time. Wash well between the 'stop' bath and the fixing bath.

"FIXING BATH.—Hypo, 3 oz., dissolved in hot water 20 oz., or 1 pint, to which add about two drops of ammonia, .880. This I mix before mixing my toning bath, and wash my hands before touching the toning solution.

"Do not touch the hypo when toning, as I find that if one spot of fixing solution gets into the toning bath the prints are generally turned yellow, perhaps not just at the time of toning, but will show up on the print being dry. I give the prints ten minutes to fix in this bath, and keep them moving all the time. I never use alum.

"I find that 2 gr. of gold will tone twenty-four 6x4¼ pieces, or one sheet, and if a less number are to be toned mix the bath up in proportion, so that, after toning, the bath may be thrown away.

"The tone of the print, when dry, will be rather colder than wet.

"After prints are thoroughly fixed, I wash them for one hour. For washing I have a deep bowl, and at the end of the tap I fasten a piece of india-rubber pipe, the other end of which is lessened by tying a piece of string round to get greater force with a smaller supply of water; the pipe is then put about 1½ inches down into the bowl, and the prints revolve and receive a thorough washing."—Amateur Photographer.

THE YERKES TELESCOPE.

Professors Hale and Burnham have gone into residence at the Yerkes Observatory, which is beginning its work on the stars with a giant telescope. Mr. Lick's giant instrument was set to work on Mount Hamilton, a crowning summit of the Californian coast range, in June, 1888, but already a larger has been produced. Mr. Lick obtained 36 inches aperture; Mr. Yerkes in his has 40 inches. In focal length his is also ahead. The Lick telescope has 57ft. 10 in.; the Yerkes instrument has nearly 64 ft., and the latter instrument is heavier by several tons. The telescope with its appurtenances, and built-up iron pedestal, standing 31 feet from the ground, weighs about 75 tons. As the power of a telescope does not increase in equal proportion with its increase of aperture, the additional 4 inches of the larger instrument, which has been attained at an enormous cost, adds only a fractional part to its utility.

Every increase in the thickness of the glass—the Yerkes objective is 4½ inches thick at the centre—tends to absorb more of the light passing through it. The Yerkes telescope is placed at an altitude of 150 feet above Lake Geneva, Wisconsin, distant about 75 miles from Chicago, where a rare clear atmosphere gives every promise of magnificent results. Professor T. J. Lee, who has carried out the experimental tests, states that the stars come out through the great telescope with startling brilliance and clearness. The divisions of the rings of Saturn are plainly visible, and the satellites—always difficult objects to grasp in a smaller telescope—shine forth like little moons in the midnight sky.

Some good fortune has attended Mr. Yerkes in carrying out his magnificent gift to the University of Chicago. He was happily spared the trouble with the casts of the glass lenses, which drove Mr. Lick almost to the point of throwing up his plan in disgust, after nineteen failures, involving a delay of three years. The first glass was cast with comparative ease, but the disc of the crown glass, which completes the achromatic combination of lenses, presented almost insuperable difficulties. Where, in other respects, the progress made appeared to be satisfactory, the glass was found to be impure. When pure in itself, it bent or shrank in cooling. If other difficulties had been overcome, the lens was spoiled in the difficult process of annealing. Success was at last obtained by extensive cutting away of the defective parts of the disc, which were replaced by fresh optical glass, welded to the original mass by pressure at the white heat. The disc was then allowed slowly to cool, again tested, new defects cut away, and all the process gone over again. Mr. Yerkes found the glass casts for his telescope ready at hand. This had been constructed in Paris by M. Montois, for the University of Southern California, when the erection of a great observatory on Wilson's Peak was under consideration. An expenditure of £8,000 secured them in the rough. They were shipped to Massachusetts, where Mr. Alvin Clarke, the famous optician of the Lick and other great objectives, spent upwards of two years' continuous labor in grinding and polishing them to the required figure. What this work involves may be estimated from the consideration that every ray of light falling on the great circle of glass, 40 inches in diameter, has to be deflected 64 feet to focus at a point no larger, if the result is to be satisfactory, than the dot of an "i" in this print. And to effect this, not one but four surfaces have to be prepared. So exceedingly delicate is the work that a little rubbing of the finger on the hard glass will sufficiently deflect the light rays out of their proper direction, so as to distort the image. Indeed, this method of "local correction" by light-fingered rubbing was resorted to by Mr. Clarke in bringing his lenses to their fine state of perfection.

