

JOURNAL OF Amateur Photographers OF Madras

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CONTENTS.

	Page.
EDITORIAL NOTES—THE WATKINS COMPETITION—THE NEW BLACK AND WHITE PROCESS—AN ACETYLENE GASOMETER—PICTURE SUBJECT FOR NEXT HALF-YEARLY COMPETITION—NEXT MONTHLY MEETING—OUR ILLUSTRATION.....	37
ORIGINAL ARTICLE — PHOTOGRAPHY IN NATURAL COLOURS.....	39
OUR HOME LETTER.....	41
PROCEEDINGS OF THE SOCIETY.....	42
CORRESPONDENCE.....	44
EXTRACTS—DON'T THROW THEM AWAY, REMEDIES FOR SPOILED NEGATIVES—STRAY THOUGHTS FOR THE HAND-CAMERA WORKER—DEVELOPMENT OF HAND-CAMERA EXPOSURES—CHIAROSCURO IN PHOTOGRAPHY.....	44
SALE AND EXCHANGE ...	48

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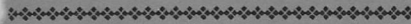
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	RS.	A.
1 ...	1	1
... 2	8	
... 4	2	
... 1	8	
... 2	14	
... 5	4	
... 1	10	
... 3	14	
... 6	9	

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... 1	8
... 4	0
... 7	0
... 1	2
... 1	2
... 1	2

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Do 1/2 " " " " " " " " " "	0	10
Do 1/1 " " " " " " " " " "	1	4
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Do do 13 1/2" x 10 1/2" "	0	3 1/2
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Do do 14 1/2" x 10 1/2" x 9 1/2" x 7 1/2" "	0	5

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CONTENTS.

	<i>Page.</i>
EDITORIAL NOTES—THE WATKINS COMPETITION—THE NEW BLACK AND WHITE PROCESS—AN ACETYLENE GASOMETER—PICTURE SUBJECT FOR NEXT HALF-YEARLY COMPETITION—NEXT MONTHLY MEETING—OUR ILLUSTRATION.....	37
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SALE AND EXCHANGE.....	48

EDITORIAL NOTES.

CONTROL over results in development, that is the extent to which the operator can alter the gradation of negatives by modifications of the developer, has again been prominently brought to notice by the result of the "Watkins Competition." It will be remembered that this competition was organised under the auspices of the Photographic Club as a challenge, by Mr. Watkins, to those who claimed large control over development by alterations in the composition of the developer. Twelve months ago Mr. Watkins advanced his views on this oft-debated question before the Royal Photographic Society, to the effect that the photographer possessed a great amount of control over the gradation of the resulting negative by *timing the development*, and that beyond this and the addition or prevention of fog he possessed scarcely any control at all. When an exposed plate was developed, he said, there was an interval of time, varying with the developer, before the image made its appearance in the highest lights, then

the half-tone image appeared next, and after another interval the lowest tone. If the developer were then washed away we should get a negative of insufficient contrast and density; on the other hand, if the development were prolonged, contrast and density would be intensified. Mr. Watkins therefore set about to determine a proper time (under given conditions) for each developer. One conclusion which his investigation led him to was that the "ratio of the time of appearance of these three tones remains constant, whatever modification is made in the developer." If you accelerate or retard the appearance of the lowest tone (shadow detail) you thereby also quicken or retard the appearance of the high light in exactly the same ratio; by modifying the strength of pyro, bromide, and alkali there was no power over the time ratio of appearance of the different tones in a negative. Mr. Watkins considered that photographers misunderstood the power which they exercise when they modify their developers; and that they could exercise just the same range of control by using a normal developer (sufficiently restrained to prevent fog under the circumstances) and accurately timing its action. He therefore adopted for practical use a method of taking the time, which elapses between the pouring of the developer on an exposed plate and the first appearance of a selected half-tone in the negative, as a guide for the total length of time during which development should continue. If the photographer in a trial development finds that he gets the printing gradation which suits his purpose by developing for four times the time of appearance noted, he can with certainty obtain the same result in future with the same developer by again developing for four times the observed time ratio, provided the exposure is not grossly different. In this way a series of "multiplying factors" can be worked out by each photographer who aims at uniformity in the gradation which suits his purpose best, these factors varying of course for different developers. In order to facilitate the use of this method, Mr. Watkins devised a special clock with a ten-minute

dial and a slide rule on its circumference to facilitate calculation. This instrument he called the Eikronometer; but a watch will serve the purpose though less convenient. The advantages which Mr. Watkins claimed for his method were that the plate can be left covered from light after the appearance of the image, the "personal equation" is not suppressed since the multiplying factor is not a fixed quantity, but only a convenient method of expressing the experience of each photographer, and that it would lead to improved average work being turned out.

These views were strongly opposed by many practical photographers, who contended from their experience that they could control the results in development by suitable alteration of the developer. The statement that there was no control over gradation in development had previously been made by Messrs. Hurter and Driffield, who have since modified their views. It was thought that Mr. Watkins had made a valuable contribution to the subject, but that like Messrs. Hurter and Driffield he had generalised too widely from his experimental results. Mr. Watkins held to his views, while Mr. Edwards gallantly led the van of the opposition. The outcome of the discussion between them was this competition. The result of it is unfortunately not very satisfactory, and it was hardly to be expected that it would be otherwise. It was a fitting conclusion perhaps that Mr. Edwards should win the first prize, since he consistently advocated that gradation can be altered by development, and to the practical worker the successful entries seem to prove this statement. Mr. Edwards says that had the conditions of the competition been less rigid, he would have been able to demonstrate more conclusively that gradation can be altered by development. He further claims that he can, by modifying the developer, produce negatives and prints which are indistinguishable, even when the exposures have been as 24 is to 1.

Mr. Watkins however still remains unconvinced, and in his opinion a single competition could not produce conclusive results. It is a case of doctors disagreeing; but to the practical photographer it looks as if Mr. Edwards has succeeded, under peculiar conditions, in altering the relative gradations of a negative in development.

WE have hardly recovered from the first effects of the announcement of the photo-

graphic properties of Röntgen's X rays, when yet another discovery comes before us. Professor Herkomer, R.A., claims that he has invented a process by which the painter can bring his work before the public in black and white without the intervention of photography or of the engraver's art. The artist has merely to paint just as he would do ordinarily, he can see the effects that he produces, and he is saved the trouble of learning another art and of reversing his picture. The artist paints upon a copper plate, which is covered with a thin coating of silver cyanide, using it just as he would a panel or a canvas. The medium employed is a special ink or paint, and while the colour is still tacky it is dusted over with a brown powder and the excess of it is brushed away. There has been some mystery about the paint and the powder; but a reference to the specification of the patent shows that the paint is a mixture of lamp-black with equal parts of castor and almond oils, and the powder a mixture of equal parts of powdered asphaltum and bronze powder. The coarser particles adhere only to the deepest shadows, where the paint is thickest, and the finer ones only on the most delicate tints, where it is thinnest. This powder gives in this way a discriminating grain and imparts to the ink the conductivity which is required for the next stage—electro-plating. The artist now hands his painting over to the Syndicate Company who hold the patent. An electrotype is thus prepared in the usual way and this forms the printing plate from which copies are struck off.

