



NEGATIVE AND PRINT

- BY -

FRANK A. PLACE.

AMERICAN ARISTOTYPE CO'S

“ARISTO - PLATINO.”

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Articles Solicited.—Contributions are invited on every subject relating to photography, also practical ideas, helpful suggestions, useful formulæ, etc. Payment will be made on accepted articles if required, but unless distinctly asked for, all articles will be accepted on the understanding that credit on subscription will be considered sufficient remuneration.

Answers to Correspondents.—Questions to the EDITOR on any subject pertaining to photography are invited, and will be answered as fully as possible through the columns of the JOURNAL.

We want Agents in every city in Canada and the United States to *push* this JOURNAL, with whom *satisfactory* arrangements will be made. We would esteem it a great favor to hear from, or be placed in communication with, persons desirous of *making money*.

Address all communications to

Canadian Photographic Journal,

TORONTO.

EDITORIAL CHAT.

THERE is some talk among our Toronto photographers of another effort to form a local association, the object of which shall be principally the readjustment of prices. It is a fact but too well known to our city photographers, that prices in Toronto are in about as demoralized a condition as they well can be. While photographers in all sections of the country have been affected by the dull state of trade, in sympathy with all other lines, Toronto especially seems to have been seriously affected by the low price epidemic, and is a lingering invalid, slow to show the "turn for the better" that is the forerunner of returning strength.

DURING the past year or so we have all got so accustomed to groaning and lamenting over hard times that it has become somewhat of a habit; and even with those whose business is very perceptibly better than it has been for several years, the old cry goes forth. This is somewhat the present state of our photographers, or many of them. They dare not come out of their shell of low prices for fear of the dragon—"Hard Times."

While photography, being more of a luxury than a necessity, has been (or is expected to be) among the last lines of business to be affected by the change for the better that has been gradually showing in trade generally, we must all feel that it is now full time that some effort be made by those who are workers under the skylight to take advantage of this easier trade feeling, and make a stand for better prices for good work, resolving at the same time to do better work for good prices.

WHILE some radical movement is necessary to solve the better prices problem, there are a number of seemingly minor matters that our Canadian photographers neglect, the value of which, however, is understood by a good many of our cousins across the line, and *worked* accordingly. For instance, if you were asked to name your most important employee, you would probably say the operator, followed, perhaps, by the printer and retoucher, while you think of the girl in the office as just "being there to wait on people." Now, the reception room young lady, to give her her full title, is one of the most important personages in the gallery. On her ability to "handle" customers, on her brightness, pleasantness, business ability, depends hundreds of dollars for or against you. The reception room young lady is "a power in the land." Therefore, have the right one for your gallery, if you have to pay her more salary than your operator. You will find the money well spent.

ANOTHER big, little thing is the reception room samples. They should be fresh, clean, snappy—testimonials of the best your gallery can do. Think of the following instruction an artist was heard giving his printer lately: "Here, Jim, have some of these 'culls' burnished for the office. Those samples in there haven't been

changed since Christmas." You can't afford to drive away business in this way. The best you can do is what is wanted in the reception room.

WE have often advocated the photographer having and pushing a specialty or two, or three, and *never* let a customer take her photos away without showing her how well adapted her particular pose, or dress, or something is for an enlargement, or an oil, or an extra half dozen of cabinets in sepia. If you have the proper person at your desk, you can, in this way, make anywhere from your rent to your *entire* expenses every month. Another little pointer, and a *big pointer* it is with a good many galleries in the States, is to always make from one to three prints *over*. Four out of five customers will take them at a figure that will leave a good profit. A large New York gallery has paid the expenses of the printing room in this *little* way for several years. Have your reception room attractive and clean, your operating room the same. Keep a choice selection of your best work in the window, including, if possible, some large work of well-known people of your city or town. Speak of your operator as "our artist, Mr. Jones," and, above all, remember the importance of the reception room young lady.

ON another page we give a circular that has been sent out by the prominent photographers of New York city regarding the forming of an organization to be known as the "Photographers' Copyright League of America," made necessary by the pirating of their work by lithographers and illustrators. While we in Canada are not troubled to such an extent as our brothers of the United States, it is always well to be on the safe side, and a Canadian Copyright League under the auspices of the P. A. of C., should, we think, receive some attention at the next convention.

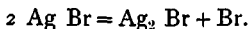
England already has a strong organization of the kind. The convention can also benefit our photographers by endeavoring to secure lower charges for, and better and easier means of securing the copyright of valuable photographs. We have thrashed the subject out at considerable length before, and hope to see some action taken regarding the matter at our next convention.

THE LATENT IMAGE AND DEVELOPMENT.

BY CHAS. H. FAIRBANKS.

Since Daguerre and Niepce first made "Old Sol" a practical painter, photography has made most wonderful progress. Our theoretical knowledge, however, is surprisingly meager and unsatisfactory. We mix silver, gelatine and a bromide; we know how it will act, but what is it chemically? We expose it to light, and we know still less about it.

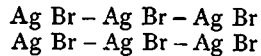
The theory of the latent image and development, as originated by Kogelmann and expanded by Liesegang, offers a very satisfactory explanation of this process. The careful research of these investigators goes a long way toward clearing up the mysteries of the dark room. As explained by Liesegang, the sensitive film of the dry plate consists of bromide of silver (Ag Br) divided by the gelatine into minute groups of molecules or grains. When exposed, the light does not penetrate into the interior of each group, but effects only the outer bromide of silver molecules; these by the action of the light give off bromine and are changed to a sub-bromide of silver ($\text{Ag}_2 \text{ Br}$).



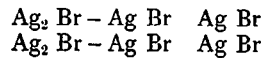
The appearance of these two silver salts

being identical, the change by the exposure is invisible.

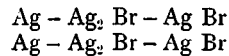
If we represent the molecular group in the sensitive film by the formula



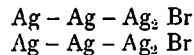
the grains which are exposed to light would be



The action of the developer upon this complex grain takes the bromine from each molecule of sub-bromide of silver, and liberates two atoms of silver: one atom from each decomposed molecule goes to build up the image, being deposited as metallic silver; the other atom unites with a neighboring molecule of unchanged bromide of silver, forming a new sub-bromide of silver molecule. The molecular group is now represented by



As soon as a new sub-bromide of silver molecule is formed it is reduced by the developer, one atom of its silver going to build up the developing image, and the other uniting with an unchanged bromide of silver molecule as before. Our complex grain has now changed to



In this ferment-like way the process continues till the developer is removed, or until every bromide of silver molecule which the exposed grain contains is reduced to metallic silver.

It will be seen that this process goes on independently in each molecular group or grain, consequently the action is not communicated to a grain unchanged by the light.

Kogelmann estimates the number of bromide of silver molecules in an average-

sized grain at one thousand million. In the normal exposure only one million of these or those in the outer surface are altered by the light; the other 999 million are unchanged bromide of silver, but through this ferment-like process yield their silver to form the image.

This is, of course, only a working hypothesis, but through this we may hope to evolve a complete theory by which we shall be able to thoroughly comprehend the physical and chemical changes of silver emulsions.

POINTERS FROM MR. HETHERINGTON.

The reception room is too often neglected—either too little furniture, the same furniture, draperies and display pictures used too long, or too much furniture and too many pictures, the whole making a stuffy, crowded, inartistic arrangement. Change your furniture and pictures as often as possible. Use only a few choice display photographs, and arrange them in the most artistic manner. Be sure to have a bright person to wait on your customers, one who has an eye to business and is at the same time polite and accommodating. Have this person work for you on the percentage plan, if possible, giving her or him, as the case may be, a certain percentage of receipts. You will find this plan pays.

The operating room should be carefully tinted, so as not to reflect bad lights on the subject. If you can only have a few accessories, have them good. Shun cheap backgrounds and accessories. Remember that your reputation as an artist largely depends on your operating room, and you cannot afford to slight any of the details that go into the composition of your pictures. Have the proper things to work with, if you have to go without a carpet on your reception room.

In sending subjects to the operating room, always refer to the operator as an artist: it will make a great difference in the impression on the subject. If you were going to have your portrait painted, you would not expect the man who was going to do the work to be referred to as the "painter."

Do not limit the operator in the use of plates. It is presumed that you have a man of ability and judgment in your operating room, and he ought to be competent to determine the number of exposures to make to serve the best interest of your business.

The retoucher should have proofs of each negative in the sack with the negative. This is a great aid in seeing points that might otherwise be overlooked.

