

VITAL STATISTICS

Smokers Less Long-Lived; Heavy Drinkers Die Earlier

Hard Labor Does Not Affect Longevity at Ages Less Than 40, But After That Age It Does Shorten Life

SCIENTISTS can now tell you whether or not groups of men are marked for early death. They can do this while these men are still in good health, years before the first appearance of any signs of the disease that will eventually kill them.

The studies which make this possible were reported publicly for the first time by Dr. Raymond Pearl, professor of biology at the Johns Hopkins University, at a meeting at the New York Academy of Medicine.

Almost as startling was Dr. Pearl's announcement for the first time of new studies showing that tobacco smokers do not live as long as non-smokers. This conclusion was based on life tables for the number, out of groups of 100,000 non-smoking men, 100,000 moderate smokers (men) and 100,000 heavy smokers (men), who were still alive at each age level after 30 years. At age 60, for example, 66,564 of the 100,000 non-smokers were still living; 61,911 of 100,000 moderate smokers were living; and 46,226 of 100,000 heavy smokers were still living.

The studies show, Dr. Pearl said, "that smoking is associated with a definite impairment of longevity. This impairment is proportional to the habitual amount of tobacco usage by smoking, being great for heavy smokers and less for moderate smokers, but even in the latter sufficient to be measurable and significant."

The effect of tobacco smoking on length of life is different from that of alcohol, Dr. Pearl pointed out, in that moderate as well as heavy smokers live less long than non-smokers, whereas moderate drinkers do not have appreciably shorter lives than total abstainers, although heavy drinkers do.

The effect of hard physical labor on length of life was also studied by statistical methods. Up to the age of about 40 years, hard labor either indoors or outdoors has no effect on life expectation, Dr. Pearl reported, but after about age 40 such labor "definitely and considerably" shortens the length of life of the individuals.

Dr. Pearl, himself a biologist, emphasized that only a physician can give

advice on how to live a long life. No one else, he emphasized, can tell the layman where to find the modern equivalent of the Fountain of Youth.

"Such advice does not properly fall within the province or competence of the biologist or any one else outside of the medical profession," he said. "If the layman is wise he will turn to that profession, and that only, in his search for longevity. Most particularly he will do well to pay no attention whatever to the suggestions and advice of quacks, whether individuals or commercial corporations, however seductive and widespread their advertising may be."

It is the physician who will apply Dr. Pearl's findings to pick out in advance those persons destined to die early. They will do this by measuring physical, physiological, and genetic characteristics. For Dr. Pearl has found from studies of persons eventually dying of diseases of the heart and blood vessels that these measurements and facts distinguish the persons who are going to die relatively young from those who die of one of these conditions after living to a ripe old age.

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AVIATION

Tests Before All Flights Recommended for Pilots

TO DECREASE the increasing number of airplane crashes, simple instrumental tests of pilots before and after each flight are recommended by Drs. C. E. Ferree and G. Rand of the Research Laboratory of Physiological Optics in Baltimore (*Science*, Feb. 25).

They would have each pilot before the take-off and after each landing undergo a ten-minute test for swiftness of vision, performed by a flight surgeon. The instrument used is called a tachistoscope.

"More attention should be paid to fitness in the selection of pilots and to making sure that they are fit for service at all times when they are called upon to render service," Drs. Ferree and Rand report. "It is strange indeed that so much care is taken to see that the plane is in perfect condition before a flight is undertaken and so little attention is given to the condition of the pilot.

"While it is true that a human being can not be treated as a machine, we do know that he is subject to many disturbances from day to day that render him unfit for those services which require a supernormal fitness and profic-



SYNTHETIC DUST STORMS

Canadian scientists of the Swift Current, Saskatchewan, Soil Experiment Station are using two wind tunnels, one in the laboratory and the other in the field, to study the behavior of soil particles under a wind and thus get a clue to wind erosion. The field unit (above) can be readily moved. With it, studies of the rate at which the wind strips the topsoil and then allows it to settle again are to be carried out.

iciency and involve a responsibility for human life and safety."

Tests after flights will tell how the aviator has stood the strain of service. Repeated tests on the aviator would show when he is becoming incapacitated for service through age or some other cause.

The instrument used was developed

from one devised by Drs. Ferree and Rand during the World War and used for testing army aviators. The test involves a measurement of the speed of vision, the speed of use of the muscles of the eyes in the perfect coordination needed for the clear seeing of a small detail, and the speed of accommodation.

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United will not be able to use the ship, however, under the terms of the construction agreement, until Transcontinental and Western Air, American Airlines, Pan American and North American Aviation, Inc., the other four co-operating parties, have also received planes.

Boeing's ship is noted for its advanced streamlined design, adapted for high altitude flying. A number of the Boeing planes have already been ordered by TWA and by Pan-American. Sealed cabins will maintain an air pressure equivalent to that found at 8,000 feet while the plane cruises at an altitude of 20,000 to 25,000 feet over the bad weather below.

Douglas' liner will also be adapted for substratosphere flying, although this was not included in original plans.

Both ships will cruise at a speed of slightly less than 200 miles an hour and will land at speeds in the neighborhood of 65 miles an hour. They are intended for through runs on the transcontinental lanes rather than for local service, for many smaller airports will not be able to accommodate them.

Two striking features mark the DC-4. It will be the first large plane to be equipped with a tricycle landing gear, the third wheel being under the nose. As a result the ship will be in a horizontal position when standing on the ground. It will also be able to land in a smaller space and under less favorable wind circumstances. A second feature will be the triple rudder.

A separate 110 volt power supply on

THREE LAMPS

Three of the series of models in the Buffalo Museum of Science showing the evolution of the arts of lighting and warming dwellings. They might appropriately be titled the Age of Aristotle, the Age of Shakespeare, and the Age of Pasteur.

AVIATION

New Planes Will be Double The Size of Today's Largest

One New Airliner Type, Costing \$1,500,000 to Develop,
Will Carry 42 Passengers at Speed of 200 Miles an Hour

AN INFANT aviation industry's wildest dreams of ten years ago are coming to life today in two airplane factories on the Pacific coast, where two land transport planes dwarfing all other landplanes ever built in the United States are rapidly nearing completion.

Today's biggest land transports weigh 24,000 pounds loaded. Tomorrow's—in the shape of the Boeing and Douglas ships now nearing the moment when test pilots will take them off the ground—will weigh 42,000 and 65,000 pounds respectively.

Remarkable for sheer size, the planes will also incorporate novel aeronautical features which will set them apart from the herd of today's planes.

Douglas' 42-passenger giant will have a wingspread of 138 feet. It will stand 24 feet, nearly three stories, off the ground. Sleeping 28 overnight passengers, the ship will be manned by a crew of five. Its engines will develop 5,600 horsepower for the take-off. Tests

will be run with a series of four Pratt and Whitney Twin Hornet engines and later with Wright engines. Ninety-seven feet long, the plane far eclipses in size anything but the largest clipper ships either recently completed or still under construction.

Boeing's 307, which will haul 33 passengers by day and 25 by night under the tutelage of a four-man crew, will weigh 42,000 tons when complete. Seventeen feet high when standing on its landing gear, the Boeing job will have a wingspan of 107 feet and an overall length of 74 feet. Four Wright Cyclone engines will develop 4,400 horsepower.

Douglas' new airliner represents the combined resources of five major airlines and of the company which built the DC-3, most popular skyliner in America. One and a half million dollars will have been spent on its development by the time tests are complete and the first plane is turned over to the United Air Lines, its eventual owners.

