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DEVOTED TO THE INTERESTS OF THE PROFESSIONAL AND AMATEUR PHOTOGRAPHER.

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GEORGE W. GILSON, - - EDITOR

FOR 1897.

In bidding our many readers a Merry Christmas and a Happy New Year, we may be permitted to note that the said New Year will, we expect, be made much happier by certain alterations in style of their old friend the CANADIAN PHOTOGRAPHIC JOURNAL.

Many of us do not recognize the great deficiency in our population, but if any of our readers were to commence the publication of a journal in some special field, they would soon find how small it was compared with England or the neighboring republic. We have been making special efforts this year to extend our circulation abroad, and with the happiest results. This enables us to give our readers next year one of the handsomest dollar journals in the world. We will allow you to judge. Again wishing you the merriest of Christmases and the happiest of New Years, we remain,

Yours faithfully,

YE EDITOR.

PHOTOGRAPHIC FAILURES.

By DR. HUGO ERICHSEN.

Of course, the best pictures we ever took were on those plates that were spoiled. At least we think so, and would be very indignant if somebody should contradict us. And yet—possibly those negatives would not have pleased us so very much after all, and their beauty exists only in our imagination. That quality of the mind is a clever painter, but its pictures are not always true to life.

Before a tyro becomes a full-fledged amateur photographer, he must pass through the ordeal of failures. If he becomes disheartened at the outset, he will be a failure himself. The plates he spoils, the paper he wastes, the mounts he ruins, are so much tuition money. That is the way to look at it! None of the arts may be learned without expenditure, why should photography? Even photographic artists, men who stand in the first rank and have an international reputation, register an occasional failure. *Errare humanum est!* None are perfect. But these persons have learned to bear failures, whether due to themselves or extraneous causes, with equanimity, and mindful of the good old American maxim they try and try again until they are triumphant in the end.

The photographs that take the first prize at photographic exhibitions,

both at home and abroad, are not always the result of one sitting and one exposure. Sometimes more than a dozen exposures are made, before the result is satisfactory to the artist behind the camera. Picture making is easy with brains and a fund of patience. In the first place have a clear conception of what you are going to do, in the next place do it. You will learn the way how by practice and experiment. Don't lose courage; if you don't succeed right away, keep on hammering away, as General Grant used to say. But a little thought expended on your subject beforehand will be a wonderful help to you.

Do not throw the gun into the cornfield, because you do not succeed at once. That is not the way to win battles. Persistence wins the day always, even in photography. Find out what your failures are due to and then remedy the defect or correct the mistake.

Learn to bear up under adversity. Think of the poor fellows who go to Europe and make 500 exposures, or think they have made them, only to find on their return that the shutter of their camera failed to work and that they have not secured a single memento of their journey. What is your disappointment compared to theirs? Even if you do ruin a plate now and then, what of it? There are plenty more where that came from. Occasionally we do not get another opportunity to preserve a beautiful image by means of the art-science. In that case all we can do is to grin and bear it.

An intimate friend of mine made a trip into the country and photographed a landscape which was many miles distant of his home. On his return, he sat down to enjoy a toothsome supper, when the voice of his eldest boy, an inquisitive lad of eight, was heard from the adjoining room: "Pa, what are you going to do with

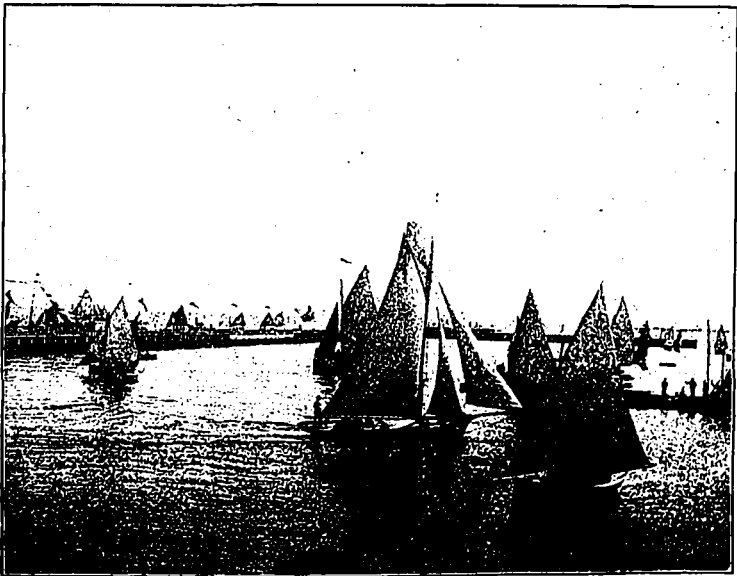
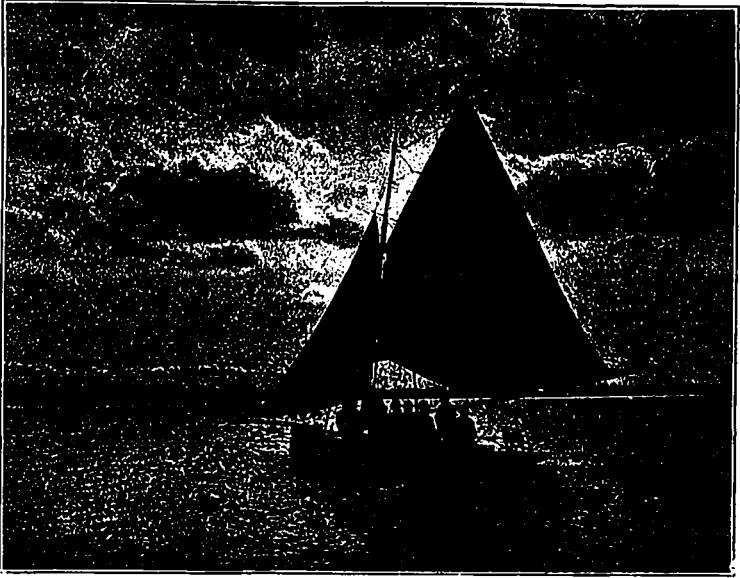
the white glass in them little boxes?" Ye gods, he had opened the plate-holders! Let us drop a curtain over what followed.

This is only one of the many experiences of the amateur that vex the spirit. You may have heard of the hapless wight who was busy focussing on an old ruin, with his head concealed under a red cloth, when he was charged upon by a snorting bull from the rear and hoisted skyward. That photographer could not sit down for weeks, but he photographed the ruin anyhow, when the bull was not around.

Hope springs eternal in the human breast. It is the mainspring of mundane action, and, when coupled with persistence, is well-nigh irresistible. Write above your dark-room door: "There is no such word as fail," and take your place among the successful photo-artists.

CLOUDS IN LANDSCAPES.

The artistic effect of landscape pictures suffers considerably from the absence of clouds or a natural-looking sky. At recent exhibitions visited by us, we have noted that in nearly every case the sky of the picture was represented by a white space, which entirely robbed the picture of any claim to a true representation of the subject photographed or anything more than a poor attempt at the production of the artistic. It is unnecessary to say that a purely white sky is never present. There is either a blue expanse above our heads or the sky is dotted with clouds, or, should it be entirely overcast, there is sufficient light and shade to give relief from the monotony of the white sheet. In no case whatever is there an absolutely white sky. Therefore, in every case where such a clear sheet of paper is set up as representative of the sky, the photographer



Photos by H. CRISP.

COMPARATIVE PICTURES SHOWING VALUE OF CLOUDS.

has erred and has put his error on record.

The sky usually gives off more light than the rest of the picture, and this light is so intense that, in time exposures, that part of the plate on which the sky is impressed is so far over-exposed as to be absolutely lost on development. The sky appears first, and by the time that the detail in the shadows of the landscape is brought out, all trace of clouds is lost, and an opaque space, printing perfectly white, is the result. With the ordinary plate, without dodging in development, it is impossible to obtain on one plate a landscape picture which shall give detail in the shadows of the landscape and at the same time give a sky approximating in color value that of the original subject. It is similar to attempting to make a picture of an electric-arc light and a candle flame at one exposure and expecting to get both perfect in one development. A rapid exposure will give the clouds, but detail in the shadows is found wanting. A time exposure will give detail in the shadows, but the sky is lost. Special forms of diaphragms and shutters have been devised, having for their object the giving of longer exposures to landscapes and short exposures to skies. These have not proved to be particularly beneficial in their effects and have not found any wide application. Suggestions have been offered as to the best method of removing the cap, it being suggested that the cap be first loosened at the bottom and raised slowly with an upward movement from the bottom, so that the cap is, as it were, hinged to the top of the hood of the lens. This is not a satisfactory method, for circumstances alter cases. The only absolutely reliable method would be in the use of a perfect orthochromatic plate; this not being at hand, the nearest approximation may be ob-

tained by the use of an orthochromatic plate in conjunction with a color screen. With this combination, surprisingly perfect results can be obtained.

