

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."

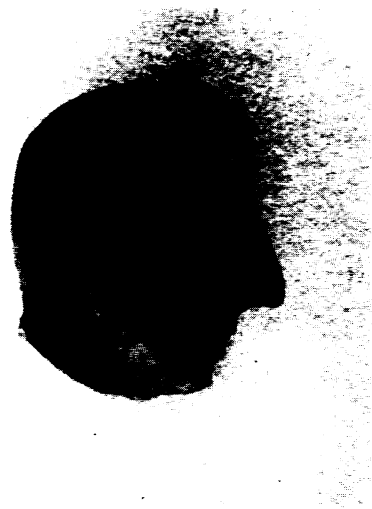
Science News Letter, June 4, 1938

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.