

Journal of the Amateur Photographic Society of Madras.

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EDITORIAL NOTES.

THE "Amateur Photographer" remarks that many a newspaper has now-a-days its photographic column, contributed sometimes by an expert, and at others very obviously by someone whose ignorance can only be stigmatised as stupendous.

Some 7 or 8 months ago we made some notes of the answers given in a London weekly

illustrated paper of good class and we greatly pity the unfortunate enquirers who were trying their best probably to struggle out of the darkness of ignorance:—here are some of the answers.

1. "By not keeping the developer in "motion you have allowed some crystals to rest on the film". Fancy the state of one's developer with undissolved chemicals forming part of the mixture poured over a plate!
2. *Dark-room light.* "Any light will do, "but it must be screened by red and yellow. Red alone is not safe."—This needs no remark.
3. "Pour the developer rapidly and "evenly over the plate to prevent blistering"!!!
4. *Platinotype instructions.* "In about a "minute development should take "place. A clearing bath of Hydro-"chloric acid 1 part to 50 of water "should be used when the paper will "become black and white." To printers in platinum comment is needless.

SINCE the last Journal was published we tried an ordinary Bicycle Acetylene lamp as the illuminant for bromide printing by contact: such a light might possibly be useful to the possessor of negatives of such density as to require some hours exposure to sunlight for P. O. paper, but to those whose negatives print fully in diffused light in 15 to 20 minutes we can only say—leave acetylene alone. With a good clean negative we found that with one second at 3 feet from the light the bromide paper (Barnet) was hopelessly over-exposed and with a *very* dense negative requiring some 5 to 6 minutes at 2 feet from a Silber lamp, 20 seconds at 2 feet gave an over-exposed print but even then we found the light not at all regular or even, for on putting a clean piece of white paper in front of the light we found the illumination very uneven and streaky, and this effect developed out on the bromide paper: it would therefore be necessary to shade one's printing frame with a piece of ground glass, or tissue paper.

A RECENT Saturday Review has the following criticism upon a new book on photography:—it would be interesting to know what the last sentence of their criticism means !!!

La Photographie, est-elle un art?—By R. de La Sizeranne.

M. de La Sizeranne is known in this country as the author of a book on Contemporary English Painters. He will not add to his reputation as a critic by the present volume written to support the confusion fostered by photographers who give their plates the superficial appearance of pictures. The question was discussed in these columns in connexion with the exhibition of photographers from whose works the illustrations are drawn: it is needless therefore to discuss it again at length. No one will dispute the statement that photography is an art, but it is amusing to see a critic swallow the implication that a photograph however carefully selected, dodged and treated becomes a work of the art of drawing. For that to happen a last stage has to be gone through; *the negative must be redrawn.*

WE congratulate ourselves upon having received communications from two members of the Society towards the contents of the

Journal which we are sure will be perused with great interest and benefit: the article on how to find a lens' equivalent focus will be of much use to those who desire to know more of the instruments they use for picture-making than is provided for them in the makers' price lists, while the other article on a visit to the "Smoking Rocks" of the Cauvery gives every detail that can be required by one wishing to pay a visit to such a lovely place.

The Journal of September 1897 contained an illustration by one of our members of a view at Hoganakal, but the young native gentleman who has been so good as to write this descriptive account of his trip there has visited the spot when there was a good deal more water in the Cauvery: he sent some 5 or 6 pictures with his paper which were on view with other "Water Scenes" at the December meeting.

Since writing the above we regret to find that the pressure on our space is so great (a most unusual thing we should say in the experience of any Editor of this Journal) that we have been compelled to leave out not only the above account of a trip to Hoganakal, but the third part of the paper on "The use of Bromide Paper" and some interesting matter of other kinds.

MR. THURSTON has very kindly provided one of his well-known "studies" for the illustration of this number and has added considerably to the interest that will be taken in his picture by placing at the Editor's disposal very full information upon the habits and customs of the Kadirs, from which we have been able to make up a short account for the use of our readers. Members might considerably assist future Editors by contributing pictures of the interesting races in their parts of India, Burmah, &c., together with such details as are here provided by Mr. Thurston.

IN case the rest of the paper on "The use of bromide paper" cannot appear in the Journal, the writer thereof proposes to complete the paper and have the whole of it reprinted—copies of the paper will be sent to those members who apply in time to the present Honorary Secretary.

OUR ILLUSTRATION.

This month we are glad to be able to give one of Dr. Thurston's pictures of a Kādir man, and from Bulletin Vol. II, No. 3, issued by that gentleman from the Government Museum we glean the following particulars regarding this peculiar race of people.

The Kādīrs inhabit the Anaimalai Hills and the mountain range which extends thence southward into Travancore. Dr. Thurston says their salient characteristics may be briefly summed up as follows:—short stature; dark skin; platyrhine. Men and women have their incisor teeth chipped: woman wear bamboo combs in their back-hair. They speak a Tamil patois and in talking run up the scale finishing on a higher note than they commenced on.

The Kādīrs afford a typical example of happiness without culture. Unspoiled by education, they still retain many of their simple "manners and customs." Dr. Thurston says it was quite refreshing to hear the hearty shrieks of laughter of the nude, curly-haired children, wholly illiterate and happy in their ignorance, as they played at funerals or indulged in the amusement of making mud-pies.

Give the Kādir a simple bill-hook and what wonders he will perform! He will build houses out of étah, so neat and comfortable as to be positively luxurious. He will bridge a stream with canes and branches. He will make a raft out of bamboo, a carving knife out of étah, a comb out of bamboo, a fishing-line out of fibre and a match from dry wood. He will find food for you where you think you must starve and show you the branch which, if cut, will give you drink. He will set traps for beasts and birds which are more effective than some of the most elaborate products of machinery.

The Kādīrs are essentially nomad in habit, living in small communities and shifting from place to place in the jungle, whence they suddenly re-appear as casually as if they had only just returned from a morning stroll, instead of from a long camping expedition. They are fond of dogs, which they keep chiefly as a protection from wild-beasts at nights.

They seem exceedingly plucky and Dr. Thurston cites as an example of pluck worthy of a place in Kipling's Jungle Book the case of a

hill-man and his wife who, overtaken by night in the jungle, decided to pass it on a rock. As they slept a tiger carried off the woman. Hearing her shrieks the sleeping man awoke and followed in pursuit in the vain hope of saving his wife. Coming on the beast in possession of the mangled corpse, he killed it at close-quarters with a spear, yet he was wholly unconscious that he had performed an act of heroism worthy of the bronze cross "for valour."

