larval life in marine bottom invertebrates as related to larval transports and ocean currents," Gunnar Thorson (University Zoological Museum, Copenhagen, Denmark); "Surface films and their importance in exchange processes."

10 Sept. "Cycles of Organic and Inorganic Substances in the Ocean," AAAS Committee representative, Fritz F. Koczy (University of Miami); chairman, Y. Miyake (Central Meteorological Observatory, Tokyo). "Physical chemistry of sea water," Lars Gunnar Sillen (Royal Institute of Technology, Stockholm, Sweden); "Biologically active substances," C. E. Lucas (Marine Laboratory, Aberdeen, Scotland); "Primary production," J. H. Steele (Marine Laboratory, Aberdeen, Scotland); "Balance between living and dead matter in the oceans," W. D. McElroy (Johns Hopkins University).

11 Sept. "Cycles of Organic and Inorganic Substances in the Ocean" (continued), chairman, Thomas G. Thompson (University of Washington, Seattle). "Air-ocean," Erik Eriksson (Meteorological Institute, Stockholm, Sweden); "Sea-water and sediment," S. W. Brujewicz (Institute of Oceanology, Academy of Sciences, U.S.S.R.); "Vertical and horizontal transport in the ocean," L. H. N. Cooper (Marine Biological Association, Plymouth, Great Britain).

Afternoon Seminars

31 Aug. "Shape and structure of the ocean basins and the forces involved," conveners, Maurice N. Hill (Cambridge University, Great Britain) and Harry H. Hess (Princeton University); "Physical chemistry of sea water and surface films," conveners, Dayton E. Carritt (Chesapeake Bay Institute, Johns Hopkins University) and Gifford C. Ewing (Scripps Institution of Oceanography); "Biogeography and environmental influences," convener, Joel W. Hedgpeth (Pacific Marine Station, Dillon Beach, Calif.).

1 Sept. "Shape and structure of the ocean basins and the forces involved" (continued); "Physical chemistry of sea water and surface films" (continued); "Bathypelagic organisms," conveners, A. Fr. Bruun and Torben Wolff (University Zoological Museum, Copenhagen, Denmark).

2 Sept. "History of sea water and the origin of life," convener, William W. Rubey (U.S. Geological Survey); "The influence of land masses on the distribution of organisms," convener, K. O. Emery (University of Southern California); "The role of ethology in oceanography," conveners, H. O. Bull (Dove Marine Laboratory, Great Britain) and T. J. Walker (Scripps Institution of Oceanography).

3 Sept. "History of sea water and the origin of life" (continued); "Epicontinental sediments and nearshore sedimentary processes," convener, Robert S. Dietz (U.S. Navy Electronics Laboratory, San Diego, Calif.); "Primary production," convener, John H. Ryther (Woods Hole Oceanographic Institution).

4 Sept. "Stratigraphy of the deep sea and the marine climate record," conveners, Cesare Emiliani (University of Miami) and William R. Riedel (Scripps Institution of Oceanography); "Turbulent transports," convener, Willem V. R. Malkus (Woods Hole Oceanographic Institution); "Cultivation of marine organisms as a means of understanding environmental influences on populations," convener, Dixy Lee Ray (University of Washington, Seattle).

7 Sept. "Stratigraphy of the deep sea and the marine climate record" (continued); "Deep sea circulation," convener, Charles S. Cox (Scripps Institution of Oceanography); "Physiology of marine organisms in relation to their environment," convener, Otto Kinne (University of Toronto, Canada).

8 Sept. "Physical and biological processes in sedimentation," convener, E. L. Hamilton (U.S. Navy Electronics Laboratory, San Diego, Calif.); "Nutrient relationships," convener, Bostwick H. Ketchum (Woods Hole Oceanographic Institution); "Evolution and adaptation in the sea," convener, A. A. Buzzati-Traverso (Universita di Pavia, Italy).

9 Sept. "Physical and biological processes in sedimentation" (continued); "Estuarine and nearshore circulation," convener, D. W. Pritchard (Chesapeake Bay Institute, Johns Hopkins University); "Paleobiogeography," convener, Preston E. Cloud (U.S. Geological Survey).

10 Sept. "Nuclear processes in marine sedimentation," Johannes Geiss (University of Miami); "Sea-air interchange," convener, Erik Eriksson (Meteorological Institute, Stockholm, Sweden) and Bernhard Haurwitz (High Altitude Observatory, Boulder, Colo.); "Biologically active substances," convener, Luigi Provosoli (Haskins Laboratories, New York).

11 Sept. "Sea water sediment exchange: marine minerals," convener, Edward D. Goldberg (Scripps Institution of Oceanography); "Spectrum of sea level," convener, Walter H. Munk (Scripps Institution of Oceanography); "Balance between living and dead matter in the oceans," convener, Eugene Corcoran (University of Miami).

New Atomic Particle

The discovery of an atomic particle, the xi zero or neutral cascade hyperon, has been announced by a group of scientists at the University of California's Lawrence Radiation Laboratory and by the Atomic Energy Commission. The discovery is unique in that it was dependent upon observation of two interconnected invisible "tracks" between sets of visible tracks in a photograph. Analysis of single invisible tracks has been common.

The particle completes the list of predicted particles of ordinary matter. A few predicted antiparticles remain to be seen.

The report on the xi zero appears in the current issue of *Physical Review Letters,* a publication of the American Physical Society, by the following group of researchers: Luis W. Alvarez, professor of physics at the University of California; Philippe Eberhard, physicist on leave from the Centre National de la Recherche Scientifique de France; Myron L. Good, physicist at the Lawrence Laboratory; William Graziano, graduate student; Harold K. Ticho, professor of physics, University of California, Los Angeles; and Stanley G. Wojcicki, graduate student.

The particle was discovered by means of the laboratory's 15-inch liquid hydrogen bubble chamber, which was exposed to a special beam of particles produced by the Lawrence laboratory's bevatron.

The particle has a mass about 40 percent greater than the proton. It has no electrical charge. Its lifetime is fleeting —about one ten-billionth of a second.

The investigators found only one photograph with evidence of the creation of the xi zero. This photograph was taken just before Christmas. It was one of 70,000 taken during an experimental run extending over a period of several weeks.

United States-EURATOM Program

The U.S. Atomic Energy Commission and the Commission of the European Atomic Energy Community have announced that the U.S.-EURATOM Joint Research and Development Board will begin meeting early in April to consider proposals under the U.S.-EURATOM Joint Research and Development Program. Proposals are to be submitted in response to the invitation issued by the AEC and EURATOM in December 1958.

The research and development program is centered on nuclear power reactors and is an integral part of the joint program contemplated by the Agreement for Cooperation between the United States and EURATOM that came into effect on 18 February. The over-all industrial objective is "to bring into operation within the European Atomic Energy Community (EURA-