

Do You Know?

The *black widow* spider is an extremely timid creature.

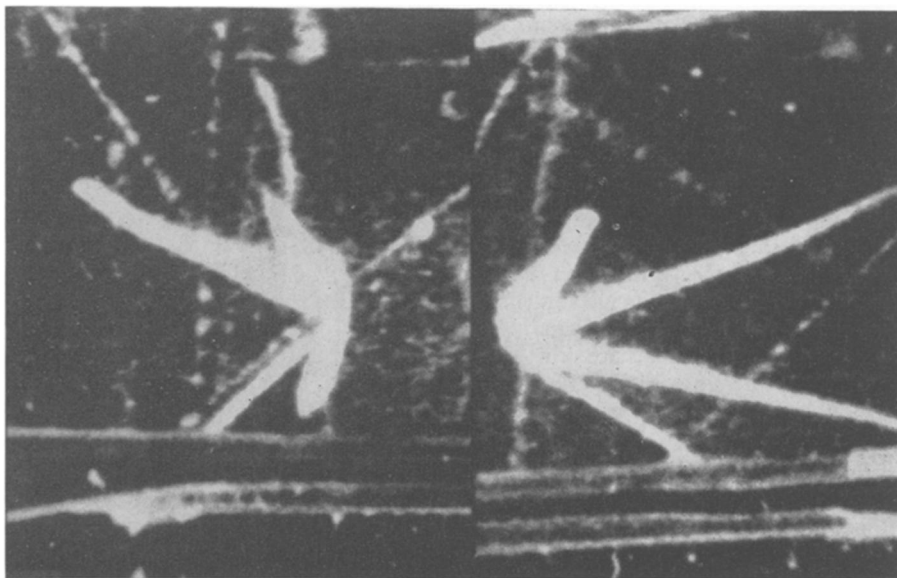
The chemical weed killer, 2,4-D, does not harm cows.

The rare gas *xenon* has narcotic effects on men, experimental work reveals.

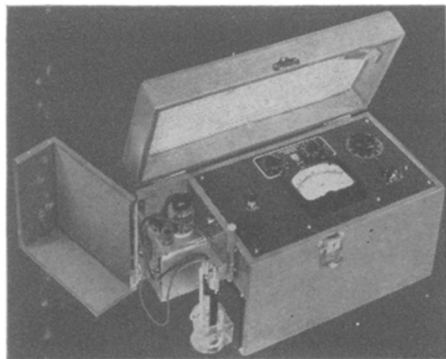
Most of the fertilizing elements in *wood ashes* are in an oxide form and have a sweetening effect on the soil.

One-fourth of the cultivated land under irrigation works constructed by the U. S. Bureau of Reclamation is used for growing *alfalfa*.

Dihydrostreptomycin is a new drug derived from streptomycin that is as active against germs as the older drug and has the added advantage of being more stable.



ATOM-SMASHING—Photographs taken by Dr. Wilson M. Powell, University of California physicist, show the disintegration of an atomic nucleus. Two photographs of the phenomena taken at different angles are shown. Each large point of the star represents an alpha particle. It is assumed that neutrons, which cannot be photographed, are being emitted in the direction away from the alpha particles. It is also assumed that the atomic explosion was caused by a neutron.



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Catalog E-96(2) gives further details.



Jrl Ad E-96(25e)

PHOTOGRAPHY

Nuclear Pictures Taken

► A PICTORIAL record of atom-smashing in nature, showing such basic subatomic events as the birth and death of basic particles of matter and the complete disintegration of nuclei, was published in the *Physical Review* by a young University of California scientist.

The photographs, probably the most dramatic ever taken of the primordial processes of the universe, were taken on top of Mount Evans, Colo., an altitude of 14,120 feet, where the frequency and intensity of cosmic radiation is much greater than at sea level.

The photographs were taken by Dr. Wilson M. Powell, associate professor of physics, during two expeditions in 1940 and 1941. The results were not published until recently because the war interrupted Dr. Powell's work.

Dr. Powell found an enormous number of neutrons in cosmic rays at high altitude. These neutrons appeared to have a maximum energy of about 200,000,000 electron volts. Their presence was detected photographically only by the disintegration of nuclei. The sud-

den appearance of a star effect on the photographic plate, with fragments of the nucleus flying in all directions, was set down as the work of a high speed neutron.

The photographs were taken in Wilson cloud chambers, which were filled with argon gas. Five plates of lead were spaced in the chamber to scatter particles going through and to test the penetrating power of the particles. Angle of deflection and penetrating power are clues as to the type of particle making a particular track through the chamber.

Dr. Powell and other University of California scientists hope some of the remarkable subatomic events found in cosmic rays at high altitude may be reproduced in the laboratory when the big new atom smashing machines, the 4,000-ton cyclotron, the synchrotron and the linear accelerator, are completed on the Berkeley campus. Dr. Powell hopes to construct special equipment in which such man-made cosmic radiation may be observed in the laboratory under control conditions.

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