The Kādīrs carry loads strapped on the back with fibre, not on their heads in the manner customary amongst coolies on the plains: the woman too carry their babies on their backs huddled up in a dirty cloth with the ends slung over their shoulders, quite contrary to the usual habit of straddling the infants across the loins as a saddle.

Some Kādīrs are good trackers and a few are good shikāris.

They do not seem at all dainty in what they eat, for Dr. Thurston says he was told that they will eat the putrid and fly-blown flesh of carcasses of wild beasts which they come across in their wanderings and to succulent roots (which they dig up with a stick) they add such things as sheep, fowls, rock-snakes, (Python) deer, porcupines, rats (field and house), wild pigs, monkeys, &c., and they do credit to their food by displaying a hard, well-nourished body.

Feasting at the expense of the bridegroom's parents seems to be a most essential feature of a wedding and its previous "engagement": the marriage tie can be dissolved for incompatibility of temper, disobedience on the part of the wife, &c., without appeal to any higher authority than a council of elders.

It is very essential that a wife should be a good cook in accordance with the maxim that the way to the heart is through the mouth and Dr. Thurston remarks how many men in civilised western society would be envious of a system of marriage where the contract can be sealed or unloosed according to the cookery results!

They bury their dead in a grave in a recumbent posture on a mat with head towards the east and they cover the corpse with a mat and leaves, the grave being then filled in with earth.

OUR HOME LETTER.*October 1899.*

Among the occurrences of the month, the exhibition of the Royal Photographic Society, and that of the Photographic Salon may be considered the most important. It is impossible for me within the limits of a short letter like this to attempt to give many details in regard to the pictures at either of these galleries, and if I were to do so, the information could hardly be of practical value to photographers, who are debarred by distance, from an examination of the pictures for themselves. Just a few words then of general information with regard to these exhibitions.

At the Royal Photographic Society there were 418 exhibits including a small quantity of apparatus, a few lantern slides, and several photographs of scientific interest. The vast majority of the photographs, however, were of a pictorial character, and intended by their authors to show what very charming bits of art may be produced by the camera when thoughtfully handled. Landscapes largely predominated, but there were a great many portraits, and also a fair sprinkling of architectural subjects. Figure studies, or what are known as genre pictures, were decidedly in the minority. The development of platinum paper with a developer retarded by glycerine and applied with a brush is likely to receive a new impetus from the charming sketch-like effects shown by Alfred Stieglitz. At the Salon the same photographer has similar work done in two tints obtained by judicious application of the hot and cold methods of treating platinum paper. The effect in the example shown is unquestionably very pretty, but I hardly think the method capable of application except to a restricted extent for special subjects.

At the Royal exhibition one's attention is attracted by several photographs of rainbows by William Andrews, showing that the tint of the sky is brighter inside the bow than outside. Another technical exhibit of interest is one of three enlargements contributed by Messrs. Kodak Limited. The first shows the picture enlarged on smooth bromide paper, the second a similar enlargement with a piece of bolting cloth in close contact with the surface of the bromide paper, while in the third case the same enlargement has been made with the bolting cloth at a distance of three-eighths from the surface of the bromide paper. The effect of this bolting cloth, which is a fine grain material used by millers for sifting flour, is to greatly soften the outlines of objects in a picture, and to broaden the general effect. Many subjects are considerably improved by its use, though I must confess I have seen more convincing instances than this one.

At the Salon one misses several old exhibitors, Annan for example who has but one frame, Crooke, Smedley Aston, and others who are absent entirely. On the other hand there are new men whose work promises well. Robert Demachy has, as usual, several

charming subjects in gum-bichromate. Some beautiful portraits, and mediæval architectural pieces are contributed by Harold Baker, whose choice of harmonious tints in print, mount, and frame afford splendid examples of art to the novice.

One cannot fail to be impressed by the portrait exhibits of the Americans, whose ranks include ten or a dozen, of whom perhaps five or six are women professionals. Clever this Yankee portrait work undoubtedly is, and at the same time not restricted to one style. There is evidently a large scope left even yet for originality of treatment in portraiture.

Before leaving the exhibitions I might say a word on the subject of framing. Broad frames without mounts are still the prevailing style, but any tendency towards monotony is relieved by the presence of a good many pictures on broad mounts with simple, plain, narrow mouldings, the picture being often placed away from the centre. Photographers cling pretty closely to rectangular shapes, circles are rarely seen, and ovals, never.

It has been announced that an International Congress of Photographers will be held at Paris from the 23rd to the 28th of July next. The conference will continue the work of the previous conferences held at Paris in 1889, and Brussels in 1891, and also examine any new question which may be brought up. The fee has been fixed at ten francs, these amounts going towards the defrayal of expenses of postage and printing. The programme will include visits to scientific institutions, and manufactories, etc. The secretary is M. Pector, 9 Rue Lincoln, Paris.

The prospectus of the second Photographic Trades' Exhibition, to be held in the Portman Rooms, London, next April, has been issued, and those interested, or desiring to secure space, should at once apply to the Secretary, Arthur C. Brookes, Harp Alley, Farringdon Street, London, E. C.

PERCY LUND.

HOW TO FIND THE EQUIVALENT FOCUS OF ANY LENS.

Some issues back there appeared in the journal an interesting note on the way to make a scale for focussing a hand-camera, and it was there pointed out that the first step was to find the equivalent focus of the lens which it was proposed to use. I propose in this note to point out how this can be done.

It may be as well first to define what the principal or equivalent focus of a lens is. "It is a term applied to a compound lens. It is the focus of parallel rays entering the lens. It is termed 'equivalent' from being compared with a single lens that would produce the same sized image at the same distance from the object."

There are two ways known to me in which the equivalent focus can be found; the first is given by Abney and is as follows:—

Measure a distance of (say) 150 feet away from some fixed point, and place a rod at one extremity. From this point measure a line exactly at right angles to the first, of some 40 feet in length, and place another rod at its end. Now place the camera front exactly over the starting point of the first line and level it, the lens being in the direction of the first line. Having marked a central vertical line on the ground glass with a pencil, focus the first rod accurately, so as to fall on the pencil line on the ground glass. Take a picture of the two rods in the usual way, and measure back, as accurately as possible, the distance of the centre of the ground glass from the starting point and also the distance apart of the two images of the rods at their base upon the negative. Then:

Let:

- P = the principal or equivalent focus.
- D = the horizontal distance of the ground glass from the first rod.
- i = the length between the rods measured on the negative.
- d = the distance between the rods on the ground.