The operator and the person at the desk should look over the proofs together each morning, as they are the two people who come directly in contact with the subject.

Choose the backgrounds for the subject. Don't use large chairs and balustrades for small children. Work bald-headed subjects across the light, and reduce the shiny effect of the skin by using Strauss Modeler, one of the most useful articles in an operating room.

The dark room should be scrupulously clean, and distilled water used in combining all chemicals.

ANSWERS TO CORRE- SPONDENTS.

J. A. C.—(1) A teaspoonful of common molasses added to the glue will make it adhere to your metal boxes. (2) From our own experience we can assure you that the Walpole Hypo is indeed worth the small advance in price over the German article.

"Monto."—Write the advertiser direct—as to his reasons for selling. He has not given us any information.

"Saxon."—A Carbutt color screen will only cost about \$1.50, and is just what you need to obviate your trouble.

PHOTOGRAPHY IN COLORS.



SENSITIVE substance capable of taking photographic impressions in their true colors must have the power of assuming the exact color of any ray of light that may act upon it. This implies that the effect of rays of differ-

ent refrangibility must differ in kind, and not in degree, as in ordinary photographic action. The principle of the Lypman process, in which the colors depend upon the physical arrangement of the particles within the film, is comparatively simple; but where the colors are produced by chemical means the matter becomes far more complicated, for in this case we must suppose each ray of light to bring about a different form of chemical change. The Lypman process is at present further advanced than any other method yet devised, while the chemical method, of which the present article is to treat, seems to have been neglected. It is very doubtful if the iridescent arising from interference can ever be made to have the solidity of those produced by chemical means, and for this reason the solution of the problem may finally be reached through the chemical method.

A simple metallic salt will generally undergo but one form of chemical change under the influence of light; the only difference in the effect of light of different wave-lengths is in the rapidity of action. This form of action would not fulfil the

condition necessary to the production of more than one color. In a mixture of two or more salts, however, different rays may bring about different chemical results. If we take for example two compounds having their maximum points of sensitiveness in the blue and the green respectively, then either of these two rays would effect the greatest amount of chemical decomposition in the salt which was most sensitive to it. There are other ways in which the same result might be brought about. A highly complex compound which is sensitive to light will sometimes split up into others which are also sensitive, and as these products of decomposition will generally have their points of maximum sensitiveness in different parts of the spectrum the same result as that explained above will ensue. Again, in a combination capable of splitting up in more than one way, different rays may induce different modes of decomposition, for it is only reasonable to suppose that some parts of the molecular system would give way to vibrations of a particular period quicker than others. This is what probably takes place in the red and purple silver chlorides when exposed to the spectrum. These salts assume a variety of colors under different regions of the spectrum, some of which very closely resemble the colors of the light to which they may be exposed.

These colors must certainly result from different forms of chemical action, but the coincidence of color with that of the light which produced it is probably in all cases simply accidental. These phenomena as a basis for color-photography have long been abandoned; they simply serve as an illustration of the form of chemical action varying with the quality of the light.

That different rays may cause different chemical effects, and thereby produce different colors, is thus demonstrated; but there is still a condition that has not

been fulfilled. We have seen no reason why the colors thus produced should be the same as those of the rays of light to which they correspond. This question, which seems the most difficult in the whole problem, is easily answered when we trace the final consequences of the persistent action of light. Take, for example, a complex and highly colored organic compound which will probably be sensitive to light, owing to the instability of organic compounds generally. A film of such a substance, when acted on by a ray of simple or compound color, will undergo a partial decomposition. The products of decomposition will generally be sensitive and will undergo a further splitting up; they may also react on each other, forming new combinations which will also be sensitive and will again break up into other forms. The chemical operations will thus become extremely complicated, new compounds being continually formed and destroyed. Now, the sensitiveness of a compound, or the rapidity with which it is decomposed, will depend on the amount of light it absorbs; those having the greatest absorbing power will be the most rapidly decomposed (provided their stability is not such as to resist decomposition), while those absorbing no light will survive. It follows, therefore, that the final result of the action of the ray will be to destroy all combinations by which it is absorbed, and to consequently make a free passage for itself. The effect will be as though the ray had pierced its way through the film. Now, it is plain that the color of the film by transmitted light must be a nearer approach, in its altered state, to that of the ray than it was in its original condition, for this ray now constitutes a part of the transmitted light, whereas it was originally absent as absorbed. The color of the film will thus tend towards that of the ray which acts upon it.

If we suppose the substance of the film in its original condition to absorb all rays, or to be black, then in its altered state no rays will be transmitted, but those which acted upon it, and the result will then be a perfect reproduction of color.

This is the true principle of photography in colors. Whether it can be carried into practice or not is a question for experimental research. There is no reason why a chemical compound having such properties as we have described could not exist; it has simply not been found. The chemical process by which the colors are formed is as simple and definite as the formation of the interference colors in the Lyman process. The experimental evidence that such operations actually take place will probably only be found in organic chemistry. We might account in this way for the color phenomena observed in the silver chloride experiments, but it is hardly conceivable that a combination of a metal and a halogen could be capable of so many changes.

Nearly all organic coloring matter is sensitive to light, the effect of which is to cause a bleaching or partial destruction of the color. From the complex nature of the action which attends this bleaching, we should expect to find associated with it some manifestations of the color-forming principle previously explained. It would be difficult or impossible to effect the bleaching under a spectrum projection, owing to the long exposure and great quantity of light required, but the influence of different rays may be examined by long exposures to direct sunlight under colored glasses. Paper, stained with the coloring matter to be examined, may be covered with squares of glass of different colors, and exposed in a window which receives the sunlight during the greater part of the day. From

one to two months' exposure will be required to produce any visible effect. The thicknesses of glass should be so arranged that the bleaching will take place with the same rapidity under each color; this is necessary in order that a fair comparison of the results may be made. If a solution of fuchsine is used, it will be found, on comparing the parts exposed under the different glasses, that two entirely different kinds of pink have been formed; under the blue glass the color will have assumed decidedly more blue than that under the yellow or green. Several aniline derivatives show variations in color, but to such a slight extent that it is difficult to tell whether they are an approach to the color of the glass or not. A solution of eosine acts very much like fuchsine. The most remarkable effect is produced with paper coated with eosine and gelatine. No more eosine should be used than necessary to give the coating a red color. Paper prepared in this way is not as rapid as that prepared with a simple solution, but the variations in color are decidedly more marked. Under blue glass the color bleaches to a bluish pink, which takes on more blue as the exposure is prolonged, while under yellow or yellowish green the red color predominates, until finally it gives way to a bright orange color.

The few experiments made in this line by the writer are sufficient to show that the principle is more than merely conjectural.

CORWIN GITCHELL.

A WASTE OF MATERIAL.

BY J. O. JACKS.

The following opinion given by *Photography*, an English journal, on the English size of lantern plates, *vs.*, the American size, is full of sense. The writer has looked over thousands of American slides

and cannot recall a single one that did not show a considerable waste of good material; indeed, hardly one that would not yield just as good a picture were it made on our sized plates. I can see no good reason why they should use a 4 x $3\frac{1}{4}$ plate, while on the other hand our size of $3\frac{1}{4}$ square has much to commend it.

The square size is undoubtedly much easier to handle, besides being lighter, cheaper and—but I am robbing *Photography* of its thunder, which is as follows:

“We have recently looked through some sets of American lantern slides, and have been struck with the apparent waste of size. The English standard size is, of course, $3\frac{1}{4}$ in. square, and in the area of this it appears to be possible to get all sorts of pictures for lantern work—quite as full of variety and as comprehensive in scope as that produced by transatlantic workers. We should judge the standard size in use there to be 4 in. x $3\frac{1}{4}$ in., but as we found the pictures varied from $2\frac{1}{8}$ in. to $2\frac{1}{16}$ in., we cannot quite see why lantern plates of so large a size are required. The largest size picture we refer to could easily have been reduced $\frac{3}{8}$ in. with great advantage, so that any of these slides could have been included on a plate of English standard size, but it is too much to hope that our friends will join us in making the use of that standard general. The additional weight of the larger size is a consideration, as well as extra cost in connection with all fittings which come into use with it, and, so far as we can see, there is no gain whatever in using the larger size.”

A few drops of oil of turpentine added to the usual hydroquinone developer is said to act as an exceedingly active accelerator, and one which gives remarkable density.

