

Photographs of Prints

Publication/Creation

1890s

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it is valuable to serve as a transparency, from which an enlarged negative may be taken in the camera. Or the negative print left on an inked glass after the finger has pressed it may be used in the camera to give an enlarged positive upon paper. The great advantage of a transparency is felt during dull winter weather, on account of its shortening the time of exposure, which otherwise is tediously long in making these enlargements; a six-fold enlargement requiring thirty-six times as long an exposure as a reproduction on an equal or on a reduced scale. Smoked glass may be tried, but too much of the soot usually comes off on the fingers to leave a serviceable negative. When the blackened fingers are pressed on gummed paper that has been slightly damped, it leaves an admirable print. The inked pads used for office stamps are of use only when the ridges are prominent and well defined.

A photographer who proposes to undertake the supply of enlarged finger-prints should first master the art of making the simple impressions clearly. It is in daily practice at my anthropometric laboratory, in the gallery of scientific instruments at South Kensington, which is entered from the north side of the new Imperial Institute Road, at about one hundred yards from Queen's Gate (admission free).

As regards the enlarging camera, I used for some time a very rough arrangement made by myself, which acted perfectly for enlarging to a uniform scale. The board that carried the lens, and that against which the printed card was pressed from behind, were both fixtures. The latter had a small window with bevelled edges, in the optical axis. Behind was a backing of millboard that had enough elasticity to loosely hold a card that was pushed in between it and the board. When the right part of the card came in front of the window, the backing was clamped to the board, and the interposed card thereby secured tightly in its place. I now use an elaborate and costly apparatus, capable of varied adjustments and applications, but sometimes regret the serviceable simplicity of my old one.

The plates used are Mawson's photo-mechanical, for the sake of density. The paper is the ordinary Ilford, developed with amidol.

CALCULATION OF THE ANGLE OF VIEW.*

BY PHILIP EVERITT.

In the *British Journal Photographic Almanac* for this year there is to be found, for the first time, a table of natural tangents, by which the photographer may calculate the angle of view included on a given plate by a given lens, or, conversely, the focus of a lens to include a given angle on a given plate. Unfortunately the rules, formulated by the author of the article accompanying the table, are incorrect. As they may lead into error those who accept them without question, I offer this criticism and correction in the hope that the tables may thereby be made of value.

According to the first rule: for calculating the angle, half the length of the plate must be divided by the focus of the lens; the nearest natural tangent to the quotient should then be sought in the table, and the arc opposite it, multiplied by two, will give the angle.

The error is, the direction to take half the length of the plate. To demonstrate this in a simple way, compare the procedure with that of a draughtsman who wishes to make

a drawing, in perspective, of a room twelve feet wide by ten feet high, to scale of one inch to the foot. In the diagram shown there is a horizontal line, which must be at the height of the spectator's eye—say, four feet above the floor. Suppose the centre of vision removed two feet to the left of the middle of the horizon. Next describe a circle to represent the base of a cone of rays including the picture plane, no more and no less. This is done by taking the centre of vision as a centre, and the line to the farthest corner as radius. It is a rule in perspective that the line of direction shall be at right angles with the horizontal line, and terminate in the centre of vision. Assume the cone of rays to include 60° . The base of this cone is a circle. The draughtsman could now determine the exact position of the spectator. From the point taken as centre at right angles with the horizontal line, draw the line of direction. By means of a protractor, connect the corner with the place of the spectator, so that the angle includes 30° . The line of direction is now the principal ray of a cone of 60° , and represents on the plan the distance of the spectator from the picture plane. This line is seventeen one-third inches long, very nearly. As the picture formed by a rectilinear lens is in true perspective, and conforms to the same conditions, it can be said that a 12 by 10 plate, with the centre of vision removed two inches to the left of the centre of the horizon, at a height of four inches, will include an angle of 60° at about seventeen one-third inches focus.

Next work the problem by the method of the article in the *Almanac*. Divide the horizontal line in half. From the centre, and with half the horizontal line as radius, describe the circle. At right angles with this line, draw another line. With a protractor connect one end of the horizontal line with the line of direction at an angle of 30° . The circle is then the base of a cone of rays of 60° , and we have a new station point. But the circle does not include the whole picture, and the point transferred to the original line of direction shows a minus distance of about 6.93 inches. The photographer consequently would have used a lens of about $10\frac{2}{3}$ inches instead of $17\frac{1}{3}$ inches focus. Measure the angle. It will be found that from this station point nearly 88° have been included instead of 60° .

