

PHYSICS

New Time Standard

International Astronomical Union meeting in Rome expected to approve use of sidereal year instead of solar day as time standard for the world.

➤ A NEW standard of time may be adopted by astronomers now meeting in Rome, Italy.

If a new standard is adopted, it will not make any real difference to your watches and clocks. In fact, you will probably not even know when the standard is put into effect.

It is the sidereal year, the time it takes the earth to complete one trip around the sun, that will probably be adopted. It will replace the solar day, the time it takes the earth to complete a rotation about its axis.

This mean solar day is now used in checking quartz-crystal clocks employed by national time services that broadcast time signals by radio.

One of the delegates to the General Assembly of the International Astronomical Union now meeting in Rome is G. M. Clemence, director of the U. S. Naval Almanac Office of the U. S. Naval Observatory. The Observatory constantly strives to issue more exact time signals for use throughout the nation. President of the commission for the study of time is Dr. Dirk Brouwer of Yale University Observatory, New Haven, Conn.

There was a time when the king's arm was a satisfactory standard of length. In fact, our familiar yard, foot and inch are derived directly from the human arm, foot and thumb joint. Also in the beginning man needed no better timekeeper than the daily motion of the sun, which he consulted first with the naked eye and later with a sundial.

But today much more accurate standards of measuring length and time are needed. We keep our standard meter-bar carefully hidden in the International Bureau of Weights and Measures at Paris, under conditions so carefully controlled that few people have ever seen it. However, we need an even more exact measure of time. The rate at which the earth turns on its axis every 24 hours is not quite exact enough.

The rate at which the earth rotates has been found to vary in three distinct ways:

1. The earth is gradually slowing down. It is doing so at such a rate that the length of the day is increased about 0.01 second in a century.

2. In the spring the earth rotates at a slower than average rate; in the autumn it rotates a little more quickly than usual. As a result, clocks in the autumn are about 0.06 second ahead of what they are in the spring.

3. The earth is sometimes ahead of its average orientation and sometimes behind. During the past two hundred years the ac-

cumulated error in the measure of time due to this irregular variation has amounted to as much as 30 seconds.

The question of a better standard of time than the mean solar second was referred to the General Assembly of the I.A.U. at its last meeting, held four years ago, by the International Bureau of Weights and Measures. It was considered in 1950 at an international conference on the fundamental constants of astronomy. At that time it was recommended that the sidereal year be officially adopted as the fundamental standard of time, to be used where the mean solar second is not suitable by reason of its variability.

The sidereal year has already been used as the fundamental standard of time by astronomers in special studies and found satisfactory. The nearness and rapid motion of the moon, not itself suitable for use as a fundamental standard of time, assist us in obtaining ready access to the sidereal year.

Astronomers and time experts feel sure it will be approved at the meeting as the new standard of time.

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250-MILE-AN-HOUR TIRE—R. D. Van Arnamm here prepares a new tire to make simulated high-speed landings in the Firestone Tire and Rubber Company's laboratory at Akron, Ohio.

• RADIO

Saturday, Sept. 13, 1952, 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. M. H. Trytten, director of the Office of Scientific Personnel of the National Research Council, and Dr. Bernard B. Watson, professional and scientific personnel specialist of the Defense Manpower Administration, Department of Labor, discuss "Science Youth Activities."

GENERAL SCIENCE

New Chemistry-Geology Building in Los Angeles

➤ PLANNED FOR what many persons believe will be the "Chemical Age" of the next half century, a new \$4,500,000 Chemistry-Geology Building has been completed at the University of California at Los Angeles.

It is considered one of the best teaching and research plants of its kind in the West and is being made ready for classes of the fall term beginning next month.

The new building's chemistry facilities can train each term 1,500 freshmen, 375 students in quantitative analysis, 500 in organic chemistry, 90 in biochemistry and 150 in physical chemistry.

There is also laboratory capacity for 100 graduate students doing research and 13 post-doctoral research labs. In addition, there are 24 office-laboratory suites for the research work of staff members.

The geology wing contains modern classroom-laboratories, research laboratories, seminar rooms, a large geology library, a museum for displaying rocks, minerals and fossils, and space for the Institute of Geophysics.

The five-story structure with 160,000 square feet of space is, in fact, six separate buildings. They are separated by about six inches and give the group unusual protection from earthquakes.

Science News Letter, September 6, 1952

TECHNOLOGY

Fast Jet Landings With New Nylon Tires

➤ MILITARY AIRPLANES will be able to hit the runway at speeds of 250 miles an hour without tire trouble with a new nylon tire that incorporates construction principles already proved successful in automobile racing tires.

Developed by the Firestone Tire and Rubber Company, Akron, Ohio, the tire utilizes high-strength nylon and gum-dipped fabric incorporating racing-type construction and compounds. Already one of these new aviation tires has survived 50 simulated landings at 250 miles an hour in a laboratory test made by U. S. Air Force engineers. In these tests the aviation tire makes sudden contact with a rapidly revolving "grindstone" wheel.

Science News Letter, September 6, 1952