PHOTO BY
C. S. COCHRAN

ON
STANLEY PLATE.

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Focusing and the Use of Diaphragms.

IN cross-heading this article I have followed the order adopted by the publishers in their invitation to competitors, but as correct focusing depends to a large extent on the proper use of diaphragms or stops, I shall reverse the order, and deal with them first.

The photographic lenses in general use are of two classes, single and compound, and with both, stops are employed, although for very different purposes; in the first they are absolutely necessary, while in the second they are only used as a means of improvement.

A single lens, often spoken of as a landscape lens, whether plano-convex or meniscus, cannot be corrected for spherical aberration, the rays from towards the margin coming to a focus nearer the lens than those from towards the centre. The only remedy for this, unless the image were to be received on a concave plate, is the placing of a stop at some distance in front of the lens, so as to cut off the objectionable marginal rays, and let the picture be formed only of such central pencils as come practically to a focus on one plane.

In the case of a compound lens, spherical aberration has to a large extent been eliminated, so that with a full working aperture, as fixed by the maker, it will, if of a good quality, produce a sharp image, but a sharp image of only such objects as are on one plane; an object at, say, twelve feet being perfectly sharp, while those at ten and fourteen are out of focus. This applies most particularly to portrait lenses, but in a less degree to most compound varieties, is generally spoken of as want of depth of focus, and remedied more or less in proportion to the size of the stop employed. This will be easily understood from a consideration of the fact that the rays from the upper and lower margins of, say, a lens of three inches diameter cross, or come to a focus at, say, a distance of eight inches, at a much wider angle than those from the upper and lower edges of, say, a half-inch stop, something, in fact, like as 20 to 3.

To secure a sharp image of the rays crossing at the wider angle, the focusing screen must be placed exactly at the crossing point, while on those at the much smaller angle it may be moved for a certain distance to and fro without visibly affecting the sharpness. In other words, objects both in front and behind that which had been specially focused appear sufficiently sharp, and thus "depth of focus" is obtained.

Although the securing of depth of focus be the main object of the stop in a compound lens, it also tends to flatten the field. Except in the case of the new "Anastigmat," it has been hitherto impossible to altogether eliminate spherical aberration from even the best type of compound lens, and although the residue is too small to affect portraiture or landscape work, it is inimical to the successful copying of maps and plans, and although the depth of focus is not needed there, the small stop is absolutely essential to secure perfect marginal definition.

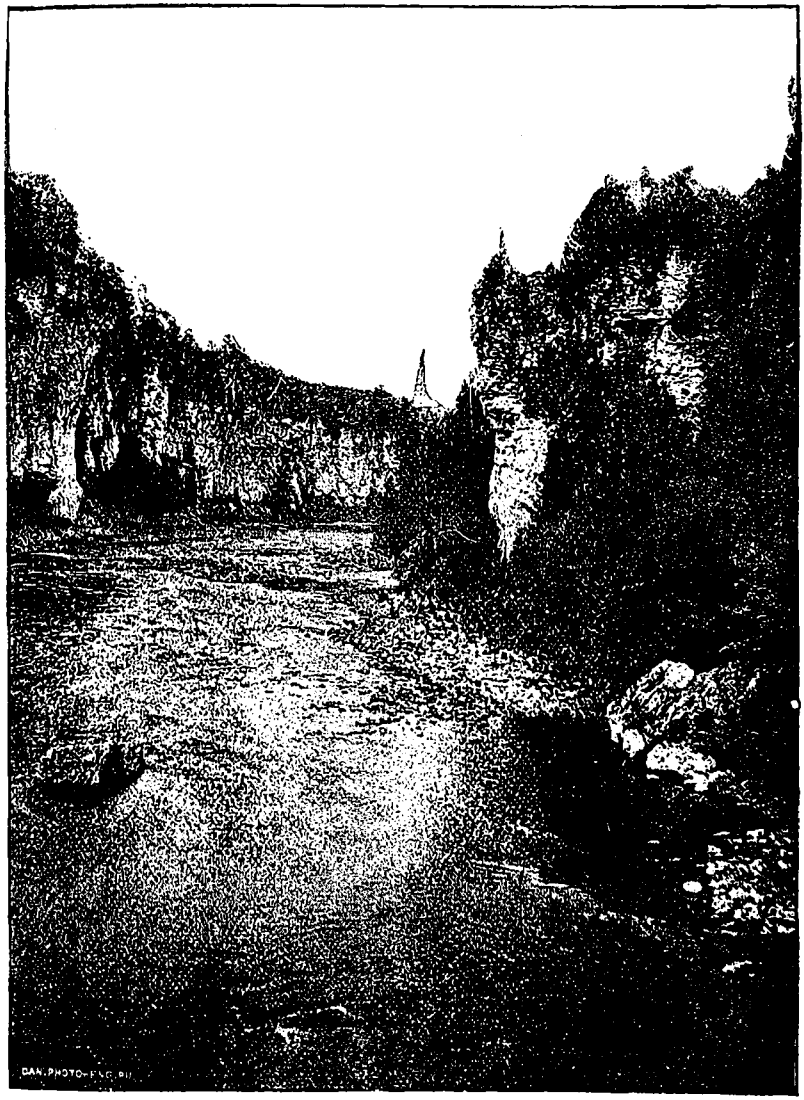
Of course, it goes without saying, that the smaller the stop the less will be the light that is transmitted to the plate, and consequently the longer will be the exposure, but the amateur, and the professional also, as he is not unfrequently in blissful ignorance of the nature and properties of his lens, should remember that the size of the stop *per se* has no meaning, and only becomes intelligible when its relation to the focal length of the lens is known.

Stops, therefore, should always be thought of and spoken of in that relation, viz., as *f*/x, x being the proportion the aperture bears to the focus of the lens. Until a few years ago, each maker made the apertures of his stops according to his own fancy, although there was a kind of general understanding that each smaller stop required twice the exposure of its next larger neighbor, but modern opticians generally adopt what is known as the U. S., or universal system.

The largest working aperture of the average portrait lens is one-fourth of its focal length, and the stop, consequently, is marked *f*/4. The U. S. takes that as the unit, and also marks it No. 1. A little calculation shows that if the aperture be reduced to 1½-fifths of the focal length, it will admit just half of the light admitted by the one-fourth, and it is marked *f*/5-6, with the U. S. No. 2, and so on through as many stops as can possibly be required. Thus: *f*/8, No. 4; *f*/11-3, No. 8; *f*/16, No. 16; *f*/22-6, No. 32; *f*/32, No. 64; *f*/45-2, No. 128.

In this way, not only is the relation which each stop bears to the focal length of the lens shown, but also, the exposure required with any one stop on any particular plate being known, the time with any of the others is seen at a glance. For example, if it is known that *f*/22 needs two seconds, *f*/32 will need four, and *f*/16 only one; or if *f*/4 requires one second, then the U. S. numbers behind each stop give the respective number of seconds needed.

Amateurs whose lenses are not so marked could hardly take the trouble to alter the openings of their stops, but they should certainly ascertain the *f* value of each of them, so as to be able to communicate intelligibly with their brethren. The first step is, of course, to ascertain the equivalent focus of the lens. If a single one, all that is required is to focus carefully some distant object, and measure the distance between the back of the lens and the focusing screen. With a compound lens the operation is more complicated. There are various methods by which



GRAND RIVER, ELORA.—F. MANCHEE.

it can be accurately accomplished, some of which may be printed in THE CANADIAN PHOTOGRAPHIC JOURNAL by and by, but in the meantime it may be managed with sufficient accuracy in a simple way. Focus, as in the case of a single lens, on a distant object, and measure the distance between the diaphragm slot and the focusing screen, which generally will be near enough for most practical purposes. Suppose the focus is found to be 10 inches; bring that to tenths = 100, and ascertain the number of tenths in each of the stops. Suppose one should be four-tenths; divide the 100 by 4, which will give 25, and shows that stop should be marked *f*/25, and so on with all the rest. A smaller fraction than a tenth, a sixteenth, or, better still, a millimeter, for the reduction of the focus and measurement of the stop, will admit of more refined measurements, but tenths will do very well.

