

## THE PHOTO-OPERA GLASS.

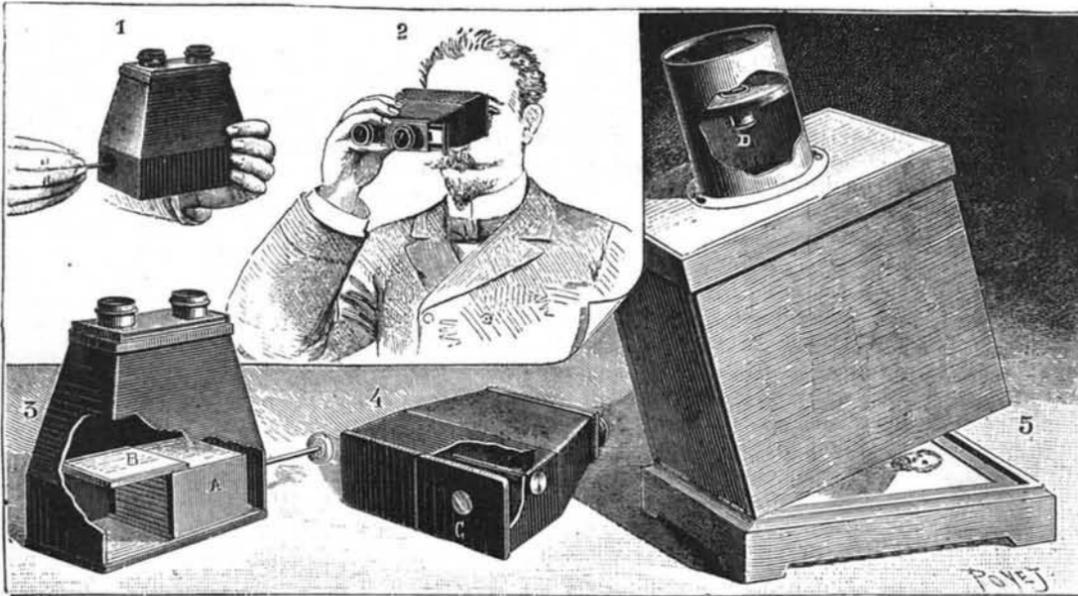
Photographic apparatus are now numbered by legions, and they are daily undergoing new modifications. It is very difficult for an amateur to make a selection, since every manufacturer has endeavored to

of ground glass, and an aperture, C (Fig. 4) in the back of the opera glass permits of seeing it. This aperture is provided with a red glass that gives a monochrome image. This is a very happy arrangement, since it permits of obtaining a much better idea of the defini-

moment of operating. The sensitized plates are contained in small independent frames of metal that are placed one upon another in the back of the apparatus in a drawer, A (Fig. 3). The first plate receives the impression as soon as the shutter is freed through pressure upon a button placed between the two objectives. In order to replace the impressed plate by another, one pulls a button placed upon the side of the apparatus, and thus displaces the drawer, A (Figs. 1 and 3). In this motion the first plate, B, remains held in place at first, and then, when the drawer is completely drawn out, drops to the bottom and becomes the last of the package after the drawer has been pushed back to its normal position. The top glass is then ready to receive an impression.

It will be remarked that in the motion that has just been effected the plates have been brought opposite the objective of the finder. But this is attended with no inconvenience, since at this moment, the shutter not being set, the finder is closed, as we have already explained. Moreover, in this motion, as each frame carries a number upon the back, such number presents itself opposite the red glass, C (Fig. 4), so that it is always possible to see how many frames remain to be used.

As may be seen, there is nothing easier than to obtain a series of negatives with the opera glass under consideration, and that, too, without being remarked. Printed of actual size, they will constitute a sufficiently valuable document, but with Mr. Carpentier's enlarging frame it is easy to at once obtain a 13x18. The enlarging apparatus (Fig. 5) consists of a square box whose bottom is hinged and carries a frame that permits of placing a sheet of paper sensitized with gelatino-bromide. This operation, of course, is performed in the laboratory. The upper part of this box is provided with a cylinder in whose extremity there is a recess for the reception of the small negative. An objective, D, immutably fixed, reproduces the enlarged and positive image upon the sensitized paper. To this effect, it suffices to step out of the laboratory



MR. CARPENTIER'S PHOTO-OPERA GLASS AND ENLARGING APPARATUS.

