

## PHYSICS

# Discover Anti-Proton

Long-sought mystery particle of the atom, the negative proton, now has been spotted on one photograph of rare cosmic ray "explosion," it is believed.

► A LONG-SOUGHT mystery particle believed to be within the atom has been discovered. It is the negative proton. It has been found, provided a rare cosmic ray "explosion" has been correctly interpreted.

Dr. Bruno Rossi of the Massachusetts Institute of Technology reported a "most unusual" cosmic ray photograph to the American Physical Society meeting in Washington.

The great mystery of the atom is the force holding the particles of its nucleus together. Even though scientists have been able both to split the nucleus and to fuse the atom, they still do not know what is its "glue." The atom is known to consist of a cloud of electrons (except for hydrogen which has only one electron) revolving around the nucleus, which has a positive charge. Electrons have a negative charge.

The nucleus consists of protons, with a positive charge, and neutrons, with no charge. Since like charges repel each other, some powerful force must hold the protons

of the nucleus in its compact core. There is thus need for an anti-proton or a negative proton, a counterpart of the proton or heart of the hydrogen atom.

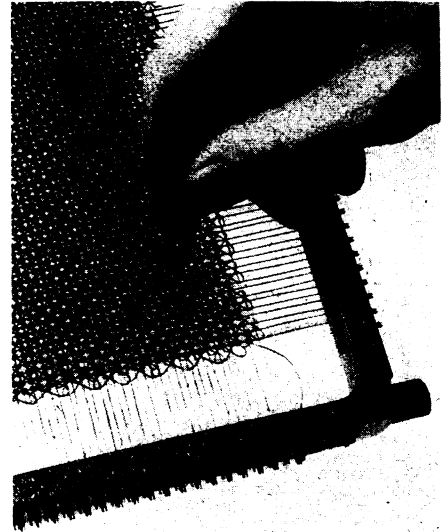
Understanding the binding force of the nucleus is the goal of physicists. Almost as "unpractical" experiments yielded the information about the fission of uranium out of which grew the atomic bomb.

Scientists travel to the tops of high mountains or send cosmic ray recorders to great heights by balloons, which are sometimes mistaken for "flying saucers." They do this to catch on sensitive photographic plates the debris of atom smashing caused by the mysterious cosmic rays from outer space that bombard the earth, most strongly at the top of our atmosphere.

The particles themselves are not seen, but they can be tagged by the swaths they cut in photographic emulsions.

Drs. H. C. DeStaeble Jr., H. S. Bridge and H. Courant collaborated with Dr. Rossi.

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**MAGNETIC MEMORY**—Over 1,000 tiny rings strung on this criss-cross of wires less than one foot square make up one unit of the new magnetic memory in Whirlwind I, the digital computer developed and built at the Massachusetts Institute of Technology. A piece of information can be stored in this new adjunct to an electronic computer in eight-millionths of a second. The tiny memory rings are made of magnetic ferro-ceramic material. They are expected to become important links in devices to control and also to aid in detecting high-speed aircraft and guided missiles.

## MEDICINE

# Launch Epilepsy Attack

► A NEW kind of attack on epilepsy has been launched at the U. S. National Institute of Neurological Diseases and Blindness and the Clinical Center of the Public Health Service at Bethesda, Md.

It is based on a discovery announced by Dr. Donald B. Tower of the institute at the meeting of the American Academy of Neurology in Washington.

Epilepsy, Dr. Tower's findings show, comes from a basic defect in body chemistry. Its control may come through regular, life-long doses of a chemical to correct the defect, much as diabetics keep well by regular doses of the insulin their bodies do not manufacture in large enough amounts.

Two such chemicals for the new attack on epilepsy have been discovered and are now being tried with signs of success, though the work is still in a very early stage, Dr. Tower said.

The chemicals are glutamine and asparagine. A few patients who have been getting one or the other of these chemicals by mouth now have fewer seizures, or convulsions, and their brain wave records also show improvement. These patients were ones who had regular and frequent seizures, so severe they could not be controlled by standard anticonvulsion drugs.

Improvement started slowly and was not

apparent until after they had been on the treatment for a month. The patients have only had the treatment for three months, so long-term effects cannot be told yet.

The reason Dr. Tower is hopeful these two chemicals will continue to stop the convulsions is that they attack the most important of three defects he finds characterize the "biochemical lesion" in the brain that causes epilepsy.

This defect is a failure to keep enough glutamic acid in the cell. This amino acid contributes to the energy supply of the cell, is an important building block for the cell's protein structure, and is associated with the movement in and out of the cell of another important chemical, potassium.

Glutamic acid itself does not readily pass from the blood to the brain, so it cannot be given to remedy the deficiency. Glutamine and asparagine were picked because they are closely related compounds. They occur naturally in the body and proved safe in tests on animals.

Several drugs are being used to control convulsions in epilepsy. These, however, act to depress the central nervous system generally. The new chemicals now on trial act to make up for the specific defect that causes epilepsy.

Science News Letter, May 15, 1954

## MEDICINE

# Non-Radioactive Form Of Cobalt Causes Cancer

► ALTHOUGH RADIOACTIVE cobalt is showing promise as an anti-cancer weapon, plain cobalt can be a cancer producer.

Discovery that it can cause cancer in rats is announced by Dr. J. C. Heath of Strangeways Research Laboratory, Cambridge, England, in *Nature* (May 1).

The powdered cobalt was injected under the animals' skin. Two of ten male rats and one of ten female rats each developed a cancer where the cobalt was injected at five and six months after the injections. The tumors, when transplanted to other rats of the same strain, "took" in five out of 20 transplants.

Previously, Dr. Heath had discovered that cobalt disturbed the normal process of cell division in chicken cells growing in cultures outside the body. This cell division disturbance, however, did not kill the cultured cells. Whether the cancer cobalt caused in the rats is in any way related to the disturbance of cell division is not yet known.

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