Having thus laid the foundation, as focusing and the proper use of the stops go hand in hand, I now proceed to that important operation.

The first essential is a very fine ground glass. If the camera has not that, it may be improved by oiling, or, better still, by rubbing in a solution of wax in turpentine, and rubbing off as much as possible. For very fine work a good plan is to cement with Canada balsam a microscopic glass cover in the centre of the focusing screen, and employ a focusing glass or Ramsden's eyepiece adjusted so that its focus falls exactly on the front of the focusing screen.

If the object in view be such as the copying of a map, whose sharpness to the edges is a *sine qua non*, the adjustments as to size, position, etc., may be made with full aperture or a large stop, and then stops smaller and smaller must be put in and the image examined until the desired result is obtained.

For portraiture, sharpness all over the plate is not necessary, and sharp backgrounds not desirable. Therefore *f*/4 or *f*/8 should be used, and in the case of sitting figures where the projecting knees may be out of focus when the head is in, the swing-back should be employed as a means of correction.

It is in landscape work, however, that focusing assumes almost the dignity of a science, and in which, from an art point of view, the use or abuse of the stop may make or mar a picture. Those whose only aim is to produce what are sometimes called topographical landscapes have only simple duties to perform—to ascertain the point from which the most pleasing composition can be obtained, focus sharply any prominent object, slip in stop *f*/32 or smaller, and give the necessary exposure. But pictures, or rather photographs, so produced are destitute of that which gives the greatest charm to a landscape—atmosphere; and as the various distances are all almost equally sharp, the unsatisfied eye wanders, like Noah's dove, from point to point without finding a place on which to rest.

The picture maker, or true photographic artist, has a different end in view. He wants to make a picture in which the eye shall be led to that which is its *motif* and made to rest there, corraled in from wandering, as it were, by the less sharply defined subordinate parts, while a kind of halo of mystery is suggested by the almost imperceptible atmospheric haze, rather felt than seen in the distance. He, too, like his topographical friend, places his camera on the well-studied point of view, and knowing that the effect of a picture, when confined within the limits of the

focusing screen, is often very different from that produced by looking at it in the open, carefully examines it with a large stop, or full aperture. Composition and light and shade satisfactory, and the *motif* clearly defined in his mind, the general effect is carefully studied, and, until he becomes indeed an experienced hand, tried with stops of various sizes and even by putting the principal points of the *motif* itself more or less out of focus. Far be it from me to recommend the principles of the "fuzzie school," but there *are* subjects that, even when they are principals, are improved by the removal of razor-edged sharpness.

Working on these lines, the photographic artist will find that the great majority of subjects will be most successfully and artistically photographed with stops varying from *f*/16 to *f*/22, and I may add that I have exhibited pictures that were both admired and medaled, and the only stop I carry is three inches of hard rubber having at one end an aperture *f*/16 and one *f*/22 at the other.

JOHN CLARK.

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Long-Focus Single Lenses from Rectilinear Compounds.

A QUESTION frequently arises as to whether it is not possible to employ, for landscape purposes, one only of the two lenses that form a rectilinear combination. If the front lens be removed from the mount, and the back one alone left *in situ*, a very excellent landscape objective, of about double the focus of the combination, is obtained. When used in this way, the diaphragm will be found to be rather too close to the first surface of the lens, and, to ensure the best results, the distance between them must be increased. This is sometimes conveniently effected by placing a cap, pierced with appropriate apertures, on the outer end of the tube, from which the anterior lens has now been removed. It is occasionally done, too, by a supplementary ring screw in the rear end of the mount, and into which the lens in turn is adapted.

It will be observed that this implies a very considerable lengthening of the camera, and it is often found, to the chagrin of the user, that the camera will not extend sufficiently far to admit of the subject being brought into focus, for it must be borne in mind that, although the focal centre—that portion from which, in a *combination*, the focus is to be measured—lies practically mid-way between the lenses, or at the centre of the tube, this is not the case when one of the lenses is to used alone in the manner described, for now the focal centre is transferred to a point outside of the convex surface of the lens, and actually nearer to the ground glass of the camera than the lens. From this it will be seen that the prolongation of the camera must, in order to admit of a single component being thus employed, extend considerably farther than at first sight would be anticipated.

But what is to be done when no such distension is permissible? Although it is doubtless best to employ a single lens with its flatter or concave side to the object, it is also possible to use it when reversed. This is more particularly the case when, as in the instance before us, it happens to be a rather deep meniscus, for the components of lenses of the rapid rectilinear type are invariably menisci. If, therefore, instead of removing and laying aside the front lens of such a combina-

tion, we treat the back one in that way and leave the front lens itself in the mount, we shall find that not only do we get an image the same size as when the back lens was used, and that we get good bright definition on the plate with a moderate stop, but we also obtain these advantages with a distension of the camera less by several inches than when the back element of the combination is employed situated at the rear end of the mount. The precise amount we gain, or, in other words, the amount practically added to the extension of the camera, equals the entire length of the brass mount of the lens, in addition to the small portion intervening between the outer surface of each lens and the optical centre, which, as we have pointed out, is in such a case located outside of the convex surface. A camera, therefore, which would not expand nearly sufficient to permit of the employment of a single component of the combination when the back lens is in question, may frequently be utilized with entire satisfaction when the front lens, still remaining in its place, is used.

We know very well that a lens, when worked in this position, with the stop behind it, will not cover a large field so flatly as when in a reversed position; but, when employed, as it must be, with a stop, it will cover with considerable brightness and sharpness a field at least as large as that covered by the combination, even when well stopped down.

Of late we have employed this system to its full extent. Two of our cameras, one of them a 10 x 8 and the other a 6½ x 4¼, possess a distending range which, while considerably in excess of that required for the combination lenses usually employed, yet falls short of what is requisite when the single half of any of them is employed in the old way. But by adopting the method now suggested--and it applies to both of the cameras in question—an enlarged view, the objects being double the size of what can be obtained by the combination, is now got with the greatest ease, and with from half an inch to an inch of camera distension to spare.

We need scarcely point out that many of the two compounds forming the lenses of the rectilinear and symmetrical are not absolutely indentical one with another, the back lens being frequently shorter in focus than the front. In this case it only remains for the photographer to select the particular combination of that focus which coincides approximately with the length of the camera draw.—*British Journal.*

