



METEOROLOGY

# New Weather Map Symbols Recall Indian Picture Writing

## Presence and Movement of Air Masses Shown For First Time; Use Will Spread to All Cities

See Front Cover

**W**EATHER maps are going to have a radically different appearance before long. They will be speckled all over with new symbols that look like Indian picture-writing, with a suggestion of shorthand thrown in.

They won't be hard to read, however. Most of them have a graphic resemblance to the thing they are intended to indicate. Thus, a round dot means rain, a six-pointed star means snow, a white circle means a clear sky, a down-sloping line means falling barometer, and so on.

Cloud shapes have their symbols, which are really rough sketches of their outlines. The flat-bottomed, round-topped "woolpack" or cumulus clouds are indicated by a half-circle. A half-circle surmounted by the inverted base of a triangle signifies the lightning-charged cloud we see on hot summer afternoons, known as the "anvil" cloud or cumulonimbus. Symbol and cloud are both shown on the front cover of this week's *SCIENCE NEWS LETTER*. A straight line ending in a short curve or hook suggests the streaky, curve-ended clouds called "mares' tails" by sailors and cirrus by meteorologists.

All the symbols of the new map are as simple and graphic as that.

On each day's map, every city where there is a Weather Bureau observatory will have spotted alongside it a cluster of these symbols. Anyone who has learned the "alphabet" will be able to tell at a glance that city's temperature, barometer state, degree of cloudiness, direction and force of wind, and other weather facts.

Missing from the new maps will be the old familiar curved lines that passed through points of equal temperature—the isotherms. Isobars, marking regions of high and low pressure, will survive,

but they will be more widely spaced than at present. Significant introductions will be indications of air masses, with letters showing polar or tropical origin, and whether they are warm or cold. The fronts where they come in contact will also be shown; it is at these fronts that liveliest weather changes often take place.

Observations for the making of the new maps will be taken at 1:30 a.m. instead of 7:30 as at present. This will enable the Weather Bureau to distribute the maps earlier in the business day when they will be of more use.

The new maps will be printed and used first in Washington, D. C. Later,

WEATHER SIGNS

*In the sign language of Uncle Sam's new weather maps, these symbols (from left to right) stand for rain, snow, thunderstorm, heavy squalls, blizzard, mixed rain and snow, hurricane, thunderstorm with hail, and sky nine-tenths clouded.*

they will replace the old-type maps in other cities. The rate at which the change-over will take place will depend largely on how rapidly funds can be made available for the alterations in the map-printing equipment.

*Science News Letter, August 23, 1941*

PHYSICS

## Change from Wave Lengths To Frequencies Proposed

**J**UST as in the case of our radios, where wave lengths have been abandoned for kilocycles or frequencies, it is now proposed that the same change be made in optical work—for light is also a wave similar to the radio waves but of much shorter wave length, or, what is the same thing, of much higher frequency.

For many years those dealing with



MARES' TAILS

*A hooked line suggests the shape of the wispy mares' tails or cirrus clouds such as these.*

light have been accustomed to measure what is called the resolving power of a spectroscope, which is the same thing as the selectivity of a radio set, by the smallest difference in wave lengths that the instrument could distinguish. Now it is proposed to use for this purpose the

smallest difference in frequencies that the instrument can distinguish—just as has been done for our radios.

The suggestion was made by S. Tolansky of the University of Manchester. (*Nature*, July 12.)

*Science News Letter*, August 23, 1941

#### PLANT PHYSIOLOGY

## Vitamin B<sub>1</sub> Found Concentrated In Buds of Many Common Trees

**L**ARGE quantities of vitamin B<sub>1</sub>, the "morale vitamin" which exercises a beneficial effect on the human nervous system, have been found in the buds and leaves of many common American trees, by Yale University botanists.

Using a constant temperature tissue culture laboratory for experiments, the scientists found heavy concentrations of the substance in the buds of oak, red maple, horse chestnut, elm, sycamore and white pine trees.

"Although vitamin B<sub>1</sub> is now produced by synthetic chemical processes, this discovery points to a large natural source of vitamin B<sub>1</sub>," stated Prof. Paul R. Burkholder. "This finding may offer a clue to the source of essential vitamins for many forest animals."

