

METEOROLOGY

Storms Write Record On Map and Seismograph

THE TERRIFIC storms that have recently been lashing the Atlantic coast have been writing their signatures large on the weather map, recent Weather Bureau studies show. Three successive areas of abnormally low pressure, entering the country over Puget Sound, have marched southeastwardly as far as Kansas and then swung straight eastward, running across country and out to sea just south of the Mason-Dixon line.

The wind-pulling low barometric pressures in these "lows" have been comparable with those of summer storm areas, and well below the ordinary winter "lows." Their extent has been extraordinary, blanketing half the country.

Attributable to the unusual storm phenomena have been an unusual series of microseisms, or tiny tremblings of the earth that register themselves on the sensitive seismographs of earthquake observatories. Rev. John P. Delaney, head of the physics department at Canisius College, Buffalo, N. Y., has just reported to Science Service a veritable storm of microseisms that coincided with the storm in the air.

Science News Letter, February 11, 1933

METALLURGY

Aluminum to Carry on After Iron is Exhausted

THE EXHAUSTION of iron and steel of the present age of metals forebodes no evil for civilizations to come, in the picture of the future given to the American Institute of Electrical Engineers by Prof. Colin G. Fink of Columbia University, inventor and authority on electrochemistry.

For the next age will be that of aluminum, Prof. Fink predicted. And aluminum is the most abundant common metal in the earth's crust, being even more common than much-used iron, which it is expected to supplant for many purposes.

"The keynote of the coming new era will be the large number of new products and devices," Prof. Fink declared. "Among the metals the one metal to enter the widest variety of new fields will be aluminum—aluminum for railway equipment, aluminum for roofs and buildings, for food containers, for transmission, for airplanes, for tank cars, pipe lines, fencing, etc. Finally

we should mention the new aluminum plate, superior to tin plate in many respects, developed at the electro-chemical laboratories at Columbia. . . .

"Whereas the supply of raw material for many of our metals is comparatively limited in years, the supply of bauxite or aluminum ore is almost limitless. Thus, for example, whereas copper at the 1929 rate of consumption will last but forty or fifty years, the aluminum ore reserves will satisfy our demands for many hundred years."

In the relative abundance of the common metals in the earth's crust, taking the parts by weight, aluminum leads with 80,000, iron is second with 50,000, while copper is seventh with only twenty, Prof. Fink pointed out. He said that for every pound of copper in the earth's crust there are 4,000 pounds of aluminum.

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PHYSICS

Tuning in on Atomic Hearts Makes Their Breaking Easier

BY ALLOWING the heart of a helium atom to "tune in" on the heart of an aluminum atom, creating in it a sympathetic vibration, physicists of the Carnegie Institution's department of terrestrial magnetism at Washington have smashed the aluminum heart or nucleus. This achievement by Dr. L. R. Hafstad was announced by Dr. M. A. Tuve in a lecture before the Franklin Institute of Philadelphia.

The first experiments on the resonance smashing or disintegration of atoms were performed by Dr. M. Pose in Germany and the Carnegie scientists have now confirmed this work and carried it further. It is found that when the attacking alpha particle or wave, which is the helium heart, has the proper energy it penetrates the other atom's nucleus. In this case, the alpha particles of mass four from radium joined with aluminum of mass 27 and formed silicon of mass 30 and released hydrogen of mass one in the form of a proton or wave-particle of positive electricity.

Using high voltage apparatus generating 600,000 volts, Drs. Tuve, Hafstad and O. Dahl repeated the experiments of Cockcroft and Walton at Cambridge, England. Hydrogen hearts or protons were flung at lithium and boron and helium obtained from the disintegration.

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IN SCIEN

RADIO

Magnetic Storms and Aurora Disturb Pacific Radio

CONDITIONS disturbing to radio cover the Pacific have interfered with Navy and amateur radio communication somewhat during a large part of January. Auroral displays and magnetic storms may have been responsible, since cosmic data reports to Science Service from College, Alaska, and Tucson, Arizona, show such conditions frequent.

The Navy has had unusual conditions in radio on the Pacific coast. And radio amateurs who have been cooperating with the Department of Terrestrial Magnetism of the Carnegie Institution of Washington in communicating with its magnetic observatory at Watheroo, Western Australia, have been hampered. By Feb. 1 amateur communications had cleared sufficiently for effective traffic to be resumed.

The Carnegie scientists at Watheroo use their radio VK6MO to communicate with H. M. Cooper, station VK5HG at Glenelg, South Australia. This station relayed the messages half way around the world to W3QP manned by John D. Morgan II at Philadelphia or W2CC operated by Albert E. Scarlett at Mt. Vernon, N. Y. These two amateurs then send the messages on to Washington.

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ENGINEERING

Tallest Radio Tower 878 Feet High

SAID to be the tallest radio antenna in the world, the new radio tower of station WSM at Nashville, Tenn., rises 878 feet. It is a single structure of steel, resting at the base on a porcelain insulator. Eight steel wire guys, attached 370 feet from the ground, hold its 150 ton weight vertical. At the base and at the 758 foot level the tower is a few feet square while at the guying level it is 38 feet square. A tubular steel pole of 120 feet surmounts the structural steel portion.