THE following description of an ingenious and simple contrivance for manufacturing Acetylene gas on a small scale for experimental purposes is taken from the *Practical Photographer* :—

The gasometer is made from two biscuit boxes, one inverted in the other. From the bottom of the lower vessel a pipe passes out below, and serves for both inlet and outlet, one branch is carried to the source of supply, the other to that of consumption. The bottom chamber of the gasometer floats on the water contained in the lower, and from the centre of it a cord is carried upwards, passing over two pulleys, and is attached to a small water vessel, which can be used to act as a counterpoise if necessary, but its first object is to provide a means of removing water from the carbide. The gas is produced in a wide mouthed bottle having a tightly fitting cork. Through this cork is a long rod carrying at its lower end a basket of wire gauze in which the carbide is placed. A tube passing through the cork leads to the gasometer. If the bottle is half filled with water, and the wire basket

lowered until the carbide touches the water, the gas is at once evolved with astonishing rapidity, and the gasometer will rise. The automatic action of the small vessel suspended from the pulley now comes into play. About one-third of the way up the side of the bottle is a hole into which a rubber tube is tightly secured. As soon therefore as the gasometer begins to rise, and the counterpoise vessel descends water flows out from the bottle into the vessel, and the level is so much reduced in the bottle that the wire basket containing the carbide no longer touches it, and the evolution of gas consequently ceases. As the gas is consumed of course the action is reversed, the water flows back again from the counterpoise vessel into the bottle, and the production of gas once more begins.

THE picture subject for the Society's next Half-yearly Competition is "*A Genre or Figure Study.*" In this connection we would draw the attention of members to ENQUIRER'S letter which we publish in this issue. The impression that enlargements are restricted to any particular subject is, we believe, prevalent among other members also; and we are requested to state that there is absolutely no such restriction imposed upon the competition in the classes for enlargements, lantern slides, and other branches of photography as mentioned in Rule 6 of the Society's Rules for Competitions, the award in these classes being made for "excellence."

MEMBERS are requested to note that the next Monthly Meeting has been ante-dated to Tuesday the 31st March, since the first Friday of next month will be Good Friday. Pictures and other exhibits should therefore be in the Secretary's hands on the 30th instant. This notice is unavoidably shorter than usual, and it is hoped that members will overlook that. Since they may send "anything" for the picture subject, short notice need not be pleaded as an excuse for sending nothing to the next meeting.

OUR illustration is "*The Gate of the Pulicat Cemetery,*" and it is from a negative taken under difficulties, the artist finding himself at Pulicat with his camera, &c., but minus the tripod stand. By the aid, however, of one of the numerous canal boat builders, who carry on their business on the shores of the lake, and the curtain poles of a camp cot, a somewhat unsightly but effectual substitute was improvised.

The Cemetery is well worth a visit, the tombs of the old Dutch Governors and residents being in a most wonderful state of preser-

vation. In one of the oldest, dated early in the seventeenth century, a more modern resident of Pulicat, who died some twenty years ago, has quietly appropriated a last resting place for himself and recorded the fact by an inscription on a slab of black marble inserted into the original stone commencing "Here lieth also, &c."

The town of Pulicat is just within the northern boundary of the Chingleput District and is situated on the shores of a large lake or backwater of the same name, nearly 50 miles in extent from north to south, and 11 across in the broadest part. It formerly belonged to the Dutch, who established themselves there about the year 1609, and there are many interesting remains still to be seen of their settlement, one of the oldest, if not the oldest, on the Coromandel coast. This, by the way, takes its name from Coromandel, a sort of suburb of Pulicat on the other side of the lake and where the wealthier inhabitants used to reside. Here there are the remains of many ruined bungalows, and also one or two, in fairly good repair, to be obtained for a nominal rental. In olden days, when going to the Hills was unknown, Pulicat, or more correctly Coromandel, was a favorite hot-weather resort; and, now the railway to Ennore is open, it may be reached with comparative ease, for it is only about 11 miles distant from thence by canal.

PHOTOGRAPHY IN NATURAL COLOURS.

(Read before the Society)

BY

R. LL. JONES.

So much that is new and sensational has been written about Colour Photography of late, and so little has proved equal to the expectations formed thereon, that anyone who ventures in the present day to speak or offer any remarks on the subject is liable to be looked on with a certain amount of suspicion—to say the least of it. Immediately any mention is made of it, people either try to change the subject of conversation, or "keep looking the opposite way and appear unaccountably shy." Yet in spite of all this, Editors find it as impossible to keep from discussing the subject in their Photographic Journals as it was for Mr. Dick to keep the mention of King Charles' head out of his memorial. At present, however, the sensational journalist is busy with the new photography, called into existence by Professor Röntgen's work, and like some being from four dimensions is telling one all about the insides of the wretched race of men confined to space of three. I may therefore hope for

some indulgence in an endeavour to place before the Society an account of a method which is probably not new to most of you, but true enough, as some of our members who have actually seen the photographs can assure you.

The following account is based on a paper by Dr. Joly which appeared not long ago in *Nature*; in many places indeed I have simply transcribed his remarks as they stand. The paper is entitled "On a Method of Photography in Natural Colours." The author states that the results are attained by no new photographic operations. Yet, I am told by those who have seen the pictures, they are extremely beautiful and that the colours appear wonderfully real. The method is free from the objection of being cumbersome. Only one image is photographed. The ordinary camera, lens, backs, &c., are used without modification. The plate used is the isochromatic plate sensitised down to the C line in the red. The exposure is somewhat longer than the ordinary exposure, for only visible light is to be used and the ultra violet radiation must be cut off by affixing in the lens an orthochromatic screen. The appearance of both negative and positive is hardly at first sight distinguishable from an ordinary negative and positive, though a lens shews the difference readily enough.

The method is based on the three colour theory of vision. The theory is attributed to Young, who supposed that the eye is provided with three distinct sets of nerve fibres, each set extending over the whole surface of the eye. Each of these three systems when excited gives us a different sensation. If we could excite one of these sets of nerves without acting on the other, we should experience the pure sensation corresponding to that set of nerves. This sensation would be truly a primary colour, however the nerve be excited. This however we are unable to do. But we can deduce some of the consequences of this theory and submit them to the test of experiment. If red, green and blue-violet be the primary colours, then we ought by means of these three colours to be able to produce any and every other colour sensation. Clerk Maxwell made a large number of experiments on colour mixtures, and found the results to agree with this theory in every case. Since his time others have experimented on the subject with improved appliances, and have in part corrected, but in the main confirmed and extended his work.

His experiments on the prismatic spectrum showed that all the colours of the spectrum and therefore all the colours in nature are equivalent to, *i.e.* produce, the same sensations as mixtures of three colours of the spectrum itself. He took three photographs of a coloured ribbon through three coloured solutions introduced into the camera, giving red, green and blue images as they would be seen by each of Young's three sets of nerves separately. When these were superposed, a coloured image was seen which, if the red and green images had been as fully photographed as the blue, would have a truly coloured image of the ribbon. He adds that by finding photo-

graphic materials more sensitive to the less refrangible rays the representation of the colours of objects might be greatly improved. This experiment was shewn in 1861. As early as that date, then, photography in natural colours was shewn to be possible. But the method employed was not a convenient one, involving as it did the taking of three photographs, and subsequently the triple projection of the images on the screen. The defect in the green and red images mentioned by Maxwell have been almost completely remedied since his time.

