

Eli Lilly and Company of Indianapolis, to be given annually to an eminent investigator selected by the Association.

To diagnose radium poisoning, Dr. Evans uses a sensitive radiation detector called a screen-cathode quantum counter which detects the presence of minute amounts of radium's deadly gamma rays. Treatment of the condition consists essentially of a process of rinsing out the radium-contaminated calcium and replacing it with fresh pure calcium. The

rinsing out is done by giving parathyroid gland hormone which depletes the calcium in the bones. To make them hard again, more calcium must be given in the diet or as medicine. The method depends on the fact that radium and calcium are very similar in chemical properties and consequently any radium taken into the body tends to accumulate in the same structures—the bony framework—where calcium accumulates.

Science News Letter, July 17, 1937

METEOROLOGY

Long Range Forecasts Unlikely to Be Attained

HOPEFUL but uninitiated people who envision long range forecasting of the weather as providing detailed information on a given day and hour and place are doomed to probable disappointment.

Hurd C. Willett of the Daniel Guggenheim Aeronautical Laboratory of the Massachusetts Institute of Technology took the "Almanac" type of forecast out of the realm of long range weather predicting at the meeting of the American Association for the Advancement of Science in Denver.

Accurate, short-range forecasts predicting local conditions can only be obtained when the full knowledge of widely distributed meteorological conditions are available both from ground stations and from aloft. This full knowledge is necessary, Mr. Willett pointed out, because the specific air masses are continually forming and disintegrating.

But, he added, "It seems rather improbable that the detailed development of [air mass] systems yet unborn can ever be forecast."

Long range forecasting, on the contrary, is based on the known fact that frequently pronounced weather abnormalities may persist over considerable areas for weeks, months and even years. The approach to the problem has been by two methods: the statistical method, using past records of weather and correlating them with an almost endless variety of variables; and the synoptic method, using synoptic charts or weather maps.

The weakness of the statistical methods, said Mr. Willett, lies in the fact that they are empirical shortcuts which have no concern at all with physical causes of the weather. Studying weather maps,

carefully prepared daily, however, furnishes a current picture of general circulation of weather over large areas. By studying this general circulation pattern it should be possible to see the influence of the pattern on contemporary weather conditions. A second aim would be to detect, if possible, empirical clues as to the future state of the weather circulation from its current state and tendencies.

For the past year, Mr. Willett indicated, meteorologists at Massachusetts Institute of Technology have been making such daily weather maps and studying them. They have found that during the colder half of the year the principal centers of weather action are the high pressure areas in Siberia and North America and the low pressure areas over Iceland and the Aleutian Islands. Important too are the subtropical high pressure areas over the Pacific and the Atlantic.

Last winter the abnormal warmth in the eastern states through December and most of January appeared due to the westward extension of the Atlantic high. Where this high met the cold mass over the continent there were heavy rains. In the Ohio Valley this led to floods.

In the West last winter's weather was marked by the abnormal disappearance of the customary Aleutian Island low pressure area and its replacement by a persistent high pressure area. This led to persistent cold air masses over the west and the usually warm mild Pacific air went north over the ocean instead of over the west coast of the United States. The western severe winter resulted.

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FAST BALL

Wesley Ferrell, crack mound ace of the Washington Senators, shows how he holds his fast ball. On the facing page, see how a pitcher's hand looks to the eye of the X-ray camera.

PSYCHOLOGY

Brain Waves Like Human's Found in the Guinea Pig

BRAIN waves, those electric impulses that are detected in the human brain itself, are probably not associated with the higher thought processes of man.

The same sort of brain rhythms have been obtained from the brain of the humble guinea pig, it is reported (*Journal of Experimental Psychology*, July), by Drs. H. H. Jasper, C. S. Bridgman, and Leonard Carmichael of The Bradley Home, Brown University and the University of Rochester.

This brain wave pattern, known to scientists as the "alpha rhythm," is not outstandingly characteristic of the electric messages ordinarily sent out by the guinea pig's brain, the investigators said, but it is possible to record from the guinea pig brain, electrical variations which in frequency, regularity and continuity, present the same nature as a good record of alpha rhythm from the human cortex.

"The findings of well-developed alpha rhythms in the guinea pig would lead one to believe that this phenomenon is connected with some basic neurological mechanism, rather than with any higher elaboration of nervous function found only in the primates," the psychologists conclude.

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