Then:

$$P = \frac{D \times i}{d + i}$$

The disadvantage of this method is that it requires a large open space to enable it to be applied, a condition not always attainable. Unless the rods are placed at a long distance from the camera so that the rays entering the lens are parallel the results may contain considerable error.

The second method is that given in the Photographic Almanac. To apply it some object such as a cross made of white laths about six feet high only is required. The object is set up perpendiclar and square to the axis of the lens and is photographed.

Then: if

- P = the principal or equivalent focus.
- D = the horizontal distance of the ground glass from the object.
- i = any dimension of the object on the ground glass.
- d = the corresponding dimension of the object.

$$(r) = \frac{d}{i}$$

Then:

$$P = D \times \frac{r}{(r + 1)}$$

In this latter formula (r) must be accurately ascertained. The measurements should be taken off the negative with a pair of dividers. The average of several results should be taken. This method will give the result accurately to the first place of decimals.

G. S.

PROCEEDINGS OF THE SOCIETY.

Monthly Meeting held on Friday, 1st Dec. 1899,
at the Museum Rooms.

The attendance was very limited as usual.

PICTURES FOR EXHIBITION.

"Water Scenes" were sent in by the Hon. Mr. G. Stokes, the Kumar Rajah of Bobbili, the Revd. E. Maennig and Mr. T. Adinarayana Chetty: the last-named gentleman sent in some very nice views of the "Smoking Rocks" on the Cauvery River at Hohanakal and they were considered the best on show.

"PLATONA PRINTS."

An album of prints on this new paper was shown by the Hon. Secretary, the members present considered the paper proved itself all that one could possibly desire.

"PLAYER'S METHOD."

The Hon. Secretary showed a specimen printed in Mr. Player's method on bromide paper through yellow glass: the picture was an engraving and the result was a negative—see page 134 of November Journal.

NEW MEMBER.

Mrs. Seymour Arnold was proposed by the Hon. Secretary, seconded by Mrs. Leet-Palk and unanimously elected a member from the 1st January 1900.

ANNUAL MEETING.

The members present were not prepared to select a date for this meeting, so the matter will be referred for decision to the Vice-President, the senior official of the Society.

QUESTION BOX.

On page 139 of the Journal for November is recorded the question by a member. "What exposure should one give for snow relative to exposure for sea and sky" and the conundrum was answered to the best of his ability by one of the members present.

The enquirer now writes.—"I join issue to some extent with the member who answered my second conundrum. The two instances I gave were the "Jungfrau from above Interlaken (N. lat 46°-40') and "Mont Blanc (extreme summit not in picture) with "Glacier des Bossus and the Bosses du Dromedaire, the latter being 13,000 odd feet high, taken from the "Pierre à l'Échelle 8000 feet (N. lat 45°-50')—the time of day and of year and the sunlight I gave before. "I do not see any reason to regard the exposure as "too short for what I wanted—the distant view of

"the Jungfrau and the view up the Glacier des Bossus. The town of Interlaken is in the foreground in one-tolerable but of course under-exposed. But had I tried for details of Interlaken I should have lost the Jungfrau: in the Glacier view there is no foreground except snow.

"In what latitude was the member? In saying that my exposure was too short did he take into account that (a) he had to consider his foreground of grass fields against my white Glacier, (b) that the exposure even at mid-day in November would be about 3 to 4 times the exposure at 3 o'clock on a July afternoon in the same place, (c) that on the same level, light in 45° N lat is probably $\frac{1}{2}$ times as actinic as in 56°-30' (central Scotland) and (d) that at 8000 feet above the sea, light is about twice as actinic at sea level?

"Take his half second exposure and allow for (b), (c) and (d) and the exposure should be $\frac{1}{2} \times \frac{3}{2} \times \frac{1}{2}$ times half a second or $\frac{1}{8}$ of a second. Therefore if $\frac{1}{8}$ th of a second is proper for a landscape such as he took were it transposed to Switzerland in mid-July the foreground being grass, was $\frac{1}{8}$ th second too short when the foreground was ice?

"The conundrum I put was—what the exposure for snow (pure and simple) should be, relative to sea and sky?—The question of foreground being neglected.

"Sea and Sky in Midsummer in 50° N Lat with f22 should receive $\frac{1}{30}$ second. What should snow and sky receive in the same conditions (assuming that they are possible.)?"

The member who replied to the best of his ability to the original question would remark that

- (a) Grass fields (very short grass) in a wide open space reflect a large amount of light and might almost be ignored even as compared with sea or snow.
- (b) The exposures in November were in Lat 40° S, so it was almost midsummer!
- (c) Theoretically the difference may exist, but practically no such difference is found and if one habitually over-exposes and regulates development accordingly, the same exposures will answer all over the world when the sun is shining brightly in summer time—at least this is the experience of the member who is replying to the query.
- (d)

He summarises the question by recommending the enquirer to expose for shadows and to so arrange the component parts of his developer as to get out all detail in the dark shadows without losing the detail in the high lights—see a most useful paper by Captain Abney in a British Journal Almanac of some 10 years ago on how to develop brilliant snows with dark pine trees in foreground.

The next Editor would doubtless gladly receive further communications on the subject.

ANNUAL MEETING 1900.

The above meeting will be held at the Society's rooms, Museum, Egmore on Monday the 15th January 1900 at 6-30 p. m. :—

BUSINESS.

1. To receive and pass the Treasurer's accounts.
2. To receive and pass the Committee's statement of audit of the Treasurer's accounts.
3. To receive the Committee's report on the Society's proceedings in 1899.
4. To elect a new President, 2 new Vice-Presidents, 6 members of the Committee and a new Hon. Secretary and Treasurer.

A Committee meeting will be held at 6 p.m. on the above date to audit the Treasurer's accounts and to pass their report.

Members are specially requested to note the above dates as no further notice can be sent to them, owing to the intervention of the Xmas Vacation.

By order,

F. DUNSTERVILLE,

Honorary Secretary.

EDITOR'S TABLE.

"WELLINGTON" FILMS.

WE have received a packet of the "Wellington Films" of which mention has frequently been made of late in the home photographic journals.