In the case of ordinary plates, when it is particularly desired to preserve the clouds present in the original subject, two exposures should be made, one rapidly following the other, one being a time exposure and the other an instantaneous one. The first is developed for the landscape and the second for the clouds, the former one being used for printing the lower part of the picture, and the latter for the printing of the sky. In this way, by carefully registering the two negatives on the print, extremely fine results are readily obtainable.

The use of separate cloud negatives has of late not met with much favor, and it would seem that these are subterfuges that can hardly call for commendation. The only sky that is properly suited to the subject is that which is in evidence at the time the photograph was taken. The subtle lights and shadows were produced by the particular sky at that particular moment, and the use of any sky other than the one then in evidence will result in the production of a picture that is incorrect. The extreme of this wrong use of separate cloud negatives is found when a subject lit from the right hand is used in conjunction with clouds lit from the left hand. In all cases where a foreign sky has been called into requisition, there must be inaccuracy.

One or other of the above-described methods should be adopted—that is, either two negatives should be made, one immediately after the other, or an orthochromatic plate and color-screen should be employed.

There is a method by which one plate may be made to give a close approximation to the sky present in the original subject, and that is by

restraining the sky by the aid of potassium bromide. The plate is placed in the developer, and, as soon as the sky makes its appearance, the tray is tilted so that the developer will cover the bottom part of the plate, and the upper portion of sky is lightly brushed over with a weak solution of potassium bromide, the plate being repeatedly flooded with the developer so that no line of demarcation shall be apparent. In this way the sky can be held back considerably, while the balance of the picture is being brought out. The precaution to be taken is to see that the sky is not made too thin, an effect as bad in one direction as the white sky in the other.

For the artificial blocking in of skies on the back of the negatives two or three methods have been recommended. The glass side of the plate may be covered with ground-glass varnish and clouds worked in with a stump charged with powdered graphite. This requires extreme care, but in the hands of careful workers fairly good results may be obtained. Another method is to paint on the glass side of the negative with a stiff brush dipped in some non-actinic color, the edges of the color being softened down with a softer brush. Should the color give too sharp an appearance to the clouds, the painting should be done on a separate piece of glass, and thus separated still further from the negative, producing then a more vignetted appearance.

Another method which has met with some approval, but which we can hardly recommend, is to remove the print from the printing-frame and lay it under a sheet of clear glass, placing on the glass some pieces of cotton wool and on this another sheet of glass. The landscape is covered up with a handkerchief or duster, and the whole exposed to light, the duster being moved backwards and forwards so that no sharp line shall

be shown. In this method, care must be taken that the clouds do not interfere with any tall buildings or trees. — H. CRISP in Anthony's Photographic Bulletin.

HINTS TO BEGINNERS IN PHOTOGRAPHY.

By ROBERT GRIMSHAW.

Many amateurs do not succeed in getting creditable pictures, even with good cameras, first, because they do not understand the general principles of optics, and second, because they do not know the special peculiarities and the capabilities of the instruments which they are using.

In a general way they forget that one cannot get a good picture of an object that is between them and the sun, or when the sun's rays fall directly vertical. Then they expect too much from a so-called "universal focus" lens, thinking that it will reach out sidewise so as to get both ends of a passenger car sixty feet long at a distance of twenty feet, and at the same time get the details of a ruined tower on a hillside, half a mile or more away.

They also expect to get an undistorted picture of a tall building only forty feet away; and to get a good sharp picture of a smutty black object like a locomotive just come in from a long run. Or, they will think that a moving object can be as readily "snapshotted" from the top of a street car or omnibus going rapidly in the opposite direction as from a stationary location.

They also expect the same speed from a \$5.00 lens as from one costing \$50.00 or more; the same speed with a given shutter, no matter what kind of plate, or with the same plate, no matter what the shutter or lens, or the same speed in Leipzig as in Naples or Cairo. Also, they will use the same developers and fixers with Thomas', Richard's or Henry's plates, and

expect to get the same results ; and the same way with papers. They will use the same baths with the celebrated X as with the renowned Y or the famous Z brands.

The best plan is to pick out some one good make of plate or film that can be got in photographic supply shops generally, and learn how to use it, first under only one set of controllable conditions (as lens, stops, baths, etc.) and then gradually work up to a full knowledge of the behavior of that kind of negative under various conditions which it is desirable to change. Sticking to one brand of negative leads to better results in the end than experimenting.

And now for the camera itself. We will say that it is a hand camera with a "pull-out" on which the distances are not marked for very near objects. If there is a ground glass plate on which to observe the image, set the instrument on table or tripod a given distance, as three feet from a wall which is well illuminated by direct sunlight, and on which there is an ordinary placard with some letters as small as one-fourth of an inch in height, and pull out the "draw" until the letters appear sharp and clear. Then make a knife scratch so that that amount of pull-out can be found again when wanted, and mark it "3." Similarly mark the "4," "6," "8" and "10" positions.

Now tack up on the wall a two-foot rule, or a yardstick, or other convenient measure, and for each position of the "draw" see what length can be distinctly seen. Thus we will say at three feet only fifteen inches can be seen the "short way" of the plate ; at six feet, thirty-six inches, and so on. This will prevent miscalculations of distances and frequent disappointments when there is no time to change the position of the camera or of the object being photographed.

Where the camera has no ground glass plate, it may be feasible to

substitute one temporarily for the film board or whatever else is about at that position. If no ground glass is available, tracing paper, or tracing cloth, or paraffined or oiled paper will answer quite well. If the substitution cannot be made, then perhaps the objective can be taken out and tested with a glass or paper screen at various focal distances, with objects at measured distances away. If all these methods fail, then mark on your poster a ring one foot or two in diameter, and take half a dozen or a dozen negatives at various distances from the poster and with the various positions of the pull-out. You will thus learn the "sharp" positions of the pull-out for each distance from the object to be photographed and also the size circle within which you may work. Thus, if at a given distance you find that your two-foot circle occupies half the short diameter of a 5 x 4 plate, you may rest assured that the maximum circle within which you may operate at that distance will be four feet in diameter ; but you might also take in an object that was five feet one way if it was not more than four feet in the opposite dimension (provided, of course, that the long way of the plate came with the long way of the object).

It is also a good plan to practise with the various "stops" under various known conditions ; and to test the finders, where there are any, to see if they are of the right size and in the right position, as they are very often hastily placed, and also sometimes get slid out of adjustment.—Scientific American.

NEPERA PAPERS.

By DR. HUGO ERICHSEN.

For the sake of convenience I include all photographic papers manufactured by the Nepera Chemical Company under this head. I can

offer nothing new as regards the method of working these papers, but I can heartily endorse all the statements made in regard to them by the company. Their range of tones, especially that of Velox paper, is extensive and beautiful.

They are easily handled, but to me they have appeared so sensitive to light that it is better to make a trial exposure, especially when large prints are to be made, than to waste good material. My experience has taught me that it is far more easy to over-expose with these papers than vice versa. Hence caution is necessary.

Their keeping quality is excellent. I have used bromide paper made at Nepera Park, which was over eight months old, and yet it was as good as the day I got it on.

Velox paper has proved a great convenience to me on cloudy days, but I imagine that it is not so useful to the professional photographer as it promised to be at first, for since the introduction of electric light in the studio for the purpose of photography, he can dispense with daylight altogether and make both his negatives and prints by means of the artificial illumination.

But Velox paper has enabled the magazines to add actual photographs to their contents without violating the postal laws, and its invention came just in the nick of time to enable publishers to evade an absurd regulation of the post office department. It will probably only be a question of time when the various illustrated monthly periodicals will introduce actual photographs into their pages, for no reproduction can equal the original, and where is the reader who would not prefer the photograph of some famous personality to a half-tone of the same.

Bromide paper, too, would be admirable for the illustration of magazines, and now that photographs can be produced automatically on this

material, at a rapid rate and a low price, it ought to be more frequently utilized for the illustration of the periodical press.

PHOTO-MICROGRAPHY FOR BEGINNERS.

By JOHN MILLS, F.R.A.S.

The object of this brief account of photo-micrography is, primarily, to encourage those readers who possess a microscope, however unpretentious it may be, to avail themselves of its use as an auxiliary in extending their acquaintance with the applications of photography. Success in this branch of applied science does not depend entirely upon the skill which one can command from the photographer's standpoint, and the beginner will, therefore, find it expedient to spare himself no pains in securing the best sections of animal and vegetable tissues which his opportunities afford, as subjects for experiment, and, while it is true that tolerably good work can be done with the simple appliances I shall describe, superior results can only be obtained by means of the best apparatus. But since this would involve a far greater outlay than ninety per cent. of the amateur photographers can afford, I have undertaken to show how the work may be carried out with the aid of a microscope, costing only about five shillings, and a little camera made from cardboard, or, better still, a cigar box.

