

By the employment of this method we reduced on the 11th February the time of exposure almost to instantaneousness. The picture here given (Fig. V.) was taken with the bell-jar over the apparatus, and was obtained by an exposure of four and a half seconds, the object being a medal placed within a leather-covered wooden jewel case. Very good results were similarly obtained by an exposure of one second through five folds of black paper.

The importance of the new discovery in its application to surgery appears to be somewhat exaggerated. In detecting foreign bodies imbedded in animal tissue, much depends on the character of these bodies, and upon their particular location relative to the bones. In this connection it may be interesting to state that from a photograph of a patient's foot taken by us we located the point of a needle in it so accurately that the surgeon stated he was able by a single incision to remove it. As the needle in this case was situated between two of the bones, the conditions for obtaining a good shadow were rather favorable.

There have been many conjectures regarding the nature of this new radiation, but up to the present its true character remains quite uncertain. As already indicated, it does not pass through glass, and from this it has been concluded that although the cathode rays produce it, it is a form of radiation quite distinct from these rays. This conclusion is further confirmed by the fact that while cathode rays can be deflected from their direct course by a magnet, the latter has no effect on the radiation outside of the tube. It is generally conceded now that when the cathode rays strike upon the glass of the Crookes' tube, vibrations are set up in it which, on being communicated to the space outside, produce what we may now call the Roentgen rays. In fact, it seems to be proven conclusively that this view is the correct one, as Professor J. J. Thomson in his recent experiments found that a sensitized photographic plate placed *inside* a Crookes' tube in the path of the cathode rays was quite unaffected by them. Whether these rays are merely ultra-ultra violet rays, or whether they are due to vortex motions or to the longitudinal vibrations which are supposed to accompany the ordinary light vibrations in the ether, is a problem which has yet to be solved.

I cannot close this article without referring to the assistance given us by President Loudon, of the University of Toronto, and Professor Galbraith, Principal of the School of Practical Science. Much of the success which accompanied our experiments was due to the many valuable suggestions offered by them, and to their kindly placing at our disposal every facility which their laboratories could afford.