When the lenses are completed, what difficulties remain in the construction of a great telescope are for the engineers. But in the nature of things the manipulation of a cumbrous

tube some 70 feet in length is not an easy task. That of the Yerkes telescope is composed of sheet steel throughout, and weighs six tons. At one end it carried the glass lenses, which alone weigh 500 pounds, and the whole tube has to remain perfectly rigid throughout its entire length at whatever angle it is placed —a very little flexure will throw the image out of the reach of the magnifying eye-piece. A fair height for a flagstaff is 50 feet. Even in London 70 feet makes a tall building. Cleopatra's Needle, on the Thames Embankment, not counting its base, is of less height, and comparisons with every-day objects such as these are more useful than figures in obtaining an idea of what has been accomplished in setting up and balancing this huge mass so that it may readily be controlled by the hand. Once directed to the required position in the heavens, the telescope is fixed by powerful electro-magnets, which have been found to grip more firmly and in less time than the clamps were operated by hand. A big driving clock attached to the telescope makes the tube turn in the contrary direction to the rotation of the earth, so that a star or planet may be kept for hours together within the field of view. For the convenience of the observer, and to avoid the necessity of ladders to reach the eye-piece, the whole floor of the observatory is made to rise or fall to the required height by means of hydraulic rams. The observer reclines at ease at the eye-piece end of the tube, and by signals to an attendant on the balcony, around the summit of the pedestal, or by manipulating a key-board near his hand, he is able to control the telescope in any direction desired, and by the same means to open the shutter to the heavens, and set revolving the huge dome, 80 feet in diameter, under which the telescope is housed. This advance in great telescopes, even when attained by such liberality as Mr. Yerkes has shown, is not to be held long. There is talk of a telescope which is to be the novelty of the Paris Exposition of 1900—a 60 inches instrument.

SNOW PICTURES—SUGGESTIONS FOR FUTURE WORK.

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

I am not an artist, and therefore shall not pretend to talk about the composition of snow pictures; but there are one or two points which I must touch upon which border on what is called Art, and on which, I am sorry to say, I have found many artistic judges hopelessly at fault. I must start by laying down the axiom that there are only two printing processes for snow scenes—platinotype and bromide paper—and with both of these we can obtain a range of tone from black to white, and too often we see snow scenes represented with tree-trunks as black as platinum and silver can be. This is hopelessly wrong. Except one sees a tree standing against a bright evening sky, it is never black; the snow reflects a good deal of light, and greys the heavy blackness of the bark, and the nearer one gets to the tree the more detail one sees, whilst farther off the trees are greyed still more by the inter-

vening haze or light. This is an important matter when we come to practical work.

Then, again, after a light thaw and subsequent frost the surface of the snow glistens considerably, and it is only in this state that one gets what is too often shown in prints, a blank, detailless waste. Fresh-fallen snow lies light and feathery, with little dimples, one might say, of shade; it lies so light that the light penetrates the surface, and therefore loses somewhat of its brightness in parts, and if it has been trampled upon there are always delicate shadows (an artist would talk about "nuances"), and the difficulty is to render these correctly.

An isochromatic plate and a yellow screen is an advantage for snow work, as the more delicate renderings of tone seem to be picked out, and instantaneous iso plates should always be used and a full exposure given, and development not carried too far.

As usual, exposure is a bugbear, and that required for snow scenes is always more debated than any other. Many tables have been published, and most of them agree in placing the factor for snow scenes down at 2, clouds being 1, a distant landscape as 4; ditto, with brightly-lit trees near, 6; ditto, with dark, 8. It is obvious from this that a snow scene requires a comparatively short exposure; only this is for bright sunshine, which is not always in evidence in winter, and if there is no sun, then the actinic power of the light in winter at noon is just ten times less than in summer, and if a dark grey sky is overhead it is lessened to 15, so that this must be taken into account; and if we assume that we have to give to a snow scene just half that for an open landscape, and then multiply by the other numbers according to the state of sky, we shall see that we cught to give much longer exposures. Then the time of day must be taken into account, for at 8 a.m. and 4 p.m. in December the light is about twenty times less actinic than in June. I have always obtained the best results with long exposures and a procedure of development outlined below.