Prof. Burkholder, who is conducting his researches in cooperation with Prof. Edmund W. Sinnott, states that the vitamin seems to be formed in the young leaves and growing points of the shoot, whence it is transported through the bark into the roots and various portions of the plant.

Experiments in which basswood and maple trees were girdled, by removing a ring of bark from the trunk early in the spring, show that almost no vitamin B<sub>1</sub> has appeared below the ring in mid-summer. Yet huge quantities of the vitamin have been found above the ring. This seems to indicate that ultimately a girdled tree may die not only from lack of food but from vitamin starvation as well.

Yale researches show that most green plants contain sufficient amounts of the vitamin for their normal growth. The amount of essential minerals in the soil and sunlight apparently influence the amount of B<sub>1</sub> which green plants are able to produce.

Vitamin B<sub>1</sub> is heavily concentrated in the buds of trees, according to Prof. Burkholder, just as it is in grain. Recently, flour refiners have sought to

increase the vitamin content of flour by restoring B<sub>1</sub> after refining has taken place in order to provide more of the material for the nation's health.

The amount of B<sub>1</sub> is measured by the amount of growth of a mold which is very sensitive and is used as an indicator plane. Growth of the indicator plant will not take place unless vitamin B<sub>1</sub> is added, and the amount of growth varies directly with the supply of vitamins.

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#### ASTRONOMY

## Distant Nebula Discovered; Looks Like Faint Star

**D**ISCOVERY of a rare type of nebula or shining cloud of gas, at a distance estimated to exceed 10,000 light years, of the Mount Wilson Observatory in a report to the Astronomical Society of the Pacific. The nebula was first detected on a plate taken with one of the smaller telescopes on Mount Wilson by William C. Miller, Dr. Merrill's assistant.

A photographic analysis of the light from the nebula made with the 60- and 100-inch reflecting telescopes revealed the presence of hydrogen, oxygen, and helium, three gases which are also found in the atmosphere of the earth. The object is approaching the earth at the rate of 338,000 miles per hour.

Dr. Merrill stated that "although the nebula resembles a faint star even when seen through the world's largest telescope, actually it is probably of extraordinary brightness and may well be several thousand times larger than our whole solar system."

He also stated that the discovery of star-like nebulae may be of considerable interest for future work with large telescopes.

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#### OCEANOGRAPHY

## Japanese Fishing Net Ashore at Wake Island

**A** JAPANESE landing has been made at Wake Island, halfway between Hawaii and Guam, where the Pacific Clippers stop. It will not be the occasion of an international "incident", however, for the landing party consisted merely of a number of hollow glass floats (which Japanese fishermen use instead of cork blocks) carrying a net lost overboard by some fishing boat. Oceanographers estimate that the long and lonely voyage of this bit of jetsam must have covered between 4,000 and 5,000 miles.

Members of the Pan-American Airways staff at Wake found the net on the coral breakwater, and sent the floats to the New York office. The floats are hollow glass globes about four inches in diameter, with a two-character Japanese inscription at the point where they were sealed shut. Similar floats are frequently found on the Pacific coast of this country, sometimes lost from Japanese boats operating on this side, sometimes perhaps having made the long journey from the opposite shore of the ocean, borne north to Alaskan waters by the Japan Current and thence down the coast.

Some of the floats picked up lately have been identical in pattern to the Japanese ones, but have borne the hammer-and-sickle emblem of the USSR. These presumably have been lost by Russian fishermen in the waters off Sakhalin island or Kamtchatka peninsula.

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#### PHYSICS

## X-Ray Tests of Fibers Show Key to Strength

**X**-RAYS are used in a new method for estimating the strength of cotton fibers, developed in the laboratories of the U. S. Department of Agriculture. Dr. Earl E. Berkley, cotton technologist, has demonstrated a direct relationship between the strength of the fibers and the "grain" of the strands of minute cellulose crystals that spiral through the fiber walls. When the X-rays show this "grain" as relatively straight the fibers are strong; when it makes a large angle with the sides the fibers are weak, like cross-grained lumber.

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