ATHLETICS—PHYSICS

New Time For 880?

Star athletes looking for a chance to break a world's record on the running track should tackle the 880-yard run.

This suggestion comes not from a coach or trainer but from recent calculations made by Dr. Earle R. Hedrick of the University of California, editor of the *Bulletin of the American Mathematical Society.* According to Dr. Hedrick's diagram of the situation, the record of 1 minute 52 seconds, made in the 880-yard race represents the least worthy performance among the recognized world's record races from the hundred-yard dash to the two-mile run. It is reasonable on this basis to expect somebody to cut five seconds from the present record without setting a new standard of human strength and endurance. On the other hand, it is considered unlikely that aonyone will lower the record of 47.4 seconds for the 440-yard curved-track race.

Adopting the rule that fatigue bears a direct mathematical relation to distance traveled, Dr. Hedrick was able to draw a smooth logarithmic curve which tells at a glance what a record performance should be in a race of any distance above 100 yards. The shorter races are not considered because of the relatively great errors due to the time of getting started. In his diagram the mathematician finds that the 220-yard, the 440-yard, and even the 100-mile record all fall nicely on an orthodox line and are thus tentatively assumed to indicate a maximum human performance. At least no record in any other race is better. The 880-yard and mile records, however, run as much as five seconds too high. Inasmuch as the 880-yard distance is the shorter of the two, the deviation here has the most significance of any recorded. Unless there is some physical factor, still unknown, which should enter the mathematical equation, the 880-yard mark looks to be the easiest of conquest.

An important use of this athletic diagram comes in the attempt to evaluate European records based on races run with metric measurement. A 1000 to 1500 meter race, which calls for a degree of fatigue not corresponding exactly to any American race, is thus readily checked and appraised. The suggestion has been made that an athletic prize should be awarded to a runner not for breaking some odd record that happens to be extant, but rather for convincing the sporting mathematician that he can

(*Just turn the page*)

ELECTRICITY

Cable Works as Push Button

A new type of electric cable for small currents, such as those used for sounding bells and buzzers and for starting and stopping machinery, has been invented by a Hungarian electrical engineer of Berlin, Oscar Nagy. It does away with the necessity of having push buttons at set points, for if the cable is squeezed at any place throughout its length the circuit is completed and the current does its work. This is accomplished by having the wires woven into a sort of loose braid, separated by an elastic non-conductor, which permits contact when pressure is applied.

Many uses are suggested for the new cable. It is expected to find a large use around complicated machinery, where threatened accidents to either operator or material demand instant stopping. Since it can be operated with feet, knees, elbows, or any part of the body, its advantage over ordinary types of switches and levers is obvious. Hidden beneath carpets or otherwise concealed, it is expected to be useful in burglar alarm systems. Strung along trenches, or along the sides of naval vessels, it will enable officers to signal to their men from any point, and by rapid successive pressures messages can be transmitted in ordinary Morse code, making it an emergency telegraph system.

An especially interesting safety application is found in its use in mines and quarries, where a fall or slide of rock automatically sounds its own emergency signal.

Science News-Letter, July 9, 1927

MUSIC

New Bow Plays Four Strings

A new type of violin bow, or rather a new rediscovery of a very old type, which permits the playing of four-part music on a single instrument, has recently been demonstrated in Berlin by a well-known virtuoso, Herman Berkowski. The bow is deeply curved instead of straight, as in the usual modern form, and the strings are left very loose. It resembles the bows shown in medieval pictures of performers on the ancient Celtic chrotta or crewth, the ancestor of the violin. It is stated that the new bow makes possible the rendition of early violin scores which have hitherto been riddles to modern performers because they called for the simultaneous reaching of strings impossible to the straight bow.

Science News-Letter, July 9, 1927

ZOOLOGY

Flood Leaves Fishes Dry

Retreating waters of the Mississippi River have begun to leave in their wake a new set of flood victims—millions of stranded fishes. Letters from residents of states along the lower Mississippi have already been received by the U. S. Bureau of Fisheries asking the bureau to come to the rescue.

The bureau is making plans for an unusually extensive program of rescue work along the lower Mississippi this summer, according to G. C. Leach, chief of the division of fish culture. The rescue crews ordinarily do most of their fish saving in the upper Mississippi region, he said today, but this year the upper Mississippi situation is not expected to be serious, as snowfall has been plentiful and this will tend to prevent rapid drying out of river beds.

Each year, wherever the water is unusually high, adult fish are carried out of the main channel of the river. They spawn in these backwaters, and when the rivers become low, innumerable young fish are left stranded in shallow ponds and depressions that rapidly dry up. Rescue crews catch them in seines and transport them to the river, thus saving the lives of from 100 million to 200 million young fish each year.

Science News-Letter, July 9, 1927

PHYSICS

Hydrogen Atoms Last

Hydrogen, one of the most common of all elements, since it is one of the two constituents of water, may survive as single atoms for longer than hitherto supposed, according to the work of Joseph Kaplan, in the Physics Laboratory of Johns Hopkins University. Ordinary hydrogen gas consists of two atoms joined together to form a hydrogen molecule, but the two atoms may be pulled apart, and in this form it has many properties not possessed by the molecules. For instance, by a method of welding invented recently by Dr. Irving Langmuir, of the General Electric Company's research laboratory, burning atomic hydrogen is used to weld pieces of metal together so that they are as strong as an ordinary single piece. It has been believed that the free atoms were only able to last for a fraction of a second. Mr. Kaplan finds, however, that the atoms may survive as long as three seconds before joining together again into molecules.

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