Any developer may be used, but the temperature of the solution is very important. Do not think because you use warm water it is all right. The developing dish should be filled with hot water and then stood in a tin baking-dish with some hot water in it, and then hot water used to mix the developer with. A chemical thermometer may be bought for a shilling, so it's just as well to have one, and see that the temperature of the developer is about 65° F.

If using pyro, reduce the quantity slightly, say, to about half, keeping the other ingredients normal; but amidol or metol are easier to control. Development should not be carried too far, so that a soft, delicate negative may result, rather than one with very great contrasts, and this can generally be obtained by using a developer fairly strong in alkali, but with a lower proportion than usual of reducing agent.

When it comes to printing, platinotype and platino-bromide papers give by far the best results, and of the two platinotype papers the hot bath is preferable, with a temperature rather

lower than usual, say, about 80° to 90° F., for developing, and with a strongly acidified developer this tends to give soft grey prints, which are very pleasing. For platino-bromides, the ordinary metol developer, diluted with an ordinary quantity of water, will give grey tones if a full exposure be given.

There are innumerable pictures or records to be made in the winter of snow, rime and hoar-frost, of frost on window-panes, etc., diversified with an occasional snapshot at skaters, sliders, and so on—snapshots being rendered far easier by the new lenses with big aperture and big covering power, and the rapid plates we now have.—Amateur Photographer.

OTTAWA CAMERA CLUB'S FIRST ANNUAL EXHIBITION.

The Ottawa Camera Club held their first annual exhibition February 27th and 28th. The exhibits were very fine, and numbered in all 327 photos. Twenty members entered.

The exhibitors gave an entertainment to their friends, at which Mr. John Mather awarded a gold medal to Mr. James Wilson for general proficiency, and Miss Christie rendered excellent music; Miss Jones, a song; Mr. Sproule, a recitation, and Mr. Johnson, a song. Mr. George Blyth then gave a magic lantern exhibit with the slides made by the exhibitors.

Among the exhibits, the following are worthy of notice: Mr. J. Wilson, two photos, entitled "The Radiant Morn" and "Evangeline"; Mr. Geo. E. Valleau, who has won prizes both in Canada and the States, had some gems of art on exhibit, such as "The Spring," and "The Watering Place," and Miss Mather's exhibit is above the average of amateur work. Her architecture and portraits, and especially the marine photos, are worthy of first place in any collection; Mr. R. B. White takes first prize in "Waterfalls"; Mr. J. Garrow has a landscape from the Picanock; Dr. Lorex has some choice carbons; Miss Ballantyne had an excellent interior and several portraits; Mr. Morgan a selection of landscapes from near Billings' Bridge; Mr. Mathewson, a landscape; Mr. W. Ide, three views among the beginners which would do credit to a professional; Prof. Shutt exhibits a fine study in grouping; Mr. Craig has a study on cattle, "A Bull Fight"; Mr. Hewett has a study in light and shade, and a cottage scene; Mr. Wiggins, an exhibit of snow scenes; Mr. Geo. Blyth had a set of landscapes.

The judges were as follows: Prof. Geo. McLaughlin, Mr. F. Brunell and Mr. E. Mills. The prizes were awarded to the following exhibitors:

Large landscapes, 1. Geo. E. Valleau; 2. J. F. Garrow; 3. J. Wilson.

Small landscapes, 1. G. F. Valleau; 2. J. Wilson.

Landscapes for beginners, 1. Mr. Frost; 2. J. Craig; 3. J. Wiggins.

Marines, 1. J. Wilson; 2. Miss Mather.

Waterfalls, 1. R. B. White; 2. J. Wilson.

Animals, 1. Geo. E. Valleau; 2. J. Wilson.

Architectural, 1. Geo. E. Valleau; 2. Miss Mather.

Interiors, 1. Geo. E. Valleau; 2. J. Wilson.

Portraits, 1. J. Wilson; 2. Miss Ballantyne.

Portraits of children, 1. J. Wilson; 2. R. B. White.

Groups, 1. J. Wilson; 2. E. A. Grant.

Genre, 1. Geo. E. Valleau; 2. J. Wilson.

Enlargements, 1. G. F. Garrow; 2. Geo. E. Valleau.

Lantern slides, 1. Geo. E. Valleau; 2. J. Wilson.

Greatest number of points in whole exhibit, J. Wilson.

Best photos on hammer plates, Geo. Valleau.

Best three prints on platinotype, Geo. E. Valleau.

