

PHYSICS

Positron Formally Introduced; Negative Proton Predicted

Discoverer Has Found 15 Pictures of Positron Tracks Among 1300 Photographs of Cosmic Ray Tracks

THE POSITRON has been formally introduced to the world of physics in a communication by its discoverer, Dr. Carl D. Anderson of the California Institute of Technology, to the *Physical Review*.

August 2, 1932, is given as the date of the first photograph of the positive electron, christened positron for short, which has the mass of the older negative electron but a positive electric charge like the proton which is nearly 2000 times more massive. (*SNL*, Sept. 24, 1932, p., 197; Feb. 25, 1933, p. 115).

A search for a negative particle of the mass of the proton was urged by Dr. Anderson, who predicted the possibility of its existence.

To date Dr. Anderson has obtained 15 photographs of positron tracks in a group of 1300 photographs of cosmic ray tracks. Positrons are let loose from atoms bombarded with cosmic rays. Dr. Anderson offers the following suggestion as to what happens:

"From the fact that positrons occur in groups associated with other tracks it is concluded that they must be secondary particles ejected from an atomic nucleus. If we retain the view that a nucleus consists of protons and neutrons (and alpha particles) and that a neutron represents a close combination of a proton and electron, then from the electromagnetic theory as to the origin of mass the simplest assumption would seem to be that an encounter between the incoming primary ray and a proton may take place in such a way as to expand the diameter of the proton to the same value as that possessed by the negatron. This process would release an energy of a billion electron-volts appearing as a secondary photon. As a second possibility the primary ray may disintegrate a neutron (or more than one) in the nucleus by the ejection either of a negatron or a positron with the result that a positive or a negative proton, as the case may be, remains in the nucleus in place of the neutron, the event occurring in this instance without the emission of

a photon. This alternative, however, postulates the existence in the nucleus of a proton of negative charge, no evidence for which exists. The greater symmetry, however, between the positive and negative charges revealed by the discovery of the positron should prove a stimulus to search for evidence of the existence of negative protons. If the neutron should prove to be a fundamental particle of a new kind rather than a proton and negatron in close combination, the above hypotheses will have to be abandoned for the proton will then in all probability be represented as a complex particle consisting of a neutron and positron."

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AGRICULTURE

Fallowing of Leased Land Will Pay Farmers Twice

FARMERS stand to make a second profit out of the portion of their land which would be leased from them by the Government under the provisions of the agricultural relief bill now before Congress.

They will get their first payment in immediate cash from the Treasury. They

PHYSIOLOGY

Spring Found to be Season Of Least Growth in Children

CHILDREN don't sprout up in spring like lilies and onions, but get fat in the fall like apples and pumpkins, it seems from studies recently completed by Dr. Carroll E. Palmer of the U. S. Public Health Service.

So if Junior and Sister show disappointingly small gains at their weekly or monthly weighings from now on for the next few months, parents need not be discouraged. Spring, traditional sea-

son of greatest growth, is the season when the child between 6 and 14 years make the least gain in weight, Dr. Palmer found in a study of 2,500 native-born, white, elementary school children.

will get their second payment in increased fertility of their land through fallowing. Land that "lies idle" for a year is not like a machine that lies idle for a year. The idle machine does not gain in value; even if it does not rust, it gets a year older and a year closer to obsolescence. Idle land, if it gets the stroking of plow and harrow called for by proper fallowing practices, grows better. It is not sucked out by hungry crop plants, and the busy bacteria living in the roots of leguminous plants or free in the soil capture nitrogen and leave it there, in the farmer's own personal bank, good against future drafts.

Science News Letter, March 25, 1933

PHOTOMICROGRAPHY

Common Box Camera Used with Microscope

THE COMMON low-priced box camera with which almost everybody begins his photographic career can be used effectively as a scientific instrument, to take photographs through a microscope. In the current issue of *The Botanical Gazette*, T. C. N. Singh, of Ravenshaw College, Cattuck, India, will describe a simple framework he has devised for holding such a camera in place on top of a microscope while the exposure is made.

The length of exposure varies according to a number of factors, including light, kind of film used and object to be photographed, Mr. Singh states. Under conditions of ordinary laboratory lighting, a two-second exposure produced good pictures.

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