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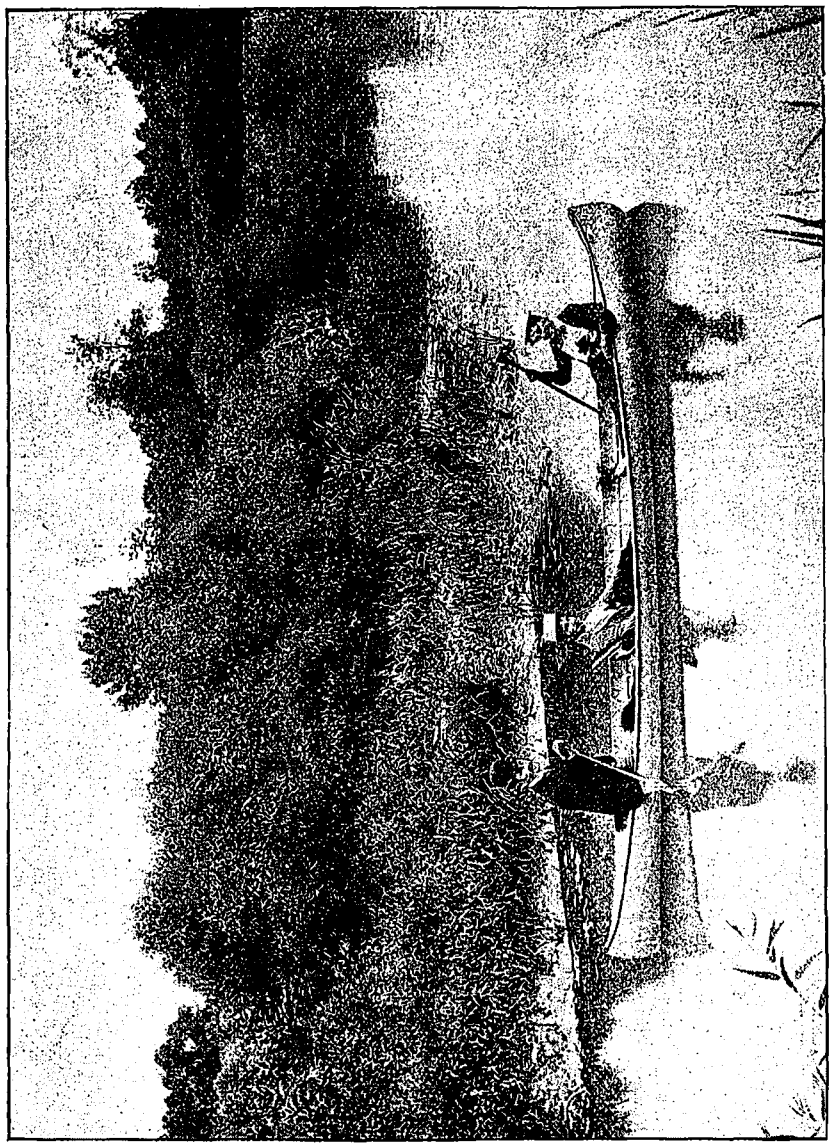
Babies' Day.

ROCKVILLE is fortunate in having two photographic galleries, both of which turn out work considerably above the average. Of course, it goes without saying that considerable rivalry exists between them. Some days ago this spirit of get-aheadiveness took a turn that was highly approved of and fully appreciated by the mothers of that charming city. The proprietors of one of the galleries conceived the idea of having a babies' day, and advertised to the world that they would on that day devote themselves exclusively to immortalizing the features of the future rulers of the country, as also those of the future *rulers* of the said rulers. And oh! what a crowd was there, my countrymen! They came for miles around—in carriages of both hand and horse power; in arms and sometimes *to* arms (twins).



SATURDAY AFTERNOON ON THE HUMBER.—E. HAVELOCK WALSH.

Every kind of baby was there, from the staid and stylish little lady with the sunny curls and dainty, soft laces to the poor little dirty-faced, bald-headed "kid," whose sole covering was its little ragged print slip, and whose eyes, in open wonder, stared at its more fortunate sister in seeming surprise that, having together left the angels so short a time before, both dressed alike, there should now be such a difference. However, they were just as happy, and all, for such a sea of babies, were very good. One by one they were brought before the camera, "taken," and carried out, after each had left its name as a deposit for the one glossy picture each was to receive. This ceaseless flow of babies was kept up the entire day, and as the sun went down and the last little tot was gone, the operators, who had so nobly braved the battle, sank down "all in a heap" and murmured, "Thank the Lord! it's over at last. More than *two hundred babies* have been taken in *one day* and we still live."

The same scene was enacted a few days later at the other gallery, and now there are more pictures of cute little darlings to the square inch in Brockville and more delighted mothers than in any town of its size in Canada.

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"Music hath charms to soothe the savage breast!" Is this why a brass band is put around a bull-dog's neck?

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Only those who are somewhat familiar with the working of the American "Aristo" paper can realize how simple is the method of work and how readily it lends itself to the richest tones and still retains its brilliant high lights clean and white. We are more pleased at its possibilities with each new lot of prints we see.

"Free Crayons."

THE festive "free crayon" canvasser has settled down upon Kingston and the towns surrounding that interesting old place, and has induced many of the old settlers to give up various sums in good coin of the realm. The total sum secured by these gents of plausible speech and kind hearts, inasmuch as they go abroad in the land giving away large and beautifully (?) executed crayons to all who want them (and are willing to pay $10 for a $2 frame in order to get some loved picture back) is said to extend a considerable way up into the hundreds. It seems that their kindness (?) is not appreciated by all, as a number of serious complaints are heard from the section now receiving the attention of these gents of exceeding promise. A late issue of the Kingston *Whig* has the following article on their doings:

Crayon Portrait Frauds.

The city and district are being invaded by crayon picture adventurers. Some of these agents canvass with a well-finished portrait, selling for 50c., explaining the low price by saying that they make thousands, and that their object in selling so cheap is to get their work well advertised, after which they will raise the price. If the agent gets an order he collects the 50c. at once and gives a ticket which entitles the bearer to call at their office and get a life-size, hand finished crayon portrait free without further charge by presenting ticket and *purchasing a frame*. It is needless to say that the agents have no cheap frames to sell, they don't deal in cheap goods, their frames are all first-class. Their prices are from $6 to $10 each.

When the agent passes over the ticket if the buyer detects that it is necessary to purchase a frame before getting the crayon, the agent immediately says that that has been changed

and crosses the words out with a pencil, giving the impression that such purchase is unnecessary. When, however, the buyer presents the ticket he is accused of having crossed out the words himself and given abuse and even threatened with trouble unless he selects a frame and pays a deposit on it.

The agents never give a small picture back; they insist on the terms of the so-called agreement being carried out. As a result thousands of people, who have entrusted them with valuable pictures, are likely to lose through inability to pay the exorbitant price charged for frames.

This manner of doing business does incalculable harm to the regular business men, and should be vigorously stamped out. The agents have no stake in the country, no money invested in apparatus, and their so-called "finest hand-finished crayons" are but cheap solar prints, produced in the States and touched up by some artless individual who couldn't get an easel in a responsible studio for love or money. Thousands of dollars have already been sent out of the country. We do not have much sympathy for people who desert their own townsmen and reputable merchants, for strangers like portrait artists and hay fork adventurers. But it is our duty at least to warn them.

And one of the photographers of that city seemingly intends to fight them with their own weapons, as the following advertisement in the same paper will show:

FREE

ONE LARGE CRAYON PORTRAIT, 14x17, TO every purchaser of One Dozen Cabinet Photos, or if preferred by purchasing a frame from us, will give you a crayon free. T. W. POWELL, 165 Princess Street. This offer is good for sixty days only. Deal with those you know and have a stake in the country. Beware of frauds who never return pictures you give them without paying an extraordinary price for frames.

When will people learn that it is not possible to get "something for nothing"? We do not intend to harp on the subject of free crayon frauds as some journals do, for a photograph journal does not reach the class of people who are daily gulled by these fellows. It is the daily press who should issue the warning note. We hope no Canadian photographer will give them countenance; rather expose them whenever possible.

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Photography and Photo-Mechanical Printing.*

BY PAUL L. WATERLOW.

III.

THE next process to which we would direct your attention is the one known as the Woodbury process. This was discovered, perfected, and carried out on a large scale by Mr. W. B. Woodbury.

