

ments. Some of the plants are attacked by germs, or bacteria as they are technically called, and the parts of the plants the germs can not destroy likewise sink to the sea bottom, where, together with all the other organic matter (carbon compounds) that have accumulated in the sediments, they are attacked by yet other animals and germs, and still more indigestible residues are formed. It is from these unusable residues that oil is generated.

Oil is not formed in soft sediments. No trace of petroleum is found in sediments now being deposited. A considerable time after the sediments accumulate, perhaps millions of years afterward, chemical changes take place which transform the bacterial excrements into oil. Today, oil chemists believe that only certain of these undigested residues can be transformed into oil.

Studies of more than 30,000 samples of rock, mostly from drill-cuttings, have shown geologists that a complex chemical property of the rock, called the nitrogen-reduction ratio, is a valuable clue to its oil possibilities. While not an infallible clue, the presence of a high nitrogen-reduction ratio is a good indication of no oil, while a low ratio indicates a good possibility of oil production from a suitable trap in the rock layer.

The nitrogen-reduction ratio is the best known clue to the oil possibilities of a rock. It does not work for every sediment, just as radium will not cure every cancer, but the "batting average" of the nitrogen-reduction ratio test is high. Like radium in the cure of cancer, the nitrogen-reduction ratio offers promise in the finding of oil, but further research will be necessary on both radium and the nitrogen reduction ratio before their full possibilities become useful.

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Science News Letter, December 11, 1937

Many peoples of the world have used gourds as bottles and dippers.

METEOROLOGY

New Observatory Can Stand 200-Mile-an-Hour Winds

By DR. CHARLES F. BROOKS

Professor of Meteorology, Harvard University; Director, Blue Hill Observatory

See Front Cover

AFTER five years in the stage office of the Mount Washington Auto Road Company, the famous weather observatory on the summit of this stormy mountain has just moved into a building of its own.

By direction of Col. Henry N. Teague, president of the Mount Washington Railway Co., an extraordinarily sturdy building has been constructed. People who have ridden on the cog railroad have noted the size of the timbers making up the trestle on Jacob's Ladder and elsewhere—9 x 10 inches and 24 feet long. These same timbers when replaced have been cut to 22 feet and mortised for the framework of the new building.

It is probably safe to say that nowhere in the United States is a frame building of more solid construction to be found.

The Observatory wants to take no chances of being blown away if another 200 mile-an-hour wind comes along! In such a wind in April, 1934, the Stage Office danced about as much as its heavy chains would permit, and its walls now and then bellowsed in and out. The pressure inside the building varied between gusts by 0.2 inches on the barometer. This is the equivalent of a change of pressure of a ton on the surface of the building in the course of a few seconds.

Mt. Washington, highest peak in the northeastern United States and therefore a mecca for summer tourists and hikers, has had many buildings erected on its summit during the course of the last century. Everyone of the old-timers with the exception of Tip Top House burned down in the great fire of 1908. Two of them blew down. Today most of the buildings atop the peak are chained down.

The basal frame of the new building is fastened to ten long bolts that extend downward at least five feet into rock or huge blocks of concrete poured in holes among the rocks. The corners of this frame are bound with heavy diagonal steel rods.

The frame consists of twelve big uprights suitably connected by horizontal

timbers at the level of the second floor and all braced by 6 x 6's. The rafters are 3 x 8's closely spaced. It is obvious that if the building is to blow away it will have to go as a unit and take a chunk of the mountain top with it.

The windows for the Observatory are of double plate glass presented by the Pittsburgh Plate Glass Company, which will have a chance to prove their strength and insulating qualities under the severe conditions experienced on the mountain in winter. Several of the window units are fitted with thermocouples.

The building is now completed except for minor inside work. It has for walls one layer of shingles much overlapped, two layers of boarding, two layers of paper, one layer of Cabot quilting (a gift of a warm-hearted friend), and one layer of fireproof wallboard. It is not anticipated that much wind will come through this!

Heat is supplied from a hot-air furnace, and water from a 2,500-gallon tank inside the building, filled with water from the Base Station by the pump of the Mt. Washington Club. Before spring, water obtained from melting rime will probably be more palatable than the tank water.

The building is to be rented from the cog railway company by the corporation which has been formed to operate the observatory building. The corporation aims to "make, summarize and report scientific observations, chiefly geophysical, in the vicinity of Mt. Washington, New Hampshire; to conduct radio studies on Mt. Washington; and to further public safety and public appreciation of scientific work on Mt. Washington."

The U. S. Weather Bureau will continue to maintain half of the personnel of the observatory and a portion of the instrumental equipment as well, while the Blue Hill Observatory of Harvard University will direct the scientific activities and supply such special apparatus as may be needed.

