

case are indicated but faintly. Fig. IV. shows a set of drawing instruments inclosed in a thick leather case.

The action upon the sensitized film of the dry plate seems to be the same as that due to the light of the sun. The developers used were metol, hydroquinone, pyrogallie acid, and oxalate of potash and iron. Pyro' developer seemed to give best results. The images came up rather more slowly than with ordinary light, and the density as seen before fixing the plate was somewhat misleading, as the chemical action seems to be confined to the surface of the film only. The color of the deposit upon the plate by the various developers is the same as that given by sunlight. Various types of dry plates were tested, but, though we were unable to detect any difference in the action upon them, it may be possible, when more properties of the new radiation are known, to produce a more sensitive film than those now in use.

During our early experiments we found that the time required to obtain good impressions on a plate was so long that the utility of the new discovery seemed to be very limited, even if not doubtful.

We therefore directed our efforts to reducing, if possible, the time of exposure, and this we succeeded in doing to a very marked degree.

On making a careful test of all the tubes in the Physical Laboratory, we found one which gave a much stronger radiation than any of the others. This tube, constructed by Seguy, of Paris, was pear-shaped, and as it had one electrode inserted in the smaller end, and the other in the side, we were able, by making the former the negative terminal, to obtain a large glass surface exposed to the action of the cathode rays. This tube was employed in all our later experiments. Thinking that probably the action would vary with different sensitized films, we conducted a series of tests to determine the relative sensitiveness to the rays of various types of plates, but observed no marked difference, and concluded that any reduction in the time of exposure must be otherwise obtained. As experiments made with prisms and lenses of wood, pitch, and other materials, gave no indication of refraction at their surfaces, the only remaining method for the concentration of the rays seemed to be an application of the principle of reflection. In order to determine whether the rays could be reflected, a surface of clean mercury was prepared, and it was found that when the rays were directed towards this surface sensitized films protected from direct radiation were fogged by some action coming from the mercury. To test this apparent reflection still further, a sensitized film, protected by a plate-holder, was placed at a distance of about twenty centimetres below the Crookes' tube. A thick plate of glass was then inserted midway between the