In his early experiments, Professor Roentgen found that on surrounding a Crookes' tube while in action with a close-fitting black paper cover, it was possible to see in a completely darkened room a brilliant fluorescence upon paper covered with barium platino-cyanide held near the tube. This appearance he found to be still visible, though faint, at a distance of two metres. From this experiment he concluded that the Crookes' tube was the origin of the action causing the fluorescence, and that this action, whatever it was, passed through paper which was impervious to ordinary light. Extending his experiments by placing other substances between the Crookes' tube and the fluorescent screen, he found that all bodies allowed this new kind of radiation to pass through them in a greater or less degree. Wood, paper, and water were very transparent, aluminium and ebonite fairly so, while copper, lead, gold, platinum, and even glass were quite opaque unless made in very thin plates. Different thicknesses of various materials were tried, and the results obtained showed that as the thickness increased the hindrance offered to the new rays by all bodies also increased.

The density of bodies seems to be the only property which affects their permeability, and yet their densities alone do not determine completely their transparency, as plates of aluminium, glass, quartz and Iceland spar of equal thickness were interposed between the tube and the screen, and it was quite evident that, although their densities are about the same, the resistances they offered to the passage of the rays were quite different. Although these new rays can be passed through many substances which are opaque to sunlight, no evidence has yet been obtained which would show that they can be refracted. On passing them through prisms, or lenses, of water, carbon bisulphide, ebonite, aluminium or wood, there is no indication, or, if any, but slight, of refraction at these surfaces.

Since many metals and glass of ordinary thickness are found to be impermeable to these rays, it is but natural to expect that these substances would reflect them; but all experiments so far seem to show that the ordinary law of reflection does not hold for these new rays, and that if they can be reflected at all it is only in a very general and irregular manner.

Although this unknown radiation was at first detected and studied by means of a fluorescent screen, it was soon found that ordinary photographic dry plates were sensitive to it, and it is owing to the developments in this direction that such intense interest has been aroused.

The reproductions illustrating this article are from photographs taken in the course of our own investigations, and they will indicate some of