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CE FIELDS

ENTOMOLOGY

Colorado Potato Beetle Spreads Rapidly in France

COLORADO potato beetles, or "potato bugs" are spreading rapidly in France, where they gained an entry during the World War. They are now found over about a third of the country.

Recently a group of German entomologists visited infested potato-growing regions, in anticipation of an eventual invasion of Germany by this introduced pest.

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ARCHAEOLOGY

Jugoslavia Called Key To Balkan Archaeology

THERE ARE tremendous possibilities for scientific exploration and digging in Jugoslavia, which is the archaeological key region of the Balkans, Dr. Vladimir J. Fewkes of the Peabody Museum, reported to the American Anthropological Association.

Dr. Fewkes described the results of the American Archaeological Expedition to Jugoslavia which he led last season, and which was sponsored by the Peabody Museum and Fogg Art Museum of Harvard and the American School of Prehistoric Research.

The expedition succeeded in surveying almost 150 archaeological sites in Jugoslavia. Most of these were classical, Dr. Fewkes said, representing Greek, Macedonian, Roman, and Byzantine cultures. The expedition also gathered new ideas of how trade routes ran through this part of Europe, and along what avenue the ancient cultures spread.

At Starcevo, where discoveries were made last year, the expedition resumed its digging and found many objects showing what life was like along the River Danube in the Neolithic, or New Stone Age.

In this Stone Age village of about 2500 B.C. Dr. Fewkes reported finding foundations of semi-subterranean dwellings, arranged in irregular groups. The villagers had crude, but well-made pot-

tery vessels for cooking, and beautiful colored vases and bowls. Among other articles in the ruins were needles, awls, and spatulas of bone; some knife blades and celts; shells; and small libation tables of baked clay.

The Stone Age people were simple farmers who also bred domestic animals and eked out the food supply by hunting and fishing. The layout of their community suggests to the archaeologists that these people had an organized social life. Religious thought is indicated by the libation tables and their burials accompanied by rites.

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PHYSIOLOGY

Blood-Forming Hormone Treats Variety of Diseases

A NUMBER of conditions besides pernicious anemia may be successfully treated with addisin, newly-discovered blood-forming hormone, Dr. Roger S. Morris of the University of Cincinnati reported to the American College of Physicians.

The normal stomach of man, swine, dogs or cattle secretes this blood-forming substance which Dr. Morris and his associates, Drs. Murray L. Rich, Leon Schiff, John H. Foulger and Henry Felson, believe is a hormone. They have previously reported that they were successful in treating pernicious anemia with this substance which after proper concentration and purification is injected into the muscles of the patient.

Another blood disease, erythremia, is in many ways the opposite of anemia, Dr. Morris pointed out. In erythremia there are too many instead of too few red blood cells. His studies suggested that in this condition too much of the blood-forming addisin is being secreted. He described the case of a patient suffering from both erythremia and stomach ulcer. To relieve the ulcer symptoms, he washed out his stomach three or four times a week for a six-months period. During this time there was a steady decrease in the number of red blood cells, just as might be expected from washing much of the blood-forming substance out of the stomach before it had a chance to function.

Possibility of curing a type of jaundice and a rather rare, fatal disease called Agranulocytic angina, in which there are too few white blood cells, is suggested by results of addisin treatment in a few cases, Dr. Morris said.

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MEDICINE

Success Reported With Whooping Cough Vaccine

WHOOPING cough vaccination has protected over 100 young children from the disease, Dr. Louis Sauer of Evanston, Ill., has just reported to the American Medical Association.

During the past four years about 300 children, not immune to the disease, were given injections of the vaccine. Of these, 127 were exposed to the disease without any child contracting it. Eight of the children were exposed to it in their own homes, when older brothers or sisters had the disease. Only one of these had any cough, and in this case the cough was slight, lasted only two weeks and there was no whooping.

A fresh supply of the vaccine was prepared every few months for the treatment by Dr. Sauer's collaborator, Leonora Hambrecht. The vaccine was made from a micro-organism known as *Hemophilus pertussis*, which is thought to be the germ causing whooping cough. Dr. Sauer emphasized that commercial whooping cough vaccines are not desirable and should not be used.

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PHYSICS

Huge Magnet to be Used In New Attack on Atom

THE NEW MOND Laboratory for atomic and low temperature research has just been opened at the University of Cambridge, England, with Stanley Baldwin, former prime minister, delivering the dedicatory address.

A vigorous attack on the atom will be launched in the laboratory under the direction of Prof. Peter Kapitza. The atom will be subjected to momentary magnetic fields approaching a million gauss. These are produced by one of the largest magnets in the world. This creates a pressure on the coil of two hundred atmospheres and causes local earth tremors that seem like earthquakes.

It is possible with the new apparatus to subject the atom to temperatures that are close to absolute zero.

Prof. Kapitza has invented a modification of the famous Dewar flask that keeps liquid hydrogen from evaporating for several days. The new flask is cooled with liquid air.

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