

found, are really solid particles charged with negative electricity, which are shot out in straight lines in a continuous stream with enormous velocity from the cathode. These cathode rays possess energy and can be made to turn a windmill. When the particles strike the anode or glass they set up several disturbances in them, and one of them is the emission of greenish phosphorescent light.

Professor Röntgen, of Munich, then took up the study of the cathode rays and the green phosphorescence, and, in the year 1895, made the sensational discovery of the Röntgen rays. This discovery is sometimes said to have been accidental, but accidents such as this one only occur to men of genius. Röntgen noticed that photographic plates which had been kept under cover in the neighbourhood of a highly exhausted tube through which electric discharges were passing, became fogged, just as they would do if exposed to light. On investigation, he found that the fogging was due, not to the cathode rays themselves, but to a new type of radiation produced by the glass or anode of the glass tube. When the cathode particles bombard the anode end of the tube, they not only produce waves of light which appear as green phosphorescence, but cause the glass to send out the waves which Röntgen called X-rays, but which are frequently called Röntgen rays. These waves, like light waves, are believed to be electromagnetic in nature, and they have the remarkable property of being able to penetrate many substances opaque to ordinary light. Röntgen soon after this discovery, photographed the coins in his purse and the bones in his hand.

The discovery of X-rays by Röntgen very quickly found application in surgery, and now no large hospital is lacking in X-ray facilities. Those who are not associated with hospitals, scarcely know the numerous and important uses of the X-rays at the present day. It may, therefore, be of interest to mention that at St. Bartholomew's Hospital in London, about 4,000 X-ray plates are used each year, and in the London Hospital about 6,000. Large hospitals like these have their special X-ray departments, each provided with a special staff of experts. The rays are used for locating foreign bodies such as needles and bullets imbedded in the flesh, and for finding the exact state of dislocations and broken bones. Then they are used in disease, for detecting con-