

In addition, it is a radiobeacon station and provides radio beams which ships may follow by radio direction finders. One important feature of the installation is that it is automatic in operation and requires servicing only about once a month.

The U. S. Coast Guard will keep close check on the operation of the new lighthouse from a light station four miles away. The three-story structure is designed to withstand earthquakes and wind and wave forces. Its 36-inch airway beacon-type lantern, producing 140,000 candlepower, will flash a warning light around the horizon every five seconds.

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PHYSICS

International Temperature Scale Has New Refinements

► THE so-called International Temperature Scale, as revised in 1948 with refinements based upon 20 years of experience, is now in use at the National Bureau of Standards in its own research program and in calibrating instruments for other scientific and industrial purposes.

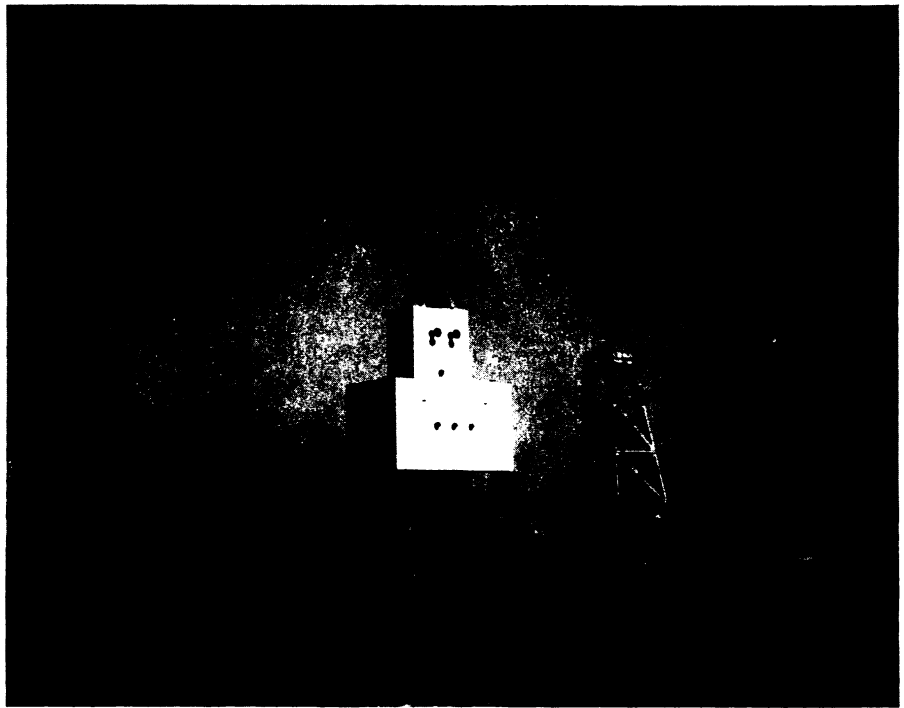
This revised scale was adopted in Paris by the Ninth General Conference on Weights and Measures last October. It is the first revision since its original adoption 21 years ago. Although the 1927 scale proved useful in providing a stable, uniform, and precise basis for obtaining temperatures, later increased precision attained in temperature measurements made a revision desirable.

The scale is based upon six reproducible temperatures, or fixed points, to which numerical values are assigned. The six fixed points of the 1927 scale were the boiling of oxygen (-182.97 degrees Centigrade), the freezing and boiling points of water, the boiling point of sulfur (444.60 degrees Centigrade), the melting point of silver (960.5 degrees) and the melting point of gold (1063 degrees). The same fixed points are specified in the 1948 scale except for a change in the silver point from 960.5 to 960.8 .

From 190 degrees below zero Centigrade to 660 degrees above, the measure of temperature in the 1927 definition was based on the indications of a standard platinum-resistance thermometer used in accordance with specified formulas. From 660 degrees to the gold point a platinum-rhodium thermocouple was the reference instrument. Above that, the optical pyrometer has been standard.

In the 1948 revision, the standard platinum-resistance thermometer is to be used from the oxygen point to the freezing point of antimony (above 630 degrees) rather than over the range from -190 to 660 degrees. Platinum of higher purity is also specified for the standard resistance thermometer and the standard thermocouple.

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NEW AUTOMATIC LIGHTHOUSE—On the breakwater of Los Angeles harbor stands this first-erected new type of lighthouse, which in addition to its beacon-type lantern and foghorn provides radio beams for ships to pick up.

GENETICS

Survival by Selection

Experiments with bacterial colonies have shown that the environment acts as a selective agency on the survival of organisms.

► WHAT looks at first glance like a clear case of Lysenkoist heredity, in colonies of bacteria in the laboratories at Columbia University, proves upon critical examination to be "orthodox" Mendelian heredity after all, with environment serving merely as a selective agency acting on organisms whose heredity is already fixed, to pick out those able to survive when the environment is changed.

Bacteria were chosen by Dr. Francis J. Ryan as subjects for his experiments largely because they can produce a new generation in 20 minutes, instead of the 20 years required in human beings. Strains were found that required the presence of one environmental factor, one of the amino acids, for survival.

Then this amino acid, known as histidine, was withdrawn from the environment. Nevertheless, bacterial colonies continued to reproduce and grow, no longer needing the histidine.

This looks like a hereditary change induced by a change in the environment, which the Lysenko school of biological

thought in the USSR insists is the only true mode of heredity.

What actually happens, however, is that in the original, histidine-requiring colony there are a few bacteria already present that can get along without the amino acid needed by all the rest. When the histidine is taken away, the other bacteria die off, while these survive and multiply, until finally the entire colony consists of their descendants.

A parallel case might be pictured on the human scale, although Dr. Ryan does not use this illustration. Suppose there were, on an imaginary island, a colony of 10,000 Chinese used to living on rice and fish, with 50 Eskimos scattered among them. Suppose then that the rice and fish gave out, and that the only available food thereafter were seal-meat and whale-blubber. After several generations there would be no Chinese left, and the whole population would consist of Eskimos. This is not an absolute parallel, since food habits are probably not fixed by genes; but the situation is at least close enough to be illustrative.

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