

PSYCHOLOGY

Many Old People Work Faster Than Average Adults

Study Showing Fourth of People Over 74 As Fast As Adults Indicates Unfairness of Automatic Retirement

NOT all old people are slow workers. Probably from one-fourth to one-third of persons over 74 years of age could release the accelerator of an automobile at the approach of danger as quickly as the average adult. And these aged persons differ in speed just as do those who are in their thirties or forties.

These facts were among those reported to the New York branch of the American Psychological Association meeting in New York by Dr. Walter R. Miles, professor of experimental psychology at Stanford University.

Dr. Miles has been making a study of "later maturity" at Stanford under a special grant from the Carnegie Corporation. So far he has examined psychologically a total of 800 persons from all walks of life, excepting only the illiterate. A special study of reaction and co-ordination speed was made for 100 of these selected at random. The ages ranged from 25 to 87 years.

Commenting on the custom of retiring or dismissing an employee who has reached a certain chronological age, Dr. Miles said:

"Age is usually one of the important factors which define physiological and psychological efficiency. No machine can last forever; action necessarily means the reaction of wear and tear. But as the data presented in this paper indicate, there are distinct and measurable efficiency differences between individuals with chronological ages about seventy years, just as there are differences among people who are in their thirties or forties. The average for all who are older than 74 years, for example, may show a decrement of one-fourth or one-third from the general adult mean. But, on the other hand, one-fourth to one-third of these old people may still be as capable, in the functions tested, as the average adult, and to check them off just because they happen to have been born seventy or more years ago may be as unfair to the individual as to drop him because he was born of foreign parents.

"Psychologists have convinced themselves and the educational world that

there is such a thing as mental age, which, although it may ordinarily run a parallel course with chronological age, does not do so in all cases. And for this reason individuals must be considered, rather than arbitrarily lumped in calendar year units. Investigation such as is reported by the present sample of data indicates that calendar worship should be further curtailed as related to the problems and adjustments required in human life at its stage of later maturity."

The measurements of speed were made by an ingenious electrical device which not only timed the movements made by the persons tested, but also gave the signal to which the person was to respond. It times as closely as a one-hundred-twentieth of a second.

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BOTANY

Fungus Beautifies Self With Fur-Trimmed Edge

See Front Cover

THE PICTURE on the front cover of this week's SCIENCE NEWS LETTER looks like a fur-trimmed opera cloak for

ASTRONOMY

Four Separate Spheres Make up Single Star in Great Bear

THE STAR XI Ursae Majoris, one of the fainter members of the constellation of the Great Bear, appears as a single body to the naked eye, but astronomical research has revealed that it actually consists of four stars. They are arranged in two pairs. Each member of each pair is revolving around its mate, while each pair in turn revolves around the other pair.

On the old star maps, xi Ursae Majoris was represented as forming part of the bear's right hind foot. It is almost directly overhead about 9:00 p. m. at this



MEASURING HER SPEED

In performing an operation like those necessary in industry. The electrical clock device is disconnected while her fingers remain on the key. When she is ready she will lift her hand, thus starting the clock, move the peg to the next hole, and return her finger to the key which stops the clock. The time is automatically recorded.

Queen Titania of the fairies, but it is nothing more romantic than a rather common small fungus, *Schizophyllum commune*, that feeds on dead sticks in the woods.

The furry effect is due to the splitting and shredding of the edges of the cap. The photograph, which shows the plant at several times its natural size, is the work of Cornelia Clarke.

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time of the year. High in the west is the familiar "Sickle" of Leo, with the brilliant Regulus at the end of the handle, pointing downwards. If you imagine a line from Regulus to Benetnasch, the end of the handle of the Great Dipper, it will cross xi Ursae Majoris almost in the middle.

Working at the Lick Observatory, Mt. Hamilton, Calif., Louis Berman has made a detailed study of the star, and has determined more accurately than ever before the dimensions of the system. Through a medium-sized tele-

scope, the star is resolved into two components. Some years ago it was found that the brighter of these stars oscillates back and forth every 22 months. This is caused by a close companion which has never been observed.

The fainter of the two stars seen in the telescope was found, in 1918, to be also double. Studies of its spectrum, obtained by analyzing its light through the prisms of a spectroscope, showed the dark lines to move back and forth every few days, thus indicating that it also is double, though the two stars cannot be observed directly. Dr. Berman's study shows that these two make a revolution every four days.