It will be well however to examine the method of Maxwell a little more closely for then Dr. Joly's process will be more easily understood. And it will be well for us to remind ourselves once more that the colours of the spectrum cannot be resolved into the three primary colours. This was proved long ago by Newton. All that is implied in the theory of colour vision is that the sensation—a purely subjective effect—produced by any colour of the spectrum can be also produced by a mixture of the three primary colours, red, green and violet.

Consider any part of the object to be photographed and let its colour be yellow, for instance, such as the spectral yellow near the D line. It is known as a result of experiment that such a yellow as this can be produced by the admixture of red and green in certain proportions. Let two photographs of this part of the object be taken, one through a solution which admits the passage through itself of the yellow light emitted by the part under consideration in proportion to the quantity of red light in the mixture which produces the same colour sensation, and the other through a solution which admits the passage of the yellow light in proportion to the quantity of green light in the mixture. These plates on development will evidently have a density of silver deposit, corresponding to the degrees in which the yellow lights emitted by the object can excite the red-seeing and green-seeing nerves respectively. In the positives these degrees of density will be interpreted as degrees of transparency. Let a positive from the first plate be backed by a red glass and a positive from the second plate by green glass. The amount of light, red and green, transmitted by each of these will be exactly proportional to the amount of red and green light necessary to produce the same colour sensation as the yellow light emitted by the object. When these two pencils enter the eye in the same direction or fall upon the same part of a white screen, the sensation of yellow produced by the light coming from the object directly will be here reproduced exactly. In a similar way, guided by experiment on colour mixture, we can reproduce by photography the colour of any other part of the object however complex in shade that colour may be. But, in general, it will be found necessary to expose three plates, because the colour sensation will not always be as easily reproduced as the instance taken above. The positives from these plates are backed by red, green and violet glasses and the three images superposed, and we have an image possessing the exact tint of the original object.

But, it may be asked, will the coloured screens through which the negatives are taken, and which have been found suitable for the accurate reproduction of one particular colour, be suitable for the accurate reproduction of another totally different colour? This is a question which can only be settled by trial, and comparison of the amount of lights which they allow to pass, with the quantities of the primary colours necessary to produce any particular colour sensation. The results prove that absolute accuracy may indeed be impossible by this method. Still Dr. Joly and others have shewn that a degree of accuracy baffling the criticism of the ordinary untrained eye is possible and that in the reproduction of the most complex tints.

The predominant colours transmitted by the screens used by Dr. Joly for taking the photograph correspond to the following three colours in the spectrum (1) the point displaced to the red side of the D line by about one-sixth of the interval D to C, (2) a point displaced to the red side of E about one-third of the interval E to D, (3) a point about midway between F and G. Another reason for this selection is the unequal distribution of light in the spectrum; for instance, the red-seeing nerve is more strongly stimulated by the yellow spectral light near D than it is by the purely red exciting light near C.

Now in order to mix two colours, or experience the combined sensation due to both, it is not necessary that they should be accurately superposed or that they should enter the eye in absolutely the same direction. There is a limit to what the eye can do in the matter of distinguishing colours and objects, imposed on it by its own structure and also by the nature of light. For instance it is, roughly speaking, impossible to see separately two thin white strips on a black ground if their distance apart is $\frac{1}{400}$ th inch when looked at from a distance of a foot. This limit is imposed by the nature of light and the size of the pupil of the eye, leaving out of account for the present the other factor. If one of these strips be red and the other green we shall simply see one line, but its colour will be yellow. It may be that this limit is altered by the structure of the eye, and thus two lines, red and green, may be seen as a single yellow line when placed at a greater distance than $\frac{1}{400}$ th inch. Similarly any tint can be produced by means of red, green and violet lines placed sufficiently near together when their intensities are in the proper proportions. These remarks will, I hope, enable you to understand clearly Dr. Joly's method, and how the trouble of taking three photographs through three separate screens, and the subsequent projection of these images again through red, green and violet glasses before the final picture in natural colours is produced is done away with. Only one photograph is taken and only one screen is used in taking it. The screen is made by ruling on a plate coated with a preliminary layer of gelatine, the orange green and violet tints mentioned before in pigments made up as inks. This screen placed closely to the sensitive surface of the photographic plate analyses the image. There will thus be "all over the plate minute regions wherein

the sensitive silver salt is excited to become reduced to the photogenic material in the same degree in which the sensations of redness, greenness and violetness would have been actually excited in the several nerves of the retina had the image been formed on it."

The plate is developed in any ordinary way and a positive taken. Use is now made of a second screen which carries red, green and violet lines to the same gauge as the taking screen. This is applied to the positive and moved over the surface till that position is reached where the red lines fall over the lined areas recording red sensations, &c. The natural colours will now be seen. For the light that comes from any particular part of the positive and through the screen will now contain red, green and violet tints so close together that they cannot be resolved by the eye and they will be present in the proportion in which they must be mixed to produce the colour of the light emitted by that part of the object. Hence the result; the natural colours of object reproduced in the picture.

The only additions, to the ordinary photographic apparatus, necessary to work by this method are the two screens, the taking and the reproducing ones, and a screen for cutting off the ultra violet radiations. To form the screens the lines may be laid on as many as 800 to the inch. When they are as frequent as 400 to the inch, the eye is no longer annoyed by the structure of the plate, though a still lower frequency suffices to produce the image in its natural colours.

OUR HOME LETTER.

Since my last letter, interest in the discovery by Professor Röntgen has increased a thousandfold, and many scientists, photographers and electricians have been making their own experiments, though as yet it cannot be said that any decided advances have been made, although it has been found that the results can be attained with apparatus of a much more simple description than was at first used, while some experimentalists have even gone so far as to state that they have obtained shadowgraphs, as they are familiarly termed, with the incandescent gas light.

The newspaper press, of course, makes a great fuss about it, as, indeed, it does about anything a trifle sensational, and in all justice it must be said that descriptions of skeleton hand photography, or other similar phenomena, are preferable to long accounts of murders, breach of promise or divorce cases. The subject is dubbed "the new photography," and Captain Abney, who is now President of The Royal Society, has rightly objected to this title, for firstly in the ordinary sense of the term it is not photography, in the second place it is not entirely new, and thirdly the term is liable to lead to much confusion, for only a few months ago the public press was alluding to the highly artistic developments of photography at the Salon under the same title. Shadowgraphy, or electrography, seem more appropriate names.

Such objects as mice, flat fish and frogs have been already much operated upon, with the result that prints illustrating their osteology are to be seen in the windows of shops almost everywhere, and seem to attract the passer-by in a marked degree.

It can scarcely be said that as yet the discovery has materially facilitated surgical science. It is related that certain doctors have discovered the presence of needles and other foreign matters in the hands and feet of patients, but it has not been sufficiently emphasized that these objects could not have been traced just as effectively by ordinary surgical means. A fractured wrist wrongly joined is another of these instances to which the same remark applies.

A startling announcement comes from Italy to the effect that one Professor Salvioni has devised means of placing the human eye on an equality with the Röntgen rays in being able to see through the same media that they are able to penetrate, but up to to-day no details of his method have been published, and our opinion must therefore be held in reserve.

In a nutshell, however, the discovery of these Röntgen rays opens up a great many possibilities, and after more experimenting with apparatus specially adapted to the work, with plates which will yield the best results, there is every possibility of important advances being made which may prove of great value in various fields of science. If any are desirous of experimenting, I might refer them to an article by Dr. John Macintyre in *The Practical Photographer* for March, wherein he describes his apparatus which is of a simple nature, but capable of yielding the best results.

