

THE STORY OF X-RAY



IN NOVEMBER, 1895, an obscure physics professor, working in a modest little laboratory at the University of Wurzburg in Bavaria, came upon a mysterious ray which had the power to penetrate flesh, cloth, wood, and metal. This tall, slender, bearded teacher was Wilhelm Konrad Roentgen.

Using the mathematical symbol "X" for the unknown quantity, he called his discovery the x-ray.

When he first came upon the new "wonder ray," so powerful that it could pass opaque objects, Roentgen told his good

friend, Boveri: "I have discovered something interesting, but I do not know whether or not my observations are correct." Except for this remark, he talked to no one about what he had found. For days he locked himself in his laboratory and, without sleep or food, worked out his experiments again and again.

Certainly there was nothing elaborate about his laboratory to inspire him. There was a wide table shelf on one side of the room, in front of two high windows which gave plenty of light. In the center was a stove; on the left a small cab-

inet whose shelves held the small objects the professor was using. There was a table in the left-hand corner, and another small table — the one on which the bones of living human beings were first radiographed — was near the stove.

THE APPARATUS used by Roentgen in making his discovery represented the labor of many students and scientists in centuries past. All had contributed something to developing knowledge of the characteristics of electricity and to the methods of its production, beginning with the creation of high-tension currents and continuing on to the study of various effects produced by such currents in a vacuum.

One of these scientists was Michael Faraday who, in 1837, carried out brilliant research on the luminous effects created in various gases by electric discharges. Perry Ghent, in his biography of Roentgen, said that to the patient study and endless experiments of this modest Englishman, and his discovery of the phenomenon of electromagnetic induction, we are indebted largely for the production of electric power as we now have it. His work marked the true beginning of the long series of investigations that ultimately brought about the discovery of the x-ray.

An important forward step toward Roentgen's discovery was made by Plucker, for whom Geissler had produced the first tube in which a vacuum, although a low one, could be indefinitely maintained. Electrodes of platinum wire were fused into the walls of the Geissler tube, which Plucker then excited with electric current, creating attractive luminous colors at the cathode end.

Later Hittorf made important researches leading to the discovery of hitherto unsuspected rays which appeared to originate at the negative pole. Scant attention was paid to them, however, until the absorbing experiments of Crookes in 1897. Hertz, in 1892, conducted experiments which led him to the conclusion that the cathode stream could pass through the glass walls of the tube, and suggested further investigation outside the vacuum. After Hertz's death, his pupil, Lenard, carried on the experiments of his teacher, coaxing the cathode stream out of the tube through an aluminum window, and noted its effects, including the fogging of photographic emulsion. The work of Hertz and Lenard were the final steps of a long journey in science before the actual discovery of the x-ray.

Most scientists agree that Crookes, with his relatively high vacuum tube, produced x-rays,

yet did not actually discover them. It remained for the 50-year-old Professor Roentgen to discover that rays emanating from a Crookes tube, when a high-voltage current is sent through it, will penetrate objects opaque to ordinary light and will affect the photographic plate.



THE FIRST published report of Roentgen's discovery appeared in the December 28 issue of "The Transactions of the Physico-Medical Association." It was not until two months after his actual discovery — on January 23, 1896 — that Roentgen officially reported his findings in a paper, "A New Kind of Ray," presented to the Physical Medical Society of Wurzburg. His report became news that electrified the world, spreading like wildfire.

Newspapers all over the world printed ghastly skeletons of hands and feet of living persons and extolled the mysterious power of those strange rays which could "see" through almost anything. The accounts, many of them displaying a curious ignorance and pessimism, were enough to arouse an assemblyman in New Jersey to introduce a bill in the House prohibiting the use of x-rays in opera glasses at theaters; and in London a firm "made prey of the ignorant women by advertising x-ray-proof clothing."

New York newspapers went so far as to say that the new rays might solve such age-old problems as spiritualism and soul photography. One paper reported that the Roentgen rays were used at the College of Physicians and Surgeons to reflect anatomic diagrams directly into the brain of students, thereby making a much more

enduring impression than the ordinary methods of learning.

The stories and tales gradually grew to such feverish heights that the London Pall Mall Gazette came forth with the laconic statement: "We are sick of the Roentgen rays. Perhaps the best thing would be for all civilized nations to combine to burn all the Roentgen rays, to execute all the discoverers, and to corner all the equipment in the world and to whelm it in the middle of the ocean. Let the fish contemplate each other's bones if they like, but not us."

WITH ALMOST equal prejudice, one of Roentgen's fellow countrymen, in an article on German intellectualism, published a contemptible statement that the Wurzburg professor was a mercenary — "selling his discovery to the world for what it would fetch." Actually, the professor, by publicly describing his experiments and inviting the world to join in the x-ray's development, made it public property, beyond the

reach of exploitation for the benefit of himself or other private interests.

In contrast to the skeptics were many strong believers in what Roentgen had found; especially medical men who could foresee how the sufferings of mankind might be lessened by the ministrations of these new rays. The acclaim of such scientists helped to make Roentgen famous overnight. Whether he liked it or not, Roentgen was showered with honors. He was summoned to the Royal Palace at Potsdam, where he dined with Wilhelm II, Emperor of Germany and King of Prussia. A government decree bestowed upon him the title of "Excellency," boulevards and streets were named for him, and monuments were erected in his honor.

Roentgen died in 1923 at the age of 78. He virtually made a gift of his x-ray to humanity, seeking no reward and receiving no monetary gain from the great discovery, except the Nobel prize for physics awarded him in 1901.

* * *

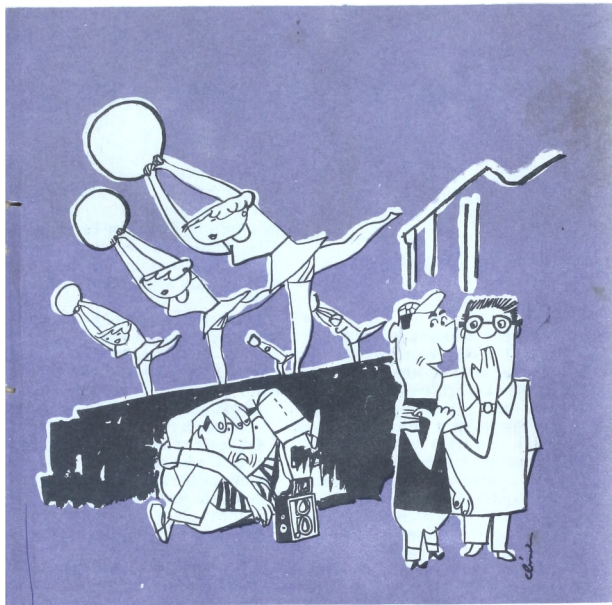
Anchored, Maybe

A man in a television studio told Jack Paar, "My wife falls for every commercial she's exposed to. Before retiring each night she uses four face creams, two chain creams, and even one elbow cream."

"I'll bet she's beautiful," mused Paar, "but tell me: how do you keep her from slipping out of bed?"

*

Fun-Orama by Elmer



"Ben takes his hobby too seriously, don't you think?"