

ELECTRONICS

New Atomic Tool Built

An electron linear accelerator, newest piece of atom-smashing equipment, built and operated at Stanford University, will lead to artificial source of cosmic rays.

➤ A SLENDER, three-foot atom-smasher may be the forerunner of a powerful new scientific instrument for producing artificial particles as potent as cosmic rays in the laboratory.

This new tool for probing the secrets of atoms is an electron linear accelerator, built and operated at the Stanford University Microwave Laboratory. A projected larger model of the accelerator, 100 to 200 feet long, could develop a billion electron volts, Dr. William W. Hansen, director of the laboratory, told the Institute of Radio Engineers. Sections of the smaller model were shown to scientists at the West Coast Electronic Manufacturers' Association trade show in San Francisco.

Electrons, the negatively-charged outer particles of atoms, "ride" through the pipe-like tube of the accelerator on microwaves. The microwaves, invisible "eyes" of radar, are generated by a million-watt magnetron in the new atom-smasher. Dr. Hansen, who played an important role in the development of radar, predicted that a billion-watt model of the accelerator will bring high voltage energy of the order of cosmic rays

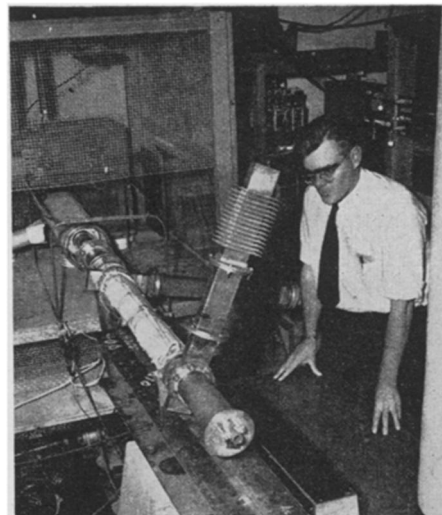
into scientific laboratories for study.

Thus far, Dr. Hansen disclosed, the three-foot accelerator has produced electrons of more than 1,500,000 volts. The instrument was built at Stanford under contract with the Office of Naval Research.

Gold-plated disks inside the tube of the atom-smasher slow down the microwaves to the speed of the slower electrons. As the electrons travel through the tube, they pick up energy which increases their mass. At one point in its lightning journey, the tiny particle weighs 2,000 times as much as it does at rest.

This new attack on the tiny bits of atoms may unlock secrets of the fundamental particles of matter. High-energy cosmic rays, mysterious particles which bombard our atmosphere from outer space, are now studied high overhead in airplanes, balloons and V-2 rockets. An accelerator for producing energies equal to that of some of this cosmic bombardment might solve some of the mysteries of the rays which we neither see nor feel but which may affect us.

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NEW ATOM SMASHER—Newest atom-smashing equipment in the United States, an electron linear accelerator, is being examined by its developer, Dr. William W. Hansen, director of the Stanford Microwave Laboratory.

of research along these lines, with the idea of eventually being able to track hurricanes and typhoons along their often erratic courses. The work is under the general direction of Capt. Howard T. Orville, chief of Naval Aerology. In addition to the six-station network in the Caribbean and Gulf areas, the Navy now has similar observatories on Guam and Okinawa, and is now setting one up at Sangley Point, on the island of Luzon in the Philippines.

Science News Letter, October 4, 1947

METEOROLOGY-SEISMOLOGY

Microseism Theory Tested

➤ THE Florida-Louisiana hurricane, because it was such a big one, gave Navy scientists an excellent chance to test out the relatively new microseismic method for tracking these tropical storms, from six observatories now in operation at Miami and Richmond, Fla., Corpus Christi, Texas, San Juan, P. R., Guantanamo, Cuba, and Swan Island in the Caribbean.

This method depends on the apparent association between big storms and tiny shiverings in the earth's crust that register themselves on seismographs, or earthquake-recording instruments. These tiny tremors, which have no known connection with the heavy shocks of true earthquakes, are known as microseisms.

A connection between microseisms and storms was vaguely noticed long

ago; it was suggested that pounding of storm-surf on the shore might cause them.

The theory was brought to a more definite focus a few years back by the Rev. James B. Macelwane, S.J., of St. Louis University, well-known researcher on earthquakes. His suggestion was that the tremors started, not on shore, but on the ocean bottom under the centers of tropical storms or hurricanes. Later he put forth the supplementary hypothesis that the mechanism that started the microseisms was a piling up of the ocean water, pushed toward the "eye" of the storm by the wide in-whirling wheel of the hurricane winds. This still remains to be proved or disproved.

The Aerological Section of the U. S. Navy has taken over the development

ASTRONOMY

German Discovers Faint New Comet in Heavens

➤ A NEW comet, visible only through powerful telescopes, has been discovered by a German astronomer, J. Reinmuth of Heidelberg, Germany.

The new thirteenth magnitude comet was moving north and west in the heavens when it was first discovered in the southern part of the constellation Pegasus, the winged horse. Reported to the Harvard College Observatory, Cambridge, Mass., by the European astronomical clearing house at Copenhagen, Denmark, the new discovery is called Comet Reinmuth, after the German astronomer who first spotted it.

Science News Letter, October 4, 1947

Popular "Panama" hats are made of toquilla straw from Ecuador.