The principle of the process is to obtain a metal mould carrying the picture upon it. Into this is poured a gelatinous ink made of lampblack and gelatine (the pigment that is used for the color can, of course, be varied). This, when warm, and in a liquid state, flows into all the hollows and gradations of the mould, and a piece of perfectly smooth paper, which has been previously waterproofed with shellac, is then placed on this liquid ink, and, after the superfluous ink is squeezed out by means of a perfectly level piece of plate glass being placed upon the top of the mould, the ink is allowed to set. The paper can then be peeled off, and the picture will be found adhering to the paper, its effect of light and shade being caused by the different thicknesses of the gelatine ink which has been picked out of the mould: that is, if you were to take this picture when wet, and look at it edgeways, you would find that it is in relief. Where the mould was highest, and the ink squeezed away, you would get the high lights;

*Lectures delivered before the Officers of the Royal Engineers at the Military School, Chatham.

where deepest, or hollow, giving the deep shadows. The picture thus obtained is now put into a solution of alum, in order to render the gelatine image insoluble in water. So much for the general principle of Woodbury type. We will now show you how you can work the process yourselves.

The first thing is to obtain a relief, and to get this you dissolve about four parts of easily soluble gelantine and two parts of lump sugar in fifteen parts of warm water; into this solution about one part of bichromate of potash is added; the solution is then strained through muslin, and poured upon a waxed glass plate, which has been accurately levelled; the warm gelatine spreads itself over the plate, forming a pretty thick gelatine layer, which in the course of a few days will dry, forming a uniform sheet, or can be dried quicker by the use of a chloride of calcium oven, and the film presents this appearance when dry. You have now a film which is sensitive to light, and this is exposed under a negative in a strong light, probably requiring about two hours or so in such light as we have in the middle of the day; after the exposure the film is taken out and allowed to soak in hot water. The parts of the film which have been affected by the light are insoluble, owing to the oxidizing action of the light upon the sensitized gelatine, as previously explained to you; where it has been protected by the different shades in the negative, it will be soluble and insoluble according to the amount of light which has penetrated through to it. When the washing is finished, and the film is dry, we have a film in relief similar to the one which we now hold up, and and it is from this basis that all the blocks are obtained which we use in Woodbury printing. This gelatine relief is very hard, and will stand an enormous amount of pressure, being absolutely incompressible. You will see, if you look carefully at it, that it carries the picture in different gradations and thicknesses of gelatine, and, if you pass your hand over it, you will find that it is all up and down.

We now proceed to make the printing blocks. The relief is placed upon a steel bed, such as we have here, round which there are fixed projecting edges (these edges prevent the lead spreading sideways under the pressure of the hydraulic press). The relief, together with a sheet of lead about a quarter of an inch thick, is now laid upon the steel bed and put into the hydraulic press, and a pressure given to the whole ranging from 200 to 500 tons. When taken out, you find that the lead has been pressed into the relief, and carries the image upon its surface, only, of course, the exact reverse to that of the relief. Here is a block which has been pressed in this way; here is a relief from which it was taken. We will now pull a print from a similar block to this which we have already fitted up in the press, so that you may see practically how the results of this beautiful process are obtained.

There are several developments and branches of this process, such as the stannotype and other methods; but, as they are comparatively unimportant, we will not go into this matter now. The Woodbury principle of raised relief is used by Boussod & Valladon, of Paris, for making some of their beautiful photogravure plates; but, of course, in this instance, the relief has to carry a grain, and an electrotype is made from the grained relief, which is afterwards carefully finished by hand.

Collotype.

We have now to endeavor to explain to you the working of one of the most

useful processes of photo-mechanical printing, and one which, perhaps, boasts of a greater variety of names than any other modern process. It is generally known by the name of collotype; the Germans call it "Lichtdruck," the French "phototypie," the Americans "phototype," and we English have given it the titles of "photo-print," "helio-type," "autotype," "photophane," "photo-mezzotype," "graphotone," etc. The basis of the process is the action of lights on compounds of gelatine with bichromate of potash, and in principle it is closely allied to the process we have described to you of phtolitography, only in this case, not only lines, but all the tones of a photograph from nature can be reproduced; and, as a matter of fact, when prints produced by the collotype process are printed on glazed paper with a suitable ink, there is scacely any perceptible difference between them and ordinary photographs. Of photo-mechanical printing processes collotype is the most useful and popular; the rapidity by which the prints can be produced render them exceedingly cheap, and it is largely employed for commercial as well as artistic purposes.

We will describe the process as it is generally worked in this country, and afterwards try to show you how the plates are printed.

The basis or principle is, as we have said, the well-known action of light on bichromated gelatine, and we have already told you that if a film of gelantine and bichromate is exposed under a negative, then washed and dried, it will, when treated like a lithographic stone, absorb water where the film has been protected by the dense parts of the negative, and refuse greasy ink; whilst, in the places where light has obtained access to the plate through the clear parts of the negative, it will refuse water and take ink. A collotype plate will not only take ink where absolutely clean glass occurs in the negative, but it will take the ink in the half-tones in exact gradations corresponding to the amount of light passing through the negative.

Various substances are used to support the film of gelatine during the printing, which, we may say, is precisely the same as for lithography, and, in fact, lithographic stones were used at first as a support. Copper plates also have been employed, but now we believe that sheets of plate glass, about half an inch thick and ground on the surface, are universally adopted.

The preparation of collotype plates is not difficult. The first thing necessary is a suitable oven, in which to dry the film of sensitized gelatine, for with this process rapid drying at a considerable heat is necessary. A large box with a sheet-iron bottom, which can be heated with Bunsen burners, answers very well, though hot-water pipes are preferable. This drying box should have a lid covered with canvas, to permit quick evaporation, and the interior must be fitted with adjustable points, on which the plates can be accurately leveled. There should also be a thermometer fixed with the bulb inside the box, so that the amount of heat can be readily adjusted. The chemical composition of the films is the same as that employed in photo-lithography, with the difference that the gelatine should be hard and pure. The inking and printing of collotype plates is necessarily an operation which places a great strain on the holding power of a film of wet gelatine to its glass support, a pressure of several tons being sometimes required to obtain the impression on paper, and a powerful substratum is used to cement the printing surface

to its glass support. The following is approximately the formula for the substratum :

Albumen	10 oz.
Water glass	4 oz.
Water	10 oz.

This solution is filtered and flowed over the surface of the ground glass, which is then dried after a slight washing. The plate is then ready for the sensitizing solution, which is composed of—

Hard gelatine	3 oz.
Water	1 qt.
Bichromate potash	½ oz.

The glass plate is warmed, and the sensitizing solution also warmed, and, after carefully filtering through flannel, is poured over the surface of substratum, and the plate is immediately placed on the leveling screws in the drying oven, and heat is applied. The drying ought to occupy about half an hour. When the plate is dry, it is ready for exposure under a negative. Here is a plate ready for exposure. We ought to mention, the negative must be reversed, that is if what is called a right-hand picture is desired.

There are several ways of reversing negatives; direct in the camera, by means of a reversing mirror, or even by placing the plate in the dark slide wrcng way about, first carefully cleaning the glass side of the plate, and allowing for the thickness of the glass in focusing; but the most generally adopted methods are, first, by stripping the films from their original glass, and turning them over on to another one; and, secondly, by making transparency and copying it in the camera through the glass.

Having obtained a reversed negative, the margins should be masked to the size of the required print with thin black paper or tinfoil, and placed, with the sensitive collotype plate, in a printing frame for exposure. The time required for exposure will, of course, vary according to the density of the negative and to the quality of the light; and, as the plate cannot be examined during exposure, an actinometer is used to measure the amount of light falling on the plate. Experience is really the only guide as to correct exposure, but the average time in a moderate light may be taken as half an hour. After exposure, the plate is removed to the dark room, and is placed in running water for about half an hour to wash out the unacted-upon bichromate, after which the plate is allowed to dry spontaneously, and it is then ready for printing. (Here are exposed plates, one plain and one inked.)

