

colorless sheet gelatine, used by engravers, and then enclose the sheet between glass plates. This plan I first employed some days since, when my assistant, Mr. Alex. Outerbridge, Jr., suggested that woodcuts and lithographs might be printed off on this same material, from the blocks or stones, and employed in like manner.

This plan on trial, proved perfectly feasible, and has been of the greatest use in various connections. It promises, in fact, to open a vast field to the lantern system of illustration, for the cost of reproduction of any existing woodcut or lithographic drawing, for this purpose, is thus rendered insignificant.

Mr. Outerbridge has also succeeded in preparing sheets of gelatine of the most excellent character, for this purpose. An account of the process by which they are made will be found at page 300 of this *Journal*.

With regard to the coloring of photographs or other transparencies, we know very little, and wish very much that some one practically conversant with the matter would place some of his information before the public.

For mere purposes of indication, common water colors, varnished when dry, will be of use, and of course, colors ground in drying oil or varnish, will answer better yet, where the work required is of sufficient extent to repay for the time expended in their preparation. The best effects, however, are reached by flowing the plate with albumen, and painting with aniline colors.

(To be continued.)

## ABSORPTION OF GASES BY CHARCOAL.

BY PROFESSOR ALBERT R. LEEDS.

IN Watts' excellent Dictionary of Chemistry, Vol. 1, p. 761, there is an account of the absorptive power of charcoal upon gases, which has been taken chiefly from the late researches of Dr. Stenhouse. Having repeated and somewhat extended these experiments, I have thought that so much as follows may be of general interest.

Some pieces of charcoal prepared from a cocoa-nut shell, and which were of a dense, lustrous character, were placed in a tube, and a stream of sulphuretted hydrogen, previously dried with chloride

of calcium, passed over them. After the lapse of ten minutes, the tube was detached, and indicated on the balance an increase of weight, due to the absorbed gas. A current of oxygen was next passed over the charcoal; the tube became slightly warm, owing to the oxidation of the hydrosulphuric acid, but in no case, in a number of experiments, was there (as I have seen it stated), a spontaneous ignition. On heating with a spirit-lamp, vapor of water was condensed upon the sides of the tube, and sulphur deposited; sulphurous acid not perceptible. When platinized was substituted for ordinary charcoal, the amount of moisture and sulphur was increased. Even in this instance, however, ignition was not spontaneous, but followed on the application of the spirit-lamp for a few moments.

By depositing finely divided platinum upon the surface and in the pores of the charcoal, a variety of interesting results were obtained. This may be effected by boiling charcoal in lumps or powder in a solution of bichloride of platinum for five to fifteen minutes, according to the size of the pieces, and then heating the charcoal to redness in a platinum crucible; holding the charcoal in the flame of a spirit-lamp will answer. A piece platinized in this way was immersed in a jar, containing one measure of oxygen, and two of hydrogen; the charcoal glowed with a dull red light, and effected a silent combination of the mixed gases. A more highly platinized fragment lit up instantaneously, the jar became clouded with smoke, and union was determined with explosion. In a stream of hydrogen, the platinized charcoal, which was previously at the temperature of the room, ignited quickly throughout and set fire to the gas. In oxygen, no action apparent. Held before the nozzle of the compound blow-pipe, the jet was speedily lighted. When previously warmed, the platinized charcoal became incandescent in burning gas, but did not inflame it, owing to the high temperature at which coal gas ignites. In alcohol vapor, there was no action apparent in the cold, but a spark previously formed in the flame of a lamp, increased in size with the production of acid vapors. A mixture of one volume of hydrogen and one of chlorine was not ignited; whether hydrochloric acid was silently formed at a slow rate was not determined. The importance of such experiments in relation to ventilation and disinfecting will be readily perceived.