In fig. 1 is shown the complete apparatus exactly as used by myself, the camera (C) being constructed as described at page 192 in the August number of *The Photogram*. The adapter (A), consisting of a stout paper tube fitted into a circular opening at the front of the camera, is securely attached to the sliding tube (F) by neatly wrapping a long narrow slip of paper around the latter

till it is just large enough to slide into the former. As the tube (F) carries the object-glass at one end and the eye-piece at the other—there being no fine adjustment in this simple form of instrument—the focussing is effected by moving the tube nearer to, or farther from, the slide (S), the transparent section on which is illuminated only by light reflected from the mirror (M). The operation may be conducted either in the dark-room or in diffused daylight, but as there is no material advantage in using the dark-room, save that the source of light is constant,

and therefore come out black, while if blue is included in the colors, light will filter through and give a much too light representation of the parts so colored.

I must remind the would-be photomicrographer, moreover, that the lenses of a microscope are not quite suited for photographic work, that is to say, the visual and chemical foci are not coincident. The lenses, which may be regarded as built up from a large number of prisms, refract the red and blue rays unequally, and the latter, being the more refrangible, will form an image a little nearer to the

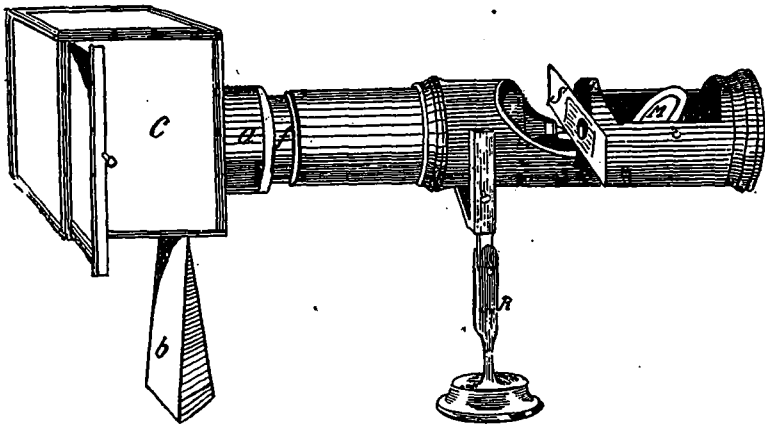


FIG. 1.

it is better to do the work in the daylight, always, of course, provided that the operator makes all his fittings perfectly light-tight. It will readily be seen that as the small amount of light reflected from the mirror (M) is all that is available, the exposure required will be of long duration.

A difficulty likely to be met with is that of color in the objects to be photographed, and on this account it may be found necessary to bleach such objects by long maceration in turpentine. Objects in which red and yellow or yellowish brown colors exist, transmit light very imperfectly

lens than that of the image of the visual rays, so that an image which is sharp enough on the screen will be somewhat obscure in the resulting negative. This difference of focus will require some preliminary trials before it can be entirely subordinated, and, as it will vary in amount depending upon the microscope used, the objective must be pushed inwards, afterwards the image appears to be sharply defined on the screen, to an extent which experiment has shown to be necessary. In the case of low-power and cheap instruments such as we are describing, the discrepancy here referred to is at its maximum,

but it is not by any means an insuperable difficulty.

In fig. 2 a section of the human kidney, photographed with the apparatus here described, is shown, the so-called Malpighian bodies and the urinary tubules being plainly discernible. The magnification is only about thirty diameters, but with a first-class microscope an enlargement of three hundred diameters is easily attainable.

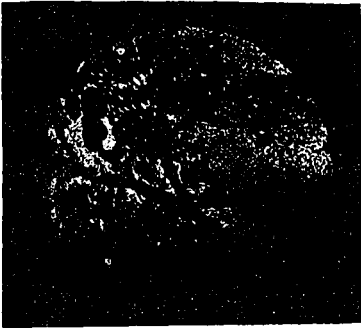


FIG. 2.

The time of exposure in the example here shown was two minutes. The amateur will soon find out for himself that it is a good plan to always allow a long exposure, because, medium plates being used, and the apparatus always directed towards the north or away from the sun, the light which reaches the sensitized plate is so feeble, comparatively, that there is little fear of over exposure, while from a variety of causes exposures of short duration are risky.

Although the apparatus as here figured is disposed horizontally, the microscope being held by a wooden clamp (R), and the camera propped up by a block of wood (B), any other position would answer equally well. It might, if convenient to the operator, be held in a slanting position, or standing upright, but the horizontal arrangement is, perhaps, the best because of the greater stability. This stability is one of the most important points in the work, for any

tremor in the apparatus ruins the definition in the resulting negative, especially when high powers are used. The whole apparatus should stand on a substantial table on a substantial floor, on which, by the way, it is well not to walk about during exposure.

As it is expensive to purchase microscopic slides ready made, a few hints on how the operator may make his own specimens will probably come in useful here. The easiest plan is to start by cutting sections from the stem of some plant held between the thumb and forefingers of the left hand, while with the right a razor is drawn across the stem transversely. After the first cut, which divides the stem as nearly as possible at right angles to the axis, the object should be to slice off a number of sections as thin as is practicable, and of uniform thickness. The razor used for this purpose should be lubricated with water and alcohol, or glycerine, and the sections detached by means of mounted needles, and placed in a watch-glass containing oil of turpentine. Hardening of the specimen is frequently necessary before a section can be cut, and the required rigidity is obtained by freezing or by steeping the specimen in methylated spirits. An ordinary smoothing plane, such as is used by joiners, will produce very good sections of some kinds of wood. Deal, for example, may be cut in exceedingly thin ribbons in this way, and when mounted, after soaking in alcohol, constitutes an interesting and easily procurable subject for experiment.

Sections of specimens to be observed under the microscope, however, are generally prepared by the aid of a microtome. This is an instrument for slicing the material into very thin pieces of uniform thickness, and it consists especially of a holder for the specimen, and a rest for a razor. In the simple form of

microtome, the razor is moved along the rest to cut the specimen, and the thickness of the slice is determined by turning a micrometer screw through a distance equal to the thickness required. The material may thus be raised above the rest to the extent of only the one-thousandth part of an inch, or even less, and a slice is obtained of corresponding thickness.

Canada balsam is used for mounting sections, and it varies much in consistency, color, and the like. To be good it should be of a syrupy consistency, nearly colorless, and thoroughly transparent. It is best to keep it in a wide-mouthed, stoppered bottle, in order to avoid, as much as possible, its tendency to harden by contact with the air. If, in consequence of undue exposure, it has hardened, it may be thinned, after warming, by the addition of a little oil of turpentine. A drop of the balsam is to be taken from the bottle by means of a pointed glass rod, and transferred to the ordinary clean glass slide. By gently warming, the balsam will spread out into a thin homogeneous layer, over which the specimen is to be placed, and a second drop of balsam is then placed over it by means of the glass rod, when, on again warming, the upper and lower layers of balsam will flow together, so enclosing the specimen. The whole should then be secured by placing in the top the usual thin cover glass, which should be put on very carefully, slantwise, so as to exclude air bubbles. If there should happen to be any air bubbles remaining after the cover is put in position, they may be removed by placing the slide in a warm stove for an hour or two. When too much balsam has been used, the excess may be removed by scratching it off with a knife, and then cleaning the glass by means of a rag moistened with oil of turpentine or benzine.—The Photogram.

IS A YELLOW SCREEN NECESSARY IN USING ISOCHROMATIC PLATES

For Landscapes and Studio Work?

By W. K. BURTON.

Of course it is not necessary. The question put more accurately would be, "Is there any appreciable benefit in the use of isochromatic plates in landscape and studio work without a yellow screen?" The question is one that sounds as if a quite definite answer should be forthcoming at once, but it is not. Briefly stated, its present position is this: The makers of isochromatic plates all state that these have a distinct advantage over ordinary plates for landscapes (at any rate) without a yellow screen. A few of the users of them say the same, but I am not aware that these have made comparative tests with that accuracy that would be necessary to establish the claim. If asked how they know there is an advantage the answer is generally something such as, "Oh, just look at that. I could have got nothing like that with an ordinary plate." But this is not enough.

As it seems to me undoubtedly the case that could it be fully established that isochromatic plates will show even a moderate advantage in landscape and portrait work without a screen, they would entirely supersede other plates, it is worth trying to find what evidence there is one way and the other. It is only that bugbear—the yellow screen—that prevents photographers from taking to isochromatic plates for ordinary work as well as for special work.

