

old age. More of their babies grew up. But life still ended around 50, if it lasted that long.

Here are Prof. Vallois' figures on human life, as it was 30,000 years ago:

34 per cent. died before 20.

53 per cent. died between 20 and 40.

10.5 per cent. died between 40 and 50.

That doesn't quite total 100 per cent. But, the fact is Prof. Vallois did find three semi-elderly individuals among his 187. All three lived later than the Neanderthal era. None of them was what we would call aged. In their skulls, there were important sutures unclosed when they died.

Growth Continues

It may seem surprising that a human head should still be putting itself together, and still uncompleted at the age of 50. But, just recall recent scientific reports showing that human growth and development go on far into middle age. A "grown" person's chest continues to broaden slightly until middle age. Ears grow longer. Hands and feet become larger. The mouth widens.

Growing up is a lifetime job for us, and the Old Stone Age people seem never to have attained this complete bodily development.

Prof. Vallois gives vital statistics for a third period of the Old Stone Age. This is the transition time, just before the New Stone Age dawned, bringing in the pastoral and farm era. Man was improving his lot in the world, but he wasn't living any longer, nor had he learned how to keep more children alive. On the contrary, fewer grew to be 20. And old age was still an undiscovered adventure.

One point brought to light by the French anthropologists is curious. That is, women died younger than men in the Old Stone Age.

In modern experience, we find just the contrary. Girl babies are less delicate

than boys, and more girls survive infancy. And from then on, comparing the sexes at advancing ages, women are found outlasting the men.

But in the Old Stone Age, women died younger. It is particularly strange, considering that women did not take so many physical chances. It was the man who stalked dangerous wild beasts to provide meals and fur coats. The man was the fighter, who had to drive off disagreeable neighbors or meet hostile strangers in combat. At least, so archaeologists judge, because when they find a prehistoric skeleton with stone axes or spear points nearby, it is almost always a man.

Women, it is true, endured hardships of childbirth, and Prof. Vallois mentions this as a possible cause of untimely death among Stone Age women. But this alone, he believes, is not sufficient explanation. Whatever it was that made life especially hard and hazardous for the cave woman, aside from bearing children, is something not yet revealed by archaeological remains of that rough and ready era.

Prof. Vallois has an interesting theory as to why Stone Age people never grew old. Unfortunately, it's no Fountain of Youth discovery. Nothing like that. Simply, that in the good old days when human beings lived almost as wild as the birds and animals, they died off the way wild birds and beasts do.

Natural Lifetime

Wild things, he explains, have a tendency to die when they get past their prime. They have spent their natural lifetime. And early man, if he escaped being run down by a rhinoceros, or some other hazard, lived out a similar natural lifetime. This lifetime of wild mankind was between 40 and 50 years. The French anthropologist thus credits civilization with stretching man's lifetime far beyond what nature allowed under wild conditions. The average man today can expect to live about 60 years. For women the average lifetime is 54. In other words, the average person today lives longer than the longest-lived humans in the Good Old Stone Age.

Or, look at it this way: the average man or woman today can expect to blow 60 candles, at least, off a birthday cake. In the Stone Age, any one was lucky to survive the teen age.

It has taken the world a long, slow time to increase the span of life for the average human. According to figures once reported in Paris, the average Roman under the Caesars lived 18 years,

which is hardly better than the Stone Age could do. In France at about the time of the French Revolution, an average lifetime was about 29 years. In 1850 the average had risen to 37 years; in 1880, 40 years. Now it has passed the 60 mark.

Science claims credit for increasing an individual's prospects of a longer life. With thousands of scientists studying diseases alone, and other thousands studying diet, and still others studying normal human bodies, mankind has been able to apply the results with what amounts to lightning speed. At least, it seems like lightning speed, to double the average lifetime within two centuries, after all the thousands of years that went by without much progress.

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Science News Letter, June 4, 1938

GENERAL SCIENCE

Better Science Education Is Aim of Committee

SCIENCE, important through its applications in every phase of the daily lives of all the people, deserves a larger place in general education, is the belief of a newly organized special committee of the American Association for the Advancement of Science. But to win that place, science teaching must be brought to a maximum of efficiency and interest.

The new body, titled the Committee on Improvement of Science in General Education, has as its chairman Prof. Lloyd W. Taylor of Oberlin College. Six special objectives are stated by Dr. Otis W. Caldwell, general secretary of the Association:

1. To clarify and define the problems involved in teaching the sciences as a part of the program of general education.

2. To develop a more scientific attack upon problems of science teaching; that is, to promote experimentation; to collect evidence, to encourage the use of procedures justified on the basis of organized and evaluated evidence in contrast to opinions, untested assumptions, and uncritical acceptance of traditional practices.

3. To disseminate information about the committee's work, and to secure constructive criticism by means of discussion groups in college and university centers, by participation in programs, and by such other means as may be found effective.

4. To obtain and to use financial sup-

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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.

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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.

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