NEW APPLICATION OF CELLULOID FILMS FOR THE DIRECT PREPARATION OF REVERSED NEGATIVES.

BY G. KYRKOW.



All direct printing processes the need of reversed negatives has, hitherto, always been considered a drawback.

There are many ways of preparing reversed negatives, but none is so perfect that with it in all cases serviceable nega-

tives can be obtained. All these processes either take up much time (*e.g.*, stripped negatives with gelatine coating, etc.), or are too dear and difficult (negatives by means of prisms, etc.).

In my practical work with direct printing processes, the asphalt process, fish-lime process, etc., I have felt the defects of the negatives obtained in one or the other way, and these defects have compelled me to search for some means of obtaining reversed negatives direct.

Fortunately, it occurred to me to use celluloid films for this purpose, and with them I have obtained satisfactory results.

The process is simply as follows: A clean celluloid film without emulsion is stuck on to a glass plate, with a sort of adhesive wax, as follows: All round the edge of the celluloid film is made sticky with the wax, and then sticky side down

is laid on to a slightly warmed glass plate, rubbed flat and put into the printing frame for a time till the plate is cold. Next, the glass plate with the film on it is taken out, and the wax that has been squeezed out at the sides of the film is removed with a rag wetted with benzine. Such films stretched on glass can be kept in stock. The remaining manipulation is the same as with the wet collodion process. The collodionized celluloid plate is sensitized in the silver bath, exposed, developed as usual and fixed with a 3% solution of cyanide of potassium. Here a new phenomenon is to be observed, *viz.*, that the transparent celluloid film, through the collodionizing, has become matt-opal, for which reason it requires some practice to be able to judge of the image on its appearing during development. Now, intensify the celluloid film negative with iodide of potassium, mercury chloride or uranium, wash well and dry. Gumming is not necessary, as the collodion coating has firmly attached itself to the film. The dry negative is opal-matt, and in this condition cannot be used, but in order immediately to obtain a negative as clear as glass it is necessary only to pour on some oil of rosemary to let it drain and dry. When the glass plate has been a little warmed the film can be stripped, the mountant sticking to the back can be removed with benzine, and the finished negative be stored for future use.

The advantages of this method are: (a) The ease with which it is carried out; (b) The utility of the negative, either reversed or direct; (c) The negatives are light and easily transportable; (d) Invariability of the size of the negative; (e) The collodion side with the sensitive coating, not being touched during printing, there is no fear of scratching the negative or messing it.

In my experiments I used only the

Eastman Company's celluloid films. By publishing these results I wish to induce photographers to use this process, and manufacturers to put on the market films with a faultless surface, cut in different sizes, packed flat and at a moderate price.

SOME REMARKS BY MR. EDGEWORTH BEFORE A LATE CONVENTION.

Gentlemen of the Northwestern Photographic Association, I have been requested to say something on the use and care of photographic lenses.

I have here two lenses—one a portrait lens, and one a rectilinear lens. Now, if you were going to make views, which of these lenses would you use? You would naturally take the rectilinear. Now, if you were going to make portraits, you would naturally pick out the portrait lens. I do not think there is one in this room who would pick out the portrait lens to make views with. But how many of you are making portraits with view lenses? The manufacturer made them to make portraits with. Now, here is an example:

One man has a very ordinary gallery, but he has picked out a first-class portrait lens: his work is very soft, round, and beautiful. His competitor wants to outdo him: fits up a beautiful place with fine accessories, but the lens does not show much, and he buys a cheap rectilinear lens, because he is told his pictures will be sharp. But when he compares his work he wonders why his pictures are hard, and nothing in the blacks, no half-tones, no definition in his whites. He may use the same dry plates, same chemicals, and the same paper, but the effect is altogether different.

This country has been flooded with cheap French lenses, a great many not properly adjusted, although there may

be pearls among them, but you have to hunt to find them. They are composed of glass and brass, but a great deal more brass than glass. I have been asked repeatedly why the sample pictures I carried looked so different from those usually shown in show-cases. They used Cramer plates, but could not get such effects. I invariably found those men using rectilinear lenses to make their work with, while the sample pictures I carried were made by the best photographers in the country, and with the very best portrait lenses.

Now, in the care of lenses: they should be cleaned every week with alcohol, and polished dry. You will find no hazy blacks if you will keep your lens in perfect order.

Do not let your lenses get so you can write your name on the glass. If your eyes are dim, you cannot see, neither can the lens. Cleanliness is *before* godliness—in the photo business.

If your lenses are not properly adjusted, send them to some optician, and have them properly adjusted; or adjust them yourself. If your lens is too short focus, cuts sharp on the surface only, separate the back lenses, and see if it does not work better. Especially if it is an old style lens, I have found it gives beautiful definition and softness.

Gentlemen, I thank you for your attention, and to-morrow I will talk on the development of Cramer plates.

THE CAMERA IN THE MISSION FIELD.

Algoma and the West.—Continued.

BY REV. P. L. SPENCER.

A few miles from Winnipeg stands St. Paul's Industrial School for Indian children, a large institution which owes much of its success to Rev. Wm. Burman, its

former Principal. Here I found the boys learning carpentering, blacksmithing and printing, and the girls acquiring a knowledge of the various branches of domestic work. I was shown a photograph of the school's exhibit at the Winnipeg Industrial Fair of that year, and certainly the display seemed wonderfully varied and good. I tried the flashlight upon a group of young carpenters, and succeeded in getting an interesting and satisfactory picture, the operations of sawing, planing, etc., being continued during the manipulation. In the blacksmith shop the result was not so good, there being a manifest lack of contrast, on account of the prevailing hue that marked all the contents, even to the workers. In fact, the shop was accomplishing its purpose too well to permit a good photograph to be possible. A visit to one of the neatly-kept dormitories was rewarded with further photographic success. Other views were obtained, and thus materials were secured for giving at missionary meetings a correct notion of the working of this prosperous Indian Home. If the hopes of its promoters are realized, Indian houses in Manitoba cannot fail to show in due time evidences of comfort and refinement.

Twenty-five miles north of Winnipeg I found myself, on the evening of the same day, enjoying the hospitality of Rev. J. G. Anderson, missionary to the Cree Indians and the Saulteaux on St. Peter's Reserve, the oldest Indian settlement in Manitoba. These tribes occupy lands and houses on both banks of the broad Red River for a distance of eight miles. They number one thousand persons, not more than a dozen of whom are still pagan. The Christians, with the exception of about sixty individuals, are members of the Anglican communion, and, judging from what I saw concerning their behavior during divine service and their ways in house

and field, I think they will compare not unfavorably with the same number of white people similarly situated. Their substantial stone church, built in 1847, was twice occupied on Sunday by a large and attentive congregation, and no fewer than eighty remained as communicants. I obtained very pleasing photographs of the church, which, being dedicated to St. Peter, gives its name to the reservation. One view was taken from the opposite bank of the river, and was made to include the parsonage and other attractive features of the landscape, the background being a range of low hills, together with some trees of the poplar and elm varieties which beautify the country along the river from one end of the reserve to the other. The other view, which was got from a point near the church, brings one of these trees, a fine, stately and wide-spreading elm into lively prominence, giving the impression to a stranger that the scene is some spot in the more highly favored, because well-treed, Province of Ontario, instead of a place in that western region of the Dominion commonly imagined to be treeless by reason of its name, the Prairie Province. An attractive sight perpetuated by the camera was the sail-boat of one of the chiefs gracefully pursuing its course towards Lake Winnipeg, and showing by its shape and actions very creditable skill on the part of its dusky builder. The ferry-scow used in transporting men, animals and vehicles from one side of the river to the other seemed a subject worthy of an exposure of a plate. The picture shows very clearly how ingenuity sometimes takes the place of engineering without one tithe of the expense. I may mention that the scow is kept in its direct course across the stream by means of a wire rope reaching from one bank to the other, and passing over or through a pulley attached to the scow's side. The motion of this primitive

kind of craft is produced by the master steadily pulling at the wire rope. As a sample of an average Indian house, I took aim at the habitation of a family named Johnson. This, like nearly all other dwellings, was very neatly constructed of squared logs, and was made as white as the purest whitewash could make it. The furniture within was simple, but sufficient for comfort; and the mistress was cleanly and tidily attired.