In appearance the film looks like ordinary bromide paper in cut sheets, but it can also be obtained in rolls up to 7½ inches in width: the plain cut sheets are stiff enough to rest flat in an ordinary double dark slide, but require of course to be backed up by a piece of stout cardboard to prevent any bulging from the pressure of the spring on the dividing partition.

The film is stated to be composed entirely of pure gelatine and during exposure it is supported on a paper backing. After exposure it is developed by any of the customary developing solutions (Pyro with ammonia or soda being recommended by the manufacturers), followed by an alum bath (1 to 20 water), and fixed in Hypo (acid bath for choice) of 1 to 5; after washing the negatives in running water for about an hour they are dried carefully to avoid cockling by squeezing them to a glass or ferrotype plate (thoroughly cleaned with ammonia, whitening and water and then dusted over with a little powdered French chalk polished off lightly with a clean cloth). They should be dried slowly in a cool place.

The negatives can be printed from without further treatment, but those who prefer having translucent negatives can adopt the simple method of stripping. Make sure the film is perfectly dry, start

the stripping by cutting across one of the corners, film side up, then by inserting the point of a knife between the film and the paper, they will be found to very easily separate: with the back of the knife loosen the film round the four sides and by gently pulling the transparent film from one corner it will be found to at once leave the paper backing: treat the film gently and don't pull too hard or you may stretch the negative and cause cockling.

The developing formulæ are given below: for each ounce of mixed developer take

No. 1.—Pyrogallic Acid (with Sulphite) ... 1 grain.
Ammonia 880° ... 1 minim.
Potassium Bromide ... ½ grain.

or

No. 2.—Pyrogallic Acid (with Sulphite) ... 3 grains.
Carbonate of Soda ... 22 "
Potassium Bromide ... 4 "

Negatives developed with No. 1 strip better than those for which No. 2 (Pyro-Soda) is used.

"PLATONA" PAPER.

We have since made further use of a considerable quantity of the "Platona" paper made by the Britannia Works Co., Ilford, (see page 139 of Novr. Journal), and we are glad to say that we are able to repeat the former report that the results are "most excellent": we tried it with and without the addition of glycerine to the makers' formula and the difference was merely in the time the developer took to bring out full details, the colour of the image in both cases was a perfect black. We also tried the formula diluted with double the quantity of water, the result was a slowing of development and a slightly perceptible warming of the colour; we then tried the addition of a quantity (how much is unknown) of Mercuric Chloride to the diluted developer, the result was a most beautiful sepia colour but unfortunately the print had not been sufficiently exposed or the addition of the mercury must be met by an increase in exposure; it was our last piece of paper unfortunately and we could not repeat the experiment, but we shall take an early opportunity of doing so, as the colour looks most suitable for figure subjects. The solution of Mercury used as above was an old intensifying mixture which originally contained 20 grains Mercuric Chloride and *some* Ammonium Chloride to each ounce!

"AGFA."

A small bottle of the above new intensifier was sent to us for trial by Messrs. Babajee Sakharan & Co., Bombay, but unfortunately the bottle met with an accident and the liquid was all lost before any experiment could be made. The account of it shows it is very simple, 1 part of "Agfa" is diluted with 9 parts of water and the negative requiring intensification is immersed in the solution and carefully watched; when sufficiently dense the negative is taken out, washed and dried. The solution can be used over and over again until exhausted.

EXTRACTS.

Negative Dodging.

A FEW years ago photographers were contented with their negatives after everything that would improve them had been done by means of chemicals. Since then things have altered, and they have now learned to consider the negative as only a means to an end, and that end is to get as perfect a print from it as possible. To do this "dodging" is resorted to after all chemical means of improvement have been exhausted. By "dodging" is meant the use of certain tools, mentioned hereafter, in such a way that they obliterate or tone down objectionable parts, and introduce others that will improve.

Discretion, of course, must be used, as it can easily be overdone in the same way as retouching. By the way, retouching of portraits comes under the head of "dodging," but I do not propose to describe it, it being more or less familiar to every one.

The tools required are very simple and inexpensive, and need but little skill in their use. They are: one bottle of retouching medium, one ditto vaseline, tube of ivory black (oil colour), one ditto gamboge (water colour), three brushes—one camel's-hair (fine), one hog's-hair (medium), and a No. 1 sable—a packet of white tissue paper, some fine emery powder and paper, two retouching pencils (Nos. 3 and 4), a little black-lead powder (waste from retouching leads), one paper stump, a penknife with a very sharp point, and a retouching needle. The latter can be made at home by boring a small hole in a penholder, and fixing the eye portion of a fine needle tightly in it. The point may then be ground upon a stone to sharpen it. A retouching desk will be indispensable.

The negative must first of all be prepared by removing all grit from the glass side, and neatly pasting a sheet of the tissue paper over, being careful not to have any creases or surplus of paste on it. The tissue paper must be of the finest quality, of an even transparency, and free from any mottling or flaws. Tracing paper may be used instead, providing it is not of a yellow colour.

If preferred, matt varnish can be applied in place of the tissue paper, but it will be found that the latter is the easiest to use. In applying the former, hold the negative in the left hand by the edges with the thumb and first finger, so that the glass side is upwards and in a horizontal position. Then take the bottle of varnish and pour a small pool in the middle, tilt till evenly distributed, taking care not to allow it to run over the edges on to the film side. Lay flat to dry, which will only take a few minutes. Slightly damp a piece of linen (free from lint) with the retouching medium, and gently rub with a circular motion all over the film side.

The retouching pencils are prepared by rubbing up to a very fine point on the emery paper. Save the lead dust, for it will be useful.

For an example of the method of "dodging" we will suppose we have a thin landscape negative, with weak detail in the shadows and faint clouds in a fairly dense sky. Having prepared the negative with tissue paper and medium, place it on the retouching desk with another piece of tissue over the film side, and then trace the outline of the horizon by means of one of the pencils. Remove

the tissue and cut away the sky portion. It may then be pasted on top of the view portion of the negative, on the glass side, seeing that it registers exactly, so that there are two thicknesses over that part and only one over the sky.

Commence by brightening the detail in the shadows, on the film side with the retouching pencil No. 3. Hold it in the right hand in much the same way as a pen is held, only very lightly, and make small, fine strokes, laying them close up against each other, never allowing them to overlap one another. If this does not make the detail sufficiently strong, go over it again, making the strokes in a different direction so that they cross the others in a similar manner to fine cross hatching. Too much pressure must not be put on the pencil or it will remove the medium and scratch the gelatine.