Best three prints on Aristo platino paper, R. B. White.

NOTES FROM HAMILTON.

The Camera Section of the Hamilton Association is an active organization, and much interest is being taken in amateur photography in Hamilton. The entertainments for the winter months, held in the club room, have been attractive and interesting. The artistic and educational features have not been overlooked. A practical lecture on "Composition in a Picture," was recently given by Mr. S. John Ireland, principal of the Hamilton Art School, and the illustrations were furnished by special slides selected from the work of members. As the slides were projected on the screen, they were criticised, and the defects to be remedied were quickly suggested by the lecturer.

Through the kindness of Mr. F. C. Beach, an American set, and the prize set of slides from the American Amateur Photographer, were shown last month. The members have a treat in store.

On March 9th, the "Rau" slides will be shown by favor of Mr. Gilson, of the CANADIAN PHOTOGRAPHIC JOURNAL at an open meeting for members and their friends.

The Canadian Exchange set from St. John, N.B., were seen at the last meeting, and the sets from Montreal and Toronto will follow in regular order.

The Hamilton club will arrange a representative set of slides for next season, and will make application for membership in the American Lantern Slide Exchange.

JOHN M. EASTWOOD, Sec.
J. R. MOODIE, Pres.

BOOKS AND PICTURES RECEIVED.

Anything pertaining to Ross lenses is sure to be interesting, and we are always glad to receive the annual catalogues of the firm. We have already noticed the large general catalogue of Messrs. Ross & Co., and we now have to acknowledge the receipt of their abridged price list for 1896, a condensed catalogue of their elegant line of lenses and cameras. Every true lover of photography who hasn't a Ross lens, should at least have a Ross catalogue.

Photographic Enlargements: How to Make Them. By G. WHEELER, Published by Geo. Wheeler & Co., Manchester. Fourth Edition. English price, 1 shilling.

This is one of the most complete handbooks on enlarging that it has been our pleasure to read. It is thoroughly practical in its teachings, and gives many suggestions and pointers that should prove of great value to the worker. It can be ordered direct or through our office at 40c. This last edition has just been placed on the market.

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The Thornton-Pickard Manufacturing Company have favored us with a most interesting book descriptive of their large factory at Altrincham. A number of illustrations, which seem to be very good collotypes, show the different sections of the work-rooms with the men at work. There is also given a general view of the works and an interior of the general offices. This elegantly gotten-up album is but a further evidence of the progressiveness of the firm. The company also send us a copy of their latest catalogue, which fully describes the popular Thornton-Pickard shutters, and the other lines made by the firm. In looking over its pages we notice that the Ruby Camera has been improved in several details, and is now made so that it can be used either as a hand camera or on a tripod. Also that the camera is now so constructed that the half-plate (as well as the larger sizes) can be used for stereoscopic work, in addition to ordinary pictures, if desired.

NOTICE BOARD.

An Error.—In our mention of the establishing of a New York office by the G. Cramer Plate Co., in our last issue, the number was given as 65 Greene Street. This should have been 265 Greene Street.

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Halation is principally caused by reflection from the back surface of the plate, and is always present in negatives. It is especially evident where white draperies, snow, or strongly-contrasting colors are photographed. Much of the detail and general crispness is lost, and, in some cases, positive blurring occurs. By backing the plates with Anti-Halo, a compound manufactured by E. & H. T. Anthony & Co., 591 Broadway, New York, all this is avoided, the liability to fog is reduced, and negatives with perfect sharpness and detail in the high lights are obtained.

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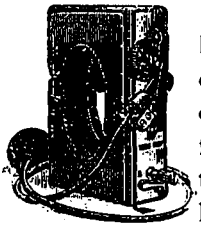
That veteran plate-maker, John Carbutt, of Philadelphia, has again been first in the introduction of a new class of dry plates. Mr. Carbutt was first to introduce transparencies and lantern slides, and was also first in the manufacture of ortho-chromatic plates. Now he has been first to place on the market a plate especially made for use with the new X rays. These plates are especially sensitive to the X rays of a Crook's tube, and require only half the exposure of the regular rapid dry plate. Those interested in working the new light should certainly give them a trial.



The Thornton-Pickard Shutter continues to rank as one of the most satisfactory shutters on the market. We have had one in constant use for some two years, and have yet a fault to find with it. Either in field or studio they give the greatest satisfaction. Being made in a number of different forms, they are easily fitted to lenses for all uses.