In the first place it must, of course, be at once admitted that for sunset effects, or any kind of photography when the light is yellow, they show a decided advantage; but we are not considering these special cases, but

rather the usual run of those in which the light is white.

A London maker of an excellent brand of orthochromatic plates has the temerity to send out as an advertisement two landscape prints—the same subject—one purporting to be printed from a negative on an ordinary plate, the other on an orthochromatic plate, without yellow screen. I say temerity, because there is so very little difference between the two prints. If one did not look for it he would not notice it at all. The distance is a trifle better rendered in the print from the isochromatic plate than in that from the other, but the difference is such as might arise from a slight difference in exposure, or of treatment in development, or from a few minutes' interval of time between the making of one exposure and of the other.

I have myself repeatedly made comparative experiments between ordinary plates and orthochromatic plates without yellow screen, and have been able to find no advantage in the orthochromatic plates, so far as the rendering of distances is concerned. Sometimes a slight superiority would be found in the rendering by the orthochromatic plate; but, on the other hand, the advantage would sometimes show with the ordinary plate. This has been the experience of all I have known, who have made actual comparative experiments.

On the other hand, I have at times noticed a perceptible superiority in the rendering of foregrounds by orthochromatic plates without yellow screen; this particularly if the foreground includes many flowers.

It is difficult to see how it is to be expected that an orthochromatic plate without yellow screen can show any superiority over an ordinary plate in rendering distances. The plate is not reduced in sensitiveness to the blue—the blue rays are not cut off—and wherein is any advantage to be

found in the increased sensitiveness to yellow? A plate is rendered many times more sensitive to yellow by orthochromatizing, but then it is about many times nothing, and the sensitiveness to yellow is still but trifling.

So far as my experience goes I can only say, with regret, that I believe that orthochromatic, or isochromatic plates used without yellow screen have no advantage over ordinary in the rendering of distance of landscapes, and only a slight and occasional one in the rendering of foregrounds.

The same I believe to be the case in studio work, though my own experiments have been confined to portraits in the open air and in ordinary rooms.

Even with a yellow screen the results of landscapes on orthochromatic plates are often disappointing. Captain Abney has fully given the reason for this. On the other hand, there are many landscapes which are vastly better rendered by an orthochromatic plate with a yellow screen than on an ordinary plate without.

In portrait work the improvement in results by the use of orthochromatic plates and yellow screens is so great that I am surprised professional photographers have not taken to the use of them generally. In the case of perfect moulding and a skin of the purest color, without fleck or spot, they may show no particular advantage, but with the ordinary run of sitters the superiority of the results with an orthochromatic plate and yellow screen over those with an ordinary plate is greater than would be believed without trial. Not only is the necessary amount of retouching reduced—odd looking lines and wrinkles come out much less prominently, and shadows are less deep and harsh—but results superior to what could be got by any amount of retouching are to be had.

The increase of exposure, I suppose, is the cry against the system, and it is true that about three times the exposure is necessary with isochromatic plates with yellow screen than with ordinary plates without; yet, see what portraits were made in the wet-plate days! and even using an isochromatic plate (rapid) and a yellow screen, the exposure will be at most one-tenth that with a wet plate.

When, I wonder, are we to have an orthochromatic plate that includes its own yellow screen? There is nothing impossible in this. I think it was Mr. W. B. Bolton who proposed that isochromatic plates should be sent out coated with yellow-stained collodion. This would no doubt be expensive, and better means might be devised, but landscape workers would certainly be willing to pay a high price for an orthochromatic plate including its own yellow screen. — Photographic Times.

RATIONAL USE OF DEVELOPING AGENTS.

By ROBERT E. M. BAIN.

Of the principal developing agents, there are: Pyrogallic acid, eikonogen, metol, hydroquinone, the ferric salts, and some lesser lights.

Each of those named has its champion, and, if the truth be told, there is but little choice in the results of all or any of them, in the hands of an expert. The average photographer is not an expert, and in the vain hope of improving his work, by trying the various formulæ published in the photographic journals, he makes a bad matter worse.

The careful and intelligent use of any of the chemical agents mentioned, will give excellent results, and it remains with the operator to select any one of them, and stick to it; and by careful attention to its action and results, obtain finally the reward of his patience and earnest effort.

Pyrogallic acid seems to hold its own with any of the newer discoveries, and has all of the good properties of the others excepting that of long continued development, in which it is apt to stain the film and mar the appearance of the finished negative.

Hydroquinone and eikonogen start development very slowly, but finish very rapidly, and so require some practice in handling; for, in a case of over-exposure, the negative is apt to develop flat and dense before one has a realizing sense of the error of time, and take steps to correct it in the chemical mixture.

With all developing solutions, the best way for those who have not been successful in accomplishing desired results, is to mix up solutions with at least four times the quantity of water called for by the formula, with the addition of a few drops of 10 per cent. solution of bromide of potassium, and after the negative has developed sufficiently to show its want of contrast, or detail in the shadows, the plate can be placed under the tap of running water and washed while a fresh developer can be mixed to meet the requirement.

The new solution should be rich in pyro (if that be the agent used) for over-exposure, with a small amount of bromide solution added, while if the exposure is found to be the reverse, increase the amount of alkali and add to the solution more water than the formula calls for, that the plate may not have a tendency to "fog."

For summer development, I have found that strong cold solutions give better results than those prepared for winter work.

It is a good thing to remember that it is much easier to obtain contrast than detail, and that the weak developing solution suggested will bring out the detail, and the last solution will add the density and contrast desired.

My good friend, Mr. Gustave



THE MILKMAID.

Specimen Half-Tone from the
BUFFALO ELECTROTYPE AND ENGRAVING CO.

Genre Study by
G. H. FOWLER, Charlotte, Mich.

Cramer, has brought out, in his new book of dry-plate formulæ, what he calls his "Hercules" developer, made up in two solutions, as follows :

SOLUTION NO. 1.

Distilled or ice water.	12 ½	ozs.
Sulphite soda crystals	1 ½	"
Hydroquinone.	¼	"
Bromide potassium. . .	⅛	"

SOLUTION NO. 2.

Water.	12 ½	ozs.
Carbonate soda crystals	3	"

Mix in equal parts for use.

This developer will be found excellent for copying engravings, making transparencies, and particularly for over-exposed plates.

Be it ever before you, that slow development is far more conducive to the attainment of the best results, and that "more haste, less speed," is particularly applicable to all kinds of chemical work.—Photographic Times.

COLLODIO BROMIDE AND TRANSPARENCIES FOR PHOTOGRAVURE.

By E. SANGER SHEPHERD.

In order to produce a photogravure plate it is first of all necessary to have a transparency made from your negative, and it is only by taking the greatest care that this shall be perfect for its purpose that a perfect plate can be secured.

It is necessary that this transparency should have every tone of the subject clearly defined, and with as wide a range of gradation as possible. It must start in the highest lights, with all but bare glass in every case, but the density of the deepest shadows must be in accordance, not so much with the subject as the nature

of the grain to be used on the copper plate.

Roughly, you may put it in this way :

1. Very delicate subjects with fine detail require a very fine even dust grain on the copper plate, and a very delicate transparency; all the detail must be there, but the deepest shadows must be decidedly thin.

2. All ordinary subjects, including negatives from nature, such as would print well on silver paper.

3. Reproductions of paintings with heavy masses of shadow, and very large plates, such as require a coarse grain in order to avoid muddiness.

For large masses of shadow and heavy subjects it is necessary to get very much wider range of tone in the transparency, because one must use a larger dust grain on the plate, and in order to get the requisite pluck the etching solution must act longer on each tone, i.e., the total time of etching must be very much longer. Instead of an even-sized grain for such subjects, I prefer to use a mixed bitumen and resin grain. First, lay a coarse bitumen grain rather wide apart on the plate, and affix by heat in the usual way, then lay a copious very fine resin grain over the bitumen, and heat only sufficient to firmly affix it to the plate. With such a grain the fine particles of resin will soon be undercut in the deepest shadows by the etching solution, leaving the bitumen to form the ink-holding capacity of the plate, but the resin will secure delicate half tones in the lighter parts of the picture, and the few dots of white in between caused by the bitumen will add to their brilliancy.

I have here and will pass around two transparencies. One is a carbon print, such as would yield a good photogravure; it is from a negative from nature, that negative being of such density that it will give all the gradations and density required by

simply printing in autotype tissue. Where your negative is of this type and the required size, I think this process may always be relied upon to secure the finest results.