The printing may be performed in an ordinary printing press, with a sheet of India rubber over the tympan, or, as is most in vogue, in a lithhographic press. The plate is first damped with a sponge and water, as Mr. Geddes is now doing, and, after wiping the surface dry, ink is applied, first with a leather roller for the purpose of inking up the shadows and stronger parts of the picture, and then with a gelatine roller, to give ink to the half-tones. A piece of ordinary paper is now placed over the inked image and pressure is aplied, the result being, if all goes well, a permanent photograph in printing ink from the negative used. If ink of a photographic or silver print color is used, and the paper is afterward enameled, the results are to all intents and purposes a photograph.

Before we conclude, we must just mention one of the most interesting and fascinating phases of collotype printing, and one which is as yet only in its infancy. We refer to chromo-collotype, and will venture to say it is the near-

est approach to the much-sought-after process of photography in natural color. In this process use is made of the fact that all colors emanate or are produced from the three primaries, namely, red blue and yellow, and, by the aid of specially sensitized color plates and our knowledge of othochromatic photography, we are enabled to analyze the the colors of a picture, and produce three plates which have the property of photographing the particular primary colors for which each one is sensitized; then, by printing these three negatives in their separate colors, one over the other, by collotype, using a transparent ink, we obtain very approximately the actual colors of the original picture or landscape. We cannot go into this matter further now, as the time at our disposal is short, and the entire process is too complex. We have here some examples of this work, upon which we have recently been making a series of experiments, and there are specimens printed from the negatives of each color as well as complete proof printed in the three colors and registered one over the other, viz., red blue and yellow.

The Carbon Process.

THE Blair Camera Co., whose trade agents are E. & H. T. Anthony, of New York City, send us the following interesting description of the carbon process. They are now fully prepared to supply at prices that should insure its being used largely by those desiring variety in colors and absolute permanence of prints. Messrs. E. & H. T. Anthony will, we are sure, be glad to furnish prices of material and any other information to those inquiring:

The lack of permanency and of variety in color in the ordinary silver print photographs, has led to a demand for something more satisfactory in artistic effects and in freedom from fading. This condition applies to the work of amateurs, as well as the portraits from professional photographers. The carbon process perfectly meets this demand, and affords the most beautiful results attainable from the negative. While not of recent origin, the difficulties in working the carbon process have prevented its general introduction and development. As a matter of fact, it is quite as easy and requires little more time than the silver-print process.

Instructions for Carbon Work.

Carbon tissue is sold in rolls or bands. Bands are made 12 feet long by 20 and 30 inches wide, and before sensitizing may be cut to any size desired. Transfer paper, flexible support and waxing solution are also required.

Carbon tissue is produced in various colors, which should be designated when ordering. Warm black, purple, chocolate brown, portrait brown, sepia, red chalk, rouge, blue and green. For line work, views, etc., warm black is recommended. For portraits, warm black, brown, sepia and other colors can be used with pleasing effect.

Carbon prints are produced either by single or double transfer. "Single" when a reversed negative can be obtained; "Double" when printed by contact from ordinary negatives, in either case using the same tissue.

To sensitize the carbon tissue, cut to size and immerse from eight to ten minutes in the following solution:

Water.....30 oz.
Bi-chromate of potash..... 1 "

This bath should be kept at a temperature of from 40 to 50 deg. Fahr., and tissue sensitized in dark room, or by shaded gas light.

After removal draw each side of tissue over a glass rod to insure evenness and avoid streaks. To do this a couple of snips, fastened to stick of convenient length, should be applied to one edge of tissue, holding same in one hand with glass rod in the other, drawing tissue carefully over same, or squegee off upon a clean glass plate, face of tissue in contact with plate; this is recommended in hot weather, as tissue will keep longer. Hang in a well-ventilated *dark room* to dry, where it will be free from dust and any gas or noxious fumes, and will dry in from two or three hours. It is well to sensitize tissue for each day, the night previous. If put in a tightly covered tin box the sensitized tissue will keep several days. Negatives for carbon printing require a mask of black paper called a "safe edge," to protect the edge of tissue not covered by the negative itself from the light. It is about three times as sensitive as silvered paper, therefore requires only one-third as long exposure in printing.

As a guide in printing a single tint actinometer is used, experience with which soon enables one to judge how many tints a negative will require.

FOR SINGLE TRANSFER.

After sensitizing as directed, place paper on your reversed negative in an ordinary printing frame and put out to print, together with actinometer, by which alone time for exposure must be judged. To develop, first immerse the print in cold water, and bring in contact with same a piece of *transfer paper* (which should be cut somewhat larger than the finished print), after which remove to a glass or other flat, smooth surface, and bring in more perfect contact with a soft rubber squegee. First protect the tissue by spreading a wet rubber cloth over same, upon which to apply the squegee. Let dry five or ten minutes, then develop in clean water 90 to 100 degrees, increasing the temperature if necessary, to make the paper pull of readily. Wash away all soluble color, rinse with cold water, then in a 10 to 20 per cent. solution of alum, again in cold water, and put to dry in a cool place free from dust.

In making single transfer prints from negatives, prints will be reversed unless a reversed negative is used.

FOR DOUBLE TRANSFER.

To prepare the flexible support, fold up a small pad of fine cloth and wet it with a waxing solution, rub this over the flexible support and allow it to dry; again repeat this operation, as to make sure that the surface is perfectly coated after drying. Immediately before the print is put on, with another dry pad, rub off all the surplus wax, leaving an evenly coated surface.

Proceed precisely as directed for single transfer, only using a flexible support instead of transfer paper, from which, after print is dry, it can be re-transferred at any time to the final support. With proper care the flexible support can be used over again almost indefinitely.

When ready for the final transfer immerse in cold water, together with the "final support" or transfer paper, and as soon as soft and pliable (usually from three to five minutes) bring together, remove and squegee in perfect contact as before and hang away to dry.

FOR CARBON TRANSPARENCIES

a special tissue is used. This tissue is sensitized in the usual way, but the exposure is about double that required for carbon prints. Place tissue on negative and print as before, making allowance for additional time required. Take a cleaned glass, coat same with

substratum, a solution made up of 3 grains gelatine, to 10 ounces of water, adding one dram of a 10 per cent. solution of chrome alum, mixed warm. Flow on plate and allow to dry, then immerse the print together with the prepared plate in cold water, bringing them together in contact and squegee of as in single transfer. Place between soft blotters ten or fifteen minutes, and then develop. Care should be taken to place all carbon prints to dry where they will be free from dust. With the transparencies for enlargements this is of great importance, as all defects are magnified in the negative.

To enlarge, place transparency in camera, film side to the lens (making a reversed negative) for carbon printing, or the glass side to lens if for silver print. Negatives for carbon should be rather more vigorous than for silver printing.

The curl in the tissue caused by rolling up in the box may be removed by putting it in a damp place. A large box containing a wet cloth (not in contact with tissue) will answer.

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Our Illustration.

OUR illustration this month is one that will repay a careful examination. As a study in posing and lighting it is almost perfect, and as such, and as a lesson in the *art* of using accessories, in retouching and in all the minor details that go to make up the successful photograph, it should prove instructive to many of our readers. It is the work of Mr. Cochran, of Hamilton, president of our association, and an artist who is too well known to need any introduction at our hands. Our illustration will also prove very interesting to those desirous of turning out the best work possible, as showing what can be accomplished by using the Stanley plate. The many good qualities this plate possesses, makes it a favorite among both professionals and amateurs. The Red Label Stanley, especially, combines great speed with good printing qualities, and is at the same time easily handled. No wonder that this factory is taxed to its utmost capacity to supply the demand for a thoroughly first-class home dry plate.

