

PHYSICS

New Kind of Atom Destruction Found in Pike's Peak Tests

COSMIC RAYS, already one of the most baffling mysteries of the world of science, are even more complex in their behavior than hitherto imagined. New ways, heretofore unreported, in which the penetrating rays can destroy atom nuclei by impact have been discovered by Drs. Carl D. Anderson and Seth H. Neddermeyer of California Institute of Technology. Dr. Anderson is well known for his discovery of the famous "positron", one of the fundamental particles from which all matter appears to be composed.

In a report to the American Physical Society (*Physical Review*, Aug. 15) the California scientists make the first full disclosure of their recent high altitude experiments atop Pike's Peak, Colorado.

The California scientists discovered:

1. That the bundles of cosmic ray energy, known as photons, can disintegrate heavy atoms such as lead.
2. That light and tiny electrons can smash into the nuclear heart of atoms and occasionally break them up and make them eject massive particles.
3. That some of the disintegrations seem to be produced by the non-charged

and piercing particles known as neutrons occurring as secondary radiation in the cosmic rays.

In the experiments tons of apparatus were moved from Pasadena by truck across deserts and up Pike's Peak in order that the identical equipment could be used at the two locations to give a most accurate comparison of results.

In an intensive program of research on the mountain top Dr. Anderson and Dr. Neddermeyer accomplished what was virtually a whole year of investigation in a few weeks. Thousands of photographs were taken with Wilson cloud chamber apparatus which showed cosmic rays destroying atoms and molecules. Use of the mountain top was prompted by the knowledge that much of the earth's atmosphere would be below the instruments so that the cosmic rays observed would be more powerful than in the Pasadena laboratory near sea level.

While other investigators have taken measurements of cosmic rays at even greater heights, the Anderson-Neddermeyer research was the first in which actual photographs of the atomic breakdowns were obtained.

Science News Letter, August 29, 1936

temperature change between July and December is but five or six degrees. Because December finds the thermometer standing at 84 degrees does not mean in Hawaii that during the summer months it will climb higher. Trade winds help to maintain a fairly stationary temperature the year around, the mean being about 75 degrees.

First public knowledge of an apparent slight upward climb in Hawaii's temperature was obtained in 1925, when Edward A. Beals, at that time in charge of the U. S. Weather Bureau in Hawaii, reported to his department head in Washington that "Hawaii is growing warmer year by year."

In his report, Mr. Beals stated that seasonal high pressure that before 1925 had prevailed several hundred miles off California, slightly west of San Francisco, had shifted its position and was, in the final analysis, responsible for the rise in temperature in Hawaii.

Observer Beals' records indicated that the temperature in Hawaii had increased nearly a degree in 20 years.

These findings of ten years ago are borne out by a continuance of the study under direction of Mr. Voorhees, who believes the shift in the direction of the trade winds to be responsible.

Science News Letter, August 29, 1936

MEDICINE

Effect of Nursing On Breast Cancer Reported

A POSSIBLE effect of nursing on the development of breast cancer in mice is reported by Dr. John J. Bittner, of the Jackson Memorial Laboratory at Bar Harbor, Me. (*Science*, Aug. 14).

The effect is not on the mother but on the offspring. It indicates that the transmission of cancer from one generation of mice in a cancer family to another is not due to straight inheritance but to influences outside the heredity-bearing chromosomes. The cancer-producing factor, it appears from the report, is lapped up at the breast of a mother who carries it.

In Dr. Bittner's investigations, infant mice, less than 24 hours old, from a family line in which breast cancer occurred very frequently were nursed by foster-mothers from a line in which this type of cancer rarely occurred. The percentage of breast cancers occurring in the fostered mice was appreciably less than that for the ancestors of these mice.

Experiments will have to be made

CLIMATOLOGY

Hawaii's Climate Changes With Shift in Trade Wind

WHILE weather on the "Mainland" is giving people plenty to think about, students of climatology in Hawaii are having their own problems to puzzle over. Three changes have become apparent:

Tradewinds in the Pacific have shifted their course.

Hawaii's temperature is gradually rising.

Distribution of rainfall in the mid-Pacific American territory is changing.

Some points in Hawaii are receiving 30 per cent more rain than they did 30 years ago while other points are receiving 21 per cent less. Every month in the year is slightly warmer than the

corresponding period 30 years past.

These are some of the conclusions John H. Voorhees, in charge of the U.S. Weather Bureau at Honolulu, has drawn from a study of records covering the period since the Federal Government established an official weather bureau there in 1904.

The warmest December day in Honolulu in nearly half a century was Dec. 8, 1935, when the maximum temperature was 84.6 degrees. The next highest temperature for that month in the past 46 years was Dec. 11, 1926, at 84.1 degrees. These high year-end figures are deceiving in relation to those during July and August, since the