

PHYSIOLOGY

Explains Why Older Men Win Marathons, Boys a Short Dash

For the Same Reason That Old People Seek the Fire, Older Persons Excel Only on Slower Movements

THE REASON why it takes a young man to win the 100-yard dash and an older man to win a marathon or set a record for the 10-mile race is the same as the reason why old people seek a place by the fire and wear heavier clothing than young people. The explanation for this was given by Prof. Walter B. Cannon of Harvard Medical School, speaking at Mount Sinai Hospital in New York City.

Nurmi set the 10-mile record when he was 31 years old and old men and women hug the stove because of the aging of "homeostatic mechanisms." This term refers to the mechanisms which keep the blood and other body fluids stable and which also, as shown by recent research, maintain uniformity over other conditions in the body.

As examples of some of these other conditions Dr. Cannon gave the flushing of active muscles with abundant blood when they are vigorously at work, thus providing them with oxygen and washing away their waste; the special provisions for an adequate blood supply to essential and highly sensitive organs such as the brain and heart when severe hemorrhage occurs, the blood supply to other parts of the body being temporarily diminished at such times in order that there may be an adequate flow to those structures which are of supreme importance to the organism; and the plentiful blood supply to glands of internal secretion such as the thyroid and adrenal, which put forth locally from their surfaces powerful secretions.

Poor Heat Control

Describing what happens when the mechanisms for maintaining these conditions begin to age with the rest of the body, Dr. Cannon said:

"As men grow older the body temperature is maintained at the usual fairly uniform level, but the agents maintaining it become gradually more and more defective. The rate of heat production in the body gradually falls until it is about 25 per cent. less in late senescence than it is in early manhood. For

this reason old people seek a place by the stove or open fire or other source of heat, or wear heavier clothing than the young.

"There is also a gradual lessening of the ability to accommodate to high temperature because sweating and dilation of the surface vessels, by means of which heat is lost from the body, become deficient as the skin undergoes atrophy and the blood vessels stiffen in later years of life. For this reason there is a sharp rise in the death rate from heat stroke in the decades after the 70th year.

"Limitations of similar character are seen when vigorous muscular activity is undertaken. The bounds are set in part by restriction of the so-called 'vital capacity'—the maximal to-and-fro movement of the air in breathing. From early manhood until the 60th year the reduction may be 20 per cent. and by the 9th decade it may be reduced more than one-third. This is largely due to increased stiffening of the chest wall.

"Furthermore, the blood pressure is likely to rise in the late years because the arteries become less elastic and therefore do not adapt themselves to the needs of the active muscles in physical exertion.

Heart Won't Adjust

"The heart likewise shows a lessened ability to adjust itself to bodily needs; in experimental tests the maximal heart rate in youth during maximal work averaged 196 beats per minute, whereas in the 60's the maximal rate was 163 beats per minute, a reduction of about 16 per cent. As a result of these limitations insufficient oxygen is delivered to the active muscles to burn the lactic acid which is produced by vigorous muscular exercise, and consequently performance is much reduced.

"In harmony with these observations there is the fact that records in competitive sports are held by young persons when quick actions are required, and by older persons when slower actions are allowed. The record in the

100-yard dash was made by a young man of 21 years. The running records from 1 to 5 miles are held by men from 23 to 27 years of age. The record for 10 miles was made by Nurmi when 31 years old. DeMar, who ran marathons between his 22nd and his 50th years, was at his best between 36 and 42. Baseball players are rarely first-rate after about the middle of the 4th decade. Indeed, there are few stars in sports after 40. These limitations are due to the gradually reduced ability of homeostatic mechanisms to maintain stable states in the body fluids as one grows older."

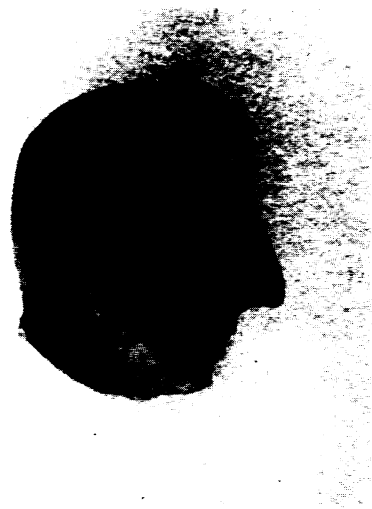
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GEOLOGY

Platinum-Like Metal Found In Alaska

PLATINUM, heavy noncorrodible metal, used in electrical contacts, fountain pen points and as a hardener for dental gold, comprises more than one-fifth of the platinum-metals content of some of the Platinum Creek, Alaska, placer deposits, reports Dr. J. B. Mertie, Jr., of the U. S. Geological Survey, who described his studies of the Alaska platinum mines to the Geological Society of Washington.

