

each gradation of light and shade affects the sensitive film correspondingly. Therefore, if a properly exposed half tone plate be developed it will be found, on examination, that those parts corresponding to the extra high lights will be almost black, the next highest lights will be dark with minute transparent spots regularly spaced in the mass, and, passing through the half tones, it will be observed that the plate appears ruled with transparent parallel lines, corresponding to the opaque lines of the screen plate, and leaving isolated regularly spaced black spots. Then, passing to those parts corresponding to the deep shadows it will be observed that the dark spots diminish in size until they are entirely absent in the deepest shadows of the picture.

If a picture be printed from such a negative we would obtain a result similar to that of a half tone illustration. Further than the use of the screen plate and its effect upon the negative the process of making a half tone negative is similar to that of making a line negative.

*Reversal of the Negative.*—There is, however, one more operation, which both line and half tone negatives must undergo after intensification if they are to be used in making illustrations, and that is, reversal of the negative. If the negative be used as it is formed by the camera the resulting illustration, printed by the press, will have right and left reversed, and to prevent this the film is stripped from the glass plate and placed upon another plate in reverse.

*Printing the Negative Image upon Metal.*—The principle enabling the production of metal engravings by photography is this: Certain organic substances mixed with a bichromate will, when dry, be rendered insoluble by the action of actinic light rays. Hence, if a metal plate be coated with such a film, be allowed to dry, and then be exposed to light under a negative, the light passing through the clear spaces will render insoluble the chromated film directly beneath, while those parts unaffected—parts protected by the opaque masses of the negative—will remain soluble. Washing the printed metal plate removes the soluble parts leaving the image, on the metal, formed of the insoluble coating. This explains why such particular care was exercised throughout the process of negative making to obtain a negative image composed of transparent and opaque parts; the chromated compound is either soluble or insoluble; therefore, to reproduce the picture