

METEOROLOGY

# Weather Is International

Meteorology and oceanography must be related in world-wide research. Adequate weather information must be of international scope.

► RESEARCH on an international basis is the prime need in the related sciences of meteorology and oceanography, scientists from all over the world were told at the opening session of the fall meeting of the National Academy of Sciences. You cannot intelligently discuss the weather of any one country, however small, unless you know the weather all over the world; you cannot tell the full meaning of the waves breaking on a single beach without a background of knowledge of all the oceans.

The needs of these two boundaryless sciences were presented by Dr. H. U. Sverdrup, director of the Scripps Institution of Oceanography at La Jolla, Calif., and Dr. C. G. A. Rossby, University of Chicago meteorologist.

Dr. Sverdrup gave particular point to his discussion by showing how oceanographers during the war made use of world-wide weather reports in preparing forecasts of ocean swells and beach waves needed by the high command in planning landings and other operations. Advance knowledge of the height of the waves on the beaches of Normandy or Okinawa depended on accurate reports of direction and force of the winds blowing hundreds of miles away, days before; and these in turn were determined in part by the movement of air masses across continental areas far remote from any ocean.

Similar applications of scientific oceanography for the needs of peaceful com-

merce, for the protection of beaches from the attack of eroding waves, for the planning of harbor works and navigation aids and for a hundred other purposes demand a well-organized and well-financed program of international scope, not only for the relatively exciting job of getting the original data but especially for the long and sometimes dull tasks of interpreting them and making the results promptly available for practical use.

Dr. Rossby called attention to the advantages already gained from international exchange of information among countries that have built up an extensive network of observing and reporting stations all around the northern hemisphere. This cooperation is possible largely through substantial agreement among meteorologists on methods and procedure, particularly through the universal adoption of the air-mass analysis method which originated in Norway a generation ago. He also suggested that it may become necessary soon to set up an equally far-flung net in the predominantly oceanic southern hemisphere, because of the long-range influence of the weather there upon events in the atmosphere nearer home.

Both speakers laid special emphasis on the great present need for training new workers for research in these two sciences, both of which are suffering from the double strain of rapid expansion and present understaffing.

*Science News Letter, November 2, 1946*

GENERAL SCIENCE

# Freedom of Science Urged

► SCIENTISTS of the world were urged to unite in combating continued maintenance of wartime secrecy now that the guns are silent, by Sir Henry Dale, past president of the Royal Society of London, who delivered the Pilgrim Trust Lecture before the meeting of the National Academy of Sciences.

"We have surely the right and the duty to give urgent warning of any danger threatened by those policies to the integrity of science, which we, the world's scientists, should hold as a sacred

trust not for any nation but for the world," Sir Henry declared. "I hold it to be our right and our duty to unite in telling the world insistently, that if national policies fail to free science in peace from the secrecy which it accepted as a necessity of war, they will poison its very spirit, . . . that science will languish, and that all the fair promise which it offers of a harvest of human prosperity, culture and happiness will be blighted and withered.

"We need only look at Hitler's Ger-

many to see how the enslavement of science, to prepare in secret for war, can in a few years destroy much of the true scientific activity which, not long ago, stood high among the gifts of a great nation. On such a matter we must be clear and uncompromising in our attitude."

Besides bringing the force of public opinion to bear on secretive officials, scientists can make a more direct and immediate application of their principle of freedom to speak and publish, Sir Henry suggested. They can insist upon that freedom for themselves as teachers and research leaders, and they can inculcate it, even by a kind of formal vow, in the young men whom they are train-

## SCIENCE NEWS LETTER

Vol. 50 NOVEMBER 2, 1946 No. 18

The weekly summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N. W., Washington 6, D. C. North 2255. Edited by WATSON DAVIS.

Subscriptions—\$5.00 a year; two years, \$8.00; 15 cents a copy. Back numbers more than six months old, if still available, 25 cents.

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Entered as second class matter at the post office at Washington, D. C., under the Act of March 3, 1879. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to Periodical Literature, Abridged Guide, and the Engineering Index.

The New York Museum of Science and Industry has elected SCIENCE NEWS LETTER as its official publication to be received by its members.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 393 7th Ave., N.Y.C., Pennsylvania 6-5566, and 360 N. Michigan Ave., Chicago, State 4439.

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ing to be the scientists of the future.

Formal action along the lines suggested by Sir Henry has already been taken by the International Council of Scientific Unions, representing eight international science organizations. Dr. John A. Fleming of the Carnegie Institution of Washington told the meeting of an outline of action adopted by the Council at a general assembly in London last July. In summary, this calls upon scientific workers:

"To maintain a spirit of frankness, honesty, integrity and cooperation, and to work for international understanding;

"To promote the development of science in the way most beneficial to mankind and to exert their influence as far as possible to prevent its misuse, and

"To serve the community not only by their specialized work but by assisting as far as they are able in the education of the public in the purposes and achievements of science."

*Science News Letter, November 2, 1946*

the top of the letter and low frequency for the bottom of the letter. These sounds create the blind reader's sound picture of the letter.

Almost any printed or typewritten matter can be read with the instrument, contrasted with the limited number of works available in Braille for the blind today.

The electronic reading aid was developed under the Committee on Sensory Devices of the wartime Office of Scientific Research and Development. The committee is now with the National Academy of Sciences.

*Science News Letter, November 2, 1946*

## ELECTRONICS

## Blind Can Read by Ear

For persons without sight an electronic device translates letters into sounds, making it possible to "read" almost any printed matter.

► BLIND PERSONS can read by ear with a new electronic reading aid which converts printed letters into distinctive sounds for the sightless reader. The machine was demonstrated to the public for the first time at a session of the American Philosophical Society by its inventors, Dr. V. K. Zworykin, Russian-born director of electronics research at the Radio Corporation of America laboratories, Princeton, N. J., and L. E. Flory.

To read with the electronic device, the blind person scans the printed or typewritten page with a stylus that looks like a large black fountain pen. A small beam of light in the "point" of the stylus moves up and down on each letter, reflecting to a phototube that operates an amplifier tube.

A combination of five different sounds is produced for each letter as the stylus moves over the printed matter. The reader hears the "pips" through a hearing-aid-like ear attachment. Total weight of the electronic unit is only five and one-quarter pounds.

Dr. Zworykin disclosed that work is now underway on an instrument using the same principles to form the actual sound of each letter. This would spell out each word for the blind person as he scanned print with the stylus.

The electronic reading aid shown in Philadelphia requires the reader to learn a code of sounds for each letter. Blind persons in several laboratories are now being taught the new system experimentally, Dr. Zworykin reported, adding that the device is not yet being produced commercially.

Flashing the beam of light vertically up and down each letter, the stylus reflects the black area of the letter as distinguished from the white page. A frequency modulated audio oscillator uses the reflected light from the printed letter to produce high frequency "pips" at

## ELECTRONICS

## Electronic Tubes Speed Up Mathematical Calculations

► ELECTRONIC "super-brains" that will solve complex mathematical problems a million times faster than the best methods available ten years ago were forecast before the meeting of the National Academy of Sciences by Dr. John von Neumann of the Institute for Advanced Study, Princeton, N. J. This dizzying speed-up in calculating ma-



**HEARING AID**—Electronic device, developed in laboratories of the Radio Corporation of America, operates as a stylus on a printed page, translating letters into sounds.