

port for such work in the sciences as gives promise of being effective in improving the teaching of science in general education.

5. To serve as a clearing house for coordinating the activities of the several agencies now working on parts of the whole problem, and new agencies which

may be initiated for the improvement of science teaching.

6. To act in an advisory capacity on any studies approved by it and supported through it; to require and coordinate reports of such studies; and to provide for publication of the findings.

Science News Letter, June 4, 1938

PHYSICS

Presence of New Particle Suspected in New Research

Long-Sought Neutrino Believed to Have Taken Part In Three-Body Subatomic Collision, Explaining Results

NEW experimental research, strongly indicating the existence of the much-mentioned and long-sought atomic particle, the neutrino, is announced by Drs. H. R. Crane and J. Halpern, at the University of Michigan.

The Michigan physicists describe (*Physical Review*, May 15) new methods of studying impact relations in atomic collisions.

"This is the first experiment," state Drs. Crane and Halpern, "which has given any information at all regarding the momentum relations in the individual disintegration event.

"Although the results are of limited accuracy," they add, "they strongly indicate that momentum is not conserved between the electron and the nucleus alone. Hence the laws of momentum, as well as those of energy, indicate that a third particle participates in the disintegration. This third particle, while undetected of itself, is probably the long-sought neutrino.

A gaseous compound of radioactive salt was placed in a Wilson cloud chamber, a device which renders visible the tracks of ionizing particles liberated in radioactive disintegrations. Several times previously the disintegration of a substance in the form of a gas has been suggested as a key experiment for measuring the momentum or energy of recoil in atomic studies. The difficulty has been, state the scientists, that the length of track made by the recoiling nucleus is far too short for observation, even in a cloud chamber operated at the lowest obtainable pressures.

Drs. Crane and Halpern, however, circumvented this experimental difficulty by allowing the ions formed to diffuse, for a little while, until the clusters

created attained a diameter of several millimeters. The individual droplets in these clusters could then be counted and the energies of the motion of the recoiling nucleus could be estimated. By applying magnetic fields and bending the tracks of the particles the momentum of the nucleus could be compared with that of the electron.

The result of the research shows that

the basic laws of the conservation of energy and of momentum (fundamental building stones of physical theory) do not appear to be obeyed for the collisions created. Rather than abandon these basic laws, which are so well substantiated everywhere else through the field of physics, Drs. Crane and Halpern believe a third particle, the neutrino, took part in the collision so that it was a three-body, instead of a two-body, impact. Such a condition could easily explain the experimental results obtained.

Science News Letter, June 4, 1938

Long, curving eyelashes are normal for children, but usually give place to straight lashes about the age of 16.

● Earth Trembles

Information collected by Science Service from seismological observatories and relayed to the U. S. Coast and Geodetic Survey resulted in the location of the following preliminary epicenter:

Monday, May 23, 2:18.7 a. m., E.S.T.

Under ocean 20 miles east of Honshu, principal island of Japanese archipelago, on which Tokyo is situated. Latitude 36 degrees north, longitude 141 degrees east.

For stations cooperating with Science Service in reporting earthquakes recorded on their seismographs see SNL May 21.

ANNOUNCEMENT

NEW ADVANCE ABSTRACT CARD SERVICE

Author's abstracts of all papers appearing in The Wistar Journals:

Journal of Morphology
The Journal of Comparative Neurology
The American Journal of Anatomy
The Anatomical Record
The Journal of Experimental Zoology

American Journal of Physical Anthropology
Journal of Cellular and Comparative Physiology
The Journal of Nutrition
American Anatomical Memoirs

are to be issued in the new Advance Abstract Card Service within 30 days of acceptance of abstract.

The present *Advance Abstract Sheet*, given free for the past 14 years, will be discontinued with the June, 1938 issue, to be replaced beginning in July by the new form of service. The new Card Service has been planned to meet all the needs of librarians and investigators, and is to be offered in three forms.

	<i>Annual subscription</i>
1. Advance Abstract Cards in sheets 4 abstracts per card—300 mm. by 125 mm.	\$2.00
2. Advance Abstract Card Service sheets cut into cards—75 mm. by 125 mm.	2.50
3. Advance Abstract Card Service permanent library card punched—75 mm. by 125 mm. From July to December, 1938—one-half annual rate	3.00, or \$5.00 for 2 sets

NEW ADVANTAGES

1. Subject, author, classification and abstract appear on one side. No inverted reading necessary.
2. The Advance Abstract Card in sheets (300 mm. by 125 mm.) can be filed or cut into regular size cards (75 mm. by 125 mm.) for filing. Investigators are thus able to select and keep abstracts of interest only.
3. The service will be issued promptly and months in advance of publication of the manuscript.
4. The service is practical and inexpensive.
5. An index will be furnished to all subscribers annually.

SUBSCRIBE NOW!

THE WISTAR INSTITUTE OF ANATOMY AND BIOLOGY

Woodland Avenue and Thirty-sixth Street, Philadelphia, Pa.