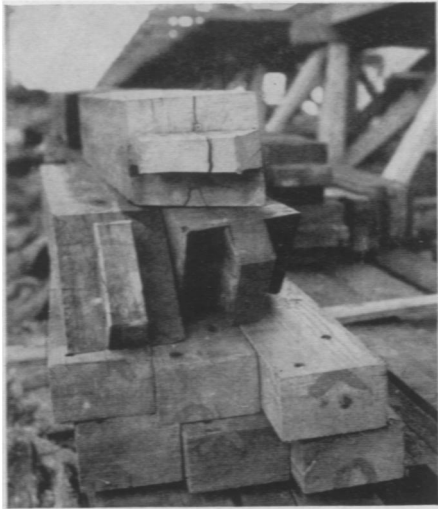
The financial support of the observatory, outside of the Weather Bureau's participation, is chiefly from the state of New Hampshire, which has appropriated \$1,500 toward expenses this year; various interested organizations and in-

● RADIO

December 16, 4:15 p. m., E.S.T.
WIVES BY THE DOZEN—IN AFRICA—
Rev. Edward Ward of the Catholic University of America.

December 23, 4:15 p. m., E.S.T.
THE CHRISTMAS STAR—James Stokley
of the Franklin Institute.

In the Science Service series of radio discussions led by Watson Davis, Director, over the Columbia Broadcasting System.

**STRONG**

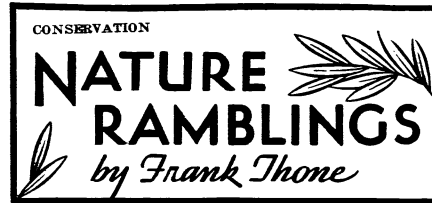
This close-up shows the special construction designed to stand against strong winds.

dividuals, and a few commercial firms.

The breadth of popular interest is evident from the fact that while mostly residents of New England, the members are spread all over the United States. Dr. J. Bjerknes of Norway and Dr. J. Jaumotte of Belgium, famous for their upper air studies, are honorary members. Two hundred annual members at one dollar each are already enrolled in the corporation. In this respect the organization resembles the Sonnblick Society in Austria which, with a worldwide membership, continues to operate an observatory on the summit of Sonnblick at 10,170 feet.

Special investigations which are planned at Mount Washington for the immediate future, all of them in continuation of previous studies of the same phenomena here, are experiments with floating balloons to mark the vertical motions and turbulences of the wind as it passes over the summit; development of a more efficient means of obtaining a continuous record of wind direction and velocity than the internally heated anemometer and wind-vane on a summit where ice so frequently forms; studies of the rate of deposition of ice on an experimental airplane wing under different conditions of humidity, cloud density and wind velocity; the times of arrival of fronts in comparison with those in surrounding lowlands; the more accurate measurements of the precipitation on this windy summit; and variations in ultra-high-frequency radio transmission between the summit, Blue Hill and other points in relation to the stratification of the air.

Science News Letter, December 11, 1937

**Pass the Greens!**

NOTHING would seem less of a menace to our forests and soil than the purchase of a few yards of ground-pine garlanding, or wreaths of native holly, to make the house gayer as Yuletide approaches. Yet care must be exercised in the use of even these minor products of the woods, for over-zealous market collectors have wrought real devastation in areas tributary to our larger cities.

Holly of course is not a major element in our American forests. It grows fairly freely in the deciduous woodlands of the eastern part of the country, except in the northern areas where winters are too severe. It is mainly a small tree of the under-story, though specimens growing in the open may reach a height of forty feet or more. Its timber uses are very limited; its chief value is esthetic.

For that very reason, however, it should be spared. We are taking to the woods more and more for our recreation, and it would be a sad pity if any integral part of them should be torn out and dragged to town to die after brief use. The Wild Flower Preservation Society recommends purchase of English holly instead of the duller-leaved, sparser-berried American species. English holly is grown in this country now, so buying it encourages legitimate growers at the same time that it saves the native holly in the wild.

For the fine, prickly-leaved stuff we call ground pine, there is no imported or cultivated substitute. So if you insist on ground-pine garlands the gatherers for market will have to go out into the forests and strip the soil, exposing it to erosion and upsetting the ecological balance generally. Better to step out of the market for living garlands altogether,

and use some of the bright, attractive manufactured substitutes abundantly available nowadays.

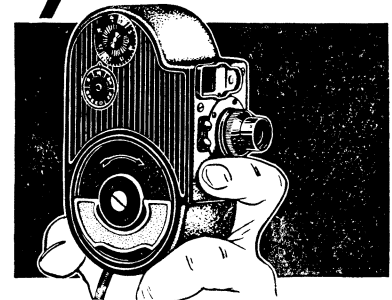
One kind of Christmas greens you can use, however, with never a frown from conservationists. Mistletoe. This Yuletide ally of Cupid is no asset to any forest it grows in, for it is a parasite on the trees and when too abundant can do considerable harm. So foresters are always willing to see it removed. It is only a nuisance to them, and they are glad to know that elsewhere it can be a subject of festivity.

Science News Letter, December 11, 1937

A bronze statue of Admiral Peary, in polar costume, was unveiled near his birthplace in Cresson, Pennsylvania, this year.

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