

PHYSICS

# "Positron" Confirmed As New Particle of Matter

## Discovery of California Physicist Proved Reality As Positive Electron Is Found at Cavendish Laboratory

**T**HE EXISTENCE of a positive electron has been confirmed and it will be christened the "positron."

The discovery of this fourth fundamental particle and atomic building block was made last fall by the American physicist, Dr. Carl D. Anderson, (SNL, Sept. 24, 1932, p. 197) and now physicists at famous Cavendish Laboratory, Cambridge, England, have announced confirmation.

Positive electrons were found in cosmic rays by Dr. P. M. S. Blackett, working with G. Occhialini. Their method makes the new positive electron rays photograph themselves. It has a life of only a fraction of a second and meets its end by colliding with an ordinary negative electron.

The Cavendish Laboratory work confirms the discovery and prediction made by Dr. Anderson of the California Institute of Technology, Pasadena, last September, who on evidence contained in several cosmic ray photographs reported the probable existence of a new particle of matter, positively charged but with the mass of the familiar negative electron.

### Theory in Confusion

The demonstration of the existence of a positive electron, as a fundamental particle of matter, throws atomic structure theory into at least a momentary state of confusion. And since the positive electron was found in cosmic rays it may prove to be helpful in explaining the nature of this radiation.

Two years ago there were only two fundamental particles of matter or bricks out of which atoms might be built, the positive particle, or proton, and the negative particle, or electron. In 1931, Dr. J. Chadwick in Cambridge's Cavendish Laboratory forged the last link in the chain of experimental evidence for the reality of the neutron, the close combination of electron and proton that carries no electrical charge. Now out of the same famous laboratory presided over by Lord

Rutherford of Nelson has come the demonstration of the reality of the positive electron, confirming the discovery by Dr. Anderson.

The fundamental corpuscles or particles of matter may be listed as follows:

**Electrons**—Units of electricity, negatively charged, discovered by Sir J. J. Thomson in 1897, widely recognized in all electrical phenomena, considered to make up the "outer shell" of atoms or to revolve about atomic hearts like satellites about a sun, in the last few years proved to have many of the properties of light and partake of the nature of a wave motion, called beta rays when issued from radioactive substances.

### Protons and Neutrons

**Protons**—Positive particles or corpuscles, nuclei or hearts of hydrogen atoms. Mass of protons 1850 times that of electrons.

**Neutrons**—Neutral particles of matter, consisting of a close combination of electron and proton, whose electrical charges neutralize each other. Discovered in 1931 by Dr. Chadwick.

**Positive electrons**—Positively charged particles or corpuscles or rays discovered in cosmic rays by Dr. Carl D. Anderson, 1932, just confirmed by Drs. P. M. S. Blackett and G. Occhialini. Mass of electrons but opposite electrical charge. (Turn to Page 124)

MEDICINE

## Typhoid Carriers Made Safe By Gall-Bladder Removal

**R**EMOVAL of the gall-bladder freed nine typhoid fever carriers of the germs and made them no longer a menace to society, reports a hospital in Trondheim, Norway.

The operation has been performed on four other patients. In one case it is too early to claim permanent results. The operation proved fatal in the other three cases. These were all elderly persons on whom the operation was not

urged by the hospital authorities, but was undertaken on the express wish of the patients and their relatives. The nine patients successfully operated on ceased to discharge typhoid or paratyphoid bacilli after the operation.

The lot of the typhoid carrier today is little better than that of the leper in the past. The typhoid or paratyphoid bacilli lurking in the gall-bladder of the carrier are constantly being discharged, and if she handles food in any way (the carrier is nearly always a woman for some unknown reason) the odds are she will sooner or later infect her neighbors and kill some of them.

*Science News Letter, February 25, 1933*

ARCHAEOLOGY

## History Pushed Back In America and Asia

**R**ECORDS in American history are being made and broken fast, just now.

Not long ago, Dr. Harold S. Colton of the Museum of Northern Arizona reported that his museum had set United States history back 76 years, by finding a timber dated 708 A.D. in an Indian dwelling in Arizona. And the next week Dr. Colton broke his own record for pushing United States history back into the dark centuries. The museum has discovered a charred timber cut about 660 A.D. (Turn Page)



### MORE HISTORY

*Prof. E. A. Speiser of the University of Pennsylvania Museum is holding one of the 3200-year-old cuneiform tablets that add 300 years to Assyrian chronology.*