The second is a much more delicate subject, being a reproduction of a silver-point drawing. Such a subject requires a very fine grain, preferably white resin, and as that grain is very easily undercut by the etching solutions, it is necessary to get all the gradations in a very much closer scale.

Perhaps the easiest method of securing a transparency of any desired kind is to use collodion emulsion. Gelatine dry plate, I know, will do very well for many subjects, but I have always found collodion more certain and less difficult.

For the emulsion I prefer as simple a formula as possible, and after experimenting with many I settled on an unwashed bromide emulsion as the most suitable. The emulsion is made in bulk using an excess of bromide so that in the unwashed state it is very insensitive; by using it in this form and afterward washing out the excess of bromide you may coat the plate in a good light, when all defects may be at once noted, dust, specks, etc., and then take the plate into a safer light whilst washing out the excess of bromide.

With such a plate any class of transparency required may be obtained with ease by varying the exposure and length of development, a strong, plucky picture from a very thin negative, or vice versa. I find it best with line subjects to get only a very faint image with the development, and secure the requisite density by after intensification.

To prepare 10 ounces of the emulsion dissolve 250 grains of silver nitrate in a test tube with $2\frac{1}{2}$ drachms of water and add $2\frac{1}{2}$ ounces of warm alcohol (0.805), weigh out 50 grains of pyroxyline and place in a 12-ounce

amber glass bottle, add the silver solution and 5 ounces of ether (0.725) to dissolve the cotton.

In $2\frac{1}{2}$ ounces of alcohol dissolve 200 grains of zinc bromide, take the solutions into the dark-room and gradually add the bromide to the collodion, shaking well between each addition.

For development I have always used the formula for pyro and ammonium given by Mr. Brooks:

No. 1.

Saturated solution of carbonate ammonium	4 oz.
Potassium bromide	4 dra.
Water to	20 oz.

No. 2.

Pyrogallic acid	6 dra.
Alcohol	4 oz.

For a half plate take $\frac{1}{2}$ ounce of No. 1 and 6 to 12 minims of No. 2 according to the class of transparency required.

Either hypo or cyanide may be used for fixing, but if the negative is to be intensified I prefer cyanide, as the film can be washed in a shorter time; I never use a substratum but only an edging of rubber solution; dishes are not necessary, and any size plate may be coated with ease without the uncertainty of using a different batch of emulsion as you would probably have to do with gelatine plates. A heavily weighted stone jar with a pad fixed in the mouth should stand in the sink to support the plate during development, etc.

It is always advisable to secure the necessary density of half-tone subjects by development or acid pyro intensification, but for line work I prefer to get a very faint clear image with the developer and intensify with lead; after fixing wash well and flow over with

Nitrate of lead	2 oz.
Red prussiate potash . . .	2 "
Water to	20 "

Wash well under the tap and flow over with water 10 ounces, nitric acid $\frac{1}{2}$ drachm, wash, and flow with sulphide of ammonium, wash and again apply the acid. The very finest line work may be copied in this manner without fear of the lines filling.

For keeping the emulsion I use a 10-ounce ordinary wet collodion pourer with cap, kept in a tin with loose fitting cover, so that it may be easily taken off with one hand in the dark-room. For copying from line subjects on yellow or toned papers add a few drops of an alcoholic solution of erythrosine to the collodion and use a faint yellow screen.

Extreme contrast, such as required for line work, can be much more easily obtained with an unwashed than with a washed emulsion.

For line work in photogravure I prefer to have a very small amount of dust grain on the plate, and if the drawing contains brush work or large black patches, to let these go in the etching and recover their value afterwards by re-etching. If you attempt to use a sufficiently large dust grain to give brilliant deep blacks the finest lines would etch broken or rotten.

I will pass around an example. There are in this drawing a great number of very fine lines together with solid patches of black; these fine lines if etched over a coarse enough grain to suit the black patches would have been broken up into dots, but by keeping the grain fine, the fine lines are all sweet and clean, and the solid blacks, which were undercut in the etching, have been recovered by after-biting.

I would like to mention a wrinkle in connection with line negatives. One sometimes wishes to copy a print on colored paper, and I have found it more easy to bleach out the color than to attempt to make a good line negative by the use of orthochromatic plates and a yellow screen.

I may say the only difficulty likely

to be met with in making the collodion emulsion is with the pyroxyline; this should dissolve without leaving any glutinous particles. The best way is to try several brands, and when you get a suitable one, buy a quantity; a little sand of insoluble matter in the emulsion will not matter, but always shun a cotton which gives a floccy collodion.—The Photographic Journal.

ORTHOCHROMATIC PLATES WITHOUT SCREENS— A REPLY TO MR. S. H. HORGAN.

By W. A. COOPER.

“And the parson made it his text that week,
And he said likewise,
That a lie which is half a truth is ever
The blackest of lies.
That a lie which is all a lie may be met
and fought with outright.
But a lie which is part a truth is a harder
matter to fight.”

A writer on orthochromatic plates, in a late issue of the Photo-American, Mr. S. H. Horgan, has an article on the above subject, with some illustrations showing recent experiments with different plates as to their color values, intended as a test of their orthochromatic qualities.

At first glance it would seem he had made an exhaustive research on these lines, but a careful reading shows him to be anything but an impartial judge, and consequently a dangerous writer or experimentalist to follow.

He begins his paper with this advice from Mr. Bierstadt: “If you did nothing else for the remainder of your life but advocate the use of orthochromatic plates, to the exclusion of all others, your time would be well spent.”

It would have been better had Mr. Horgan taken this veteran's advice, and not only advocated but studied the beauties and qualities of ortho-

chromatic plates before attempting to mislead a great portion of the reading photographic fraternity—the amateurs—who are always eager for knowledge on this important branch of negative making.

It is this class of young amateurs, who look and depend on our journals and magazines for just this kind of information, who are injured and misled by such articles as Mr. Horgan's.

Old workers and professionals are too well posted to believe that the blues and violets in a painting or in nature can be photographed correctly without the use of a screen, and cannot or will not go against their everyday experience and practice, and believe that there is only one plate in the market that will do this and that a very slow one.

Is Mr. Horgan serious? or has he only given out his hastily-tried experiments as a sort of bravado, thinking no one will dare reply? or was he paid for the article? as one would expect to be for any good advertisement.

It is due to the fraternity that, Mr. Horgan should define his position before talking any more nonsense about the value of orthochromatic plates, and not take the young man who sold him the plates as being serious when he said, "All dry plates of the best makers were now made orthochromatic."

The Seeds (26), Hammer's Extra Fast, Cramer's Banner and Eastman's Rapid are not orthochromatic, the makers not claiming these qualities for them. Mr. Horgan should know this, and does, if he is a practical man. So the test is valueless and a great injustice to the makers of these excellent plates.

I can take any of these plates just mentioned that make no pretension for color values, and with the use of a screen behind the lens, or by soaking the plate in a yellow dye, produce

perfect blues and violets. It is only in the reds, yellow and greens that orthochromatic plates claim any superiority; when the violets and blues are wanted in their true relation to the other colors, then you must use a screen or prepare your plate for them.

Dear old Prof. Erhman said, after lengthy experiments, "for general work the interposing screen cannot be dispensed with."

M. J. B. B. Wellington, of England, says: "To get any effect at all to orthochromatic plates a yellow screen is necessary, but many people imagine they will show correct rendering of color without any screen at all. I have not yet seen the gelatine plate that will do so."

And the greatest of all the English experimentalists, Capt. Abney, says "that orthochromatism is valueless without reducing the action of blue, or when blue or violet predominate, a yellow screen is necessary."

Mr. Geo. A. Sawyer, of the Navy, a man who knows what he is talking about, says: "While there is an appreciable advantage in other plates over the plain bromide for all subjects, it is only when used in conjunction with a color screen that their full virtues are brought forth. The ordinary bromide plate represents the color values with the greatest departure from nature. In fact, no color but red had its proper weight. The blues in the upper part of the background are too light, and some of the greens too light and some too dark. The plain ortho-plates correct some of these defects, notably in the greens, while the ortho-plate and the color screen is still nearer the truth of nature."

Mr. Edward Bierstadt, who above all others in this country I should place first as an experimentalist in color plates, says: "Cramer's Slow Isochromatic-plates lead the others so far in orthochromatic properties that, as

was said in the first International yacht race, 'There is no second.'

Now, suppose all other plates were out of the market except this slow isochromatic plate—it is, confessedly, four or five times slower than any other plate of the lot tested—what could we do in portraiture, instantaneous and many other uses. Instead of that particular plate being so far above all others, I would place it at the bottom of the list. It is, however, a good plate for some users, but Cramer's Medium Isochromatic, Wuestner's Orthochromatic, Carbutt's Ortho or any other orthochromatic without the yellow dye that the Cramer Slow Iso-plate is coated with, are all very much superior for everyday work.

