



X-RAY HEART—The very clear view of the heart, the arteries and the veins is obtained by injecting into the arm vein an opaque substance which is carried in the circulating blood.

The fact that the heart acts as a muscular force-pump propelling the blood through the arteries and that the blood returns to the heart through the veins was discovered by the English physician, William Harvey, in 1628. Atomic age medical scientists are now following the course of the blood through the body with radioactive chemicals to label blood cells and Geiger counters to trace them.

Science News Letter, February 11, 1950

NUCLEAR PHYSICS

Neutron Not Fundamental Particle, But Splits

► THE neutron, trigger of the fission atomic bomb, has lost its distinction of being a fundamental particle of nature, thanks to experiments reported to the American Physical Society by an Oak Ridge National Laboratory team, consisting of Dr. Arthur H. Snell, Frances Pleasonton and R. V. McCord.

Instead of being something that cannot itself be split, this electrically neutral particle, present in the hearts of atoms, decays radioactively after 10 to 30 minutes of freedom into an electron (unit of negative electricity) and a proton (the positive particle that is the center of the hydrogen atom).

Along with the proton, the neutron has long been considered a fundamental building block of atomic nuclei and therefore of all matter. In 1933 two Englishmen found that the neutron was slightly heavier than the proton. They suggested that it could turn into a proton by loss of an electron, what is called radioactive beta

decay, since the electron is called the beta particle.

Now the Oak Ridge scientists have proved this to be the case. The lack of electrical charge on the neutron causes it to pass through all matter with extraordinary ease. It also readily interacts with matter. Neutrons can not be studied like other radioactive material.

A stream of neutrons from the Oak Ridge uranium-graphite reactor or "pile" was used. The electrons and protons into which the neutrons decayed were detected near the powerful neutron beam.

Science News Letter, February 11, 1950

PHYSICS

Device Records Flying, Resting Time of Birds

► A SMALL radioactive device fastened to the wing of homing pigeons that records how much of the bird's time is spent in flying and how much in resting has been made by Dr. D. H. Wilkinson of Cambridge University's Cavendish Laboratory, Cambridge, England.

When the bird is in flight a stream of alpha particles strikes a photographic plate. When the bird is at rest a steel ball falls into place, sealing off the radiation so that it can not reach the film. When the film is examined under the microscope, the num-

ber of tracks counted gives the bird's flying time.

Dr. Wilkinson has some improvements in mind, including a built-in compass to record direction, and an absorption device to indicate time spent on water. He announced his new flight recorder in a letter to the British journal NATURE (Feb. 4).

Science News Letter, February 11, 1950

On This Week's Cover

► THE possibilities of producing super-bombs by the D-D reaction, the lithium-hydrogen reaction and the beryllium-deuterium reaction have forced uranium, a little used and little known element before atomic energy development, to assume a secondary role in the production of bombs. However, the atomic bomb may serve to trigger or set off the hydrogen bomb. The surface of a piece of uranium is shown being prepared for microscopic examination at the Battelle Memorial Institute; the many sparks are typical of uranium. Even after the war, knowledge of its metallurgy was no better than that concerning iron and steel in 1870. And today, when the lime-light has shifted from it, the qualities of the high-purity metal are still not well understood.

Science News Letter, February 11, 1950

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