

GENERAL SCIENCE

Radiation "Body Count"

See Front Cover

➤ SEVERAL PAJAMA-CLAD teen-aged scientists took turns climbing into a canvas hammock to spend a most unusual three minutes inside the "detector tank" of the Whole Body Counting Facility at Walter Reed Army Medical Center.

The instrument rapidly and accurately measured the natural and acquired radioactivity of their entire bodies, identifying and localizing any elements emitting gamma radiation. The only other such instrument in the world is at Los Alamos, N. M.

The "whole bodies" that were counted in the tank belonged to some of the 40 top winners of the 18th Science Talent Search, conducted by Science Clubs of America, an activity of SCIENCE SERVICE, and supported by the Westinghouse Educational Foundation of the Westinghouse Electric Corporation. One of them is shown in the photograph on the cover of this week's SCIENCE NEWS LETTER. The experience of the young scientists with the nuclear medicine facility was part of a visit to the Walter Reed Army Institute of Research and the Armed Forces Institute of Pathology, arranged for winners especially interested in the medical and biological sciences.

The young scientists learned that gamma photons from radioactivity in the body cause light flashes in an organic scintillating liquid, dissolved in 150 gallons of toluene and contained in the thick walls of the tank. The flashes are counted by 30 large

photomultiplier tubes, amplified, and recorded on electronic instruments outside the tank.

Information gathered from many such body counts will be used to establish a distribution chart of the radioactivity level in individuals from all parts of the world. The equipment also has great potential usefulness in the diagnosis and study of complex medical problems of disease and diet.

Sugar Tagged by Tritium

➤ RADIOACTIVE SUGARS that will greatly facilitate the study of complex chemical processes have been developed by the National Bureau of Standards.

The new sugars contain tritium, the radioactive isotope of hydrogen, as a tracer element. Carbon-14, another tracer element, costs 11,000 times as much as tritium. Tritium gives off no more radiation than can be stopped by a sheet of paper.

The sugars were described to some of the 40 winners in the 18th annual Science Talent Search.

Tritium-bearing sugars enable scientists to determine the amount of sugar in any stage of chemical reaction, thereby helping them understand the roles played by individual molecules.

The new sugars may be used, for example, to study how the body converts glucose to galactose and to learn how bacteria react

with simple sugars to produce many complex substances.

Dr. Horace S. Isbell, who headed the Bureau's development of the tritium sugars, said that the need for expensive equipment had retarded previous use of tritium for tracer purposes. The Bureau now uses a Geiger-type counter that puts use of tritium for labeling purposes within the means of laboratories all over the country.

Whereas one curie of carbon-14 costs \$22,000, said Dr. Isbell, the same amount of tritium costs only \$2. Also, tritium requires no expensive shielding, as does carbon-14, and lends itself to sensitive measuring.

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SEISMOLOGY

Antarctic Continent Smaller Than Ice Sheet

➤ THE ANTARCTIC CONTINENT is much smaller than its ice sheet cover, two seismologists of the California Institute of Technology at Pasadena, Calif., have found from studies of earthquake waves.

Drs. Frank Press and Gilbert Dewart said they have found that, at most, three-fourths of the Antarctic ice sheet is underlain by continent, the remaining area being oceanic in structure. They also found that larger areas of the Antarctic land mass lie below sea level than has been thought.

Their results support the idea that the below-sea-level depths observed in measurements of ice thickness are primary features, not the result of the crust's sagging under a heavy ice load.

Drs. Press and Dewart base their conclusions on the higher-than-expected speed with which certain earthquake-generated waves traveled across the Antarctic continent. Their study is reported in *Science* (Feb. 20).

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ARCHAEOLOGY

Ancient Skull Found

➤ FROM THE WELL of a Mexican farmer has been drawn evidence of ancient Americans who lived in that area some 8,000 to 6,000 years ago.

The find helps to bridge the gap between the mammoth-hunting Tepexpan Man who lived 9,000 to 10,000 years ago, and the earliest farmers. It is described in *Science* (Feb. 27) by Dr. Helmut de Terra, geologist of Columbia University.

A mineral-coated human skull was brought up from a depth of 3.42 meters (about 11 feet) in the well. The find was not made recently. In 1955 that the farmer found the remains of his ancient ancestor and consulted his priest about giving him a Christian burial. Instead, the clergyman sent the skull to Mexico's National Museum but failed to notify museum officials of the circumstances of the find.

As a result, the important skull remained unnoticed, gathering dust in the museum, until recently when Dr. de Terra was invited to visit the site of the find which is close to the village of San Vicente Chicoloapan and near the highway that leads from Mexico City to Texcoco.

Under the boulder where the skull had been found, Dr. de Terra found a fragment of a human rib and next to it an obsidian tool.

When the original well had been enlarged, something of the life of the 8,000-year-old Mexican was revealed.

He lived on seeds and other wild foods gathered from the country around him. This was shown by finds of grinding stones, metates and manos as well as obsidian knives, scrapers and flakes. One of the blades has a fine saw-toothed edge. The ancient Mexican understood the use of fire; two hearths containing charcoal were found nearby. But he had not yet learned to make pottery.

The new-found ancestor was a long-headed type, quite different from the older, round-headed Tepexpan Man.

Presence of the grinding stones indicates that he belonged to a collecting economy, food gatherers rather than farmers, of the "Chalco culture," now for the first time recognized as such, Dr. de Terra reports.

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METEOROLOGY

Weather Bureau Honors Volunteer Observers

➤ THE WEATHER BUREAU has honored 21 of its volunteer observers with more than 50 years of daily service by a special citation edition of its daily weather map.

The 21 are deans of the more than 7,000 cooperative observers who take and record weather data every day of the year, including Sundays and holidays, without pay.

Dr. F. W. Reichelderfer, chief of the Weather Bureau, said that knowledge of the U. S. climate would be meager without the daily records of volunteer observers. Dean of the corps is Barry C. Hawkins of Highlands, N. C., who has taken daily observations for more than 67 years. His period of personal service is only five months shorter than the entire history of the Weather Bureau as a civilian agency.

Brief highlights of the services of Mr. Hawkins and the 20 others honored in the special edition were reported on the back of the weather map published Feb. 26.

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