The camera is being largely used by Alpine climbers, and very few of them now set out without a compact apparatus of some sort. Mountain scenery has been to many quite a *terra incognita*. The climbers bring back negatives, the prints from which enable those "who sit at home at ease" to realize that there are some extraordinary places among the eternal hills. Huge seracs of snow and ice, vast crevasses, magnificent snow-slopes, isolated rock-peaks, fantastic rock-ridges with serrated summits, and needles of the most inaccessible appearance are now exhibited on the lantern screen with many realistic attributes.

The best cameras for Alpine work are small ones which may be put in the pocket, and which take a plate $3\frac{1}{4}$ square, or at the most not larger than quarter plate. Glass plates seem to hold the palm as yet, but there are some people who evidently obtain very good results with flat films.

In England here Alpine climbers flock to our Lake District mountains, or go further north to Scotland, or perhaps into Wales, just about this time of the year. The Lake Country mountains of Westmoreland and Cumberland are especially popular. They represent, on a much smaller scale of course, many of the principal features of the Alps and other mountain chains, and if the winter be keen they often hold a marvellous amount of snow. It is difficult for

outsiders to understand the charm of Alpine climbing and to describe it conveys but a poor impression to the mind of its charms. It must be tried to be understood. All our little mountains here have been thoroughly explored. There are no new chimneys or needles to discover, but in India you have a large field for work, especially in the north, and doubtless the next few years will witness the conquering of many Himalayan giants. I have seen a number of the photographs which Sir W. Martin Conway took while there in 1893. He was most unfortunate with his camera, as it fell accidentally a thousand feet or more down the side of a mountain, and had to be patched up with cobbler's wax and paper, the resources of civilization in those latitudes not being capable of providing proper facilities for repairing photographic apparatus. He also lost some thousands of films through unknown curiosity, some one having opened them in transit. Nevertheless many of his photographs although not technically perfect are exceedingly interesting and valuable in illustrating some of the marvellous glaciers and peaks of the virgin Himalayas.

MATTHEW SURFACE.

PROCEEDINGS OF THE SOCIETY.

Monthly Meeting, held at the Masonic Hall,
Mount Road.

Friday, March 6th, 1896.

Mr. F. Dunsterville, President, *in the chair.*

The minutes of the previous meeting having been circulated to members, in the last issue of the Journal, were taken as read and were confirmed.

The Honorary Secretary communicated the following:—

- (1) Letter from Mrs. Upcott, resigning her membership as she is leaving for England.
- (2) Prospectus of an International Photographic Exhibition to be held by the Cardiff Photographic Society, to be opened early in May and to continue open for about six months. The following are—

The Rules and Regulations.

There will be an Entrance Fee of 2/6 for one class, and 1/- for each subsequent class.

All pictures must be mounted and framed (Oxford and Oval frames rejected) labelled on back with particulars of Subject, Process, Exhibitor's Name and Address, Class, and if for Sale—the price, which will be subject to 10 per cent. commission. The Title and Exhibitor's Name may appear on front.

The Committee reserve the right of rejecting any exhibit without assigning any reason for so doing.

The Judges reserve the right of withholding, or adding to awards, and their decision will in all cases be final.

All Lantern Slides for competition must be properly mounted and marked, and have title on front.

APPARATUS.—The Committee offer Bays 13×6 ft. for the Exhibition of Apparatus and/or Processes for the sum of £20, smaller table spaces at 5/- per square foot, minimum £5. In this section exhibitors must undertake to comply with the rules and regulations of the General Exhibition, particulars of which will be sent on application.

The Committee undertake to unpack, repack and deliver to carriers, all exhibits free of cost, but carriage both ways to be paid by Exhibitor. No exhibit may be removed before the close of the Exhibition.

The Committee will not be responsible for any loss or accident, but every reasonable precaution will be exercised.

A Special Feature will be made of the Sale of Exhibits and Duplicates.

All exhibits must be received before the 10th April, 1896.

The Committee will be pleased to receive exhibits not for competition.

List of Classes and Awards.

(Open to Amateurs and Professionals.)

Class A.—Landscape and Seascape.	} Silver and Bronze Medals and Certificates in each Class.
Class B.—Portraiture.	
Class C.—Genre or Figure Study.	
Class D.—Architecture, Interiors or Exteriors.	
Class E.—Enlargements.	
Class F.—Hand Camera Prints. Set of Six.	
Class G.—Lantern Slides. Set of Six.	
Class H.—CHAMPION CLASS.—For previously medalled Pictures.	} Gold Medal and Commemorative Shield— ONE AWARD.
Class J.—Apparatus.	} — Gold, Silver and Bronze Medals and Certif's.

NEW MEMBER.

Surgn-Major VanGeyzel proposed, and Mr. Dunsterville seconded, Mrs. E. J. Sewell, Chittoor, and she was duly elected to be a member of the Society.

THE QUESTION BOX.

How can I ascertain the focus of a lens, without a camera to fit it to? I have two view lenses, and want to build a camera for them.

The focal length of a lens may be practically found by holding the lens up to the sun, and focussing its image on a piece of white paper. The distance of the sharpest image from the diaphragm slit may be taken as the focal length.

CUT FLOWERS AND FERNS.

H.H. The Elayah Rajah of Travancore was the only Exhibitor.

NEXT MEETING.

The *Picture Subject* was left open, so that members might send any pictures that they like. It is hoped that this will attract a larger number of exhibits to the meeting. As the first Friday of next month will be Good Friday, it was resolved to hold the *next Monthly Meeting on the previous Tuesday, the 31st March.*

MISCELLANEOUS EXHIBITS, &c.

General Wardrop showed two negatives of an Interior, taken on Lumiere's Extra Rapid plates, using stop *f/32*. The exposure in one case was 3 minutes and in the other 5½ minutes. Both plates were developed with a mixed Hydroquinone and Metol developer. Both were fully exposed, the one which had received the shorter exposure being consequently very much denser than the other. He showed a print from the thinner negative, and said that he could hardly obtain a print from the other on account of its density. He wished to know whether the density ought to be reduced, or how he could obtain a pluckier print from the thinner negative. The opinion of most members was that the dense negative would yield a good print if printed out in the sun, while they considered that the thinner negative would be hard to beat for printing qualities. The print from it, which was shown, was rather flat, owing most probably to the paper having been stale; but it was considered that such a negative as this should yield a good print by any of the usual printing processes.

He further showed two lenses, one a 5-inch by Wray and the other an 8-inch Rapid Symmetrical by Ross. He observed that while the rotating diaphragms on both lenses bore similar numbers, the size of the openings in the Ross lens was nearly double that of the apertures in the Wray lens. He therefore wished to know whether longer exposures should be given when using the Wray lens.

It was pointed out that the stop numbers express the ratios which the diameters of the various apertures bear to the focal length of the lens, and that in the case of a lens of 8 inch focal length, the diameters of the apertures must be nearly twice as large as in a lens of 5 inch focal length, if the ratios are the same. Consequently there is no difference in the exposures required to be given with either lens, when similar stops are used.

