

## PHYSICS

# Heavy Nuclei Hit Earth

Evidence that there are high-powered and massive particles in cosmic radiation that bombard the earth from outer space has been gathered.

► THE EARTH is being bombarded from outer space with heavy-weight projectiles. The cosmic radiation at about 20 miles over your head includes atomic heavy-weights, not just light-weights, such as the hearts of hydrogen and helium atoms.

Evidence that there are heavy nuclei in cosmic radiation has been gathered in the Office of Naval Research project called "Skyhook" during which balloons carrying recorders have been sent above the roof of the atmosphere.

Atomic debris or "cinders of creation" are being rained upon the earth in much the same way that shooting stars are remnants of past planets.

Tracks of heavy particles were captured when physicists of the University of Minnesota and the University of Rochester sent cloud chambers and special photographic plates aloft in free balloons.

The clues left in these radiation recorders are evidence for hearts of heavy atoms, the heaviest as massive as hafnium (mass 180 times that of hydrogen and

number 72 among the 96 known elements). The tracks are many times denser and heavier than those obtained from fragments produced in nuclear explosions.

This is rated as the most exciting discovery in cosmic rays of the year. The radiation has tremendous energies.

At two meetings in Pasadena, Calif., and Madison, Wis., the Rochester and Minnesota physicists have made preliminary reports and the *Physical Review* (July 15) carries their first published report. In the University of Minnesota group are Drs. F. Oppenheimer, E. P. Ney, E. J. Lofgren and Phyllis Freier, while the University of Rochester group includes Drs. H. L. Bradt and B. Peters.

Where are such high-powered and massive particles born out in the universe? A favorite idea is that they consist of the trash or debris that floats around in almost empty space, in the great galaxies of stars or between the galaxies. Very small differences in electric field operating over a considerable time (and the universe has

plenty of time to spare) would give stray atoms tremendous accelerations such as are observed. This is a suggestion made by Dr. W. F. G. Swann, director of the Bartol Research Foundation, Swarthmore, Pa.

There is a possibility that the heavy energetic particles are born in the intense magnetic fields of the sun and are then shot to earth, but this is not the most widely held theory.

Science News Letter, August 7, 1948

## PHYSICS

## All Helium in Meteorites Due to Cosmic Radiation

► ALL of the helium found in any meteorite was produced by cosmic radiation, Dr. Carl A. Bauer of the University of Michigan calculates.

Cosmic radiation has acted on all meteorites for the same amount of time—ever since the disruption of the parent planet to which these meteorites originally belonged—Dr. Bauer states. The proportion of a meteorite's mass lost in traversing the earth's atmosphere has little effect on the helium content, he reports in *Physical Review* (July 15).

It was Dr. Bauer who last fall announced that iron meteorites arriving from outer space are not seven billion years old, as previously estimated, but only about half that age.

At that time he pointed out that meteorites could be "artificially aged," extremely small amounts of helium gas contained in the bits of heavenly iron resulting from intense cosmic-ray bombardment in outer space. Heretofore it has been assumed that the helium was due to radioactive breakdown of uranium and thorium, the iron fragments having been in existence long enough as solids to allow the helium gas in them to be formed that way.

If cosmic radiation produced helium in small meteorites, the University of Michigan scientist reasons, then this process is sufficient to produce, in the same period of time, all the helium observed in any meteorite.

Science News Letter, August 7, 1948

## ENGINEERING

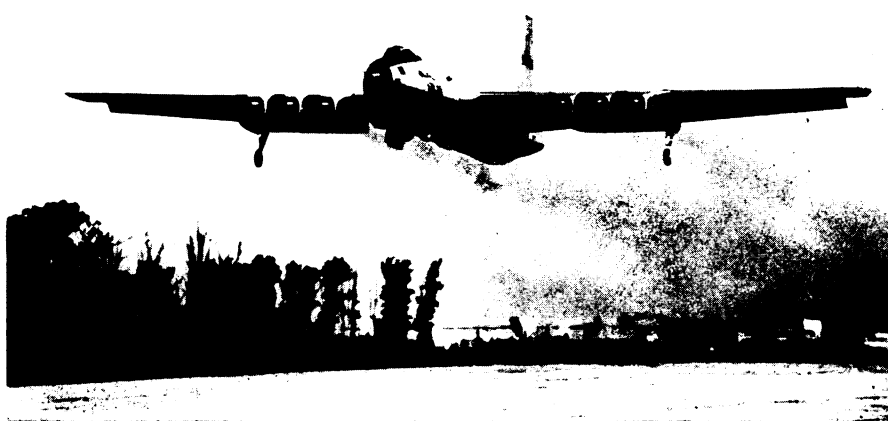
## Electrical Insulation Tape Neither Burns nor Chars

See Front Cover

► FINE PAPER-THIN TAPE, a high-temperature electrical insulation developed by Johns-Manville, will neither ignite, melt nor char. It is shown under blow-torch test on the cover of this week's SCIENCE NEWS LETTER.

Brought by the torch to a bright red heat, its thermal life and non-combustibility are demonstrated. Its use will make electrical installations safer from fires from short-circuits. Its trade name is Quinterra.

Science News Letter, August 7, 1948



**SIX-JET BOMBER**—Undergoing military tests at Wright Field, Ohio, by the U. S. Air Force, is the largest jet bomber of conventional design yet put in the air. It was built by Glenn L. Martin near Baltimore, Md., and for the present will be known as the XB-48. The X will be dropped when tests are completed and the bomber accepted. It will then go into production.