



GIANT ATOM MERRY-GO-ROUND

Here is the powerful cyclotron or atom gun used for record-making high voltage experiments at the University of California. Note the great 85-ton magnet. Prof. Ernest O. Lawrence, who invented the powerful apparatus, stands at the left. Dr. Donald Cooksey, scientist working with Prof. Lawrence, is at the right.

that amounted to the capture of a fundamental building block of matter that is known as the neutron. And radio-platinum disintegrates into gold.

The picture on the front cover shows the great activity caused by a neutron beam from the Lawrence giant atom gun or cyclotron at the University of California. This cloud chamber was photographed in 1/1000 second by Dr. F. N.

D. Kurie. A multitude of hydrogen atoms are shown speeding after collision with neutrons, although the test chamber was a full six feet away from the giant machine. The photograph shows an effect equivalent to that which would be produced by one hundred grams of radium worth approximately \$4,000,000.

Science News Letter, May 2, 1936

PHYSIOLOGY

Carbon Dioxide a Vital Need; Once Thought Mere Waste

CARBON dioxide, commonly looked upon as nothing but a "waste" product of bodily processes, is "almost as essential to the normal functioning of the body as is oxygen."

This challenge to a long-established tradition of biology was thrown down before the meeting of the American Philosophical Society in Philadelphia, by one of the world's leaders in research on respiration, Prof. Yandell Henderson of Yale University.

True, carbon dioxide is a waste product of respiration, just as it is of the burning of coal, oil or wood; most of it must therefore be got rid of. But it is an error to think that any considerable residue left in the body is a poi-

son, Prof. Henderson contended. A certain amount is absolutely necessary, because carbon dioxide is "the normal stimulus to the circulation as well as to respiration."

Supporting evidence for Prof. Henderson's claim was found in troubles sometimes encountered with hospital patients going under anesthesia. Some patients breathe excessively in the early stages of anesthesia, and thereby decrease the carbon dioxide concentration of the blood. This condition, called acapnia, may result in failure of both circulation and respiration. This tendency to collapse is now counteracted and prevented by the inhalation of carbon dioxide, diluted with oxygen or with

air. Also, at the end of the operation, inhalation of carbon dioxide is now the accepted means of speeding up the elimination of the anesthetic and preventing difficulties with the patient's lungs. The same means of stimulating breath and circulation is now used in resuscitating victims of carbon monoxide asphyxiation, and as a better substitute for the time-honored method of spanking newborn babies who fail to start breathing.

The American Philosophical Society, whose annual meeting Prof. Henderson thus inaugurated, is the oldest scientific body in the United States. It was founded in 1727 by Benjamin Franklin, in the days when "philosophy" was considered as embracing all natural knowledge, and hence, as properly including all the sciences. In keeping with this tradition, therefore, the three-day meeting in the Philosophical Society's building, immediately alongside Independence Hall, featured discussions of historical, economic and literary matters, as well as an impressive array of strictly scientific papers.

Science News Letter, May 2, 1936

MEDICINE

New Detection Method for Dangerous Radium Poisoning

THE unfortunate victims of often fatal radium poisoning can now be studied and a new treatment applied through use of a new radioactivity detection method that is 10 to 100 times as sensitive as the older and usual methods. Dr. Robley D. Evans, Massachusetts Institute of Technology physicist, told the National Academy of Sciences of his new way of finding out how much radium the poisoned persons are carrying around in their skeletons.

Persons who drink radium water nostrums, or who submit to injections of radium chloride, as well as girls and others working in factories with radium and similar substances, sometimes get the reactive substances into their systems. There, fixed in the bones, such substances slowly disintegrate into lead, giving off a radioactive gas called radon and bombarding the body with penetrating gamma radiation which is so harmful that the victim often dies.

Dr. Evans used a sensitive kind of radiation detector that was developed during the present push of physicists to discover all about radiations and the make-up of atoms. His new type of "screen-cathode quantum counter" for detecting radium's gamma rays discovered radium in one fatal case that had