Mr. J. L. Walker showed a lens which had been sent to him as being unserviceable on account of extensive fungoid growth on both front and back combinations. It afforded some proof of the soundness of the classification of lens owners, which Mr. Michie Smith gave in his paper on the "Care of Lenses," published in the last Journal. Clearly this lens belonged to one in the first class of lens owners, *viz.*, those who are almost afraid to look at their lenses for fear of spoiling them, for the "fungoid growth" vanished on the application of a soft handkerchief.

TECHNICAL WORK.

Mr. Jones read his paper on *Photography, in Natural Colours*, carefully explaining the principle of the latest method, that of Dr. Joly. The paper is printed elsewhere in this issue of the Journal.

A vote of thanks to Mr. Jones terminated the meeting.

CORRESPONDENCE.

TO THE EDITORS OF THE JOURNAL.

Cyanotype.

DEAR SIRS,—My note on Cyanotype printing in your last issue of the Journal is slightly misleading in two particulars, and I shall be glad if you will kindly allow me to state (1) that the formula for sensitising does equally well for any paper as well as for Saxe or Rive; (2) that varnishing of the print is not essential. I find that blue prints are quite permanent without varnishing; in fact I usually avoid varnish now as it imparts a yellow color to the prints.

MADRAS, } Yours faithfully,
25th February 1896. } J. H. COOK.

TO THE EDITORS OF THE JOURNAL.

Enlargements at the Half-yearly Competitions.

DEAR SIRS,—How is it that the Judges have awarded a medal to a picture of dogs, in the class for Enlargements at the last Half-yearly Competition, when the subject was a "Group of Cattle"? Had I known that the expression "Cattle" would receive such wide interpretation, I might have sent a very good enlargement of a group, consisting of a dog, a horse, and their master.

Further, at the competition in last June, the medal for enlargements was awarded for a single figure, when the subject was "A Group."

CUDDAPAH, } Yours faithfully,
4th March 1896. } ENQUIRER.

[Our correspondent is under a misapprehension. The subjects announced for the Half-yearly Competitions are only for direct prints in the two classes of "Large" and "Small Pictures" as defined by Rule 4 of the Society's Rules for Competitions. Rule 6 allows additional awards to be made for "excellence in copying, enlarging, lantern slides, or any other branch of photography." For these there is no restriction as to subject. The Judges' awards have been correctly made.—Eds.]

EXTRACTS.

Don't Throw Them Away—Remedies for Spoiled Negatives.

BY W. ETHELBERT HENRY, C.E., F.R.P.S.

It would be interesting to know just how many defective negatives are resting ignominiously in odd workrooms throughout the world, and it would be equally interesting to know what a large majority of them could be made to give good prints by means of judicious treatment. During some years past innumerable negatives have reached me with plaintive requests that I would make them printable, if such a thing was possible. It often

happened that a little simple treatment was all that was necessary to transform them into quite passable negatives; in some instances, of course, the treatment was more complicated.

If you make a bad negative the general verdict is, "Throw it away and make another;" but as this is often impossible, either on account of distance or death, I will point out, as concisely as possible under the circumstances, how several classes of cures can be effected.

OVER-EXPOSURE.—This is often accompanied by over-development. Place the negative film downwards on a sheet of white paper; if it is correct in gradation, with its deepest shades tolerably clear, it can be remedied by intensification with mercury and silver cyanide. If, on the contrary, it looks foggy all over, it has been over-developed with an incorrect developer and must be reduced with potassium ferridcyanide and then intensified. If the negative is (after reduction) so thin as to be almost invisible, it must be intensified with the uranium intensifier and used for making another negative of correct density. Before going on to the next failure let us see how to make this duplicate. We will suppose that we have a very thin negative which, after uranium intensification, has all its silver deposit changed to a pale red. Put the negative into a printing frame with a slow landscape plate in contact, and expose at a distance of six feet to a No. 5 Bray gas burner for about three seconds; develop the plate with a well-restrained hydroquinone developer until it is almost as fully developed as a negative should be. Do not treat it as you would a lantern-slide, because you must have plenty of "body" and pluck. When the positive is dry, expose it in contact with another plate of the same speed at the same distance from the light for about five seconds, and use a similar developer.

Should there appear to be too much contrast during development, throw off the solution and use fresh, with less bromide. In this way it is possible to secure almost any class of negative that may be required.

OVER-INTENSIFICATION.—Dense negatives, caused by over-intensification, can be rapidly reduced by a short immersion in

Hypo	...	...	...	...	1 oz.
Water	...	...	...	..	6 "

OVER-DENSITY.—Negatives that are over-dense owing to prolonged development can be satisfactorily reduced by rocking in a tray containing a fresh mixture of

Hypo	...	...	...	...	1 oz.
Potassium ferridcyanide	...	...	...	...	10 gr.
Water	...	...	...	...	6 oz.

When the negative is reduced enough it must be well washed.

HARSH CONTRASTS.—These are often due to using too much bromide in the developer; the negative is very clear in the shadows, and intensely dark in the high lights.

If the contrast is only slightly exaggerated it can be remedied without chemical treatment. Coat the plate on the glass side while quite cold, with matt varnish, poured on the plate, not applied by a brush. The following is a useful formula:—

Gum sandarac	...	...	...	...	90 gr.
Gum mastic	...	...	...	...	23 "
Methylated ether	...	...	...	...	2 oz.
Benzole	..	...	...	...	½ to 1½ "

The benzole must be added according to the effect desired. If a small quantity be used, the varnish will dry like very fine ground-glass; coarse effects are secured by adding a larger amount; but for our purpose one ounce will be about right. The coat of varnish will dry in a minute or two, and in five minutes will be hard enough for working.

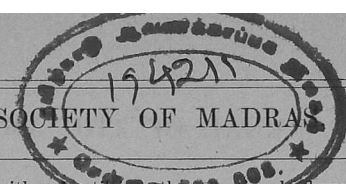
We shall next want a clear varnish made thus:—

Canada balsam	...	...	...	...	1 dram.
Turpentine	...	...	...	...	1 oz.

Put the negative on a retouching desk, or on some other arrangement that will exclude most of the light that does not pass directly through the negative, and then, with a camel-hair pencil, apply the clear varnish thinly over the densest parts of the negative—still working on the matt-varnished (glass) side of the negative.

In a moment a difference will be observed, the contrast being much reduced. If more is needed we must allow the plate to dry, and then go over the shadow portions with a brush charged with Prussian blue and water, applying only a thin coat.

Another plan, in use among professional photographers, is to cut a piece of tracing paper a little longer than the negative, place



it between damp blotting paper for ten or fifteen minutes, and then put the negative on it (glass side in contact), turning the ends of the tracing paper over and fastening them with glue to the edges of the film. When dry, the paper will be as tight as a drum-head, and may be worked on with lead pencil, water colour (Prussian blue chiefly), stump and blacklead, and varnish, until the desired effect is obtained.

The negative may be treated chemically by immersing in the following bath:—

Potassium bichromate	...	...	15 gr.
Alum	...	...	75 "
Hydrochloric acid	...	...	1 drachm.
Water	...	...	4 oz.

It must remain in this bath until the film is whitened through to the glass side; this converts the deposit into chloride of silver. After well washing, the picture can be redeveloped in daylight with any good developer until of satisfactory density. This treatment has the advantage of developing the thinner deposit (detail in the shadows) first, so that development may be stopped as soon as the relative density is correct. The plate must then be fixed. If not dense enough, it can now be intensified up to printing vigour, without fear of further exaggeration of contrast.

