

ASTRONOMY

How Do Sunspots Affect Man's Life on Earth?

DID you know that the best vintage wines are from crops that grow in those years when sunspots are at a maximum? And that trees show their greatest growth in periods when the surface of the sun shows the greatest number of spots? Or that the Dow-Jones stock market averages follow a curve which is very similar to curves based on sunspot numbers?

These are only a few of the many remarkable, but unexplained, coincidences between the activities of plant and animal life on earth and the appearance of those gigantic electro-magnetic disturbances on the sun which man calls sunspots.

More and more scientists, and others, are probing sunspots and seeking to learn the relationship between their appearance and the multitudinous activities of earth-bound man. In his newest book "Sunspots and Their Effects from the Human Point of View," (McGraw-Hill) Dr. Harlan True Stetson, astronomer and research associate of the Massachusetts Institute of Technology, summarizes the knowledge which science now has in its possession to analyze, for the truth or falseness, the speculation on this intriguing matter.

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ARCHAEOLOGY

Britain's Stone Circles Explained; Indoor Temples?

WHEN Stone Age man and his wife in Britain came to worship at the famed place called Stonehenge, they may have had comfortable seats indoors.

In other words, the great stone circle of ruins, now one of England's prize mysteries, may once have been a covered temple.

Visitors at Stonehenge gaze up at the 16-foot stones that outline a great circle. They point out the inner circle and horseshoe of stones, and the altar-like arrangement of stones within. In their minds, they conjure up a picture of Stone Age Britons gathering in the open air by moonlight or at sunrise for strange, barbaric rites of worship.

But that prevailing picture is wrong, according to a theory advanced by Prof. A. Vayson de Pradenne of the University of Paris, in the British archaeological journal *Antiquity*. The prehistoric builders constructed a roof and

walls of massive beams and earthen plaster over the stonework skeleton, he believes. And to see what the building was like, we have only to look at an American Indian earth lodge, in the Great Plains region. Even the plan and proportions of Stonehenge bear striking resemblance to an Indian meeting house, save for the stone framework.

Technical difficulties of roofing a building 108 feet in diameter would not baffle early Britons who could move 40-ton boulders. So argues Prof. de Pradenne. Beams less than 30 feet long would have been big enough to use. A turf covering for the roof was probably added, he explains. And the completed structure would serve to keep dry the sacred objects, and the priests who must perform their duties in a climate that was even rainier than England today.

That Stonehenge was a place of worship seems logical to Prof. de Pradenne. But whether it was a meeting house, tomb, or dwelling, he believes wood and stone were combined to make it a roofed structure. And he suggests that other prehistoric ruins of giant stone may well be examined closely, to see whether they are not mere skeletons of larger structures once built with wood.

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GEOGRAPHY

New Survey Finds That Mt. Whitney Is Highest

MOUNT Whitney is still the highest mountain in continental United States, but second and third places have been interchanged as a result of recent surveys by the U. S. Coast and Geodetic Survey and the U. S. Geological Survey. The new heights for the five highest peaks in the United States are:

Mount Whitney, California, 14,495 feet, lost 1 foot.

Mount Massive, Colorado, 14,424, gained 5 feet.

Mount Elbert, Colorado, 14,420, lost 11 feet.

Mount Rainier, Washington, 14,408 feet, same.

Mount Harvard, Colorado, 14,375 feet, lost 24 feet.

The gains and losses are not actual. So far as we know, the heights of these peaks above sea level are the same now as they were a few years ago. The change in heights is due to more accurate surveys since the last set of altitudes was announced in 1936.

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IN SCIENCE

METEOROLOGY

Frost-Beauty Perfected Only With Right Conditions

See Front Cover

FROST silvers the commonest things into beauty, once in a while in early winter. We awake to find that instead of the thin, hard, blighting film of white there has been deposited during the night a thick rime of furry frost that transforms even the most commonplace garden plants and wayside weeds into Christmas-trees of fairyland.

But like the magic of the fairies, there must be an exact balance of correct conditions before this can occur. The night must be still. There must be abundant moisture in the air—even to the point of foginess. Finally, the ground and objects near it must be enough colder than the moisture-laden atmosphere to cause a precipitation of the water, not as dew, but as fine splinters of ice.

Some garden plants, transfigured by such a delicately-achieved meteorological miracle, were photographed for the cover of this issue of the SCIENCE NEWS LETTER by the late Cornelia Clarke.

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PHYSICS

Solar Cooker Exhibit Wins Medal For Designer

DR. Charles G. Abbot, Secretary of the Smithsonian Institution of Washington, D. C., has been awarded a gold distinguished service medal by the Great Lakes Exposition for his solar cooker, which has been on view at the exposition during the past summer.

Dr. Abbot's solar cooker, a boiler heated by the sun and so named because the first time Dr. Abbot demonstrated it, it was used for cooking, was one of the "Making of a Nation" exhibits. The model shown was an improvement over the one the Smithsonian scientist demonstrated a year ago. It featured an automatic control which stopped the flow of water into the boiler when the sun went behind a cloud and turned it on when the sun reappeared.