On the slow plate the screen (color screen) is on the plate, in addition to the color sensitizer in the emulsion. Dr. Eder, of Vienna, mentions the Smith plate, colored yellow with "Picric acid" or "Martin's yellow," or both, which is washed away in developing.

Dr. Albert uses Picric acid in his collodion emulsion. I coated ordinary orthochromatic plates, years ago, with an alcoholic solution of Tropaeolin, which operated as a screen, but abandoned it as soon as the market was supplied with the regular ortho-plate, as I found that I did not always want the yellow screen; with the slow iso-plate you have to use the screen, as it is dried on the plate, and you cannot get rid of it; the ortho and the iso of all the makers are far ahead of it, and all can be used with or without a screen, as the case may require, and all can be used for every possible kind of work, whether it be copied from colored pictures, or black and white portraits or landscape."

And the last authority I shall mention, M. C. H. Bothamly, a gentleman well-known in England as an experienced worker and writer, says: "In

the case of ortho-plates, the orange, yellow and greens are very much too light. It is only when the yellow screen is used that the values become correct." Dr. Eder alone has experimented with over 150 different color sensitizers and found only a few that are now well known and used in making ortho-plates. But these are only for the reds, yellow, orange and greens. All the makers advise the use of a color screen, with the single exception of Mr. Cramer.

It will be apparent to all that these Cramer slow plates are a screen in themselves. Examine one unexposed in white light and observe the color. Examine also one of his non-halation plates, and remember the fact that the latter is made on the lines of the Roach patent owned by the Cramer Co., and consists in coloring the substratum used with a dye, affecting the under portion of the emulsion, also making it slow, thus preventing reflection or halation.

The same coloring matter used on the face of a fast Cramer Iso-plate will make it a slow one with a perfect screen on its face. So when Mr. Horgan tells us his tests were made without a screen it is, to say the least, unfair and a great injustice to the makers of other ortho-plates.

Mr. Horgan further says: "The exposures were made in the middle of the day, as rapidly after each other as possible. Why? He does not mention time of exposure, inferring all were given the same exposure. Nor does he mention the fact that the Cramer Slow requires from eight to ten times the exposure of any of the other makes used, or practically as long as I would give a Wuestner Ortho with a screen."

This in itself is a farce, and shows the test to have simply been a trick and not deserving the notice here given to it; but for the fear that silence on our part might be taken as an evidence of believing Mr. Horgan

to be correct in his deductions and encouraging further researches and tests on his part, I have given my experience with ortho-plates. Mr. Horgan towards the close of his article says: "Wuestner and Carbutt plates possess like properties; violets, the darkest color, photographing lighter than yellow, the brightest, which leaves three plates hardly deserving the title orthochromatic."

Ye gods! What a consummate cheek this man must possess to dare publish such an insult to the makers and workers all over the civilized world, that the plates they have considered perfect in color values "hardly deserved the title of orthochromatics."

What a misfortune of mine not to have made the acquaintance of this authority in orthochromatic photography, this searchlight on the watch tower, looking all over for a perfect plate and only finding it in St. Louis! All the work of John Carbutt, Mr. Wuestner, Lumiere Bros., Dr. Eder, Dr. Vogel, Dr. Forbes and the great English amateurs have been in vain. They will have to overhaul their formulae and "make a note of it." All the private galleries I have reproduced, and the many great pictures I have copied in the public galleries in this and other cities, have been in vain, as I have used almost exclusively the Wuestner and Carbutt plates.

And the expert critic, Mr. Alfred Trumble, a most gifted writer on art and a judge of color, must have been mistaken in speaking of my work from paintings, when he says:

"Among a number of examples of his art which I have before me, is a series of reproductions from paintings, ancient and modern, in the collections of Mr. Albert A. Munger, of Chicago; Miss Georgiana Schuyler, of this city; Mr. William Macbeth, the Metropolitan Museum of Art, and others. The results which he arrives at in these reproductions are

simply astonishing. Not only does he secure the form and light and shade of his originals, but he gives one also the color values, texture and technique, with an incredible fidelity. For example, there are two photographs after paintings by Lancret, both exteriors, park scenes, with figures. Those familiar with Lancret know his predilection for blues, a color generally considered next, to impossible for the photographers. Yet in these reproductions Mr. Cooper has rendered in black and white, without any trickery of retouching, as absolute a reflex of his originals as is possible with monochrome repetitions of works in color, even to the subtleties of handling and the very texture of the canvas. The blues and the cool grays are in their proper relation with the warmer tones, the lights are brilliant without any forcing of effect, and the deeper notes strong without being opaque or heavy. Another triumph over similar difficulties is a photograph of a painting by Julien Dupre, "In the Harvest Field," one of his all-out-of-doors exploits of bright, cool light, which is given to perfection.

To take a mixed lot as they come, here are copies of pictures by men as various in their styles and methods as Meyer Von Bremen, Charles Bague, Fromentin, Vibert, Meissonier, Christian Mali, C. Van Leemputten, Van Marcke, Charles Jacque, Teniers, Gerome, Detti, Corot, Albert Lynch, a half-length Joan of Arc belonging to Boussod, Valladon & Co., and Lerolle. This latter is the large choir-gallery scene, presented to the Metropolitan Museum of Art by the late George I. Seney, one of the most difficult paintings to photograph, by reason of its peculiarities of color and contrasts of light and shade, which I can imagine. Two perfect masterpieces are reproductions of portraits by Gilbert Stuart of the grandfather and grandmother of Miss Schuyler,

both bust lengths, which only lack color to place the work of the painter completely before you. Another notable photograph is after a portrait by Stagg, of Lieut. Philip Schuyler, an upright three-quarter length, in uniform, with his gloved hands resting on the hilt of his sword. Nothing could be more just or delicate than the rendition of this figure, posed against a light background, in its blue uniform, with the buff gloves and the brass and gold relief of buttons, bullion and accoutrements, each holding its relative value in the monochrome of the carbon print."

It may be of interest to many workers to know that all the earlier negatives made in Chicago of the paintings mentioned were made on Carbutt Ortho-plates with screens furnished by him; while the later ones made in New York, including Lancret, Stuart and Lerolle, were made on Wuestner Ortho-plates with a screen in every instance.

The 10 x 12 plates made of the international yacht race, a year ago, under the most unfavorable circumstances as to light and weather, as all know, were charming in sky and water effect, and were made on a Wuestner plate, without a screen, of course, as the rapidity required left that out of the question. I use and appreciate all the good qualities of the Cramer plate; but, in common with old and experienced workers, prefer a plate that requires a screen. This will be understood when I say that my work consists chiefly in reproducing paintings and making interiors—in both cases it is absolutely necessary to use a screen of the proper color to suit the subject in hand. This I do either back of the lens or in the diaphragm, and the screen that gives the violets and blue their proper color on the ground glass I use—something not practical in using dyes on the plate.

TONING BROMIDE PRINTS.

By DR. A. MIETHE.

The bromide prints are developed in the usual manner with the formula of hydroquinone and metol fixed, well-washed, then submitted to a bath of weak bichloride of mercury until bleached, or in the following method:

Stock Solution.

Bromide of potassium .	20 parts.
Sulphate of copper . . .	20 "
Water	100 "

For use, take 1 part of this and dilute with 10 parts water. With some varieties of paper the bichloride of mercury is very difficult to wash out, which is not the case with the copper bleacher.

After the prints have been bleached by either method they are well washed and submitted to a second development with weak rodinal solution (1-100). It will readily be seen that in the first development the operation should not be carried to the full degree, otherwise the second development will render the prints too intense.

The bichloride of mercury solution is allowed to operate only until the deepest shadows of the print begin to bleach. If this precaution is not taken, on the subsequent development the shadows will be too much clogged.

The second development or blackening of the image is best effected by daylight, as the tone can be better judged than in the yellow or red light of the dark-room.

If the dilution of the rodinal bath is properly adjusted a variety of tones can be secured, beginning with reddish-brown and passing by rapid gradations to brown and bluish-black.

As soon as the desired tone is reached the print must immediately be taken out and washed in water, placed in the hypo bath for a few minutes, and finally well washed.

If the image in the second development comes out too strong it may be reduced with the well-known Farmer's reducer (ferricyanide of potassium and hypo), but it is necessary here to use great care, as the half-tones are liable to suffer, being attacked more vigorously by the reducer than by the deep shadows. A few seconds will generally suffice. A weak solution of perchloride of iron and citric acid frequently acts more uniformly than the ferricyanide and hypo. The formula is: Perchloride of iron, 60 grains; citric acid, 120 grains; water, 32 ounces.