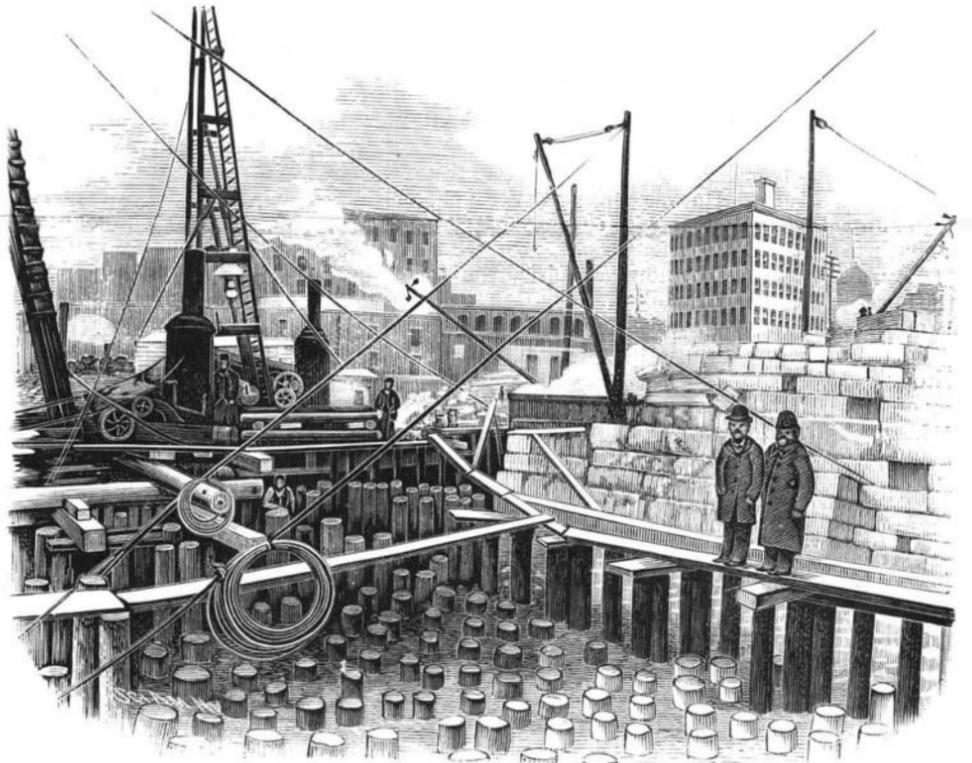
meet a special requirement, and we believe that there is no universal apparatus. We shall always have three principal groups, viz.: the old model of bellows camera, uniting the conditions of long extension for the use of objectives of different foci, focusing, decentering, etc.; the magazine apparatus, containing, in the form of a rectangular box, all the material; and, finally, the pocket camera, which is one or the other of the two preceding of reduced dimensions. All these arrangements have their *raison d'être* and find their utility according to the times and places where they are to be employed. Another preoccupation of manufacturers has also sometimes been to so conceal the apparatus as to make it possible to take a photograph in secret. This has an interest especially for artists who are in search of truthfulness in the attitude of individuals. But, aside from a few apparatus that give almost microscopic images, there is nothing very complete in this respect.

Mr. J. Carpentier, an able electric engineer, who, in his spare hours, is a distinguished amateur photographer, has endeavored to solve this problem, and seems to us to have succeeded in it, by taking a mean term that consists in obtaining a negative of sufficient size (4.5 x 6) and in easily enlarging it to 15 x 18 by means of a special instrument of very simple manipulation. This apparatus consists of a double apparatus (Fig. 1) that may be carried in a case, provided with a strap passing over the shoulder, or even be put into the pocket. It contains twelve plates that are changed automatically. In order to operate, the opera glass is placed before the eyes (Fig. 2), and to a person not in the secret, the user seems to be looking at a landscape rather than taking a negative.

The apparatus is provided with two objectives: One of them, which is designed to impress the plate, possesses all the qualities of a good photographic objective, while the other, which is of the same focus, serves as a finder. The image that it gives is received on a plate

negative. When, in an ordinary camera, we look at the image with all its colors, we run the risk of being deceived as to the relative value of the different tones that will be shown in the negative by a single color. It will be understood that we shall avoid such danger if we observe the image with a glass that permits of its being seen in but a single color. We recommend the use of this process, which is very easily put in practice and which, moreover, is already applied to a few finders capable of being adapted to any camera whatever.