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A Word to the Wise.

To the Editor of THE JOURNAL.

SIR,—The coming photographic convention ought to be in the minds of every progressive photographer in Canada, for truly there was never greater encouragement for photographers to attend the convention and make an exhibition of their work. The prize list this year is larger than it has ever been in the history of the association, and the Executive Committee have so arranged for the awarding of prizes that all will stand an equal chance according to the merits of their work, although they may live in a country village, and moreover the prizes for the most part are in the shining gold. But after all, prize winning should not be the prime object of our comming together—the convention was never called for any such purpose—but that we might convene together to encourage and stimulate each other, to exchange our thoughts and ideas, and together as one man raise the standard of photography to its proper place. It is true that there has been more or less departure from the standard, but whose fault has it been? Let each one of us examine ourselves, and see how much we have done to make every convention a suc-

cess. Have we not had selfish objects in view? Have we not said, "There is no profit; there is nothing to be made; there is nothing special that I can learn," wholly forgetting the fact that others are needing the instruction and advice that you are able to give, forgetting, also, that what benefits one benefits all, and that you cannot do good to another man without receiving good yourself? In conversation with a photographer the other day, I asked him why he did not attend the conventions. Oh, said he, it would not do me any good and I do not like the way the convention is conducted. I asked him of whom the association was composed, was it not individual photographers, and why was he not there filling his proper place and trying to make things run successfully. If each man would only do his part with an unselfish motive in view, the great wheel of photography would revolve once more with pleasure and profit to all.

Now, brother photographers, let us turn over a new leaf, let every man put his shoulder to the wheel, and let us come up to the next convention, not with the idea of getting all we can get and giving nothing in return, but come prepared to ask and answer questions; come with the determination that you will not go home without contributing something to the good of the convention. If you see faults in the way things are managed, point them out, but at the same time do not forget the remedy. Don't find fault unless you can suggest a better plan. For my part, I would like to see the whole constitution remodeled, and things run on an entirely new basis. Altogether, I would like to see the association in a position to offer advantages to its members that those who were not members could not enjoy. It cannot be done in the loose way we now conduct business, but there is a plan by which it can be accomplished. I hinted at the plan last year, but it did not seem to take. But I was not surprised; no really good thing ever does take at first, all reforms need persistent pushing, and I hope the day is not far distant when it will mean something to be a member of the Phototographers' Association of Canada.

Yours truly,

J. C. WALKER.

N.B.—The Executive Committee met at my studio a short time ago and final arrangements have been made as to date of convention and place of meeting. We have secured the finest hall in the city for the purpose. We think it is much ahead of anything we have ever had, with ample space for all; good light in every part of the building. You will receive an official circular from the secretary giving full particulars. If any one fails to receive circular, a card to E. Poole, St. Catharines will have the desired effect.

J. C. W.

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Some Hard-Hitting by an Old-time Photographer.

To the Editor of THE JOURNAL.

SIR,—Would you allow me to make a suggestion through your valuable journal, which all photographers in this domain ought to take. I must congratulate you on getting up such a neat and artistic journal, and it is to be hoped that the fraternity will be interested enough to write for it, so as to make it more interesting and useful. The suggestion I was about to make is, would it not be wise for the managing committee of our photographic conventions to engage Sam

Jones, or some other great revivalist—but be sure and get the best, for the best is required indeed to accomplish it—to attend the convention and hold what is generally called a revival meeting to see if he cannot get the photographers to turn over a new leaf, or at least knock some of the abominable lying out of them, as I am sure you will all agree it is about high time that it should stop. There was a time when the lawyers had the leather medal for lying, but I think the photographers have it now; if not, they richly deserve it. They not only lie to their patrons about their own work, but also about their neighbors' work, and they lie to each other. Not long since, calling on a photographer I asked him how business was, which is generally one of the first questions. He said it was splendid, that they were pushed with work. I afterwards met two of his employés, who were apprentices, and while speaking to them I remarked that they were very busy—yes, busy playing euchre and checkers—had not printed any and had only taken three negatives that week; it was then Friday night. Now, what is he? At one of our photographic conventions, three of us were together examining some negatives which we all thought were developed with oxolate and iron. We asked the exhibitor and he said no, that they were developed with pyro soda. He also got up when the question of developing was under discussion and advocated pyro soda development, saying that those he had on exhibition were developed with it. I called at his studio, mistrusting the rascal, and while there two ladies called for a sitting. The operator asked me to go into the dark room, and what did I see him develop with but oxolate and iron. I asked him if he developed those negatives which they had on exhibition. He said he did. Were they developed with oxolate and iron? Yes. I told him that his employer had said they were not, that they were developed with pyro soda. Now, what was he?

Some time ago the photographers of our town met to arrange for uniform prices. What did I come to hear in a few days but that the strongest advocate of raising prices was offering to those whom he knew to be other photographers' customers, thirteen for a dozen, and had gone to a cabinet factory and offered to do their work for half price. Now, what of him?

Now, you may say what you like about conventions, etc. I do not condemn them, the object is a good one if properly carried out, but I am sorry to admit that what Mr. Welford said in regard to them is too true, but I think it a much greater drawback, parties getting up and recommending what they would not use themselves, but they must not think that all are so blind that they cannot see, or that they have not studied the art and chemistry enough to know what they hear is not true. There is always a complaining about so few photographers exhibiting at our conventions. What is the reason? I fear it is because many of them are afraid of their work being laughed at (which has often occurred)—work that was fully as good as, and a question if not better than, some that was exhibited, and blown sky-high simply because it was shown by certain persons. For an illustration, at one of the American conventions a few years ago, there was a prize awarded to a party who had a large exhibit. His poses were good, also light and shade, but we cannot give him the credit altogether for the posing, as they were all actresses—grand accessories, full

dress and costumes; but when you took a piece of paper and cut a hole just large enough to show the face and examined it, you would say the flies must have retouched it. Now, as the convention is coming on again soon, bring your work along, and if it is to be sneered and laughed at, don't mind, be like the man that was kicked by a mule—take it, considering where it comes from. You may say what you like about conventions, fixing prices, etc., but as long as this lying, malice and rings continue we may expect to remain in the old rut and sing the old song, "Paddle Your Own Canoe." TIM TID.

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The article on "Focusing and the Use of Diaphragms," by Mr. John Clark, in this issue, would probably have been the prize article for that heading, had we been able to arouse enough enthusiasm in what would have been a very interesting contest to warrant us in carrying it on. Mr. Clark is an interesting and instructive writer, and we are glad to announce that he has been prevailed upon to contribute a series of articles to this journal. We are sure he will make many friends among our readers.

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In the half-tone pictures of this issue we give further examples of the high grade of work that the members of the Camera Club are doing. The negatives were made by Mr. F. Manchée and Mr. E. Havelock Walsh.

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"Honest Pat, if the devil his choice had to make,
Which of us two the first do you think he would take?"
"Why, 'tis me to be sure, he would carry away;
Your honor, he knows, he could have any day."

Notable Photographic People Abroad.

MISS Catherine Weed Barnes, of the editorial staff of the *Amateur Photographer*, has gone to England to get something new in scenery. When it is known that she intends to expose about 2,000 plates during her visit, and that the chance of a "miss" when Miss Barnes decides that a certain bit of Old Country scenery needs photographing will be *very small*, it will be readily believed that she will bring back with her a collection of views that will excel any one collection ever brought into this country by an amateur, or, indeed, a professional. Miss Barnes is exceptionally good at lantern slides, and no doubt next winter will see many of the shots taken transformed into "things of beauty" as slides. Miss Barnes while abroad will read a paper on "Amateur Photography in America" before the annual convention of photographers at Edinburgh, in July.