The nature of the error will be found in the assumption of a fixed centre of vision, at the centre of the horizontal line, with the horizon as diameter of the base of the cone of rays. In the example given, the centre of vision was removed two inches to the left, therefore the radius was from the wrong centre, and much too short. Artists rarely use the middle of the horizontal line as the centre of vision. They prefer to avoid it, because the centre of a picture is its weakest point. This may be proved by examining the pictures in our galleries, or, to come nearer home, consult the lecture before this Society by the late Mr. Norman Macbeth, printed in the *British Journal of Photography* for Jan. 6th, 1888. Mr. H. P. Robinson, in his book on "Pictorial Effect in Photography," also warns the reader against the use of the centre of the picture as the centre of vision.

The worthlessness of the rule becomes more apparent when we apply it to pictures of equal length, but different height.

Take the series 12 by 4, 12 by 6, 12 by 8, 12 by 10. The rule would give all these different pictures as taken under the same angle, regardless also of the fact that the centre of vision might be different in each case, an assertion which is obviously incorrect. Take a twelve-inch

* Abstract of paper read before the London and Provincial Photographic Association.

line at ten inches focus. With the centre of vision midway, the angle included is 62° , but, removed four inches to the right or left, it is reduced to less than 57° . A line of given length may, therefore, include more or less angle, according to its position on the picture plane, as may be proved by the scale produced. This scale is divided longitudinally and latitudinally into spaces representing inches. From one corner, as centre, radii are drawn representing the ninety degrees of a quadrant. The numbers from right to left represent inches focus, and those from top to bottom inches distance from centre of vision to extreme limit of picture or farthest corner of plate. By means of this scale the angle of view, or focus of lens for a given angle, may be found without calculation for any picture, which method some photographers may prefer.

Having demonstrated the error in the rule, it will be seen the following correction must be made. The rule to find the angle of view should be: Ascertain the position of the centre of vision; from this measure the distance to the farthest corner of the plate, and divide it by the focus. Seek the nearest natural tangent to this number in the table, and read off the corresponding arc. Twice this arc is the angle required.

To find the focus the rule should be: Divide the angle we wish to include by two, which will give the arc. Find the natural tangent opposite this arc in the table; measure the distance between the centre of vision and the farthest corner of the plate, and divide it by the natural tangent found. The quotient is the focus.

One word of caution in conclusion. Should it be necessary to photograph on a plate of given dimensions under a given angle, first ascertain the length of the principal ray, and then select the lens which will give the image at that focus. In most cases this will be difficult, as the lens stock will rarely be found to include one which is suitable. It is preferable to photograph the subject approximately to size, using a plate of somewhat larger size, and a lens of rather shorter focus, to allow for the necessary adjustment for objects in the foreground. Place the camera in position to include the correct angle for lens and subject, and trim the print.

ENLARGING.*

BY CAPTAIN S. GARNETT RADCLIFFE.

THIS is one of the most delightful and satisfying branches of photography in my opinion. I have read in your last number Captain Garrett's difficulties, and I would recommend him to stick to daylight enlarging, unless he can manage to fit a lime-light to his lantern. I have always noticed that the light from enlarging lanterns, even with the best lamps, is irregular. Daylight enlarging has always given me the most satisfactory results, and I therefore venture to give the following description of my apparatus and method, in case they might possibly be of use to Captain Garrett, or any other beginner.

I have always used a box-camera made in two parts, which took my lens at one end, and the negative at the other; it was stained black inside, with Stephen's ebony stain; the lens end fitted *exactly* into the negative end; the negative end of this box-camera was screwed tightly into one of the windows of my dark-room, with the end protruding well outside, and had movable holders for different sizes of negatives. The lens end moved in and out for focussing, by means of a screw like a camera.