HALATION.—There are often distinct signs of halation surrounding the edges of trees and buildings when taken against a brilliant sky, as well as around windows of interiors. This is caused by a light reflected from the back of the plate and could be avoided by using plates with a suitable backing composition. The defect can be considerably remedied by mechanical treatment, thus: Make the negative quite dry by warming it, then place it, glass side downwards, on a perfectly flat and unyielding surface—such as plate-glass covered with one thickness of blotting-paper. All that is then needed is a supply of alcohol (free from water) and a small piece of chamois leather. Stretch the leather over one finger, apply some alcohol, and rub *vigorously* over that part of the negative covered by halation. The friction, if energetic enough, will cause the film to give vent to shrieks of the most heartrending description, but it is necessary to persevere in the treatment despite all remonstrance. After a few minutes' rubbing, the leather will be perceptibly blackened with the removed silver, and a new surface should then be moistened with alcohol. This is a capital method of reducing local density, whether it be due to halation or to other causes.

CRACKED NEGATIVES.—If the film of a cracked negative is not damaged it should be stripped and transferred to another glass. If this is undesirable, prints can be made free from evidences of the crack by placing the printing frame at the bottom of a box about two feet deep, covered at the top with tissue paper. In this way printing will proceed slowly, but the results justify the means.

SCRATCHED FILM.—If a film is scratched but slightly, it can generally be remedied by careful "spotting"—i.e., touching with the point of a sable hair pencil charged with a mixture of crimson-lake, Prussian blue, and indian ink, to match the colour of the film as nearly as may be. No attempt must be made to apply the colour in *strokes*; it must be done by innumerable *dots* of colour, in order to avoid overlapping the film and so causing white marks in the print. If the scratches are more extensive, it is a better plan to fill them in with colour until they are quite opaque, and then make a transparency by contact, finally working in the detail on the transparency with a lead pencil until satisfactory. A new negative can then be made by contact. But a much greater power is within reach of those who can work the carbon process, as a print can be made on special transparency tissue without attempting to correct the scratch on the original negative. The positive will then show the defect as a ridge of gelatine, which can easily be shaved down with a sharp knife. If a negative is now made by the same process, the remaining defects can be eliminated quickly and entirely.

SCRATCHED GLASS.—Negatives with scratches on the glass side sometimes show the defect on prints as a whitish line due to dirt in the scratches. This can be remedied by thoroughly cleansing the scratches, and, when dry, filling them with a mixture of equal parts of Canada balsam and chloroform, and drying before a fire.

NEGATIVES "OUT OF SQUARE."—A common failure, especially among architectural negatives and hand-camera shots at street scenes, consists of a tumbling-backwards effect due to the plate not being strictly plumb at time of exposure. Prints from such negatives are never pleasant to look upon, yet it is often impossible to take duplicates under better conditions. A negative of this kind can be corrected easily enough by making a positive from it in the camera, correcting the perpendiculars at the time of focussing.

This may be done either by tilting the negative backwards or forwards, or by placing it perpendicular and allowing the swing-back of the camera back or forth until the desired correction is attained. This will, of course, throw the focus out considerably, but by stopping the lens down to *f*/32, or even *f*/64 if need be, the resulting positive will be quite sharp, and its lines will be correct. A new negative can then be made either by contact or on carbon transparency tissue.—*The Amateur Photographer.*

Stray Thoughts for the Hand-Camera Worker.

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

It may seem somewhat bold on my part to pretend to teach in a journal, the editor of which is a notable hand-camera worker, those who follow this branch of photography, but whilst I am not quite such an enthusiast as some on this subject, I frequently use a hand-camera, and some practical ideas may not be amiss.

The question as to the developer which is most suitable for hand-camera exposures is of interest to all, and whilst I do not believe that there is one particular nostrum which will produce more detail than another, there are certainly developers and methods of using the same which will produce better printing negatives. My favourite formula—and everybody has some fad—is a mixture of metol and hydroquinone as follows:—

1. Metol	...	...	120 grains
Hydroquinone	...	...	120 "
Sodium Sulphite	...	...	4 ozs.
Distilled Water	...	...	to 20 "
2. Sodium Tribasic Phosphate	...	...	4 ozs.
Distilled Water	...	...	to 20 "

For use mix in equal parts.

Unless the temperature of these solutions is kept at about 65° F. a deposit will form, but by shaking and mixing a clear solution will be obtained. Except in cases of over-exposure, no bromide need be added, and if development is not carried too far, soft, delicate negatives full of detail, suitable for platinotype or gelatino-chloride papers, will be obtained.

After three or four days' work with the hand-camera, a stock of exposed plates is obtained, the development of which becomes a serious task, and the most satisfactory method of dealing with these is undoubtedly by means of the so-called stand development, suggested by Meydenbauer, of Berlin; in my hands this has proved eminently successful, and the only new apparatus required is a grooved trough instead of a dish. A special form of trough for this work has been constructed by Le Comptoir Général de Photographie, 57, Rue Saint-Roch, Paris, which contains two grooved vessels each holding nine plates, over all fits a big cover which effectually excludes light. The particular developer I use is compounded with the stock solutions of the above formula, and every ounce of mixed developer is diluted with 6 ounces of water. The durations of development varies from one-half to three hours, but one is not compelled to be in the dark room, and an occasional look at the plates is all that is required. Of course this may seem very wasteful of developer, but it is not so, and the results, considering the very varied time of exposures, are most satisfactory. I strongly recommend a trial of it, and almost any developer may be used, provided the proportion of reducer, pyro, amidol, etc., is reduced to about 1:3500.

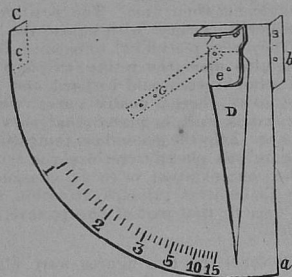
It frequently happens in hand-camera work that negatives are obtained which are somewhat dense in the high lights and too thin in the shadows; intensification under such circumstances merely aggravates the trouble, and either the negative is placed amongst the failures or else dodged with matt varnish, etc. There is, however, one process, which although not new, seems but little known, and although some little trouble, it repays one for use.

If a negative of this harsh character is soaked in water till the film is soft and then covered with a mixture of potassium bichromate 20 grains, potassium bromide 5 grains, pure nitric acid 5 drops, water 1 oz., it will rapidly become bleached, and should then be well washed and treated with a 5 per cent. solution of metabisulphite of potassium for ten minutes and again washed, the action of the metabisulphite being to remove the chromate from the film. The next process is development of the white image, which consists of silver bromide; any developer may be used, but it should not contain a restrainer, and development must only be carried far enough to re-develop the shadows, but not the high lights thoroughly. Of course it is well known that the image penetrates deeper into

the film the denser it is, consequently if we only carry development till the shadows are developed right through, the high lights will not be reduced right through, and on fixing the negative again at this stage we shall obtain a softer and more harmonious negative, which will print well.

This process may seem troublesome, but as all the operations can be performed in daylight, and as it places considerable power in our hands for modifying results, it is well worth trial.

One of the most difficult things in hand-camera work is to correctly judge distance. There is one little device which, although described in a French paper in 1888, does not seem to be known at all. It is the Telemeter, or distance measurer, and is of such simple construction that anyone could make it himself from the accompanying diagram. It can be made of card or three-ply fretwood or thin metal, and would take up very little room in an outfit, or could even be affixed by a screw to the side of a hand-camera.