The high lights may now be brightened up. This is best done on the tissue-paper side. Squeeze a little of the gamboge out on to a clean glass, add some water, and well mix with the camel's-hair brush. Do not make it too thick. Its right consistency is when it is transparent. Load the brush with it (not too full, or it will run), and apply to the brightest high lights, such as whitewashed houses, the glitter on water, bright patches of roadway, &c., taking care that the colour does not go beyond the outline. Where the high lights are to be perfectly white, the colour must be used thicker, and, when they only require a slight brightening, it may be applied more thinly.

At this stage a rough print ought to be taken to see how the work is progressing.

It is surprising what beautiful results can be obtained by simply introducing a little atmosphere.

If it is desired, it may be made by putting a wash of gamboge over the portion of tissue that covers the distant parts of the view.

The clouds in the sky should now be improved to make them printable.

First deepen the density of their high lights by loading the paper stump with black lead, and rubbing it on the tissue directly over them. Turn the negative over, and reduce the shadow portions, to still further increase the contrasts. This is done by covering the rounded portion of a penholder with chamois leather, and dipping in the emery powder. It is then gently rubbed on the shadows from left to right, taking the precaution to see that the reduction is evenly done. Rubbing too hard will scratch the film and spoil it.

Harshness of contrast is another defect which is very prevalent in negatives, especially in those depicting interior scenes. In "dodging" these, they should be prepared in a similar manner to the above, with retouching medium and tissue paper. With the stump and black-lead powder go over all the deep shadows, putting an even coat of black on the tissue side, of course not working over the edge on to the high lights, or it will deepen the contrast instead of modifying it. If the contrast is very strong, a wash of gamboge can be used instead of the black lead. The detail in the shadows may be touched up with the pencil, but the high lights must be left severely alone. The contrast may still further be harmonised by dipping the hog's-hair brush in the vaseline and painting over the high lights on the tissue-paper side. This makes the paper transparent in those parts.

Dirty skies, that is, skies that print muddy or uneven, are another source of trouble to the photographer.

Practically the only method of improving these is to block them out. By blocking out is meant to so cover the sky up that it prints perfectly white. No doubt the best method is to paint it out by means of opaque paint. Squeeze a little of the ivory black out on to a piece of glass, and add a little turpentine to make it semi-liquid. Then take the fine sable brush, dip it in, and gently paint round the edge of the sky close up against the horizon. Having gone all along the outline, fill in the rest with the hog's-hair brush.

Every spot ought to be covered, so that it is perfectly opaque when viewed by transmitted light. The greatest care must be taken not to paint over the edge on to any portion of the view.

Some ladies are continually exercising their minds with the problem of how to reduce the size of their waist.

It may be done by means of photography; at least, it can be made to look smaller than it really is if the sitter is taken against a white background and a portion of the waist each side painted out. First of all, two lines must be drawn, one each end, by means of the pencil. They must be parallel to the outside of the waist. The amount to be cut off will, of course, depend upon the size of the figure. If a cabinet, about one-twentieth of an inch each side will generally be found sufficient. The sable brush and black paint can then be taken and painted on the background and waist till it reaches the line. If skilfully done, detection will be impossible.

The beautiful effect of snow falling is very hard to render in a photograph by natural means, but it can easily be "dodged" in. Of course, the surroundings must be as natural as possible. For instance, it would be impossible to get it to look natural on a summer landscape. It matters little whether the "snow" is placed on the glass or film side of the negative. It is done with the small sable brush and black paint. The spots must be made small, not all of a uniform size, and should be placed irregularly over the negative.

Portraits, if brilliantly lighted, may be made to look exactly like statuary by cutting out the background of the negative so that it prints black.

Place it on the retouching desk and take the penknife, hold it upright, and gently but firmly cut round the edge. It must be done very gently, or the knife will cut over the edge. Having gone round the outline, hold the knife on a slant, so that the handle points over the right shoulder, then draw it along about one-sixteenth of an inch from the outline cut, and it will peel off the gelatine in strips. The whole of the background must be done in this way, first making an incision in the film and then peeling. It is well to practise this on old negatives first before attempting on a valuable one, as the slightest slip may ruin it.

Sometimes the movement of a figure in the foreground will spoil an otherwise good negative. To obliterate this, use the retouching pencil on the light portions to make them of the same density as the surrounding parts, then take the retouching needle and lightly cross hatch over the dense parts till they are reduced to the same depth as the rest. If carefully done, close inspection will fail to reveal that there had been any figure there.

The needle will also be found a useful appliance for tining down high lights of too great a density, which are too small to be reduced by means of emery powder.

Portraits taken out of doors usually have objectionable backgrounds. These can so be "dodged" on the negative that they print lightly, throwing the figure into relief and giving very pleasing results.

The best method is to cover the back of the negative over with tisse paper, and paint all over the part covering background with a wash of gamboge, of course taking care not to put any over the figure.

If you have a very thin landscape negative which gives a dark print, do not throw it away, but paint a spot on the glass side of its sky with ivory black, and have one or more zigzag strokes coming from it. This will give the effect of lightning, and makes a picture of an otherwise worthless negative.

Many other improvements can be effected with the above simple appliances.—*The British Journal of Photography.*

OSBORN THORNBURY.

Landscapes and Clouds.

MR. CADETT'S paper on this subject, read before the Camera Club last week, was listened to by a large audience with great interest, for it touches upon a point which is of the greatest importance to the aspiring amateur. It need hardly be demonstrated that many of the landscapes which find favour in the eyes of Judges at our exhibitions owe their success to cloud effects, and, when the ordinary amateur notes this, he strives hard to go and do likewise. He has generally stored away landscape negatives without number which are terribly monotonous in their absence of clouds, and he looks forward to the time when he shall be able to wed them with suitable atmospheric effects and once more bring them to the light of day as new creations. But it must be confessed that Mr. Cadett's paper did not tend to help these owners of stored treasures, for he dealt exclusively with the possibility of securing clouds and landscape on one negative simultaneously.

It was somewhat unfortunate that Mr. Cadett had to commence his discourse with an apology, and, moreover, a double barrelled apology. In the first place, he spoke under the distressing grip of a bad cold, and, in the next, he had hoped to show a number of pictures taken in Switzerland, which pictures had failed to come out as he had intended. It is a comfort for insignificant workers to hear that an expert sometimes goes wrong (just as most persons are not grieved to hear of friends' misfortunes), and such workers, if any were present, must have chuckled when they heard the lecturer confess that he had failed to get his Swiss exposure meter adjusted for altitude, and had forgotten to back his plates. However, he was able to illustrate by means of other persons' pictures, the various points touched upon.