In both cases watch closely the action, and remove the print as soon as the proper degree of reduction is obtained.

The advantage of this process of toning over many others consists in the ease with which uniformity of tone is secured in dealing with many prints.—Photo Archiv.

PHOTOGRAPHING CLOUDS.

It is well known that the clear-blue sky has the same effect upon the sensitive plate as light clouds (cirrus and cirro-cumulus), and the intensity of the former must be moderated by the interposition of the yellow screen.

On the other hand, it is necessary that the plates should be sensitive to the transmitted yellow and green rays, hence orthochromatic. As a screen or filter one should select the best yellow glass. But as this article cannot always be procured of the proper intensity, an excellent and effective substitute may be had in the use of a glass cell filled with colored liquid. Gelatine and collodion films dyed yellow are not to be recommended, inasmuch as their color changes under the action of light, besides losing much in transparency.

The glass cells for this purpose may be had ready made of the dealers in

optical apparatus. They may be sealed at the top after the introduction of the colored liquid by means of a flat piece of glass. They are best placed in the slot for the diaphragm of the lens.

The best preparation for filling these cells is a saturated solution of bichromate of potash, to which is added a few drops of hydrochloric acid.

According to the nature of the clouds to be photographed, a greater or lesser intensity of the yellow fluid should be employed.

For a light-blue sky, or with those delicate feather-like clouds, denominated mares' tails, the saturated solution of the bichromate should be used.

For a darker-blue sky, with well-defined cirrus clouds, the saturated solution should be diluted with an equal volume of water.

For clouds still better defined, like the cumulus, so prevalent in summer, or the storm cumulus cloud, dilute the saturated solution with three volumes of water.

If the cell containing the bichromate solution is hermetically sealed it will last for a long time without any appreciable evaporation or crystallization of the salt on the sides of the glass.

The ordinary orthochromatic plates of commerce may be employed if freshly prepared.

The most suitable developer is the alkaline pyro. Begin with a mixture containing a minimum of bromide of potassium and very little pyro, and rather an excess of alkali in order to bring out the image rapidly but weak, which may be strengthened gradually by successive increments of the pyro, until the desired intensity is attained.

The exposures are necessarily very brief. With the employment of the yellow screen of greatest intensity and an aperture of lens $f-30$, cirrus clouds need only an exposure of less than

six seconds. With an opening of lens $f-15$, and very bright cirrus $f-30$, a second often suffices.—Photo Correspondence.

PRACTICAL FORMULÆ.

Making Panoramic Pictures.—

In a leader on the making of panoramic photographs in sections, that is, panoramas formed by joining several prints from three or more negatives, the *British Journal* gives the following hints which will doubtless be of use to some of our readers. The camera must be planted perfectly level; it should rotate freely on its base; the centre of rotation should be as nearly as possible under the optical centre of the lens; the camera must not be moved between the exposures except for the purpose of rotation; the exposures should be made quickly, one after the other, and each plate should receive the same exposure. In arranging the camera for the different sections of the picture, a good margin should be allowed on each negative—that is, each should contain at either end a good amount of the subject of the adjoining negative. By this means the dark ends so often seen in panoramic pictures may be avoided, and the joinings of the pictures more easily hidden than if the whole of each negative were used. In developing the negatives they should all be made of the same density and of the same character, or prints of the same tones will not easily be obtained. The prints should be made on a paper giving reliable results with uniformity, such as albumen paper; they should be all printed to the same depth and toned in the same bath. It is important that the prints shall be cut in the same direction from the sheet, otherwise when they are wetted, they will expand in different directions. The best way to cut the prints so that each section

will join evenly is to superimpose the duplicated portions and then cut through both prints at once with a sharp knife. Sometimes it is better to make the joining run otherwise than straight through the subject.

The Toning of Gelatino-Chloride Prints.—An excellent all-around toning bath for gelatino-chloride papers is made as follows: Prepare a stock solution of sodium acetate, 1 ounce; sodium bicarbonate, 1 drachm; water, 15 ounces. For use take 2 ounces of this stock solution, 16 ounces of water, 2 ounces of gold chloride solution made by dissolving 15 grains of chloride of gold in 15 ounces of water.

CLIPPINGS.

Magnesium chloride has been used successfully as a fixing agent in place of sodium hyposulphite, and common salt (which is sodium chloride) is said to give good results for prints.

Nitrate of silver, if required in solution for sensitizing, etc., should be dissolved in distilled water or else a precipitate of chloride of silver may be the result. If distilled water is not at hand, boiled and filtered water will do instead.

If the new substance "Pegamoid" is what it claims to be, namely, a waterproof paper, it may be very useful in photography for making dishes, etc., for backing papers and other things innumerable, for which a thin, tough, pliant, impermeable substance is required.

Intensification.—If the negatives developed with pyrogallol are treated with a solution of ferric oxalate of potassium, they intensify. The ferric salts, together with the oxidation products of the developer, form an ink that colors the picture considerably darker.—Archiv.

Cleaning Glass Plates.—The following method will serve to make the plates very clean before exposure: Rub together calcined magnesia and benzine so that a mass results from which drops can be pressed. The solution thus obtained must be kept in a well-corked glass bottle. It is rubbed on with a piece of cotton.—Chronik.

The acid fixing bath is a great convenience, and certainly helps to give clear negatives. There are many formulæ, but the following is excellent, though a trifle more expensive owing to the cost of the sodium metabisulphite, viz., 2d. per ounce.

Sodium hyposulphite. 4 ounces.
 " metabisulphite. 1 "
 Water.....20 "

Removing Silver Nitrate Stains.—Make up the following solution:

Mercury bichloride... 5 grains.
 Ammonium muriate... 5 "
 Distilled water.....40 "

Apply the mixture to the spots, then rub. This removes stains almost instantly, even if old, on linen cotton or wool. Skin stains thus treated become whitish-yellow and soon disappear.

Photography of the Invisible.—

A simple experiment, serving to show the existence of rays invisible to the human eye at the violet end of the spectrum, can be accomplished by virtue of one of the properties of quinine, which has the power of lowering the tone of violet, ultra violet and blue rays, or in other words of converting them into rays of less refraction. The method adopted is to take a strong solution of sulphate of quinine and write or draw with it on a piece of paper. The result will scarcely be visible to the human eye, but if the paper is photographed, the drawing or writing will appear clear and black in the ultimate print.

A Varnish for Celluloid Films.—

Powdered amber ... 3 parts.
 Chloroform 45 "
 Coal-tar benzine.... 45 "
 Gum dammar..... 7½"

The mixture should be allowed to stand in a warm place for some time and decanted twice before using.

Permanent Bottle Inscriptions.—

Brown shellac 60 parts.
 Methylated spirit 150 "
 Borax 35 "
 Water.....250 "
 Methylated violet.... 1 "

First the shellac is dissolved cold, then gradually warmed, and afterwards gradually added to the borax solution; the dye comes last.

Some two or three years ago a contrivance was introduced for supporting the front of the camera when racked out to its full length, so as to prevent vibration of the apparatus. This same result can be obtained by fixing a piece of fine twine like water-cord from the bottom of the front to the middle of the front leg of the tripod. This cord does not support the front, but in a wind certainly stops the vibration both vertical and horizontal.

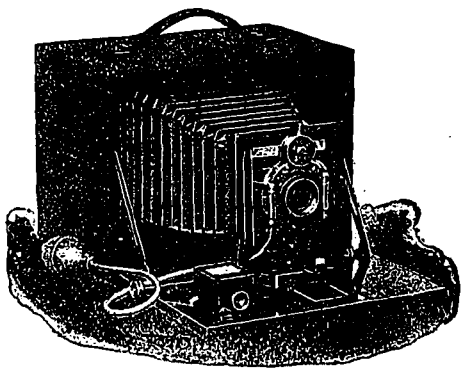
Influence of Temperature on Dry Plates.—Herr A. Schellen has experimented on the influence of temperature on silver bromide plates and found that the sensibility of silver bromide does not change between -20° and $+20^{\circ}$, but that the density of the silver deposit with the same length of exposure is increased approximately in proportion to the temperature. From 20° downwards silver reduction takes place also in the non-exposed parts. From this it seems that the temperature of the plate at the time of exposure is indifferent, but that the developer must always be kept below 20° .—Centralblatt.

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**Metol Hydroquinone
Developer (Hammer).**

Pure hot water	160 oz.
Sulphite of sodium (crystals)	6 oz.
Carbonate of sodium (crystals)	5 oz.
Metol (Hauff)	1 oz.
Hydroquinone	60 gr.

To develop, take of the stock solution and water equal parts.

Eikonogen Hydroquinone Developer.