Having obtained these valuable materials for use in future missionary illustrative talks, I bade good-bye to my kind entertainer, duly impressed by the thought that the work accomplished by the church on St. Peter's reserve may justly be reckoned among the most satisfactory results of evangelizing operations. If any reader is sceptical as to the benefit of missions, I would advise him to pay a visit, if possible, to this Red River Indian settlement, and then go among the aborigines that have not come under the influence of the Christian religion. I think that the contrast he will observe will be sufficient to make him henceforth a warm and liberal supporter of some well-established missionary society.

A sight I witnessed 260 miles farther west gives point to the last statement. At Broadview, a missionary station, of which I had temporary charge four years previous to the present tour, I was noting the improvements of both a civic and an ecclesiastical nature which the lapse of time had brought about in the village, when there met me a human creature whose facial expression can best be likened to that of a mummy, and whose general appearance betokened the lowest degree of degradation. This proved to be "Old Auntie," a well-known squaw belonging to the tribes recently placed on the Broadview reserve a few miles distant. She was a sample of what paganism does in the way of caring for the aged and

infirm. Left by her heathen relatives to wander about in quest of bones and remnants of meat at the village butcher shop and fragments of food at the doors of the kitchens of the charitable residents, and allowed to wear upon her person clothing of a horribly ragged and filthy kind, and upon her head only Nature's covering in a condition of perpetually unkempt disorder, she seemed to be not very far removed from a mere animal. The sight, while sufficient to create the most profound disgust, could not fail to arouse in any Christian heart the most sincere pity and sorrow. Here was a human being whose steps were verging upon the grave, and who, nevertheless, was a stranger to everything that is allied to spiritual purity, holiness and beauty. Contrast her condition with that of the average woman on St. Peter's Red River reserve. Who will say that missions are a failure? I may add that the age of this old pagan was a matter of uncertainty, but was guessed to be not far from one hundred, she having a daughter living whose years were said to number 80. The day being unfavorable for photography I did not try to get a portrait of "Old Auntie," but I was fortunate enough to obtain a perfect likeness through the kindness of the clergyman of Broadview, who gave me a photograph made by the local artist. This I took when in England to Newton & Co., London, who made an excellent lantern transparency from it. I need scarcely say that the exhibition of it never fails to produce surprise, wonder and compassionate concern.

AMIDOL DEVELOPER.—One solution.

Amidol.....	60 grs.
Sodium sulphite.....	1 1/2 ozs.
Water.....	7 ozs.

For use, take 1 part of above to 3 parts water. Can be used repeatedly.

ELECTRIC LIGHT IN PHOTOGRAPHIC STUDIOS.

A Few Hints.

BY GEO. G. ROCKWOOD.

In all departures from old-established lines, and upon the introduction of every new and important invention, many difficulties have to be met, carefully considered and surmounted. Most of these obstacles arise from the impression that by and through these inventions a royal road to success has been established, without the exercise of common-sense, and omitting the same conscientious effort that we bring to bear in the ordinary methods of working. Therefore in the introduction of what is such a revolution in the art of photography as the electric light, and its new methods of working, many have met what seemed to them insuperable difficulties. Speaking strongly and not very elegantly, this is all "gammon."

The new electric light won't go alone; it won't abolish effort; neither does it provide any royal road to success, without work and experience. Because it is claimed, and is a fact, that the electric light is quicker than the ordinary skylight, each photographer attempts to beat the record and not give sufficient exposure; they do not give care enough to the arrangement of their reflectors, and are not sufficiently careful as to the source of, or to the angle of light, as it falls upon the sitter. I think that the points here mentioned are the ones that need consideration.

Now let me make this one statement concerning the power of light, which may be a key to the situation.

Light loses its power inversely as the square of the distance. Putting it in simpler form; if the light is, we will say,

six feet from the sitter, and is moved to a distance of twelve feet, the light loses its intensity, or rather is diluted so as to require four times the exposure. Therefore the sitter should be as near to the source of light as is practical to secure great rapidity. The first thing that will impress the intelligent operator, when he moves the sitter close to the source of light, is a rather sharply defined shadow. Here is where he wants a head screen, made preferably of architect's drawing linen, or fine book muslin, which gives a soft beautiful light to the head, and transparency to the shadows. This should be so placed as to affect the head only, letting the light strike the drapery in full force, and hence secure that "crispness" so desirable in drapery.

Another point, carefully consider the angle at which the light falls upon the sitter. My own method, both under this light and when working by daylight, is to let the light fall at an angle of as near forty-five degrees from the side and from the front as is possible. This gives what may be called normal shadow. In my own case, with the Anthony light, I found myself by accident at first working with a light too low, which deprived me of a good deal of modelling. I gave this matter—and advise all others to do the same thing—careful thought and experiment, not necessarily by exposure of plates, but by careful studies of light and shadow, as they may appear to the eye; the camera will faithfully record that effect.

Now, it is a well-known fact that our most expert photographers, of long experience and ability, often have to study and practice under a new skylight and new surroundings, for some little time, before they can get the mastery of all its possibilities. If this be so with ordinary skylights, is it not fair to assume that such a radical departure as a new source of



MADE WITH ANTHONY'S ELECTRIC LIGHT APPARATUS.

light, to wit, the electric light, needs quite as much, if not more, careful consideration and practice? So study your light, its angles, the value of the reflectors, being sure that the camera sees with as much fidelity as the human eye.

I am led to this discussion from the fact that one or two old friends have taken hold of the electric light, and, after two or three exposures, have written me for suggestions. I will, therefore, only reiterate what I have already intimated, that this, like all other good things, must be conscientiously studied, and experience gained; not assuming that the light has any supernatural powers.—*Anthony's Bulletin.*

TONING PLATINUM PRINTS.

BY ALFRED W. DOLLOND.

Until quite recently, prints in platinum were looked upon as quite unalterable by subsequent treatment; but, during the past year, attention has been called to methods of toning or intensification with silver, gold, and a compound containing uranium.

It is a method of toning with gold that I am about to demonstrate. This treatment is applicable to most silver-printing processes. The prints are bleached, to some extent, during toning, but the strength is restored by the developer; the tones obtained, however, are not, as a rule, very pleasing. This method was arrived at after a series of experiments, which I will briefly describe.

The first point to establish was whether the platinum image had any attraction for nascent gold. To ascertain this, platinum prints were placed in the ordinary gold toning baths used for silver prints, made up of weak solutions of gold chloride, and containing borax, sodium acetate, or

ammonium sulphocyanide. In such baths the gold is in the form of a more or less unstable compound, and in the course of time the metal is set free. The presence of the platinum prints did not seem to hasten very much the deposition of gold, but in the course of many hours the prints appeared to be slightly intensified. The experiment was thus, so far, hopeful, as there appeared to be a slight attraction for the gold; but this method has no practical value, owing to the length of time required. Besides, the prints are badly stained all over.

In order to hasten the reduction, I tried feeble reducing agents, such as sulphites, oxalates, organic acids, and various developing agents in neutral and acid solutions. In all cases gold was deposited rapidly, but it fell almost impartially all over the surface of the print, and did not appear to be specially attracted to the platinum image or to have any great power of adhering to it.

Upon trying organic reducing agents of a glutinous nature, much more promising results were obtained from gum, glycerine, sugar, treacle and glucose; glycerine answered best. Glycerine alone has a very feeble reducing action upon gold chloride, but, when in contact with a platinum print, the attraction of the platinum for the nascent gold assists the action, and the deposition commences in a few minutes. Gold deposited under these conditions adheres closely to the platinum.

As soon as the toning commences, the prints begin to take a slightly bluer color in addition to an increase of strength. If the original image is brownish in tint the toning will turn it first pure black; then blue-black and finally almost blue. Owing to the color becoming eventually unpleasantly blue, this process is not suited for the intensification of very weak prints.

There is very little tendency for the

gold to be deposited upon the plain paper where no platinum at all is present, unless the action be carried to an extreme extent, but a slight deposit of platinum previously invisible may be intensified and become evident.

At first I simply washed the prints in water after toning, but I found later that this was not sufficient, as they were apt to take a slight pink tinge in the whites after keeping some time. This I attribute to a tendency on the part of the gold to form some sort of compound with the size of the paper. What is required is to ensure the complete reduction of any gold compounds present. A simple way of doing this is to treat the prints with an alkaline developer. None of the prints so treated have shown any sign of change.

Working details:—*Solution 1.*

Gold chloride 15 grains.
Water $7\frac{1}{2}$ drachms.
Neutralized with chalk before use.

Solution 2.—Glycerine.