Some unkind critics had on a former occasion accused him of seeking, by means of a lecture, a gratuitous advertisement, and, as a manufacturer of dry plates, he was, of course, open to such remarks; but he would ask his hearers how he could, occupying the position which he did, avoid talking shop? He felt quite sure that at the Camera Club at least he would not be misunderstood.

Although generally he associated himself with the scientific side of photography, he was now more particularly to speak of it in its pictorial aspect. On many occasions he had seen very beautiful lantern slides exhibited on the screen before them, especially Swiss views, but he could not help noticing that, in some of the finest, the deep shadows were far too deep, while at the same time the high lights were burnt out. He thought that he would be able to show how such faults might be obviated.

In the first place, let them consider the range of the photographic plate, i.e., the range of correct gradation. This word "gradation" was not well understood, as we all found last week when, in the course of discussion upon Captain Abney's paper, he (the lecturer) had a little passage of arms with regard to it. Captain Abney maintained that a quick plate had a better range than a slow one, a statement with which he could not agree. But it was more than possible that they did not both define the word "gradation" in the same way, and were consequently speaking at cross purposes.

If densities or opacities on a plate are proportional to the light which produced them, they must be correct. A slow plate has a very extended range, and, although you hear people complaining of such plates giving hard negatives, it must be remembered that, by proper control in development, a slow plate can be made to give a picture as soft as may be desired. It was not to his interest as a manufacturer to cry up the virtues of slow plates, for any one can make them, but he is bound to say of a slow plate that it will give a far greater range than a quick one. He would pass round two negatives, with positive prints, one of which was exposed for five seconds and the other for fifty seconds. The negatives were developed together for precisely the same time, and yet the two prints are absolutely identical. With a rapid plate it would be quite impossible to show such a result.

Now with regard to clouds. With an ordinary plate and screen, if we fully expose for the landscape, the clouds not only are over-exposed, but they become reversed. If, also, the cloud happens to reflect as much white light as the blue on which it is placed, the cloud disappears on the plate. If, therefore, we want to represent clouds, we must, by means of a proper screen, cut down the blue. Any screen which will do this is better than none, but, of course, it is best to have a screen which will do the work well, while at the same time it assists the other colours in the picture.

He would now show, by means of the lantern, three landscape slides taken by means of Mr. Sanger Shepherd's screens, one under blue, another under green, and the third under red, and it would be seen that there was very little difference between the green and the red. To compare with these, he would show some pictures taken with the spectrum plate through a mixed screen. The improvement was at once evident, but the increase of exposure was about forty times. It may be taken as a certainty that most photographs showing the presence of fine clouds have been due to the use of well-corrected screens and colour-sensitive plates.

The lecturer concluded his remarks by some observations upon the important subject of backing plates, and detailed some experiments which proved the great advantage of backing in obviating halation, and other markings due to internal reflection between the surfaces of a glass plate.

The Chairman (Professor Armstrong) described the paper as being both valuable to photographers as well as highly interesting, and he invited a discussion, which should be a full one, considering the number of experts who were present.

Mr. Bothamley alluded to the extraordinary latitude of many plates in the market, and to the possibility of obtaining the same printing results, provided that time were given to the experiments, from negatives of various exposures. He had often shown that very much improved results could be obtained with an orthochromatic plate and a simple yellow screen, and he might say that, as far as pure landscape went, such screen met all his requirements. The yellow screen had the advantage also of not increasing the exposure over-much. Where clouds came in, the mixed screen would do better work, and they were indebted to Mr. Cadett for expending so much time and skill in perfecting it.

Mr. Sanger Shepherd said that fully one half of the beauty of a landscape resides in the clouds which hang above it, and, wherever there are clouds, especially white ones, the photographer who wishes to represent them accurately must use a screen corrected for all colours, for such a screen must naturally include white; but, where very little red comes into a composition, a yellow screen will do good work. A screen correcting blue and green only would be valuable for snap-shot work, and such a screen, if placed on the market, should have a wide future before it. But a screen for general work should be carefully adjusted for the plate employed, and not used for any other make of plate. You might as well put a sewing needle into a planing machine, in that you would be using a tool for a machine quite foreign to it.

Mr. Horsley Hinton could not agree with the remark of a former speaker as to the virtues of a yellow screen. He had tried every screen in turn, and none came up so nearly to his ideal as that produced by Mr. Cadett. It was difficult to secure clouds and landscape on the same plate, especially when cumulus clouds were presented on a blue sky, and he had found the Cadett screen to make the work easier than any other. He did not think that backing was an unmixed benefit to a plate. In some pictures he had taken the outline was so hard that he afterwards much regretted that the plates had been backed.

Colonel Gale remarked that he used ordinary plates for his landscape work, and printed in his clouds from separate negatives.

After a few remarks from Mr. George Davison and others, the Chairman said that the discussion showed that we were advancing to a marked extent. It was true that the use of orthochromatic plates and screens was not new, but there was a decided novelty in the employment of screens accurately adjusted to plates. He thought that we must all congratulate our-elves that we had among us a plate-manufacturer who was content and able to approach such an important matter from a scientific standpoint. Mr. Cadett has acted in the prosecution of these researches as a German manufacturer would have done—he could not pay him a much higher compliment.

Mr. Cadett having replied to the questions which the discussion of his interesting paper raised, the meeting came to a close with the usual vote of thanks.—*The British Journal of Photography.*

Lantern Slide Making for Beginners.

BY "PRIMROSE HILL."

This is the first of a series of practical chapters on *Lantern Slide Making*. The first two or three will be of quite an elementary character, subsequent chapters being progressive, and becoming more advanced.

I.—INTRODUCTORY.

The following chapters are primarily designed for those photographers who have had little or no experience in making lantern slides. At the same time, it is hoped that the experienced worker may here and there pick up a hint which will help him to still further improve upon his past productions.

We shall presume that the reader knows nothing whatever about making lantern slides; but that he has already several small negatives, and would like to try his hand at making a few lantern slides.

There are many photographers who are a little shy about asking questions, for fear of being laughed at for their ignorance. There are others who have no friend at hand to ask. Therefore, in order that we may be of special use to readers of this kind, we propose going into all details, and therefore must ask those who already know all these things to be a little patient, in memory of the time when they themselves were quite beginners.