Gold, containing iron as the impurity, in place of the usual copper, found in the placer deposits along with the plati-



CITIZEN OF KISH

This tiny portrait of a Sumerian, who lived in Kish 4,500 years ago, is attracting attention at Chicago's Field Museum. Greatly enlarged in this picture, the real sculptured head is only 3/16 of an inch tall. It was found during recent excavations by a seven-year-old Arab with pretty sharp eyes.

num, may be related to the same mineralization that brought the platinum to the surface from the deep-lying hot rocks at some time in the past, Dr. Mertrie believes. Another type of gold, found in the same area, was brought in by glaciers, from whose deposits the gold was washed into the platinum mining

areas.

Found in woodless, misty rainswept valleys, under several feet of gravel, the Alaskan platinum deposits are producing thousands of ounces of the heavy metal each year, for use in the chemical and jewelry industries.

Science News Letter, June 4, 1938

AERONAUTICS

Place in the Air Predicted For "Windmill" Plane

Plane That Can Take Off Almost Straight Up and Can Hover Low Over the Ground Has Many Uses

WRITE this in your book: a place in the air for the "windmill" aircraft within five years.

Aviation men and others are freely predicting widespread adoption of the new autogiro that is emerging today from years of quiet experimental work without benefit of publicity. A rapidly-growing list of uses is being compiled for new varieties of the "windmill" plane that can do things no ordinary airplane can duplicate.

One of the new autogiros demonstrated by W. Wallace Kellett of Phil-

adelphia, an outstanding designer, took off in 25 feet. It landed almost literally on a dime—the wheels struck the earth and stopped, hardly moving a millimeter.

Up in the air it stood stock still, it moved sideways, it turned as though an axle pierced the fuselage.

And the pilot did all that simply by maneuvering the three whirling blades above the fuselage of the newest type of rotatable wing aircraft.

Abilities such as these have the Army interested. Navy men are curious, too,

and so are foresters, Coast Guardsmen, persons concerned with air mail and others. It will not be long, the autogiro's backers hope, before these uses become realities.

The autogiro has come a long way during the decade since the late Senor Juan de la Cierva, its inventor who was killed in the crash of a transport plane in 1936 in just the kind of accident he sought to prevent with his odd-looking craft, brought it to the United States.

Today, the trim machine demonstrated by Kellett has no wings, depending for its lift entirely on the whirling blades. With a 225-horsepower motor powering a propeller to give it forward speed and turning the overhead blades for the take off, the autogiro can make 125 miles an hour; it can lift more, rise more sharply and quickly than the predecessors which attracted so much attention hardly more than half a dozen years ago.

For Observation

The Army wants it for "spotting" artillery fire and for observation and reconnoitering. The autogiro would also be useful for liaison operations.

The Navy may find it useful for "spotting" naval gunfire for it has the advantage of being able to hover, yet being so maneuverable that it can follow the course of an enemy fleet. In addition, the autogiro is easily carried on a battleship or smaller war vessel. It needs less space to take off than is occupied by the catapults required by present-day scouting planes. In addition, it can land dead on the ship; battleships today must pick up their seaplanes from the surface of the water.

Airplanes are already in wide use for dusting fields with insect poisons, but it is a risky business, moving along at nearly 100 miles an hour only a few feet above the ground. Hence, another use is seen for the autogiro: hovering a few feet above the ground spreading a chemical cloud is not a risky business for the rotatable wing aircraft. Spotting diseased trees has also been successfully accomplished.

Peace Uses

Perhaps chemical forest fire extinction is too expensive to be practical, but the nimble autogiro can bring supplies to forest fire fighters in isolated spots and hover a dozen feet over the men, dropping its load exactly where it is wanted.

Another use may be found in life-saving activities of the U. S. Coast



STRAIGHT UP

The autogiro is shown here rising almost vertically from the landing field. It differs from the Helicopter in that it has a regular propeller to give it forward speed and provide the airstream that whirls the rotor. In the passenger's seat, the Science Service staff photographer snaps a view of the propeller during takeoff.