

# MAGNETIC STORM WORST IN CENTURY

## Violence in Earth's Electric Field Started Sunday— Linked to Sun Spots

### SCIENTIFIC STUDIES MADE

## Federal Experts Report Data to Geophysical Union—Na- tional Academy Elects

By WILLIAM L. LAURENCE

Special to THE NEW YORK TIMES.

WASHINGTON, April 28.—The worst magnetic storm in a hundred years has been raging during the past four days in the great ocean of magnetism surrounding the earth, it was reported today at the meeting of the American Geophysical Union by Dr. A. G. McNish of the Department of Terrestrial Magnetism, Carnegie Institution of Washington.

The magnetic storm, which consists of unusually large fluctuations in the earth's magnetic field, started on Sunday and is still going on. It is being studied at the Magnetic Observatory of the Coast and Geodetic Survey at Cheltenham, Md.

The deviations of the magnetic needle at the observatory, Dr. McNish said, have been highly erratic and reached as high as seventy minutes, the largest observed in a century.

The storm is causing severe interference in communications. Telegraph companies reported "dead" periods and radio signals have been subjected to sudden and severe fading.

The disturbances in the earth's magnetic field, which are believed to be correlated with sun-spot activity, have recently been partly explained by the accumulation of evidence for the existence of mighty rivers of electricity flowing in circular paths around the earth's magnetic poles. The stronger currents of these electric rivers, it was found, flow in those regions of the earth which are turned away from the sun.

### Upper Air More Conductive

These currents may be caused, Dr. McNish stated, by an increase in the electrical conductivity of the upper layers of the atmosphere, from which radio waves are reflected, produced by corpuscles coming from the sun.

In addition to being responsible for the magnetic disturbances, these electric rivers very likely are also involved in the production of the Northern Lights, according to present theory.

If the skies had been clearer over the Eastern States during the past four days, said Captain N. H. Peck of the Coast and Geodetic Survey, people would have seen a great display of the aurora borealis, which is a rare event in these latitudes.

The present sunspot cycle is due to reach its maximum in 1939.

The nature of the corpuscles from the sun, to which are linked magnetic storms and the Northern Lights, is at present a mystery. It had been believed that they were electrically charged; but recent calculations show that they can be neither electrons nor protons.

It is, therefore, thought they may be neutral particles which produce secondary electrical particles after entering the earth's atmosphere. These are deflected by the earth's magnetic field, which causes them to impinge on the dark side of the earth, where they produce luminosity in the atmosphere in the form of the aurora.

Dr. McNish also reported discovery of the existence of a superconductive layer 200 to 250 kilometers below the surface of the earth, which is a hundred times more conductive than the layer on the earth's surface.

### Next Drought Cycle Put in 1975

The present drought cycle is nearly ended and the United States need not expect another before 1975, it was predicted at the meeting by Dr. Charles G. Abbot, secretary of the Smithsonian Institution.

The prediction is based on correlations of the twenty-three-year cycle of sunspots and weather on earth, long a subject of special study by Dr. Abbot. A double sunspot period, a cycle of forty-six years, Dr. Abbot said, "appears to be particularly important in precipitation."

The cycles have been checked by observation on tree-rings over 400 years, variations in the level of the Great Lakes over 100 years and temperature records.

"We seem justified," said Dr. Abbot, "in expecting a recovery from drought conditions in the Northwest within a year or two, but a severe recurrence of them following the year 1975."

Dr. Arthur L. Day of the Geophysical Laboratory, Carnegie Institution of Washington, was today re-elected vice president of the National Academy of Sciences for a four-year term ending June 30, 1941.

Dr. Herbert Spencer Jennings, Professor of Experimental Zoology, Johns Hopkins University, and Dr. Oswald Veblen, mathematician, of the Institute of Advanced Study, Princeton, were elected to the council of the academy. Dr. August Krogh, Nobel Prize winner, of Copenhagen University, Denmark, was elected foreign associate.

### New Members of Academy

The following scientists were elected to the academy, bringing it to 298 members:

- Calvin Blackman Bridges, California Institute of Technology.
- Oliver Ellsworth Buckley, Bell Telephone Laboratories, New York.
- Arthur Jeffery Dempster, University of Chicago.
- Ernest William Goodpasture, Vanderbilt University.
- Carl Gottfried Hartman, department of embryology, Carnegie Institution of Washington.
- Donnel Foster Hewett, Geological Survey.
- Leo Loeb, Washington University, St. Louis.
- Duncan Arthur MacInnes, Rockefeller Institute for Medical Research.
- George Richards Minot, Boston City Hospital.
- John von Neumann, Institute for Advanced Study, Princeton.
- Seth Barnes Nicholson, Mount Wilson Observatory.
- Otto Struve, Yerkes Observatory.
- Francis Bertody Sumner, Scripps Institution of Oceanography, California.
- Charles Thom, Department of Agriculture.
- Edward Chace Tolman, University of California.