But to return to our opera glass: Behind the two objectives slides a metallic plate provided with an aperture. This is the simple drop shutter. It is so arranged that it can be set without uncovering the sensitized plate, and it is therefore useless to have a cap upon the objective; besides, it permits of seeing the image in the finder only when it is set—a second useful precaution, since in this way one cannot forget to set it at the



PILE FOUNDATIONS ELECTRIC POWER STATION BROOKLYN CITY RAILWAY.

and expose the apparatus for an instant to either diffused or artificial light. There is no need of focusing, etc., as all that is regulated in advance. It is thus possible to obtain a series of negatives or several positives from the same negative. Nothing remains to be done but to develop and fix by the ordinary processes.

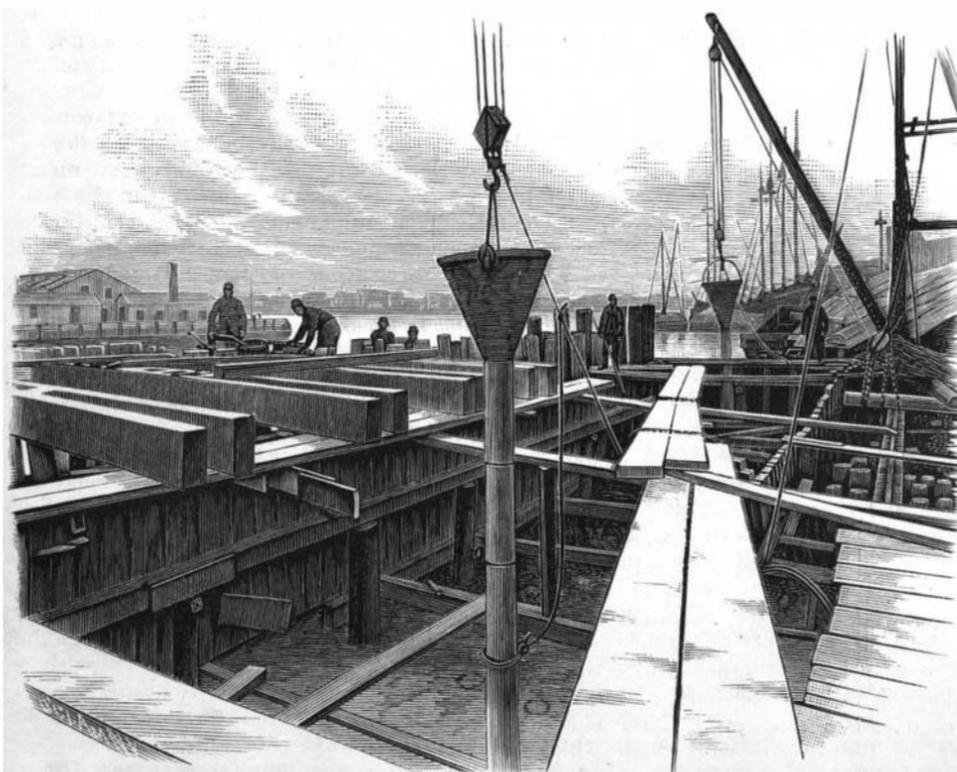
On the subject of the photo-opera glass we have hitherto spoken only of instantaneous negatives, but it may prove useful to have an exposure. In such a case we employ a special arrangement occupying but little space and that permits of fixing the instrument upon a foot. The operation is then performed either with a cap or a folding shutter which is fixed to the extremity of the objective. The operator may thus obtain good results.

It may be seen that the apparatus devised by Mr. Carpentier is complete and well answers the object that he proposed to himself; that is, to have a compact apparatus that permits of obtaining a negative without attracting attention, and a positive large enough to constitute a useful document.—*La Nature*.

## THE CONCRETE FOUNDATIONS FOR THE ELECTRIC POWER HOUSE OF THE BROOKLYN RAILWAY COMPANY.

The Brooklyn City Railway Company is building a power house for their electric railroad at the corner of Division and Kent Avenues, Brooklyn, N. Y., near the edge of the East River. The greater portion of the foundation rests on piles and concrete. There will be three detached buildings—engine house, boiler house, and house for economizers.

The boiler house is to be 143 feet long and 91 feet wide, and will rest on piles. The strength of this foundation is shown by the method of building. Along the water side a coffer-dam, 143 feet long and 29 feet wide, was built, as shown in our illustrations. Piles were driven inside the



COFFER DAM AND CONCRETE FUNNEL ETC.—FOUNDATION OF ELECTRIC POWER STATION.