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Mr. Frederick Ives, of Philadelphia, is also abroad, and has delivered several lectures explaining his process of color photography. It has not been all plain sailing, however, for Mr. Ives, as Dr. Vogel has put in his claim of priority, claiming to have published *his* method of obtaining similar results several years ahead of Mr. Ives, and also states for Mr. Ives' information that the process of using three negatives, as is done by Mr. Ives, is an old one, and was used, some ten years previous to Mr. Ives using it, by Cros, Ducos du Hauron and Albert. Several other applicants for the honor of discovering natural-color photography—or what has really only as yet been discovered, the art of *projecting* in natural colors—have also sprung up, and the general feeling in England seems to be that, at best, Mr.

Ives' process is but an improvement on what was already known. The facts in the case seem to be that our friends across the pond expected too much from Mr. Ives and his process, and in being disappointed in not finding him able to tell them the much sought after secret of true and direct color photography, have overlooked the really great advance toward the solving of this brain-puzzling phase of photography that his process makes as far as it goes.

Mr. Ives' process and apparatus is tersely described by the Royal Society in their catalogue of the objects of interest exhibited during the evening as follows :

"By means of a compound camera front, three photographic negatives of the object are made by a simultaneous and equal exposure from the same point of view, and upon the same sensitive plate. The photographic plate is sensitive to all colors of light, but by introducing light filters, one of the negatives is made by such light rays only as excite the fundamental red sensation, and in due proportion ; another by light rays as they excite the fundamental green sensation, and another by light rays as they excite the fundamental blue-violet sensation.

"From this triple negative, a triple lantern slide is made which, although it shows no color, contains such a graphic record of the natural colors that in order to reproduce them to the eye it is sufficient to superpose the three images, one with red light, one with green and one with blue-violet. This is accomplished either in the exhibitor's new heliochromoscope, a device about the size of a hand stereoscope, and used in much the same way, or by projection with a special optical lantern, having three optical systems, with red, green and blue glasses. The three images, being exactly superposed, appear as one only, in which the natural colors are reproduced, together with the light and shade. Images of three ordinary photographs, exactly alike, if superposed in the same way, through the same colored glasses, would show no color whatever."

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Mr. John Carbutt, of Wayne Junction, Philadelphia, Pa., is another visitor to England. Mr. Carbutt has a world-wide reputation as a manufacturer of dry plates and films, and to him, probably more than any one man, America owes the high standard of her dry plates. Mr. Carbutt has some of the immense films for which he is famous, and is verily startling the natives on the "other side" with the size of direct prints made from these giant negatives. An idea of the size of the films made by Mr. Carbutt may be gathered from the following description of a picture made by W. H. Rau, of Philadelphia :

"The picture is in the nature of a panorama of the battle-field of Gettysburg from the summit of Little Round Top, and while not the largest direct photograph ever taken, is without doubt the largest of its kind ever made in this country, and perhaps anywhere. The remakable feature of the photograph is the extent of the panorama, the print being made from a single negative, and the view embracing an angle of from 165 to 170 degrees. The photograph, which is 18 inches wide by 48 inches long, was made by Mr. Rau with a camera constructed upon the principle of Moissard's instrument, a French invention which has been successfully employed (though on a smaller scale) in securing panoramas of the city of Paris. Though covering such an extreme angle of view, the photo-

graph is entirely free from distortion—a performance the remarkable nature of which will be appreciated by those who know the usual effect of using an extremely wide angle lens upon a large plate. In Mr. Rau's camera a lens of long focus (15 inches) was employed, and the extreme angle of view is secured by using a flexible Carbutt film bent into the shape of a half cylinder, and by revolving the lens upon a pivot so accurately adjusted that the sensitive surface of the film is in the focus of the lens, no matter what its position. The rays of light passing through the lens are so controlled by a system of diaphragms that only a very small section of the film is illuminated at a time, and the exposure is made by revolving the lens on its optical centre from one extreme of the view to the other. The adjustment is so accurate that in cases where a longer exposure is needed, as for instance where there are dark masses of foliage to be photographed, or where the sky is overcast, the lens can be moved back and forward several times, giving as many successive exposures, without any "doubling" of the lines in the negatives. The holders or "dark slides" in which the sensitive films are placed are necessarily flexible, a requisite which added greatly to the difficulty of making the camera. These alone represented an outlay of several hundred dollars. The sensitive films required had to be specially made for Mr. Rau, the largest sizes regularly supplied by the manufacturers being only about half as large. The films were furnished and especially coated by John Carbutt, the Wayne Junction dry-plate manufacturer. In addition to these special films, Mr. Rau was obliged to purchase a complete outfit of developing dishes, etc., as well as paper for the production of the positives, and the cards upon which to mount the finished prints, the sizes required being far larger than any which are to be found in the regular photographic supply stocks."

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English Photos at the World's Fair.

THE Royal British World's Fair Commission has appointed a Photographic Committee, consisting of Captain Abney, Francis Cobb, James Dredge, G. Davison, Colonel J. Gale, H. P. Robinson and Sir Henry Trueman Wood, to form a collection of photographs, representative of the best work which is now being done in England, both by amateurs and professionals, for the Photographic Department of the forthcoming Exposition. The pictures lent for this purpose will be transmitted to Chicago and taken back free of charge to the exhibitors, and the Royal Commission will also undertake their care while they are in the Exposition. The committee proposes to send an invitation to a limited number of photographic artists, and hopes to be able to get together a collection which will be worthy of the present advanced condition of photographic art in England. Pictures will only be received from those to whom invitations have been addressed. In addition to the selected collection there will be many photographs sent by exhibitors at their own cost, and for these space will be allotted in the usual way.

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Force of Habit.

"He's a great editor, isn't he?" said one reporter to another.

"I should say so. Why, he gets so used to saying 'we' that he often puts two fares in the street car ticket box."
—*Washington Star.*

Photography at the World's Fair.

WE have received from Mr. F. C. Beach, who has done so much towards procuring for photographers the right to use their cameras at the World's Fair, the following petition, which should receive the signature of every club in the country:

To the Ways and Means Committee, World's Columbian Exposition, Chicago, Ill.

Having learned that it is the decision of your committee and that of the Executive Committee of the World's Columbian Exposition, that the granting of special permits to amateur photographers and others for the privilege of photographing the Exposition grounds is to be refused, because they will interfere with concessions to be held by three or four professional concerns:

We, the representatives of the photographic clubs and societies of the United States, do most urgently petition you to reconsider your decision; first, in behalf of the thousands of amateurs and others who will wish to exercise the right to photograph; second, because their work will make a far more valuable and complete record of the Exposition than is possible by the few to whom it is proposed to grant the privilege; third, because it is probable a larger revenue can be derived by the issuing of special permits to the estimated hundred or two hundred thousand photographers who will certainly visit the Exposition (at the rate of five dollars for a limited period of one week, aggregating nearly half a million dollars) than will be realized by restricting the privilege to a few for a specified amount (which is likely not to be much above one hundred thousand dollars), while at the same time greater general benefit will accrue to all concerned.

We hold that, as the camera is now so universally used by the public, and as the Exposition is a public enterprise conducted by the United States for the public benefit and education, it is unjust to the public to restrict the photographic privilege as is now contemplated, when the same revenue can be effected by methods which will confer pleasure and instruction to an immense number, and with less friction.

We earnestly request that the interests of the amateur photographers be especially recognized because of the increased revenue they may bring to the Exposition, on the plan outlined, and on account of the great value of the work they will create.

We further request that special facilities for photographic work be provided for the amateur on the Exposition grounds, from which an additional revenue can be derived above that previously mentioned.

We ask for an early and careful consideration of the foregoing propositions.

