GENERAL SCIENCE

New Sports Records

British scientists are checking to see how the pull of gravity affects records set for shot put, javelin, broad jump or pole vaulting in athletic contests.

➤ THE PULL of gravity may have something to do with whether a primed athlete sets a new international shot-put, javelin, broad-jump or pole-vault record.

This is the theory of some British scientists who currently are looking into the matter at the National Physical Laboratory near London.

A scientist at the National Bureau of Standards said the difference between the North Pole "g" and the equator's "g" is usually too small to notice without delicate scientific instruments.

A 200-pound athlete at the North Pole would weigh 199 pounds at the equator. However, a shot weighing 16 pounds at the Pole would weigh only 1/200 less at the equator, or 15.92 pounds—a loss of only 1.28 ounces.

This is because the earth bulges at its middle. Centrifugal force, which tends to sling things off the earth, also is stronger at the equator.

The theory holds that the "weaker" gravity nearer the equator will permit an athlete to jump slightly farther, to hurl the discus a few inches more or to vault a bit higher. The effect would be equal for all the contestants, however.

Since Melbourne, site of the 1956 Olympics, is about 22 degrees closer to the equator than Helsinki, site of the 1952 games, British scientists are predicting that many records set in 1952 at Helsinki will be broken in 1956, "providing athletes make exactly the same efforts and that all other conditions, excepting the site, remain unchanged."

The effects of high altitudes and low barometer readings on the human body are complex and receiving much scientific attention. However, except for the way they would affect the athlete's physical performance in a contest, they should not materially affect the distance a shot is putted, a discus is hurled or the height a trackman vaults, in the opinion of Dr. Walter Ramberg, chief of the mechanics division of the National Bureau of Standards.

He said a thin atmosphere, such as is found in the Andes, would produce a little less drag on a shot, but probably not enough to increase materially the distance it is hurled.

It is impractical, however, to separate in theory the performance of an athlete's body and the performance of the athletic equipment such as shots, javelins and discuses.

Obviously the distance a shot is putted depends, among other things, upon the force the athlete can muster. In a high altitude, the unacclimated man may feel "breathless" and may turn in a poor performance—even if his missile meets less air resistance due to the altitude.

Science News Letter, August 14, 1954

ASTRONOMY

Model of Universe

➤ A THOUSAND million golf balls scattered about 20 feet apart throughout a sphere five miles in diameter would give a model of the universe as it is now observed with the world's largest telescope, the 200-inch giant Hale telescope atop Mt. Palomar in California.

If the golf balls were replaced by objects ranging from buckshot to footballs, and if they were clumped together at random into groups of various sizes, the model would be still closer to the largest volume of space man can now explore.

The golf balls in this model represent the nebulae, or giant star systems like the Milky Way, and instead of a sphere five miles in diameter, the real sphere of our universe is so big that the horizon is two thousand million light years away.

Each nebula, or star system, consists of thousands of millions of stars drifting together through space. These nebulae are scattered singly and in groups of various sizes up to great clusters and even clouds, represented in the model by the buckshot or the footballs.

When very large volumes of space are compared, the tendency of nebulae to cluster averages out, and the distribution so far observed is everywhere and in all directions very much the same.

The average distance between neighboring nebulae, when the clustering is taken into account, is about four million light years, equivalent to the 20-foot distance between golf balls in the model. A light year is the distance light travels in one year, or six million million miles.

If the observable sphere is a fair sample of the universe, and astronomers believe that it is, then the universe is the same throughout. The five-mile sphere filled with golf balls as a model of the observable universe was drawn by the late Dr. Edwin Hubble of Mt. Wilson Observatory.

Science News Letter, August 14, 1954

• RADIO

Saturday, August 21, 1954, 3:15-3:30 p.m. EDT

"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Dr. Henry B. Hass, president, Sugar Research Foundation, will discuss "The Science of Sugar."

ASTRONOMY

European Astronomers Discover New Comet

➤ TWO EUROPEAN astronomers have discovered a new comet, their second such discovery in less than a month. (See SNL, July 17, p. 36.)

The comet, now known only as 1954f, is of ninth magnitude. It was found on July 28 by L. Kresak and M. Vozarova, both of Skalnate Pleso Observatory in Czechoslovakia, in the constellation of Camelopardalis, the giraffe. On July 28, its coordinates were 6 hours, 56 minutes in right ascension, and its declination a positive 65 degrees, 52 minutes.

With a small telescope and good visibility, the new comet can be seen most of the night as it swings from west to east under the pole star in the northern sky.

Science News Letter, August 14, 1954

VETERINARY MEDICINE

Heat Hard on Cows, Heaviest Suffer Most

➤ HOT, SUNNY weather is harder on cows than on humans. The heaviest cows suffer most, except for Indian Brahmans.

The reason cows suffer from the heat is that they cannot perspire and so get rid of heat. The heavy breeds, such as Holsteins, suffer more because they have less skin area per pound of weight and so have greater difficulty ridding themselves of the sun's radiated heat.

Brahmans, a heavy breed, come off better than the lighter Jerseys because of their big ears, dewlaps and navel flap which act as "built-in radiators." The extra skin area helps dissipate the heat.

Tests showing how breed affects heat tolerance and why were made by U. S. Department of Agriculture engineers and dairymen of the Missouri Experiment Station at Columbia, Mo.

The tests showed that hair color has some effect on an animal's ability to tolerate radiated heat, but more significant was the ability of the cows to change the texture of their coat as temperatures increased. Coarse shaggy hair was replaced by fine, glossy hair that absorbed less and reflected more of the sun's radiation.

The lighter hair of Brahmans, Jerseys and predominantly white Holsteins reflected more radiated heat in the visible light spectrum, but the predominantly black Holsteins showed excellent ability to reflect invisible infrared radiation.

Science News Letter, August 14, 1954