It consists of a flat piece of wood or metal of 90°. To the upper edges are fastened two small projections, *B C*, in which are two small apertures, *b c*. *D* is an index finger which moves readily on the screw *e*. *F* is a piece of bent brass which, working loosely on the screws, is kept from pressing on *D* by the spring *G*, which works on the pin *g*. The arc is graduated as shown in yards, feet, or metres. To use this, it is held in the right hand, the thumb at *a*, the first finger at *F*. The instrument is directed to the foot of the person, or the ground where any object stands, the observer looking through *b c*. As soon as the foot of the person is seen, the plate *F* is pressed down, and the distance shown by the point of the index finger. The theoretical basis of the construction of this instrument is very simple, and is dependent on the fact that the angle formed by the index finger and *b a* is always equal to the angle formed by the line of sight through *b c* with a straight line drawn from the observer to the object along the ground.—*The Photographic Review*.

Development of Hand-Camera Exposures.

S. L. Coulthrust we all know as a consistent and good worker with the hand camera, and his paper before the Manchester Society, though containing very little that is new, is yet a useful one. The following is an extract upon the development question:—

“For developers I cannot claim to have anything fresh or novel, and I must confess I am greatly behind the times in this respect, for I have not tried any of the new developers. There are all kinds of reports going about of what you can do and what you can get; some would have you believe you could get a negative with a snap-shot in a coalhole if you used *their* developer; and others, that *their* developer would bring up the faded image upon a worn-out sixpence; yet, in face of all this, I am content to use that much-knocked-about friend, pyro-bromide and ammonia, all made up in 10 per cent. solution, so that I can make up any formula that I desire, either for snap-shot or ordinary work.

“In developing, I go for detail first, and let density take care of itself. What I think is best to aim for is a soft, clear negative, full of detail and fine gradations. For ordinary landscape and seascape work in open country, I take for developing:—

Water ... 2 ounces.
 Pyro ... 3 grains or 60 mins. of 10 per cent. solution.
 Bromide, 1 grain „ 10 „ „ „ „
 Ammonia, 1 min. „ 10 „ „ „ „

and for street work or any quick exposure:—

Water ... 2 ounces.
 Pyro ... 2 grains or 40 mins. of 10 per cent. solution.
 Bromide, ½ grain „ 5 „ 10 „ „ „
 Ammonia, 1 min. „ 10 „ „ „ „

“Flood this over the plate with an even flow, and cover over at once with a piece of board, and keep well rocked; examine in the course of about one minute, and, if correctly exposed and developer is right, the high lights should have commenced to show; if this is so, keep on as you are, and development will proceed; add more pyro and a little ammonia if more density is desired. If, however, after say two or three minutes, no signs of any image appear, add five more minims of ten per cent. solution of ammonia, and keep on adding at short intervals until development is complete, adding more pyro if wanted, keeping the plate well covered and rocked all the time. Develop until the plate is dark all over, and the image seen at the back, as I find that in all rapid plates the density is not as real as it appears to be, and much is lost in the fixing bath. I think a little fog is no drawback to a negative; many of my best negatives are fogged in the shadows, which I prefer to clear glass.

“Seeing that most of our hand-camera negatives are used for the production of enlargements or lantern slides, they should be kept of the soft order, as I believe this class of negative is best for those purposes, and that the optical lantern is, without a doubt, the best method of showing the picture we have obtained with the hand camera; and that lantern slides are the best means of keeping a set of pictures together, for prints have a bad habit of going astray.”—*The Photographic Review*.

Chiaroscuro in Photography.

BY JOHN T. FAIRS.

It has often been said that “what has been done may be done,” and if we use this phrase in connection with the subject before us, we have only to study such of our leaders in art photography as Mr. H. P. Robinson, and a few others, to learn the immense possibilities open to the photographer. It has been my privilege to see much of Mr. Robinson's work, and I have often been charmed with the results of applying simple art craft to photography. What strikes one on walking through a photographic exhibition (and that forcibly) is that the technical merit is far ahead of the artistic. The object of the author is to bridge over in some measure this existing gulf, by advancing a few art principles, by which, if studiously applied with artistic feeling, photographic work may be done of such a character as shall not fail to please the most critical and artistic eye.

Now for a chat about the much avoided, but all important subject—“Chiaroscuro”—as to what it is and how to apply it to camera work, because after all, inasmuch as it is intelligently applied to the work, the result will be a picture to satisfy the eye and mind, instead of a merely good photograph. Well, first of all, what is it? Is chiaroscuro light and shade? No, not exactly. The camera will give you light and shade, but chiaroscuro only as the objects photographed are arranged in accordance with the principles of art and laws of vision. What do you mean? is a question I am often asked, at this point. I will try to be simple and make myself clearly understood.

Now, there may be several objects in a photograph, and the light and shade of each may be good. Where the camera has failed in the adjustment of tones, intelligent retouching has been resorted to for completing the values, so that the photograph, when looked at closely and each object viewed separately, shows good light and shade, and we may say of such, “What splendid photograph,” but place the same on a wall, or at any proper distance, to be viewed as a whole or picture, and it offends the eye, because it appears like a piece of patchwork and not a picture, the reason being that it is not rendered consistently with the laws of vision. Take the same subject and render it in such a way that the laws of vision are not violated, and it can only be viewed at a right distance, not closely but according to the place it properly takes in the angle of vision. There being nothing to shock the sense of sight, the eye travels over the whole, first by means of degradation, and again by gradation in a pleasant and satisfied manner, the eye being led from and to the principal point of interest. This is what chiaroscuro really is; the rendering of a picture impression consistently with the laws of vision. The one is a photograph, the other a picture.

How is it to be produced? Nature has arranged matters for us so simply, and not less perfectly, that we must give her due consideration in order to understand her meaning, and to prevent a violation of her plan. She has so determined that for us to be intelligent about existing things, two things are necessary, viz., the eye and the light, the eye for the light, and the light for the eye, the