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Personal Mention.

We are glad to hear that Mr. Charley Neil, of Queen street, who has been seriously ill for several weeks, is now so far recovered as to be at business again.

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Mr. R. Dukelow, of Brockville, has just returned from New York City, where he went as a delegate to the Christian Endeavor annual meeting. Mr. Dukelow also visited all the notable galleries of the east and has probably brought back a goodly number of new ideas.

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In keeping with the spirit of the times, Mr. J. Bruce, our well-known King street photographer, is putting in a handsome new plate-glass front, and remodeling the ground floor generally. Mr. Bruce ranks among the first of Canadian photographers both in studio and outdoor work.

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Mr. McVey, late of Cincinnati, has bought out Mr. Andrews' gallery at 1118 Queen street west, and will run it under the name of the American Foto

Co. Mr. McVey is a thoroughly practical man and a worker, and we have no doubt the stand will be made to pay under his management. Specialties will be made of life-size work, porcelain pictures, photographs on silk, outdoor and flash-light photography, also developing and printing for amateurs.

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Bicyclist Frank G. Lenz, who is touring the world on a pneumatic safety for the New York magazine *Outing*, reached Toronto on June 21st from Hamilton. He is accompanied as far as San Francisco by Mr. Robt. Bruce, of *Outing*, in whose columns the story of the perilous journey will be printed. Mr. Lenz left New York June 4, and expects to complete his ride of about 20,000 miles in two years. Tom Stevens had to give up the trip through China to India, but Mr. Lenz hopes to make that ride successfully. He carries little luggage, but has his camera with him, and with its aid will illustrate his journey.

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Too Much Competition.

The photographic establishment of Mr. Huffman, of Hamilton, who assigned in May, was sold by auction realizing $780, something less than the inventory value. Mr. Mulholland was the buyer. We understand that later Mr. Mulholland sold to a company who are to carry on the business.

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Wide sympathies only come with a wide experience. City people are sometimes inclined to sneer at the farmer and his wife as they ride into town on a load of grain or go about the stores hunting for bargains. They may be very close in their calculations and occasionally unpolished in their remarks, yet the weather-beaten faces rather than toil-worn clothes should appeal to the imagination of those who serve them. The dollars they have to spend have been hardly earned; the hands knotted with rheumatism and hardened by years of toil are as gentle in caresses of loved ones as those hands which never see the sun or lift a heavier burden than a parasol or a walking stick. There may be less polish, but there is as much gentleness in the lives of the people on the side roads and concessions as in those on the streets and avenues. Unfortunately for the farmer, he is too often judged by the roust-about, the hard-drinking, hard-swearing, loud-talking rough who comes from his mortgaged farm to paint the town red and show city people that he is not afraid of them. Just as often, perhaps, the farmer misjudges people from town by accepting as a representative of the many classes which make up a city the dude who goes into the country to exhibit his one suit of tennis flannels, or a bartender who hires a livery "rig" and patrols the side lines accompanied by a jag and the idea that he is teaching these hayseeds how to put on style.—*Saturday Night.*

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An unconscious but comical play upon words was made by a little girl not long since, while relating to a sympathizing lady the loss of two pet calves. "What caused their death?" said the lady. "Oh," was the answer, "one was hooked to death, and the other died on its own hook."

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Jones said: "My wife's hair is so long it falls in wavy tresses to her waist." "That's nothing," replied Lee, "when my wife lets hers down it falls to the floor."

The Daguerrotype.

You hev to hold it sidewise
Fer to make the likeness show,
'Cuz it's sort uh dim an' shifty
Till you get it right—'bout so!
An' then the eyes winks at yeh,
An' the mouth is cherry ripe,
Law! it beats yer new-style picters,
This old diggerytype!

Thar's a blush acrost the dimples
Thet burrows in the cheeks;
From out them clumps o' ringlets
Two little small ears peeks.
Thet brooch thet jines her neck-gear
Is what they used to wear;
A big gold frame thet sprawled around
A lock o'—some one's hair.

'Twas took 'fore we was married,
Thet there—your maw an' me,
An' times I study on it,
Why, 't fazes me to see
Thet fifty year 'ain't teched her
A lick! She's jest the same
She was when Sudie Scriggens
Took Boone C. Curds' name.

The hair is mebby whiter
'An it was in '41,
But her cheeks is jest as pinky,
An' her smiles ain't slacked up none.
I reckon—love—er somethin'
Yerluminates her face,
Like the crimsont velvet linin'
Warms up ther picter case.

'S I say, these cyard boa'd portraits,
They make me sort uh tired,
A-grinnin forf upun yeh
Like their very lips was wired!
Give me the old diggerytype,
Whar the face steals on your sight
Like a dream that comes by night-time
When your suppers' actin' right!

—*Eva Wilder McGlasson.*

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Useful Hints and Formulas.

TINTED SILVER PRINTS.—A method of producing colored silver prints, giving extraordinary results and effects, is published by Ogonowski in his book upon photochromy. The proceeding is as follows: Ordinary plain salted photographic paper is floated on the silver bath as usual, and printed faintly under the negative; it is then washed, toned, and fixed. This faint positive print while still wet is laid upon a sheet of absorbent paper; then both are placed upon a sheet of glass. The damp print from which all superfluous water has been absorbed, is now worked in with water-colors, using only local tones, avoiding the use of flake white, vermilion, chrome and cadmium yellow. The print is now thoroughly dried; it is then albumenized one to three coats with salted, whipped albumen. It is then again silvered, and again placed under the negative, taking great care that the register be true. The print is now made similar to an ordinary albumen print, washed, toned and fixed. The tints, being protected by the coating of the albumen film, are not affected by the various processes. These tinted silver prints are said to produce the most charming effects.

DEAD BLACK.—The best plan is to stain the woodwork of the camera as follows: Clean the woodwork carefully with glass-paper. Then rub over it a tuft of cotton wool, dipped in an infusion of nutgalls, and allow it to dry.

Now go over it again with a clean piece of cotton wool, dipped in muriated tincture of iron. The great advantage of this method is that when once done there is no fear of it wearing off and the black settling on the plate or lens.

But if you prefer it you can use the following:

Alcohol	8 ozs.
Lampblack	2 "
Gum shellac	1 "

Dissolve the shellac in seven-eighths of the spirit, and mix well the lampblack with the other ounce. Then mix the two.—*Photography.*

STRENGTHENING NEGATIVES BY HEAT.—The tendency of intensifiers being to

flatten and diminish the beauty of the photograph, their use may often be avoided by the following simple means: If after the negative is developed, fixed and washed, it needs a little strengthening, dry it *rapidly* by *artificial heat,* which will generally bring it up to good printing strength. The difference between a negative dried in this manner and one allowed to dry in its own time is surprising.

To soften down landscape prints where there is too much contrast and and harshness in the negative, expose the paper to the sunlight just before printing. In this way a dead white sky may be brought to any desired shade without interfering with the brilliancy of the print.

Mr. Walmsley, of "Graphol" developing powder fame, recommends the following fixing bath:

Sodium hyposulphite	8 ozs.
Sodium bisulphite	1 "
Water	32 "

and says that anyone trying it will use it ever after.

If you are troubled with muddy water in washing prints, first wash them over with clean, clear water before immersing them in the other, and the dirt will not adhere to them.

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A gentleman recently treated a handkerchief with nitric and sulphuric acid until it was converted into pyroxaline. He then gave it to his servant with instructions to have it washed and ironed at once. When about to do the latter the servant was astonished to see the linen disappear in a whiff of smoke as soon as the hot iron touched it.

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No wonder the amateur photographer is intoxicated with his art. He is always "taking something."—*Yonkers Statesman.*