(1) *The lantern picture on the screen is a shadow picture.* Make this point clear in your mind from the first, because when you come to talk about density and detail, etc., all will depend on this point being grasped. If in one hand we hold a candle, and hold up the other hand between the candle flame and the wall, we get a shadow picture of our hand. This is a picture in strong dark only. But suppose for a moment that our several fingers were more or less transparent in different degrees. Then we should not get such dark shadows, for some light would pass through. Now, instead of one hand, suppose we had a photographic print on very transparent paper or on glass, we should get an enlarged edition of this on the wall. Again, if in place of the candle we have a much stronger light of some kind, and if between the wall and the print we put a magnifying lens, we shall get the same state of affairs, except that now our picture is upside down on the wall. But this can be set right by inverting the picture. Thus we have the essentials of a lantern picture, viz., a strong light, transparent positive print, a lens, and a screen for receiving the enlarged picture.

(2) *The standard size of a lantern slide in this country is 3½ by 3¼ in.* The reason why a standard size is chosen is that any slide will fit any "carrier" or slide holder of standard size. This, of course, is a matter of very great general convenience.

(3) *An ordinary slide usually consists of the following parts:* (a) The positive transparent picture on a glass 3½ by 3¼ in. (b) A second piece of clear glass of the same size known as the "cover glass," or protecting glass. (c) These two are bound together by a narrow strip of paper, tape, metal, etc., just overlapping their edges. These so-called "binders" are usually of paper, and extend about ¼ in. over the face of each glass. (d) The "matt." This is a piece of opaque paper (often black), and measures outside 3¼ by 3¼ in., i.e., the same size as the plate. In this opaque paper is cut an "opening" of any desired size or shape. Thus we can block out, with this matt, portions

of the picture, and the size and proportions of the picture seen through the "opening" are under control of our choice and taste.

(4) *Choice of process.*—The following photographic processes for making slides may be mentioned, viz., collodion, albumen, carbon, and gelatine. For each of them much may be said. But the beginner is, without hesitation, advised to start with the gelatine process, and for the following reasons:

(a) Prepared plates of excellent quality are issued by numerous plate-making firms.

(b) The gelatine process is convenient, easy, and clearly to work.

(c) The results are (or should be) all that one can desire.

(d) The process is economical of time and money.

(5) *Choice of Method.*—We have practically two methods of working open to us. (a) First we may lay a sensitive prepared plate film to film in contact with our negative, and expose to a source of light, develop, and get a *contact print* of same size as the original negative. (b) Secondly, we may set up our negative in a suitable frame, illuminate it from behind, point our camera to it, and with a lantern plate in the dark slide proceed as though taking a negative. The result will be a positive from the negative, which may be same size, or enlarged or reduced as the case may be. For both these methods something may be said.

(a) *Contact Method.*—Our lantern plate is $3\frac{1}{4}$ by $3\frac{1}{4}$ in., and we cannot stretch this piece of glass so as to cover a quarter-plate negative, which is $4\frac{1}{4}$ by $3\frac{1}{4}$ in. Consequently our lantern slides cannot give us the whole of the subject included on the quarter plate negative. Much less can we make the lantern plate give us more than a small part of a half or whole plate negative. But if it so happens that we only want to use any part not exceeding 3 in. either way of our negative, then this disadvantage is not felt. On the other hand, this *contact method* is certainly easier than the second (or lens) method. It is very suitable for evening work, i.e., exposing by artificial light—lamp, gas, or magnesium ribbon.

(b) *The second (or lens) method,* necessitating the use of a lens, is often spoken of as "through the camera." Unless we can employ daylight, this plan presents certain difficulties as regards illuminating the negative evenly, and with a light so strong that the time of exposure does not become inconveniently long. This can, however, be done in various ways which will be subsequently described. The obvious advantage of this method is that we can make our lantern picture include the whole or any part of a negative of any size.

However, in order to simplify matters as much as possible we shall assume that we make our first few slides by contact from quarter-plate negatives.

(6) *Apparatus Required.*—Before commencing any photographic operation we should always see that we have at hand all the various things we need. In this case we shall require:

(1) One or more quarter-plate *negatives*. For our first few trials it will be well to select a landscape or seascape or architectural subject rather than a portrait. The negative should be a fairly bright one, free from fog or stain, and showing a good range of gradation from nearly clear glass in the shadows, to good density in the highest lights.

(ii) A quarter-plate *printing frame* and a piece of smooth black cloth (or velvet) measuring $4\frac{1}{4}$ by $3\frac{1}{4}$ in.

(iii) A *dusting brush*. One of camel's hair of the broad, flat varnish brush kind and about $1\frac{1}{2}$ or 2 in. wide will be convenient. If this cannot be had, a piece of clean velvet folded and folded again, soft side out, can be made to serve; but a brush is much the best.

(iv.) *Light* for exposing. This must depend upon the convenience of the reader. We may use oil or paraffin lamp, gas flame, or magnesium ribbon.

(v.) Box of prepared *lantern plates*, i.e., glass coated with gelatino-bromide emulsion. They are sold in boxes of one dozen plates, and the usual price is one shilling. It would be perhaps undesirable to mention any makers' names, lest the reader should think those not mentioned were not worthy. The reader is hardly likely to go far wrong if he takes the produce of any of the well-known plate-making firms. Some of these supply two kinds of lantern plates, viz., *rapid*, suitable for the lens method, and giving back and white slides; *slow*, suitable for contact method, and giving black or warm coloured results according to exposure and development. The beginner is advised to select a slow rather than a rapid plate for first experiments.

(vi.) *Chemicals.*—As a general rule it is best to follow the maker's instructions for development, etc. At the same time, where we are using several brands of plates, it becomes inconvenient to have a dozen different bottles, whose contents are but slight modifications of each other. On the other hand, it is a great convenience to have a standard formula which can easily be modified to suit any one of the different plates in use.

We find the developer here given below is one which gives us excellent results with several well-known brands of plates, and therefore commend it to the notice of lantern-slide makers generally.

(7) *Standard Hydroquinone Developer.*

A.—Hydroquinone	...	...	...	60 gr.
Potassium metabisulphite	...	...	...	30 gr.
Potassium bromide	...	...	...	16 gr.
Water (to make)	...	...	...	6 oz.
B.—Sodium hydrate (caustic soda)	...	...	...	80 gr.
Sodium sulphite	...	...	...	$\frac{1}{2}$ oz.
Water (to make)	...	...	...	5 oz.
C.—Ammonium bromide	...	...	...	30 gr.
Ammonium carbonate	...	...	...	30 gr.
Water (to make)	...	...	...	2 $\frac{1}{2}$ oz.