one remaining absolutely inactive apart from the other. One word then about light—we may speak of it as effect produced upon the mind by the action of a subtle matter and the sensitive expansion of the optic nerve, which is spread over the interior of the eye and is called the retina, where the light is focussed, and the picture impression received. The action of the light medium is not exerted in straight lines, but is of a wavy or vibratory character. The movement of the atoms of light medium is transmitted from one to another, the intensity diminishing as the distance from the exciting cause increases; and besides the movement between atom and atom there is also a movement which is of a symmetrical character embracing a larger or smaller number of atoms; it is this movement which is called a wave. The length of the wave determines the nature of the mental effect which we call colour, the wave lengths of red being the longest, and those of violet the shortest. That no doubt is the reason why red is chosen as a danger signal—its wave lengths being the longest, it has a more sudden and powerful effect upon the retina. We spoke just now of the angle of vision, and it must ever be borne in mind that as it is limited to 60° the object or objects must necessarily range within this angle, or they will be distorted if represented correctly. It is only after careful study that we find out how very limited we are in what we see at one and the same time. It matters not what the subject is, the eye is directed to one point only and at this point sees things clearly, sharply, and strongly; a subject can be depicted faithfully only as this is borne in mind, that one portion (and that small, comparatively speaking) is directly opposite or at right angles to the eye. This should ever be the chief point of interest in the picture. To look first at one portion of a subject and then at another is not the way to cultivate the perception for seeing things correctly. When studying a subject to see what best can be done to make a true and striking picture great care must be taken not to move the position of the eye, it must be viewed, that is the whole of the subject, with the eye in a fixed position. This is where the first real difficulty presents itself. A little thought and patience at this point are needful, the eye must be schooled, it must answer to the dictates of the mind, as does the hand. To see with the eye is one thing, but to see with the brain through the eye is quite another. Suppose we have a group, say of three figures, we place them at a proper distance within the angle of vision. The most important figure occupies a central position. The eye is directed towards this figure, of course to the face, not to the neck, drapery or hands, as we often see done. If introduced to a person it is right to look them in the face, not at their neck, arms, or clothes; this would indeed be a breach of good manners. The camera must be refined, must have at least good manners, or it will soon be discovered what sort of a person (mentally) is behind it, therefore on the face of the principal figure must the eye be fixed, and remain so until the other two gradually, and at first slowly, assert themselves till they are seen with, and in relation to the first, from a fixed position. Now for careful study. It is at this stage that the true picture impression is made on the brain through the sense of sight. To render that impression should be the object and aim of the photographer, and if done, a highly artistic picture would be the result. At first it is somewhat difficult to acquire this power to see rightly because of the very bad habit of glancing first at one figure, then at another, at this piece of drapery, and so on. We are supposing the group to be arranged as to composition, etc., with suitable lighting, therefore this part of the business is dismissed, and we will go on a little with our group. The photographer has now looked long enough at the subject from his fixed point of view, and a definite impression of the whole relatively has been received, so please consider a few questions. Q: Will you tell us where the light is strongest, that is where it seems to play with the greatest amount of activity? A: Upon the face of the principal figure. Q: The light second in strength, where does it fall? A: Upon the lady's face on the right which is about equal in strength to the light on the neck of the principal figure. Q: And the third light, where does it fall? A: On the face of the figure on the left. Q: Why is the face on the right more strongly lighted than the one on the left? A: Because the group is lighted from that side. Q: The fourth light? A: On the hand of the principal figure resting on the knees. Q: Does the cuff on the wrist of the left-hand figure compete with any of the other lights you have mentioned? A: No. Q: How is it, seeing that the cuff is white? A: The reason is that it is too far removed from the point of sight where the light is most active, the rays of light passing between the eye and it are weakened, falling as they do obliquely, and not at right angles as they do between the eye and the face of the principal figure. Q: As you do not see the two remaining figures under the same strength of light as the first, are they misty or distorted looking? A: No, they are clearly defined, but seem to retire somewhat. Q: Do you mean

that they appear to be smaller? A: No, they seem to lead up to the principal light. Q: Do you feel any inclination to move your eye from one point of interest to another? A: No, I used to do that, but could not get what I wanted; looking at the group in this way pleases and satisfies me. Now put this piece of cardboard before your eyes so that the edges of the opening cut off all that is outside the angle of vision. Q: What is the result? A: The effect is a framed picture, and most satisfactory to the eye. Q: Have you ever got this kind of effect in your photographs? A: No; the reason is, I suppose, that I did not know what was wanting to make a complete picture. I see now what should be done. Q: Do you think you could render your impression through your camera as a medium? A: I see what should be done, but I am afraid I do not see how to do it. I will try your patience a little further and see if I cannot give you some assistance. First of all we will take the arranging of the group, then the tone, after these the colour difficulties. The arrangement then first. The positions of the heads had first to be considered, because with figures the faces are of the first importance. They were placed not to balance, but so as to produce a wavelike motion upon the retina; to place them so as to produce a sense of straightness would be hard and geometric, anything but pleasant, so we chose a double curve, which is graceful and artistic. The hands were so placed that they should relieve the principal lights, and help the general concentration. The reason why the central figure was placed to receive the most direct light, was to heighten the concentration or focus, consistently with the first idea, viz., principal objects, principal attention, the strong light taking the eye at once to that part of the picture, and so helping to carry out the idea.

With regard to tone, the two figures were placed that they should not receive the light at so direct an angle as the first, that we might get a scale of tone. The camera is not the same as the human eye. The camera supposes the eye to be directly opposite, or at right angles to every point in the subject; not so the eye, it sees concentration of interest and light. There need not be the same arrangement for the artist who renders his impression with the brush, the three heads might if possible be equally lighted, but as he views the group from his fixed point of sight, the light would appear to play with different degrees of activity upon each, for the reason already explained. We have therefore to so arrange the tones for photography that the result will be the same, and this must be done by means of lighting, and by placing the masses and accessories so that they shall be as relative as possible, and good artistic retouching is capable of tuning the whole if after every studious endeavour we fail to get a true scale of tones, but retouching should not be depended upon, for it can never make up for the want of mental perception. If we could always select our masses of colour, and knew exactly how to place them, there would be little difficulty, but too often this cannot be. A knowledge of colour is essential, and the way a photographic plate is affected by it. As we have already said the colour impression on the retina is varied, on this part of the subject we must say a little to make matters simple, plain, and easy. The wave lengths of red we have said are the longest, orange the next in length, then yellow, after yellow green, then blue, the shortest being violet. Herein is the whole difficulty of photographing colour, and the reason why there is such a difference between what is seen on the screen and the finished monochrome print. "Which colour affects the plate most quickly?" Red, its wave lengths being the longest there is the greatest activity with this colour; after red, in the order in which the colours are named, "Does not the isochromatic plate do away with this difficulty?" No, to some extent it modifies the extremes, but its composition is still incomplete, and therefore does not render a true scale of tones apart from proper arrangement; but if what I have said is followed out, the use of isochromatic plates will go a great way towards perfecting the work, there will be more sensitive refinement expressed. An isochromatic perception is the first thing needful, then the isochromatic plate will help to render the idea more consistently than an ordinary, but it is sadly abused, because its real use and capabilities are not generally understood. "Is this colour difficulty a great drawback?" It is and it is not. That depends entirely upon the performer. In some respects it is a great advantage, and enables by judicious placing to make up, to a great extent, for the defects of photography. I mean now these defects relative to our subject, chiaroscuro.

I have tried with most satisfactory results both with a single figure and a group, by placing cold tints such as different greys, violet, and blues, about the point of concentration, followed up with green, yellow, orange, with warmly painted woodwork, red draperies and accessories. With this arrangement, in an ordinary room, and

the weakest possible light, I have got photos, that for high artistic effect and fineness of relative detail, might have been taken from high class paintings, where the chiaroscuro was rendered accurately. I think I have explained myself, but before we separate I might like more impress the necessity of careful arrangement, after the order in which I have given it, and a first rate picture is yours, with just the amount of detail throughout to be desired, but to reverse the order of colour, to let the background and accessories be cold, such as grey, blue, violet, and so on, and the warm and more active colours lead up to, and immediately surround the point of sight and centre of interest, the result will be anything but satisfactory. A spot of crude light with all the rest flat and dark would be the effect. Even then the subject may be worked into fairly good chiaroscuro, but only by a master of the resources of retouching, and an artist.—*The Practical Photographer.*

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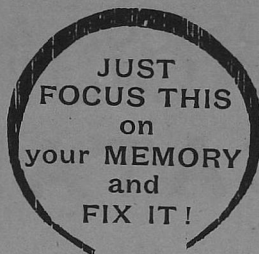
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