Solution 3.—*Developer.*

(a) Sodium sulphate . . . 1 ounce.
Water to 10 ounces.
Metol 50 grains.
(b) Potassium carbonate $\frac{1}{2}$ ounce.
Water to 10 ounces.
Mix equal parts (a) and (b).

METHOD OF WORKING.

The platinotype print—developed, cleared and dried in the usual way—is soaked for a minute or two in warm water, then laid upon a flat surface, preferably a sheet of opal glass, also warmed, and the print is well blotted to remove the excess of water. Next glycerine is gently spread over the whole surface of the print with a soft brush or the finger tip. When evenly coated, a few minims of the gold solution are dropped on, and rapidly mixed with the glycerine with a soft brush. Very soon the print will begin to

gain in strength, and assume the blue-black color. During the whole time toning is proceeding, the print should be brushed lightly and quickly to ensure even action, and to constantly bring fresh gold chloride into contact with the platinum; the brushing also lessens the tendency for the gold to be deposited on the high lights. The high lights should be watched, and, as long as they remain clear, the action may be allowed to continue. When the desired effect is obtained, the print should be quickly rinsed to remove the adhering glycerine and gold, and then sponged back and front with the metol developer. After this it will require washing for about twenty minutes.

Prints may be kept for some weeks or months before toning, but very old prints will not readily tone. The sepia paper will not tone satisfactorily. Prints are best toned in good daylight, as it is easier to judge of the color obtained, and also the action of daylight seems to hasten the deposit.

This method of treatment has the following uses:—

1. To strengthen slightly under-exposed prints.
 2. To convert a rusty or brownish tint into a pure black.
 3. To produce blue-black prints when this variation of tint is considered desirable.
 4. To enable brighter prints to be obtained from flat negatives than is usually possible by the ordinary method.
- Photographic Club.*

A FLOATING STUDIO.—A well-known photographer, of Chicago, has fitted up an elegant studio in a steam yacht, in which he intends making summer cruises along the shores of the Atlantic.

DRAPERIES.

The series of articles on photography for women by "Juno" in the *Australian Photographic Journal* are most interesting.

Speaking of Draperies, this writer says:

"The charm of studio appointments is that they harmonize with the subject. Our pictures must be suggestive of the life we live, the country in which we dwell, etc., etc. Ours is a sunny, warm climate, bright and gay. Our apartments then should be lightly and gracefully draped rather than heavily, with lace, art muslin or silken draperies, caught together with lace, ribbons, flowers or ferns. Of these latter we possess an abundant and inexhaustible variety, available at every season of the year. For England and its heavy climate let us leave heavy furniture, and warm comfortable draperies. These would be out of place here; we can have nothing more suitable than the light wicker tables, chairs, etc., with airy, cool looking drapings, now so much in vogue.

They have a grace all their own, especially when our models, in perfect accord, are attired in fairy-like textures. Exceedingly simple are the draperies of women of the present day, and they may appear easy for the artist to manage on that account, but there is great deftness in doing the little that is required well enough to produce good picturesque effects. The very neat tweed costumes and severely plain sailor hats are charming in life, but require sometimes as much fixing as a more elaborate toilette if we would show a fine figure to advantage. The soft folds of cashmeres, cambrics and fine serge cloths are exquisite in pictures, in all shades of grey, fawn, brown, blue from pale to navy, and in dark reds they are most effective. Velvet or plush is rich looking, but comes under the heading of heavy drapes.

In our Sydney Art Gallery we have

some fine studies of women's draperies, but most of them belong to fashions gone by. We must look at the living moving people of to-day for the modes that now obtain.

A perfectly plain dress is very inartistic: it requires a good deal to relieve it even for a stout, full figure. Say it is of dark material, a little knot of lace or chiffon at the throat will be all that is needed, and a little narrow edging of the same inside the collar will soften the outline of the neck.

This is for bust pictures. In case all or most of the skirt is seen, many slight accessories may be used to take off the unbroken straight lines; as, for instance, a low screen of rustic wood or wicker, flowers, grasses, ferns, etc. The young assistant will see at a glance what will befit the occasion; her delight is to produce a happy effect, and she will not fail. A costume of one color relieved by vest of lace or lawn or silk is far prettier than light blouse and dark skirt, but as light blouses and dark skirts prevail we must know how to deal judiciously with them. Any combination is preferable to pure white and dead black, for many reasons I cannot fully explain here. White and grey, cream and brown, pale blue and navy, red and black, cream and navy, pink and grey, any of these will produce more artistic soft-looking results. The pretty buckles now worn with initials, and the dainty sash ribbons tied and falling in long streamers, are to be admired as doing away with the too straight line of waist. Failing these, a few flowers with loose foliage of green just tucked in the band will make a wonderful addition.

I could give dozens of hints on the use of lace in the studio, but space forbids me to detail more than a few for the benefit of those who might much undervalue its unbounded utility.

I will take the "Seven Ages of Woman" to set forth my meaning. We begin with

the infants. There are plenty of these visitors. Here comes one, with its mother most anxious about it. "Come in!" It can sit up, and seems quite amiably disposed. But what a frock to put the little darling into! Mothers should be made to dress their babies as prettily as they deserve to be, especially when they want nice pictures of them.

This child has a musty brown dress, with no pinafore. Now what young child looks nice without either tucker or pinafore? So seeing the state of affairs, my assistant is despatched for a lovely lace pinafore recently made for a present.

What a change! See how dainty she now looks. We put a little piece of lace at the wee throat, and the mother wonders how we think of it all. That will do. Now give her the old broken doll, and while the gratified look which accompanies the little chuckle of satisfaction rests for a few brief seconds on her chubby face, let us fix that happy gaze on our plate to delight her mother in years to come. Had we taken the picture as she was it would have looked common, but see how cosily her sweet face is framed in the soft lace, and how simple and baby-like the pinafore makes her appear.

A week ago we took Mabel, a fair child of nine years. She had on a cream frock trimmed with lace, and was taken with her favorite cat on a low stool, and her family of dolls in a perambulator close by. But having a fancy to see her in another dress of dark blue velvet trimmed with white lace, this is put on, and she is again taken perched on the arm of an old wicker sofa, with the accommodating cat seated on the back, and the dolls keeping her company. Both pictures when finished are so appreciated that it is difficult to know which to choose from. The lace had to be thanked for much of the effectiveness in both portraits.

There is a "tap tap" at the studio door. We open. A pretty, fresh-looking damsel

of sixteen enters. Her mother requires us to take her photo next week, and she has called to ask how to dress for it.

"How to dress!" I repeat. "Why, just as you are." For in truth she could not have looked nicer.

"What, in this old dress!" she exclaims; "though it used to look pretty once."

"But it is yet," I replied, "and if you will only walk across to the other end of the room, and allow me to take you just as you are, I am sure you will like it."

"But I did not want it till next week, and am having a new dress made for it," she urges.

"Well, never mind; I will take you in this, and let you see the proof when you come next week." The dress is of blue cambric, with collar, yoke and deep cuffs covered with open white lace, waistband also covered with same material. She wears a hat of black lace, on which rests a bunch of forget-me-nots, and from under its brim looks forth a pair of lovely blue eyes, lighting up as pure and fresh a face as any could wish to behold. The black lace on that fair hair is bewitching, while flowers and dress alike match those eyes in hue. Black gloves, a basket of ferns and black sunshade very effectively complete the costume, and as I take my model, "just as she is," I have no doubts as to the result being duly admired, which ultimately proves to be the case.

Fourthly come bridal pictures. What would they be minus lace and flowers? Why, the bride is literally covered in lace. See the long flowing veil at her back, falling to the hem of her train. Oh! the softness and delicate tracery of those silken robes and daintily arranged lace. How perfectly charming! Every friend of the family must have a copy, so lovely she looks, which is quite true.

Very near must be ranked portraits taken in evening dress, for the great effectiveness in both cases depends largely on lace.

Next comes a married lady, young yet, but who, being tall and slight, erroneously fancies that a severely plain black dress will best suit her. "Your dress is beautiful, madam," I say, "but it has a tendency to make you appear older than you should look." "That is just what my husband says," she replies; "he dislikes this dress for that reason." "Then by no means have your portrait taken in it," I remarked. "What does he like?" "Well, he has an absurd idea that I should be taken in a dove-colored tea gown trimmed with lace and ribbon." "The very thing," I exclaim; "it would be a splendid toilette for a full-length panel picture." And after persuasion she is won over, to the satisfaction of all concerned.

