

PHYSICS

Neutrinos Confirmed

➤ "LOST" ENERGY of the universe may be found in neutrinos formed by stars.

Learning how much of the energy in the universe is held by neutrinos would be of "great importance," Dr. Willard F. Libby, acting chairman of the U. S. Atomic Energy Commission, said. He suggested the amount may be estimated in future experiments following those confirming the neutrino's existence.

Discovery of the neutrino, an uncharged atomic ghost particle, whose existence was practically no mass, was announced at the American Physical Society's meeting in New York in 1954. (See *SNL*, Feb. 13, 1954, P. 99.)

Atomic Energy Commission scientists under the direction of Drs. Frederick Reines and Clyde Cowan, Jr., have now confirmed their original discovery by further experiments conducted at the AEC's Savannah Plant in South Carolina.

Their work culminates a long search for the elusive particle, whose existence was suggested more than 20 years ago by two Nobel Prize winners, Wolfgang Pauli and the late Enrico Fermi. Drs. Reines and Cowan used the same method in their original discovery and in the confirming studies just reported, a giant scintillation counter constructed to be extremely sensitive to reactions caused by neutrinos.

A neutrino, which is Italian for little neutral one, reacts only very weakly with matter, and could easily pass through the entire mass of the sun without change. Its existence was suggested in order to explain otherwise apparent contradictions in the law of conservation of energy in beta disintegration, important in many atomic transformations.

Although indirect evidence had long ago convinced most physicists that neutrinos

actually exist, the tiny chargeless particle had previously escaped the direct detection necessary to prove its existence in the free state away from the radioactive atom from which it is emitted.

Science News Letter, June 30, 1956

ENTOMOLOGY

Mosquitoes Eat in One to Five Minutes

➤ YELLOW FEVER MOSQUITOES take one to five minutes to eat.

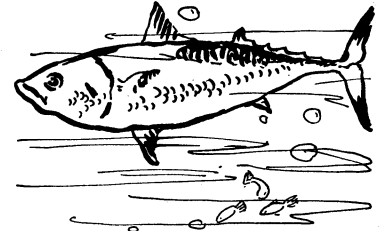
They can get their food much faster if they drill into a person's capillary than if they tap a blood pool in the tissues.

Seventy-five British medical students let themselves be bitten a total of 140 times by *Aedes aegypti*, or yellow fever mosquitoes, and scientists timed the insects at their meal. The disease-carriers took an average of about three minutes to satisfy themselves.

The average capillary feeder finished after about two minutes, while the pool drinkers needed twice as long.

The experiment by zoologist Fergus J. O'Rourke of University College, Cork, Ireland, is reported in *Nature* (June 9).

Science News Letter, June 30, 1956



The Travelers

➤ WHEN IT COMES to getting some place in a hurry, the free-moving creatures of the air and the oceans have a decided advantage over land-bound animals. Some land animals may migrate hundreds of miles in a season, but birds and bats of the air, and fish, whales and seals of the oceans may cover thousands of miles with their urge to move.

On Oct. 5, 1954, scientists with the U. S. Fish and Wildlife Service tagged an albacore tuna 1,300 miles north of Hawaii. Then, 471 days later this same tagged tuna was recaptured near Japan—2,370 miles away from the point at which it was released.

Travel seemed to work no hardship on this fish. It weighed only 15 pounds when it was tagged. When the fish was recaptured, it was found to weigh 40 pounds.

FWS scientists believe the albacore tuna of the North Pacific may all belong to a single population that migrates regularly between the coasts of the United States and Japan. They have recaptured only one other tagged albacore tuna, however, to back their theory up to now. This was a fish tagged off California some three years ago and retaken near Tokyo.

Many seal species are vast wanderers. Female Pribilof seals and their new pups swim some 3,000 miles each year from their breeding grounds in the Bering Sea to waters near southern California, and make the return trip in the spring.

Whales are credited with long voyages. Some species are thought to travel from Arctic to Antarctic waters, and it is believed that there are whales that possibly circumnavigate the globe.

The wanderings of many birds are measured in the thousands of miles, also. Some oceanic birds are seen hundreds of miles from the nearest land, while there are migrant birds that go each year from north of the Arctic Circle to as far south as Patagonia.

Even those flying mammals, the bats, have representatives that travel great distances. Two species have evidently crossed 2,500 miles of open ocean to establish themselves in the Hawaiian Islands.

Science News Letter, June 30, 1956

Questions

ACOUSTICS—What factors are important in building a machine to type directly from speech? p. 405.

ASTRONOMY—What would be effects of definite proof of life on Mars? p. 407.

Who is the first woman professor of astronomy at Harvard University? p. 402.

BIOCHEMISTRY—Why is the term for gene believed obsolete? p. 403.

GEOPHYSICS—How could an ice-free Arctic Ocean affect North America's climate? p. 402.

PATHOLOGY—How are bacteria causing intestinal upsets classified? p. 406.

PSYCHOLOGY—How does being in an iron lung affect polio patients? p. 408.

TECHNOLOGY—How can radioactive sodium bicarbonate cut down traffic difficulties? p. 406.

Photographs: Cover, U. S. Coast Guard; p. 402, Harvard University; p. 403, Convair; p. 405, American Museum of Natural History; p. 406, Republic Aviation Corporation; p. 407, Mt. Wilson and Palomar Observatories; p. 412, Ack-Ack, Inc.

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