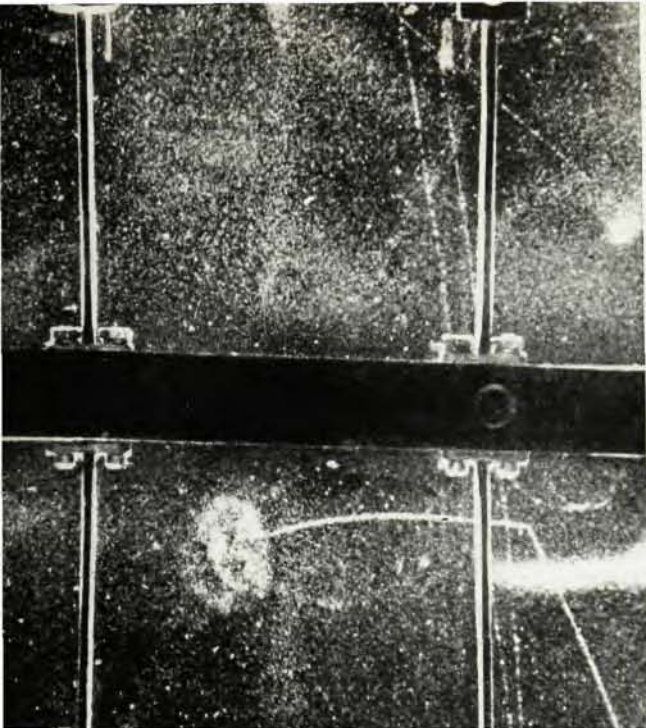
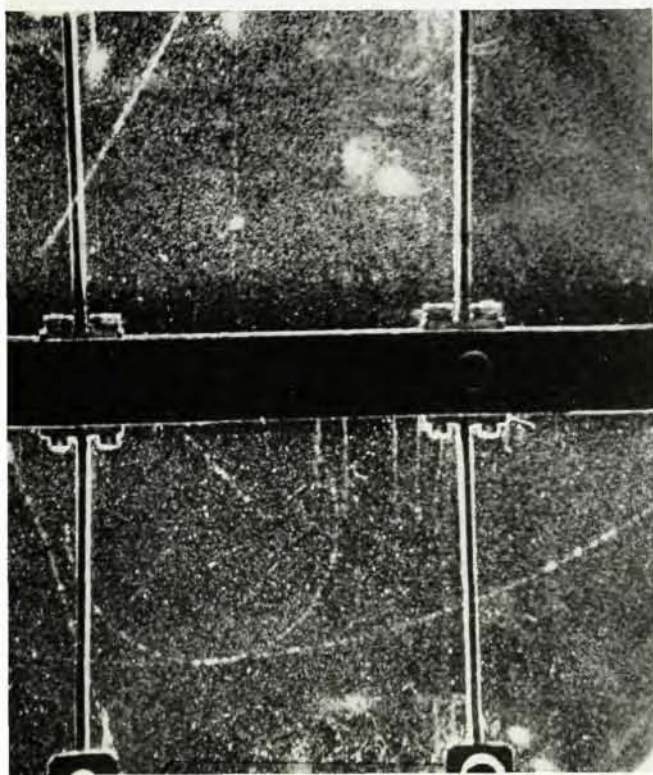




New uncharged particle, which leaves no visible track, penetrates lead plate (dark band at center of cloud chamber) and disintegrates into two charged secondary particles and possibly into neutral particles as well. Measurements of curvature and ionization of the secondary particles from track photographs such as this indicate the probable characteristics of the original particle, even though its track cannot be seen.

TWO NEW PARTICLES

New charged particle appears below lead plate at left. The track suddenly changes direction (by about 6 degrees in this case) at point of disintegration. Lower portion of track is that of a secondary charged particle. The other secondary particle or particles, being neutral, cannot leave a track to be photographed.



at an angle is that of a secondary charged particle, while another product of the disintegration must be at least one secondary neutral particle leaving no track to be seen.

Lifetime of both new particles is about three ten-billionths of a second.

THE DINEUTRON

LOS ALAMOS MAY HAVE FOUND IT

Although continuing efforts have been made, both in this country and abroad, to find convincing experimental evidence that two neutrons occasionally behave as a single particle, the search for the dineutron has been almost uniformly unrewarding. Preliminary results of a set of experiments being conducted at the Los Alamos Scientific Laboratory, however, give hope that the dineutron has in fact been observed.

In another paper given at the Washington meeting of the American Physical Society, Harold Agnew, representing a Los Alamos research group headed by Richard Taschek, described a study of the triton-triton reaction in which the Los Alamos two and one-half million volt electrostatic generator was used to accelerate tritons. The emission of alpha particles in the reaction provides the clue for detecting dineutrons, the maximum energy for the alpha particles for any given angle being obtained whenever two neutrons come off in the same direction, either as separate particles or as a dineutron. In the latter case, according to the Los Alamos workers, a group of alpha particles may be expected which should vary with angle in a predictable manner. The experiments provided some evidence for such a group.

In Great Britain, scientists at Harwell were reported late last year to have unsuccessfully attempted to find evidence for the dineutron in an experiment in which an isotope of bismuth was exposed to the neutron flux of the Harwell pile. The characteristic disintegration products that might have been expected if dineutrons were present were not observed.

METAMORPHOSIS

RADIOACTIVE DECAY OF THE NEUTRON

Letters to the Editor from Oak Ridge and Chalk River appearing in the May 1 issue of the *Physical Review* give results of recent experimental work on the instability of the neutron. A. H. Snell, F. Pleasanton, and R. V. McCord of the Oak Ridge National Laboratory reported an experiment in which neutrons from the uranium-graphite reactor at Oak Ridge were beamed through an evacuated tank and coincidence events observed with an appropriate counting arrangement. Evidence was obtained for the existence of events involving the appearance of low energy positive particles of roughly protonic mass and of others that might have been beta particles. "The observations would be explained completely and without internal contradiction," said the authors, "if neutrons in free flight transform spontaneously into protons with the emission of beta particles having a maximum energy of less than about 0.9 Mev."

The Ontario report, submitted by J. M. Robson of the Canadian Atomic Energy Project, described an arrange-