The next stage is the most difficult of all, because it is when folks are beginning to grow old we have many defects to hide. Still a mother with tall daughters should look nice if suitably dressed and of a pleasant expression. That most telling feature of true beauty will ever remain in a good woman; as an example, there is our beloved Princess of Wales, and many others I could call to mind. The French idea of growing old gracefully should be more universally adopted than it is.

The last stage we arrive at is the elderly aspect of life. What is so becoming to an old lady as a generous addition of costly lace and ribbons to her dark dress? Let us arrange it softly round that beloved, if aged, throat, fold it across her dress, and place a dainty cap on her beautiful snowy hair, and give her a pure white cambric and lace handkerchief to hold in those now tremulous, once active hands. She is all gentleness, and peaceful must her picture be. Let us have the very best portrait of dear grandmother, better than any other, for dearer is she now to us than ever in her life. Her picture is all that will soon be left us of the beloved one we have known all our lives.

AMATEUR PRINTING.

BY C. M. SHIPMAN.

It has often occurred to me, when looking over the prints made by amateurs whom I know, what a great improvement could have been made had a little thought and trouble been expended to produce the best results with the negative used.

I want to say a few words as to this relation of subject with style of print made. On questioning an amateur, you usually find that his paper is of the one brand—one tone—one washing kind. Why doesn't he notice what a difference there is between prints which are toned red, and those toned brown or purple?

If he would tone his snow scenes to a cold tone, or, better still, use a different paper—say the platinotype—how much better they would look, and how much nearer the reality than a red or brown tone, which one invariably sees!

With the red tone pictures, if he can't get anything else, all he has to do is to squeegee them on a piece of ground glass, say his focussing glass, as I have often done, and let them dry and fall off, when he will have a beautiful matt surface on his pictures, which, I warrant, is far prettier than the rest of the batch. The prints for red tones should be well fixed in a case like this; use an extra bath.

How much prettier that little silver-print, "On the Pond," would look, with its strong contrasts, if it had been printed on the platinotype paper! The beauty is lost in a silver print.

Again, you have there a picture of some friend, but it has a dark background, formed by the obscure side of the room. Why not improve it by cutting out a piece of opaque paper, as nearly following the outline of the figure as possible, and go all round the intervening space with India ink and a brush? Then the prints

made will have a white ground, and your friend will walk out of the picture, so to speak.

You must put the paper on the back of plate, and ink on front or film, otherwise sensitive paper would not rest on film, causing a blurred result.

Why not take this plate to the retoucher (your supply man) and have it retouched? It will make a new picture out of it.

The amateur is not nearly as careful as he might be with regard to the mounting of his pictures. Never take a white mount if you can help it, and the yellow tinted ones are just as bad.

Get a good plain mount for your plain pictures of a grey tint; an excellent color is the greenish grey cardboard, which comes about 24 by 36 inches, and can be cut up to suit, thus being much cheaper than ready cut mounts.

Always have a margin of at least two inches in this kind of mount, as it appears much better, and never has a cheap look, which a narrow margin might give it.

For your platinotypes, the most beautiful mounts are those made by the manufacturers of the paper. They are a little expensive, but the pictures which you put on them, if well selected, will soon repay, and you will buy frames for them forthwith.

Do not use a pair of scissors for trimming your prints, but get a glass form and trim with a sharp knife. These forms are all sizes, 5 by 8 inches being about best; and you can trim any size print with it by moving it around. You will never get saw-tooth edges in your prints if trimmed in this way.

Another trouble which the amateur finds is in weighing his chemicals for toning baths, fixing baths, etc. The easiest way to overcome this is to make standard solutions in just the same way in which he makes his gold solution.

What a job it would be if he had to weigh off his gold every time he needed it!

For an example, he weighs off 8 oz. of hypo and dissolves it in 16 oz. of water; he then has a solution of 1:2. Now, say, he is making up a toning bath, which calls for 1 oz. of hypo, all he has to do is to take 2 oz. of the standard solution and he has it, or if it calls for $\frac{1}{2}$ oz. of hypo, he takes 1 oz. of the solution and he has it correct. In this way he can make up standard solutions of hypo, alum, carbonate of soda, borax, etc.

It often happens when he is in a hurry (oftenest in fact) that his hypo is all worked out or has been thrown away; he promptly sets to work with hypo and alum solution, soon has another bath prepared; whereas, if the salts had been in crystals, it would take hot water, which is bad, and at least ten minutes' shaking, to get them dissolved.

The amateur has a great deal (and I speak seriously) to contend with at home; and about the worse evil (so his mother will say) is "that row of bottles" which is always in the way, or some being broken and "staining everything all up." A scheme which I used under these conditions I will here present to you. I made a box large enough to hold all necessary bottles, and put a strap over the top like a basket, and this box was kept, when not being used, in a place selected on account of its freedom from cold, maternal wrath.

Now this little article was not intended for the professional amateur, nor the amateur professional, but the amateur who is known by his work.—*The Photo-American*.

BEGINNERS should abstain from varnishing their negatives. It is quite a knack to varnish properly, and many a fine negative has been irretrievably ruined by improper varnishing.

THE EXAMINATION OF PHOTOGRAPHIC LENSES.

It has been the habit of the club to devote one evening in the year to the discussion on lenses. It seems by no means a too liberal indulgence in so interesting a subject. But when we take into account its natural dryness and the difficulty of handling it in a really entertaining manner, it is but natural that comparatively few of us care to give up a greater number of evenings to it.

I read a paper to you two years ago on "Optical Glass." You all know how the extension in the manufacture of that article has given a new impetus to the manufacture of lenses; has set the scientific minds of our opticians to work, and has made it possible to produce the splendid instruments that now are in our hands. I am, therefore, more hopeful now that the chapter of lenses will be more interesting to you than it has ever been before, and thus I have more pluck in approaching the subject, unable as I feel myself to be to handle it in a proper and becoming manner.

Now, I do not propose to bring before you to-night, as has often been done in photographic societies, and usually in papers upon lenses, a row of algebraic formulæ or a string of equations interlarded with Greek letters, angles, sines, "pluses and minuses," but to bring everything I have to say within the scope of our ordinary conversational language.

Your hon. secretary has put me down for "Modern Lenses." I have thought that in order to make the paper most useful and interesting to you, I would describe the divers methods of testing lenses, and develop, with the means in my power, the principles on which the tests are based.

I will, therefore, suppose that we are about to purchase a lens—a "modern"

one, as that is what your secretary insists upon—and we want to see for ourselves that we shall have our money's worth.

Of all the tests we can apply, the one that will appeal to our senses best is the one by means of the ground-glass screen; we, therefore, turn to our familiar mahogany oracle, put her on the tripod, and make her divulge the secrets of the optician's laboratory.

Pinhole Camera.—You are familiar with the phenomenon presented to us in the pinhole camera. The image projected through a small orifice into a dark chamber has all the qualities of a perfect lens except *one*. There is perfect flatness of field, no aberration, no distortion, no astigmatism, but there is an absence of the one thing without which the others are no good to us—there is want of light.

It has been said that there is no focus to the pinhole projection; this is not correct. Every aperture has in relation to the distance of the screen on which the image is projected a proportionate greater or lesser sharpness of image.

For instance, at eight inches a hole of three-sixteenths will give the sharpest image, provided it be round and sharply cut, and of the thinnest possible material. This proportion represents the least deflection of the rays of light compatible with the admittance of diffused light into the dark chamber. There is another factor interfering with sharp definition—it is the chromatic aberration, which comes in already in this primitive mode of projection, for the violet and blue rays are deflected more than the green and yellow rays, a circumstance which also tends to make the image unsharp.

The pinhole camera may, therefore, be relegated to the department of scientific curiosities and toys; and though photographs may be taken with it which have a certain scientific interest, or may serve as a basis for chiaroscuros and fuzzotypes,

no one has yet been deterred by these pictures from buying the lenses he intended to acquire for his work, or, like Diogenes, throw away his tool as useless, when seeing another attain *his* end without it.

The insertion of the lens into the camera gives us the light we require, and brings with it the above enumerated defects which it is the scientific optician's duty and task to diminish, or entirely to eliminate.

Focus.—When we handle a lens, the first question that will occur to us is, What is its focus? We can take almost no interest in it without knowing the focal length, for from it depends the judgment that we form of its usefulness with regard to angular aperture, angle of view, size of image, etc., and we will make this our first consideration.