Inside the dark-room a firm, level table was placed opposite the lens, and on this table, on a traversing stand, a drawing-board was placed perfectly upright; this board was covered with drawing-paper as tightly as possible, by damping the paper and then pasting it on round the edges; the paper was marked off in inch squares. Outside the dark-room a white screen about 5 feet high, and as broad as the window, was placed at an angle of about 45° to the negative, resting against the window immediately under the protruding end of the box, and held at the required angle by means of a rope, which passed into the dark-room, so that the screen could be raised, or lowered, to alter the light as required. The focussing was done on the drawing-board the size required, and the corners marked with pins, a fairly small stop put in, and when everything was ready, a small piece of paper was exposed to find the exposure; this was developed, and, if satisfactory, as many large sheets as were required were exposed in succession, as quickly as possible to avoid changes in the light; the large sheets were pinned at the corners, and stretched as tight as possible, and generally one or two pins were necessary down each side, and one at top and bottom. Great care must be taken in handling the paper not to touch the film side with the fingers, except at the corners and extreme edges.

The following are the chief points to observe:—

1. Negative must be as perfect as possible, and not too dense.
2. A white screen must be used outside to get a steady even light.
3. There must be no verandah, thatch, trees, &c., overhanging the window used, as they throw shadows.
4. The focus must be sharp and clear.
5. A fairly small stop must be used.

To vignette enlargements of portraits, I have always used French wadding, placing it outside the negative, with the centre cut out to the size required, and the edges very slightly and very evenly fluffed out with a pin.

PHOTOGRAPHY IN ITS RELATION TO THE ART OF PRINTING.*

It is impossible to produce a good block from a negative or a print which does not lend itself to the process; and it is equally impossible for the printer "to make anything," as the phrase goes, from some blocks that are produced, owing to want of depth and other circumstances. Sometimes, however, by force of circumstances, it is really impossible to obtain a good negative or photograph to illustrate a given subject—a fact which will serve to explain in a degree the great variety in the quality of the block produced and printed.

There are, as you know, various methods of illustrating the text of any given work, more or less elaborate, and more or less expensive in execution. For example, there are lithographs, where many colours are used; or many coloured prints from a series of wood block or zincos carefully registered, *i.e.*, so made that each colour will fall exactly where required. Photography is largely employed for the production of these pictures; or in lithography to ensure accuracy of outline; or for the sake of exactly producing stains of age, or usage, or imperfections in old documents, or parchments, or other subjects of antiquity.

Then, again, there are the various and beautiful photographic processes and prints, printed direct on the paper

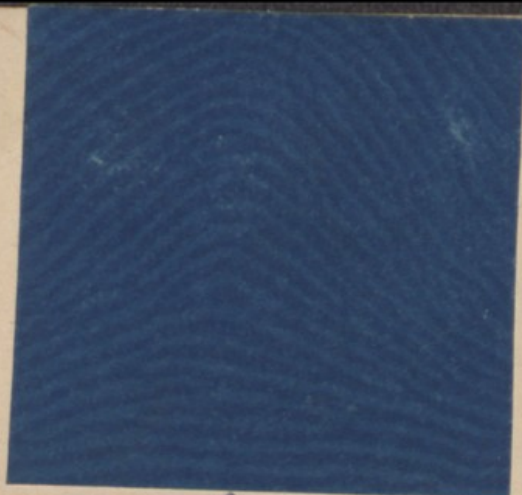
* From the *Journal of the Photographic Society of India*.

* Continued from p. 53.

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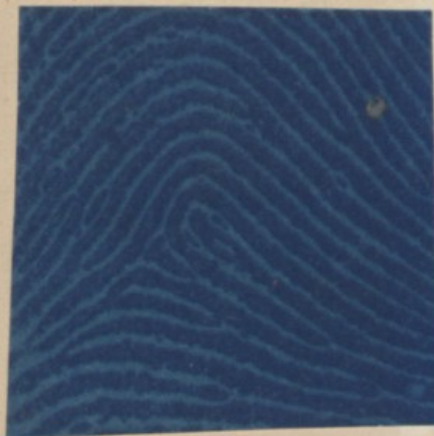
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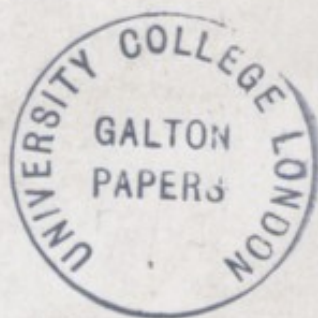


Photographie de ma main gauche

f. 10v

Empreinte revelée à l'encre, photographiée par
transparence et par le procédé au ferro-prussiate

R. Forget





R. Forget

Mai 91.

f. 11v

Photographie de ma main gauche - Empreinte révélée à l'encre
et photographiée par transparence —