Pure hot water	60 oz.
Sulphite of sodium (crystals)	3 oz.
Eikonogen	1 oz.
Hydroquinone	60 gr.
Carbonate of potassium	1 ½ oz.

Or 3 oz. carbonate of sodium, cryst.
To develop, take the stock solution and water equal parts. Less water gives more density and contrast.

To prepare cotton, silk, pocket handkerchiefs, etc., for receiving washable platinum prints, treat them with the following solution :

Water	600 parts.
Alum	25 "
Soluble glass	18 "
Vaseline	28 "

While the mixture is cooking it must be well stirred, and then laid on while warm with a hard brush and dried by heat.—Chronik.

Ox-gall for Artistic or Photographic Purposes.—Procure from a butcher half a pint of ox-gall. Place this in a clean saucepan and add one ounce of powdered alum and one ounce of common salt. Place over the fire, and when it boils remove for half an hour to cool ; then boil again and repeat this boiling and cooling for three or four hours, and decant off into a bottle, in which put two or three drops of essence of lemon. Cork and preserve for use.

Life at Washington.—The inauguration of a President, the selection of his Cabinet, and the seating of a new Congress—national events of the coming year—suggest the question, What are the powers and duties of these high officials? During 1897 it will be answered through the Youth's Companion, in a remarkable series of articles by Secretary Herbert, Postmaster-General Wilson, Attorney-General Harmon, Senator Lodge and Speaker Reed. The Illustrated Announcement for 1897 (mailed free on application to the Youth's Companion, Boston) shows that the above is only one of many brilliant "features" by which the Companion will signalize its seventy-first year. Three novelists who at present fill the public eye—Ian Maclaren, Rudyard Kipling and Stephen Crane—will contribute some of their strongest work. Practical affairs and popular interests will be treated by Andrew Carnegie, Hon. Theodore Roosevelt, Dr. Lyman Abbott, Madame Lillian Nordica, Hon. Carl Schurz, Charles Dudley Warner, Mrs. Burton Harrison, and a hundred other famous men and women. Four fascinating serials, more than two hundred short stories, and ten times as many sketches and anecdotes will be printed during 1897; and all the departments will be maintained at the high standard which has made the Companion's name a synonym for impartial accuracy. The cost of the Companion is but \$1.75 a year, and we know of no investment that will give so great returns for so small an amount of money. New subscribers will receive the paper free from the time the subscription is received until January 1, 1897, and for a full year to January, 1898. New subscribers also receive the Companion four-page Calendar, lithographed in twelve colors, which is the most expensive color production its publishers have ever offered. Address, The Youth's Companion, 205 Columbus Ave., Boston, Mass.

Obituary.



NAPOLEON SARONY.

Just as we go to press we learn with deepest sorrow of the death of that world-renowned artist and photographer, Napoleon Sarony, who passed away on the morning of the 9th of November. It was but a few days ago that the pleasure of an interview with Mr. Sarony was ours, and, as he then appeared to be in his usual health, this sudden news shocks us, as it will all our readers, inexpressibly.

His thousands and thousands of friends will deeply mourn the loss of such a man. The city has lost a distinctive landmark.

An extended notice will appear in our next issue, regarding the life and achievements of America's best-known photographer.—The Photo-American.

DR. LIESGANG.

We note with deep regret the death of Dr. Johann Paul Edward Liesgang, which occurred in Düsseldorf, September 6th. Dr. Liesgang was deeply interested in photography from the age of fourteen to the time of his death (fifty-eight), and has done much both in writing and manufacturing, as well as in bringing out the ideas of others. At the age of sixteen he published his first book, at twenty-one the degree of Doctor was conferred on him.

Dr. Liesgang established a factory where were produced Albumen paper, Aristo paper, and photographic apparatus, being the first to introduce Collodio-chloride paper in Germany. Besides the business he also conducted several magazines at different times.

Dr. Liesgang was well known and highly esteemed, and his loss to the photographic world will be painfully felt.

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W. C. MACDONALD,
Actuary.

J. K. MACDONALD,
Managing Director.

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FOR SALE OR EXCHANGE

Advertisements in this column, on and after this date, will be charged at the rate of one cent a word. The amount must, in all cases, accompany advertisement.

AN ENGLISH CAMERA, 6½ x 8½. Six double holders, tripod, Beck lens and diaphragm shutter (time and instantaneous), four printing frames, ten-inch Acme burnisher, leather carrying case, shears, two graduates, etc., etc., as good as new. Price, \$50 cash. Apply to **ELLIOTT ILLUSTRATING Co.**, 31 King St. East, Toronto. 8

BARGAIN.—4 x 5 hand camera, with complete outfit; nearly new; cost \$30, sell for \$45 cash. Particulars on application. Box 26, Mount Forest. 5

ENGLISH 15 x 12 camera and outfit to be sold at half cost; never been used. Write for particulars, Southworth, Fort William, Ont. 7

FOR SALE, one of the oldest established Photo Galleries in the city of Winnipeg, Man. Outfit in good order, fitted from 18 x 22 down. Will sell cheap. Good reason for selling. Address **PHOTOGRAPHER**, Box 368, Winnipeg, Man. 5

FOR SALE or exchange, one 4 x 5 folding Premier camera, R. R. Lens, four double plate holders, tripod, and two developing trays; all only used one summer, good as new; what offers? **H. N. McDONALD**, Mount Forest, Ont. 5

PHOTO business for sale in the town of Barrie; population 7,000; a good business to be done; sold cheap; only one other gallery. **JOHN STEPHENS**, Box 217, Barrie. 7

SEVERAL articles second-hand photo apparatus; cheap. Box 779, Collingwood. 12

SITUATIONS WANTED

Advertisements under this head free.

AN experienced young lady is open for engagement as retoucher, or retoucher, printer and toner; capable of taking full charge of reception room; good references, moderate wages. Address, Box 228, Oshawa, Ont. 10

BY a first-class all around photographer; samples of work and references on application; open for sit at once. **ALF. J. JENNINGS**, Brantford. 7

OPERATOR and printer wants situation, nine years' experience; reference from last employer. Address **F. H. K.**, 117 East Main Street, Jackson, Mich. 6

PHOTOGRAPHER, 10 years' experience, situation wanted with view of renting studio; I can also speak German. **JNO. DIERLAMM**, Stratford, Ont. 12

PHOTOGRAPHER, young man, six years' experience, wants situation; best of references; Only those wanting a good man need apply. **HY PLATT**, Campbellford, Ont. 11

LADY retoucher wishes situation at once; best reference. Samples on application. Address, "Retoucher," Forest, Ont. 10

SITUATION wanted, by an AI retoucher and all round workman; experience in leading studios. **J. L. MUNROE**, Kincardine, Ont. 11

SITUATION by all-round photographer, printing and finishing preferred; have had full charge of studio; moderate wages; good references. **A. E. C.**, 55 Churchill Ave., Toronto. 10

SITUATION wanted by good all-round man of 8 years' experience, able to take full charge of a good gallery. Address, F. W. KELSEY, photographer, West Port, Ont. 10

SITUATION by young lady to do office work, can also assist in retouching. **MISS N. HASS**, East Toronto, Ont. 11

SITUATION by a first-class photographer who is capable of taking full charge of any studio; will work by the week, or rent a gallery all equipped; single man of 25 years. **WM. WESTERN**, Brantford. 12

SITUATION wanted at once, by lady as retoucher, first-class, willing to assist in reception room or at general work of gallery; can make a sitting if necessary. Address, "RETOUCHER," Chatham, Ont. 11

WANTED, situation as all round assistant, or as first-class finisher; salary low. **A. J. FEAST**, 125 Pearl Street North, Hamilton, Ont. 10

WANTED, situation by a young man of a year's experience, well up in viewing and printing; wages moderate; will work as an improver. For further reference apply to Box 4, Brussels, Ont. 10

WANTED, situation as printer and general assistant, by a young man with two years' experience; best references as to ability and character furnished on application to W. J. YOUNG, Box 136, Chatham, New Brunswick. 10

YOUNG man as second printer; one year with Morrison, Chicag. Address GEO. RICHARDSON, 882 Bonney Ave., Lawndale, Ill. 7

YOUNG man, aged 21, with several years' experience in out-door work, would like situation as improver with landscape photographer or other. **E. REARDON**, 248 Friel Street, Ottawa. 7

YOUNG man, who can retouch, would like position in studio with chance to improve in other branches; wages very low on start; best of references. Address H. JAQUES, care "Elite Studio," Mitchell, Ont. 12

SITUATIONS VACANT.

PHOTOGRAPHER requires first-class lady retoucher, situation permanent to the right party. 583 Queen Street West. 10