Focus is the distance between one of the principal points to its corresponding nodal point along the axis.

In a plano-convex, this principal point is on the convex surface, in the line of the optical axis. When we have such a lens—which may be a single landscape lens—we can apply a foot-rule and measure the distance, and the thing is done. With all other forms of lenses it is different.

Most of you know that every lens has two nodal or principal points inside, and two outside; all light pencils act as if they were broken (refracted) at the first plane, from whence they seem to be going straight (that is, parallel to the axis) through the lens, and break again at the other plane.

For every form of lens these planes shift, and though they are usually inside the body of a system, they are in some cases on the outside surface, or entirely outside of it. A doublet, especially a symmetrical one, acts in this respect exactly like a single bi-convex lens, and

its principal points may be, and mostly are, on one or the other side of the so-called optical centre.

Measuring from the diaphragm, and dividing the aperture of it into the so-measured focal distance, is therefore a proceeding based on *two incorrect data*, and tells you neither the focus nor the intensity correctly.

As we can, however, not measure by the simple means of a foot-rule right through the body of the lens, other means must be found.

The law of conjugate foci here comes to our aid, and knowing (as we do) that a subject is projected in its natural size at twice the focal distance, we have the means of measuring absolutely correct focus entirely outside the lens itself, and without disturbing it in any way.

It has been recommended to focus an object at its real size, and to measure from the object to the image and divide by four. This is approximately correct, but in some instances would be out by an inch or so.

The principle applied to correct measuring of the focus is that an object at a distance (not less than 300 foci) has its sharp image at the equivalent focus, while for an object whose image is focussed to a size equal to the object itself, the distance is exactly twice that of the equivalent focus. We have thus *two focal* lengths either side of the corresponding nodal points, and if from them we deduct one, having previously ascertained it, we have the absolute focal length left. The slide and diagram illustrate this.

In my practice I cut a piece of cardboard, say, four inches square, out of which I cut a square two inches; this is put against the window, and the camera racked out until the image is exactly the same size in the centre of the focussing screen, which has been marked with two and four inch squares.

This slide shows the underlying principle which is admirably laid down by Steinheil in his treatise upon lenses, when he traces the focus from the plane which lies in or near the lens perpendicular to the axis, where all light coming from a distance as parallel rays is refracted towards the axis to the point where such ray *cuts* the axis.

Demonstration by deflected beam.—Each lens has, according to the law of refraction—depending on its curvature and material—two fixed points on either side along the axis, which determine the angle at which it bends (refracts) the light; this angle is a *constant* factor for *all cases*. I illustrate it by this rule bent to a given angle at its joint, and all focal images formed by one lens are projected under the one invariable angle.

I know of no better practical illustration than this.

Some years ago Sir H. Grubb gave a diagram in the *British Journal Photographic Almanac*, illustrating the law of conjugate foci by a straight moving beam within a small angle on a point at the corner of a small square, the sides of which represent the exact focus of the lens.

This bent beam or rule illustrates it, in my opinion, better still, as it shows the angle at which the light is deflected and the law that this angle is always the same. If you follow the movement of the two arms of the beam as they are rotated, you see that in position A one represents light coming from the distance refracted at P, the principal plane, and crossing the axis at F. Now, rotating this two-armed rule until the posterior arm cuts the axis at F' at twice the distance from the plane P, we find that the anterior arm has reached the crossing point O on the other side at exactly the same distance, viz., two focal lengths. It is evident that every intermediate conjugate could be read from the diagram; we have only to mark our axis

out by inches and read the foci off for every measurable distance.

You will observe that we have left out of consideration the thickness of the lens. There are two planes within each lens, and their distance from one another would have to be deducted from the result if we were to measure from point O to F'—that is, from object to focus.

When I say that this principle holds good for every lens, some might ask whether such a lens as the tele-photographic is included. I say yes, it is, but with this difference, that the plane of its principal point is entirely outside the combination, and a long way in front of the front lens, but, as slide shows, subject to the same principle.

(*To be continued.*)

BOOKS AND PICTURES RECEIVED.

The Practical Photographer's First Handbook. By MATHEW SURFACE. Published by Percy Lund & Co., Bradford, England.

An interesting and instructive little booklet for the beginner. Well illustrated and containing an appendix made up of useful formulæ. Price, sixpence.

The Amateur Photographer's Handbook. By ARTHUR HOPE. Published by Fleming H. Revell Company, Chicago and Toronto.

This is one of the best books for the guidance and instruction of the amateur that we have yet seen. Beginning with the first outfit, it takes the reader in a thoroughly instructive manner through the many different phases of the art. It is an instruction book that really instructs. The minor explanations that are of such vital importance to the beginner, and so often passed over in books of this sort, are here given. Another good feature is the lack of that, "For sale by the publisher,"

around which so many instruction (?) books are now written. The tenth edition is now out, revised and enlarged.

From the studio of Oliver T. Wright comes to us two well taken and finished pictures of a very pretty girl.

The Rochester Optical Co.'s descriptive catalogue and price list for 1895 is gotten up in the usual good taste of the company. It comprises a very complete list of the entire line manufactured by this well-known firm, and should be in the hands of every prospective buyer.

THE 5000 BEST BOOKS.—When a woman sends her subscription to *The Ladies' Home Journal* special privileges seem to go with it. Besides getting her full money's worth in the magazine, she can take the fullest advantage of a perfect educational plan by which she can educate her daughters or sons at the best colleges in the country free of charge, and now the *Journal* has arranged it so that she can buy her books—even a single book at a time—at prices heretofore obtained only by large buyers. There comes to us from this magazine a very artistically gotten-up illustrated booklet of over 250 pages, called "5000 Books," which serves as an easy guide to the best books in any department of reading. This guide is very well done. The best literary experts of New York, Boston and Philadelphia were engaged by the *Journal* to select the five thousand books which it presents as the most desirable for a home library, and their work has been admirably carried out. Very clear, explanatory comments are given by these men of books, and besides there are given not less than 160 portraits of leading authors. No book will, perhaps, do so much to extend good reading as this guide, so carefully gotten up, so beautifully printed, and so generously offered, free of charge, by the publishers of *The Ladies' Home Journal*. "5000 Books" is unquestion-

ably the best and easiest guide to a wise selection of books that has been issued for a long time.

NOTICE BOARD.

It is a well-known fact that many important inventions are matters of chance. We have now to record one in photographic apparatus which, while simple, nevertheless offers the attainment of artistic results which are otherwise impossible. Mr. Ernest Edwards, President of the Photo-Gravure Co., is the owner of several of the Diaphragm Shutters manufactured by the Bausch & Lomb Optical Co. He has found that with them he can obtain prolonged time exposure, and instantaneous as well, with one aperture. In the *Sun and Shade* he says that "he attaches importance to this double exposure, where sharpness is obtained by the long exposure with the small stop, with detail in the shadows, and roundness is obtained by the short exposure with the large stop, without any apparent loss of sharpness, and has found it more satisfying than anything he has yet used." The Bausch & Lomb Optical Co. find that their shutters can be made to accomplish this purpose without detriment to their other admirable qualities, and they will so supply them if desired at the regular price, and will change those now in use at a nominal charge, giving all necessary instructions for using them as Mr. Edwards does. Mr. A. P. Yates, of "Empire State Express" fame, who has in all his work used the same shutter, has had the above improvement added and obtained the same satisfying results as Mr. Edwards.