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We call the attention of our readers to the advertisement of the Sunart Photo Co., which makes its appearance in our pages this issue. This firm enjoys a great reputation in the States, which will undoubtedly extend to Canada, now that their increased facilities allow them to place their goods here. We lately had the pleasure of looking through their line of cameras, and was very much pleased with the many new improvements shown and the high grade of workmanship shown throughout. Mr. Seth C. Jones, who is the active member of the firm, is one of the best camera men in the country, and to his large experience, combined with a quick perception of what is wanted, is due to a great extent the success of the Sunart Cameras. The firm issue a very interesting catalogue, richly illustrated, which it would be well for those contemplating a new camera to look over. Send for one.

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It may be a trifle early to begin thinking of where to spend next summer's vacation, but it is not too soon to begin planning for one of the new convertible anastigmats which the Bausch & Lomb Optical Company are just introducing. These lenses are a further evolution of the Zeiss anastigmat series, possessing still more useful qualities than their predecessors. The primary idea is a doublet lens composed of systems of such a high order of correction that each may be used by itself, and when combined, give results commensurate with the high order of the separate elements. This hitherto unaccomplished task is made possible in the convertible anastigmat by the employment of several new optical glasses and the combination of four lenses in a single system instead of, as heretofore, limiting the number to two or three. The mountings of the lenses are of uniform size, so that any two single anastigmats may be combined in the lens tube or, if more than two are desirable, they may be interchanged with equal facility. The fact that three lenses of different power are contained in one mounting, greatly simplifies the photographer's outfit, and adds to its portability, especially as one shutter is sufficient for all three. For example: if two single lenses of 11½ and 14 inches focus respectively are selected for the doublet, their values will be as follows: The 14-inch lens used alone covers an 8 x 10 plate with aperture f/12.5 and subtends an angle of 46½°. The 11½-inch lens, when used alone covers a 6½ x 8½ plate with aperture f/12.5, subtending an angle of 55½°. Combining the two with the 14-inch lens for the front system, produces a lens of 7 inches focus, covering a 5 x 7½ plate at full aperture f/7.

The proper stops to be used with any of the lenses are indicated on a revolvable ring upon the lens tube, which is engraved with a separate scale for each lens or combination. A slight rotation of the ring brings the scale to the proper position, where it is held by a stop. Regarding the optical qualities of the lenses, the single anastigmats are free from astigmatism and are, in fact, an application of the principles of correction embodied in the series iv., anastigmatic doublet. The convertible doublets (two single anastigmats) stand alone in covering capacity, flatness of field, depth of focus and freedom from astigmatism, as might be expected from the high qualities of the single systems composing them.

Photographs on Railroad Tickets.

A San Francisco photographer claims to have completed a device by which every railroad ticket may be made to bear the photograph of the original purchaser as a preventive of scalping. The whole process of taking the picture, developing the negative and printing the portrait on a portion of the ticket can be done he says, while the purchaser is paying for his ticket, or in one minute at the longest. The apparatus is elaborate, but the inventor says that it is infallible and that the companies will pay a good price for a perfect method of preventing scalping by making tickets absolutely non-transferable.

F. A. Mulholland & Co. send us a line of samples of the elegant steel grey mounts introduced by them in January. The demand for this colored board was so great, that we were requested to withhold notice of it until they had filled the orders on hand, and secure a sufficient stock to accommodate the great demand. They now announce a full stock on hand, and will be able to fill all orders on sight. The steel grey color has jumped into immense popularity in the States and Canada. It makes the finest possible background for aristo platino paper.

In Photographisce Notitzen, Mr. Lodge recommends the use of telephotographic objectives for photographing wild animals, pointing out that the employment of such a lens not only enables the photographer to take his stand at a convenient distance, but also has the great advantage that the beasts are depicted amid their ordinary surroundings, and that not suspecting the presence of man, appear in natural postures.

Removal of Pyro Stains.

Place the fabric in a saturated solution of oxalic acid, and leave it to steep for some little time. Next place the material, now impregnated with the acid solution, in a 10 per cent. solution of chloride of lime till the stain disappears, and finally wash in clear water. A little rubbing facilitates the removal of the stains.

An interesting announcement is made by the Nepera Chemical Co. regarding the brush development of Velox paper. A short description of the method will be found incorporated in "Our Illustration," this issue, also on page 75.