He also finds that the star is at a distance of 26 light years, thus making

it one of the nearest stars in the sky. The orbit in which the two members of the brighter part revolve is almost edge-wise to us, and he suggests that perhaps about next February 4 or 5 the dark body may eclipse the visible one.

The fainter pair has a combined mass about the same as that of the sun, while that of the brighter pair is about 25 per cent. greater. The two stars visible in the telescope are each a little smaller than the sun, the brighter being 795,000 miles in diameter, and the fainter 700,000 miles; compared with 865,000 miles for the sun. The distance separating these two stars is about 20 times that between the sun and the earth, or about 1,858,000,000 miles.

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PHYSICS

Briton Suggests That Speed Of Light May Be Decreasing

Each Determination Consistently Lower Than Predecessor; Michelson's Present Work to "Settle it Once For All"

CRITICS of modern civilization who complain that everything goes more rapidly now than it used to are wrong in one important particular, if a suggestion made in the pages of *Nature*, leading British scientific weekly, is correct. The startling idea is advanced by M. E. J. Gheury de Bray that the speed of light is gradually diminishing. Previously scientific thought has regarded the speed of light as one of the most constant things in this changing world.

Mr. de Bray points out that each measurement of the speed of light is consistently lower than its predecessor. He cites the figures for the last three determinations in the present century. In 1902 the French physicist, Perronin, found it to be 299,895 kilometers a second. In 1924 Prof. A. A. Michelson, in California, found it 299,802 kilometers, but when he repeated his work in 1926 the result came out 299,796 kilometers. Then, in 1928, two Germans, Karolus and Mittelstädt, obtained a value of 299,778 kilometers. These indicate, says Mr. de Bray, a steady decrease in the velocity, even though the possible errors of some of the values might explain the discrepancy between two adjacent values. Also, he points out, eighteen other determinations fit in with the idea of "a decrease in the ve-

locity of light, while there is not a single one against it."

In his communication, he does not consider at length the possible cause of such a decrease, but he does make one suggestion. "The velocity of light," he says, "is affected by magnetism, and the measurements of this 'constant' are performed in a magnetic field of varying intensity, namely, the earth's magnetic field, yet no correction seems to be applied to allow for this variation in the physical conditions in which the experiments are carried out, or in any other which may be present." Also, he says, it has been shown that a decrease in the velocity would not contradict the theory of relativity.

Prof. Michelson is now in Pasadena, California, completing a new and still more accurate determination of light's speed. Mr. de Bray believes that this work will "settle it once for all."

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ARCHITECTURE

House Built Without Regard For Precedent

A THOROUGHLY modern house designed with utter disregard for architectural precedent and with all pos-

sible consideration of modern invention has been built in the Grand Central Palace by the Architectural League of New York.

Glass, steel and aluminum are the principal building materials, and here are some of the features of the new house: Three-inch walls weighing only one-twelfth as much as concrete and steel and protecting the occupants from heat and cold better than 14 inches of masonry; glass walls at two ends of the living room; no cellar because it is useless and expensive; garage and heating system on the ground floor; a flat roof made into a garden terrace; folding partitions enclosing rooms; a rubber-surfaced dining table that rolls up out of the way on a cylinder; and artificial light closely approximating daylight from low voltage gas tubes sunk in the ceiling over the windows with an additional controlled source of ultra-violet light.

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NUTRITION

Soybeans Recommended As The Ideal Human Food

SOYBEANS, three million acres of which are raised for cattle food and other agricultural uses in this country, have been recommended to the American Chemical Society as the ideal human food by Dr. A. A. Horvath, now of the U. S. Bureau of Mines, Pittsburgh, but formerly in charge of extensive soybean research at the Peking Union Medical College, China.

Nearly half of the world's total population uses soybeans daily as a protein food, replacing meat. A hundred generations of Chinese have been raised on this source of protein, and Dr. Horvath called this one of the world's most extensive biological experiments. Its protein, or meat-like constituent, is extremely well balanced, containing some necessary amino acids that milk and meat do not provide. Forty per cent. of the soybean is protein, while twenty per cent. is oil. It contains all the vitamins and counteracts acids within the body.

Dr. Horvath explained that one pound of soybeans costing wholesale two cents contains as much protein and fat as two pounds of beef. A new Austrian process is now being used to remove the beany taste from soybean flour and make it suitable for wider general use.

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