To prepare A.—Take 3 oz. of tepid distilled (or boiled tap) water. In this dissolve the metabisulphite. Then add the hydroquinone, and make up to the 6-oz. mark with water. It will probably take some little time and occasional shaking to get all the hydroquinone dissolved, but it can be done. Finally add the bromide.

To prepare B.—First dissolve the sulphite in 4 oz. of distilled (or boiled tap) water, then add the caustic soda, and make up to the 5-oz. mark.

To prepare C.—Both the ammonium salts may be put into the bottle together and cold water added until it reaches the 2 $\frac{1}{2}$ -oz. mark on the bottle.

(8) It may here be explained that when making up a formula which reads "Water to 4 oz.," etc., it is easiest to select a clean bottle which will contain the required number of ounces. In the graduate take exactly four ounces of water, and pour this into the clean empty bottle.

Set the bottle on a table, and with a bit of broken flint make a scratch on the bottle just corresponding with the surface of the water.

(9) *Fixing Bath*.—This is simply our old friend "hypo." Hypo, 4 oz.; water, 1 pint, i.e., 20 oz. If clean and bright slides are required, we must use clean hypo. Into a quite clean wine bottle put 4 oz. of hypo, and add 20 oz. of tepid water.

(10) With regard to fixing and developing dishes we can use those employed for making the quarter-plate negatives. Dealers, however, will for sixpence supply us with a lantern-plate developing dish, which just fits a lantern plate.

We are now prepared for our first attempt at slide-making, which we reserve for next chapter.

II.—HOW TO MAKE TEST EXPOSURE.

(11) Having got together our needful apparatus (viz., a negative, printing frame, dusting brush, light and developer dishes, etc.), we may now make our first trial. The reader must please understand that the exposures here given may or may not apply to his case. He must bear in mind the variations of negatives, of strength of light, and sensitiveness of plates. We will suppose our negative to be of some landscape subject, of fairly moderate density, so that it gives us a bright silver or platinum print, and free from any appreciable negative colour stain. The light we propose using is an ordinary No. 5 Bray's gas burner. We now go into our dark room, which may be fairly well lighted by ruby or red-orange light. Lay the printing frame face down on the table. Place the negative in it, film upwards, in the usual way. With the dusting brush carefully go over the film of the negative, and also the surrounding parts of the wooden frame. Open the box of prepared plates. [Observe they are packed face to face or film to film. Observe, too, that the coating is apparently thinner, more transparent, and not so easily seen as the coating of an ordinary negative plate. Therefore some care is needed so that you make sure which is film side and which is glass side. This you can best do by catching the reflection of the lamp first on the film side and then on the glass side. Once you notice the difference, and hereafter you should not mistake one for the other.] Now dust the film side of the plate, and then lay its film in contact with the film of the negative in the printing frame. Hold up the frame, with negative and plate, and look through the plate towards the light. You will be able to see enough to enable you to adjust the plate over that part of the negative that you wish to reproduce. This done, cover the back of the plate with the piece of black cloth. Replace the back of printing frame, and close it up, and of course be careful to close the plate box directly a plate has been taken out. Slip the plate box and printing frame under your focussing cloth or in a drawer, and then turn up the light.

(12) *Adjusting the distance from the light*.—Neither the foot rule nor tape measure are very convenient things to use in semi-darkness. But the following plan will be found convenient: Take a piece of stout string about 5 or 6 feet long. At one end make a loop, which easily slips over the gas bracket, and embraces the part holding the

burner. Now make a one-loop knot on the string, and adjust its position so that when the string is held tight, this knot is just one foot from the centre of the gas flame. Then at 2 feet from the flame make a two-loop knot. Another, a three-loop one, at 3 feet, and so on at 4 and 5 and 6 feet. We can thus by a touch of the finger know the various positions of these knots.

(13) *A trial exposure*.—This done, we turn the gas jet down to the small blue flame, then holding our printing frame and the knotted string in the same hand, we adjust matters so that the frame is at the 4 feet knot. Then, with the other hand, we turn up the gas, and expose the plate for ten seconds, and then turn it down to the blue bead again. Next, with a bit of cardboard, or piece of brown paper, folded two or three times, we cover up one-third of the negative face, and with it one-third of the lantern plate below it. Then again turn up the gas for another ten seconds; then, in like manner, as before, we slide our card shield so as to cover up two-thirds of the negative and plate, thus leaving only one-third uncovered. Finally, we turn up the gas again for twenty seconds. Consider for a moment the present state of affairs. The whole plate was exposed ten seconds, two thirds was exposed another ten, or total of twenty, and the last third had yet another twenty, or total of forty seconds. Thus the three strips have had ten, twenty and forty seconds' exposure.

(14) *Developing the plate*.—Take of mixture A (par. 7), one dram; take of mixture B, one dram, and add water to make a total of one ounce. This is our normal mixture for black tones. Apply this to the plate, just as though you were developing a negative. In about forty to sixty seconds probably the image will begin to appear. Development should be carried on until we can see the darkest parts showing at the back of the plate. This may take, perhaps, three or four minutes. Development being finished, the plate is washed in clean water for half a minute or so, and then transferred to clean hypo. The plate should be very thoroughly fixed. If it takes five minutes for the fixing bath to remove all milky appearance, then give another five minutes, or a total of ten minutes, in the fixing bath. The plate is then washed in a gently flowing stream, and the gelatine surface once or twice very gently rubbed with the tip of the finger or a tuft of pure cotton wool. After at least an hour's washing, the plate is set up to dry in a place free from dust.

Of course, in the case supposed, we shall expect to see the plate come in three different strips, such as may be seen in the accompanying reproduction* from a test slide made exactly in the way just described. A was exposed ten seconds, and then covered up; B had a total of twenty, and C a total of forty. We thus see that B gives us the best result. This is, however, just a trifle too strong in contrast; therefore when making a new slide, we should decide to give about twenty-five seconds' exposure with the developer in question.

The beginner is strongly recommended to make one or two exposures in this way, to make a note at the time as to details of light, plate, negative, distance from light, exposure, and developer; and write them on the plate when dry.—*The Amateur Photographer*.

(To be continued.)

* Sorry we cannot reproduce the picture.—(Ed.)