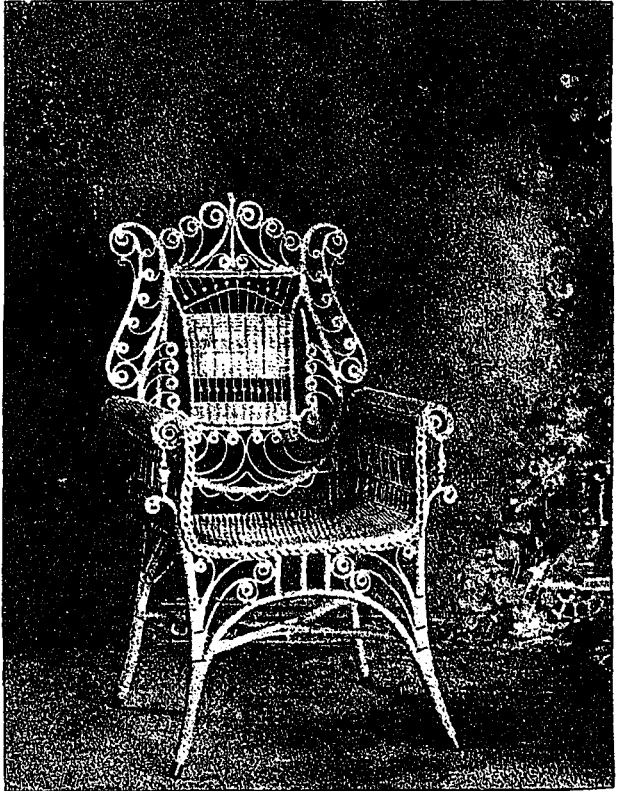
Messrs. Sharpe, Eakins & Ferris are rapidly building up a solid business through the Dominion. We call the attention of our readers to the increased space occupied by this firm in this issue, in which will be found announcements of a nature to interest every photographer. In "Imperial" plates and "Kosmos"

paper; this firm have two lines that will easily make a place for themselves in Canada. We have had an opportunity of trying both plates and paper, finding them fully up to the claims of the makers. Imperial plates will be found especially good for studio work, giving results that are all that could be wished for. The firm carries a full line of photo stock. If in want of anything it will pay you to get quotations from them. Samples of "Kosmos" paper can be obtained from them on application.

The "Standpat" Chair shown in the illustration, is an accessory lately put on the market by F. A. Mulholland & Co., of Toronto. It sprang at once into popularity—the sales being so large as to keep the firm hustling to fill the orders. It photographs exceptionally well. The back of chair is detachable, and gives, when removed, a stylish "Princess" chair. The price is most reasonable. Full particulars can be had from Messrs. Mulholland & Co.

W. Watson & Sons, England, evidently build their cameras in the best possible manner. There was a Watson "Acme" camera in town last week (accompanied by its enthusiastic owner) that had been to India and back, nearly all over England, and working all the time. "It's just as good as the day I bought it," said the owner, and it looked it.

The Manhattan Optical Co.'s traveller, Mr. George L. Ehrmann, called on us lately. He was making a hurried trip through Canada in the interests of his house and reported business as good as could be expected on a first trip. Mr. Ehrmann is a son of the late Charles Ehrmann, who was for many years editorially connected with the *Photo Times*.



THE "STANDPAT" CHAIR

Ilo Paper users will not be surprised to hear that the Grand prize pictures of the late Indiana convention was on "Ilo" paper. It's a good paper—have you tried it?

Mr. C. F. Stanley was in town a few hours last week, on his way west in the interests of his popular plate.

Mr. Hopkins, of St. Thomas, was in town lately arranging for the manufacture of his new flashlight apparatus. He had a number of samples of work done by his machine with him, from the quality of which we are inclined to think that friend Jim has "struck a winner."

Illinois College of Photography is the name of a new establishment of this kind just started at Effingham, Ill. Their annual catalogue for 1895-6 may be had on application.

The No. 4 Folding Kodet, special, of the Eastman Kodak Company is certainly a beauty for the price. If you intend buying, look it up.

TORONTO CAMERA CLUB.

The regular season closed on Monday, April 29th, and the Monday evening meetings will therefore be discontinued until Monday, October 7th.

Work on the proposed alterations to the Club rooms will be commenced about May 10th, and will be completed in about one month, during which time no cards will be issued for the studio. As the alterations include the rearrangement of the dark room, no developing or similar work can be done in the rooms after the repairs are commenced. Members are advised to remove all fragile articles from their lockers.

The Canadian Lantern Slide Interchange has been completed, and proved very interesting. A steady advance was shown by the Montreal and Hamilton Clubs, and the St. John Club, the youngest member, showed it possessed some good workers.

Since sending out the last notice, the following gentlemen have been elected as members: Harry McMaster, G. E. Lumsden, Walter E. Wilmott, J. F. Deeks, A.

G. Malcolm, R. M. Olivant, W. Sanford Alley, J. T. R. Stinson and W. H. Martin.

As soon as the alterations are completed, the rooms will be kept in order and open for the use of the members during the summer.

ERNEST M. LAKE, *Sec.-Treas.*

MONTREAL CAMERA CLUB.

The set of lantern slides from the St. John, N.B., Camera Club was shown at the rooms on April 2nd, and that of the Hamilton Club on April 23rd, and were very much admired by the members.

It is to be hoped that by next year a Canadian Interchange will be formed, as there is no doubt the members are helped on very much by seeing work done in the other parts of the country.

The prize photographs and lantern slides of the CANADIAN PHOTOGRAPHIC JOURNAL were received here about April 15th, and the photographs were hung around the walls of the Club rooms, where they showed to great advantage.

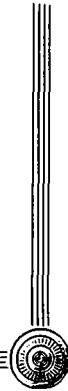
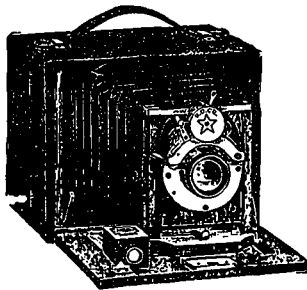
The president, officers and committee invited the members and their friends to an "At Home" on April 23rd, to view this collection of photographs of the CANADIAN PHOTOGRAPHIC JOURNAL, and a very pleasant evening was spent. The rooms were well filled, about 130 guests being present. After the photographs had been on view for about an hour, the slides were thrown on the screen by the electric lantern, which was manipulated by Mr. Howard T. Barnes. Refreshments were served during the evening in the studio, which was prettily decorated for the occasion, and the guests left shortly before midnight.

The rooms have been open during last week, and will continue open until the end of this week every afternoon and evening to enable outsiders to see these prize photographs, and a large number have

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Premo C,	"	20.00	"	27.00
Premo,	"	30.00	"	38.00

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already taken advantage of the offer, so that the member of the committee on duty has had his time fully occupied showing the visitors over the place.

The annual meeting of the Club was held at the rooms on Tuesday evening, May 7th, and the usual reports were handed in, which made a very good showing for the past year. The election of officers and committee for the coming year then took place, and resulted as follows: President, E. Stanger; Vice-President, A. J. Ferguson; Hon. Secretary, Alfred W. Cole, 28 Victoria Street; Hon. Treasurer, A. C. Lyman. Executive Committee: C. Lester, George Sumner, Howard T. Barnes, George McDougall, Frank R. Redpath and Nevill Norton Evans.

Montreal, May 8th, 1895.

COPYRIGHT LAW.

Editor CANADIAN PHOTO. JOURNAL:

SIR,—At an informal meeting held by a number of representative photographers of this city, March 14, 1895, it was unanimously decided to issue the following prospectus to the prominent members of our profession, submitting the plan proposed therein to their earliest consideration, and requesting their immediate reply to same—address, Committee of the proposed Photographers' Copyright League, 13-15 West Twenty-fourth Street, New York.

Art in photography is at last a generally acknowledged factor, and the productions of photographers have become the chief source of supply for the illustrations which fill newspapers and periodicals. Even the courts now recognize that fact and extend the protection of the copyright law to all such photographers as are "artistic."

During the past ten years a vigorous battle has been waging between a few

determined photographers on the one hand, and an indiscriminate host of lithographers and other pirates, on the other. The latter had become so used to appropriating without leave whatever they saw was good and original in photographic publications, giving in return neither remuneration nor even credit, and the results to them were so profitable, that the effort to break them of the pernicious habit was no easy matter. On the contrary it developed rapidly into a serious and bitterly contested struggle.

Thus far each photographer has done his fighting single-handed, and generally against large and powerful corporations. In spite of this, however, the result has been almost uniformly a complete victory for the photographer, decision after decision being rendered in his favor by the courts, though often only after years of burdensome and expensive litigation.

In view of these facts and other reasons which follow, we deem it wise and expedient, at this time, to band our best men together, so that in future a united front will be opposed to infringers of all kinds. There have been many demands within the past few years for such a union, and we know of no question now rife in the fraternity in which a community of interests would be more desirable, mutual and in every way advantageous to us all.

Our proposition is that an organization (to be known as the Photographers' Copyright League of America) be formed at once, and take upon itself, by means of an advisory committee to be elected annually, the prosecution of all infringers of the copyright works of any of its members, whenever a proper case for such prosecution is presented by him; that it defray all expenses of same; and that in return, so as to make it self-supporting, a fair percentage of all recoveries so obtained, be turned into the treasury of the

(Continued on page xii.)