

thereby removing it from the collodion or gelatin film. This leaves us now with a completed negative for general photographic purposes.

*Line Negatives.*—The commonest form of photo electric work which we see is known as line work, that is, reproductions of pen and ink drawings, intense black and white effects and some special crayon work adapted to the process. Examples of such work may be seen in every newspaper, Judge, Puck and others abound with drawings reproduced by this process and, if the artist be a good one, such reproductions are very effective for illustrative purposes, for example, C. D. Gibson's work.

The copy—the drawing—as it comes to the engraver is generally from one-half to twice again as large as the illustration is intended to be. In fact, it is made larger as the negative gains in intensity and sharpness by the reduction. The copy is mounted on the copy board and the whole placed on the frame for supporting the camera and board and the camera focussed. The camera used for such purposes differs from the ordinary camera in the extreme length of bellows which enables it to be used for reducing, copying, and enlarging. Now, as the reproduced drawing must be of given size, say of a width equal to that of two columns of a newspaper, the engraver moves the camera until the image which he sees on the ground glass screen is sharply defined and about four or four and a quarter inches in width,—the desired size. Having focussed the copy and inserted suitable stops in the lens to obtain better definition, the operator coats a glass plate with collodion containing halogen salts, sensitizes it by immersion for a few minutes in a bath of silver nitrate, places it in a plate holder, film side forward, inserts the holder in the camera and then exposes the plate.

The plate is now ready to be developed and fixed after which it must be intensified. An ordinary negative, for printing on metal, is worthless, as the dark parts permit too much light to pass through them, therefore intensification, which renders the dark portions opaque, is necessary. Intensification may be effected by flowing the negative with a combined solution of copper sulphate and potassium bromide until the film becomes white, washing, and then flowing it with silver nitrate solution until it all is blackened, this operation being repeated until the lines appear sharp and clear. Additional intensity is sometimes desired; it is gained