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E FIELDS

MEDICINE

Ultraviolet Light Promises Vaccine Against Rabies

A VACCINE against rabies or hydrophobia, dread disease of dogs and other animals including man made with the aid of ultraviolet light seems a possibility, as a result of experiments reported by Drs. H. L. Hodes, G. I. Lavin and L. T. Webster of the Rockefeller Institute for Medical Research. (*Science*, Nov. 12).

Dr. Webster has recently been trying to develop a more effective vaccine against rabies than the one now available. In the experiments reported it was possible, he and his associates found, to destroy the harmful quality of the rabies virus without destroying its ability when injected into mice to protect them against lethal doses of the disease-causing virus.

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ENGINEERING

Molasses Roads Adaptable For Drier Western States

SOUTHERN farmers spurred by the hope of using cotton in road building, now have an additional reason for glee in reports from India that molasses roads are a success. The prospect of finding another outlet for America's sugarcane crop is intriguing.

India's molasses highway has been mentioned previously but American highway engineers have been sitting, with their fingers crossed, awaiting details of construction and some independent analysis of costs. Now these important facts can be told, for the Department of Commerce has just received reports from Vice Consul Aubrey E. Lippincott at Madras, India; reports which they feel can be trusted.

The cost of the molasses road on the Bangalore-Mysore highway is 304 rupees per mile which comes out to be about \$112 in current rates of exchange.

This cost compares favorably with the roads treated with calcium chloride which are being used in northern regions in the United States. Like such

roads the molasses highway would be considered second-class road in this country from the standpoint of traffic.

Ten tons of molasses are used to a mile of highway. This is mixed with well-slaked lime and charcoal powder in the ratio 4:2:1, respectively, by volume. It takes about four hours for the final coat to set and while still slightly soft, sand is spread over it and the surface is rolled. Traffic is allowed over the highway the next day.

Despite several heavy rains, the molasses appears not to wash out unduly. What the highway would do in a region of greater rainfall is problematical. It lies in terrain where the annual rainfall is only six inches.

Seeking comparable American rainfall conditions it appears that such highways might be adaptable for Arizona, Idaho, Utah, New Mexico and southern California. The success of such roads in the molasses "belt" of the southern states is still questionable.

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GEOLOGY

Great Lakes May Supply Clue to Subsea Canyons

ICE-CARVED lake basins in North America and Europe may supply clues that will solve the problem of the subsea canyons which have excited the interest of geologists recently. In reviewing the evidence of ice-cutting of the basins of the Great Lakes and other lake basins, Dr. Francis P. Shepard, University of Illinois geologist, points out that an average thickness of the continental ice of four miles or more during the most recent glacial period would account for both the cutting of the deep lake basins in the northern parts of Europe and America and a lowering of sea level sufficient to account for the submerged canyons.

Supporting the theory that the basins of the Great Lakes were largely cut out by glacial ice, Dr. Shepard cites the evidence of large amounts of fresh rock piled on the southern shores of the lakes. The ice came from the north, and the rock almost certainly came from somewhere in the present lake basins.

Other basins, many of them submerged on the continental shelves, not far from the puzzling submerged canyons, were also cut by the glacial ice, according to Dr. Shepard, and but for a slight increase in sea level would form a number of lakes whose total area would exceed that of the Great Lakes.

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ORDNANCE

Machine Guns Aimed by Remote Control Device

A REMOTE control device to direct the fire of machine guns has been granted a U. S. patent. The device was invented by Lucien Albert Bousset of Courbevoie, France.

Assigned to the Societe Anonyme des Anciens Etablissements Hotchkiss et Cie, well-known French machine-gun makers, the device is intended particularly for use in fighting planes, to permit a pilot or gunner in a central cockpit to fire guns mounted out in the wings.

Cable relays fire the guns simultaneously or in succession at will, according to the papers, numbered 2,097,962. The Hotchkiss works is one of the French arms firms not taken over by the French government under the terms of the arms nationalization decree passed by the former Blum cabinet.

The invention, certain to be ranked as an important military device, has been patented in England as well as in France and this country. No secret is apparently made of the way in which it operates, presumably because European nations have all either independently invented, bought or secured by more devious means, designs for similar apparatus.

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ARCHAEOLOGY

Treasures Lost by Robbers Now Saved by Science

BECAUSE robbers were in a hurry, 3,100 years ago, America now may inspect the greatest collection of gold and ivory objects ever saved from ruins of ancient Palestine.

The collection, discovered last spring in the treasury of a palace at Megiddo, were put on exhibit in the Oriental Institute's museum, Chicago, November 1. The Institute's expedition made the discovery and will eventually have part of the collection permanently, after the Palestine Department of Antiquities has divided the objects.

Archaeologists owe their lucky find to excitement of robbers who plundered the Canaanite palace in the eleventh century B. C. The looters tore necklaces apart, dropping gold and carnelian beads and other ornaments. They flung aside ivory carvings, which were ornamental plaques, furniture inlays and other ornaments, and these now reveal much information about Canaanite art.

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