the mouth of the river, but at the present time the chloride in the water is equivalent to .224 per cent. NaCl. Associated with the above animals were the decapods, *Palaemonetes vulgaris* and *Rhithropanopeus harrisi,* which ordinarily occur in salt or quite brackish water. While this occurrence of *Cordylophora* is rather similar to those described in the Biological Survey of the Woods Hole Region, it also raises the question as to the exact conditions under which the animal occurs in the interior states from which it has been several times reported.

CHARLES H. BLAKE
DEPARTMENT OF BIOLOGY AND PUBLIC HEALTH
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SCIENTIFIC MEETINGS

THIRTEENTH ANNUAL MEETING OF THE AMERICAN GEOPHYSICAL UNION

THE thirteenth annual assembly of the American Geophysical Union and of the meetings of its sections on April 28 and 29, 1932, was held at Washington, D. C., in the building of the National Academy of Sciences and National Research Council, except for two of the three meetings of the Section of Hydrology, which were held in the conference room of the Geological Survey in the building of the Department of the Interior.

The individual section meetings were marked by numerous progress reports on geophysical activities, not only in the United States, but also in Canada and in Mexico. The Section of Geodesy, following such progress reports, discussed gravity work, isostasy, instrumental developments, the moon's influence on latitude and aerial photogrammetry.

In the Section of Seismology the meeting was given over to a "Symposium on the Application of Seismology to the Study of Ocean-Basins."

In the Section of Meteorology accounts of the programs arranged for the Second International Polar Year of 1932–1933 and for the solar eclipse of August 31, 1932, were followed by papers bearing on winds in the upper atmosphere and in the antarctic, on atmospheric turbidity and water-vapor, on interrelations between air- and ocean-temperatures in California and the northeast Pacific, on weather-charts of the northern hemisphere and on a half century of American rainfall.

In the Section of Terrestrial Magnetism and Electricity the reports of 17 organizations regarding American activities in its fields during the past year were followed by papers relating to ionization of the upper atmosphere, its radio exploration and geophysical significance, to conducting-layer measurements at Little America, to periodicities in radio-transmission phenomena, to cosmic radio correlations, to slow-moving ions of the atmosphere, to lightning discharges and the electrical fields of thunder-storms and to instrumental progress.

The communications to the Section of Oceanography, besides progress reports showing the development of oceanographical work in the United States by governmental and private organizations, included discussions of light penetration into the sea, of formation of submarine valleys, of oceanic surveys of temperatures and the temperature gradients in oceanic waters, of Arctic and Atlantic interchanges, of radium content of ocean-bottom sediments, of microbiology and marine limestone and of oceanographic centers and methods of northwest Europe.

In the Section of Volcanology the papers dealt with Central American volcanoes in 1932, with volcanic developments in 1931–32 and with volatility of silica with steam.

The Section of Hydrology devoted the morning, afternoon and evening of April 28 to hearing reports of its nine permanent committees and 21 papers submitted by authors from federal governmental, state governmental, university and consulting engineering organizations. These covered numerous investigations and developments in scientific hydrology throughout the United States. They serve also to illustrate how wide-spread and how effective is the cooperation of American hydrologists.

At the business meeting which preceded the scientific session of the general assembly of the Union on April 29, 1932, the general secretary reported a total membership of 274 as of the date of May 1, 1932. This report gave some account of the relations of the union with the International Union of Geodesy and Geophysics and of the bearings of the union's activities in international geophysical expeditions as, for example, the International Scientific Expedition to the Bahamas during February and March, 1932, and the Arctic Expedition of the *Graf Zeppelin* in July, 1931.

The following resolutions, as proposed by the union and by its several sections, were unanimously approved:

(*I*) *Resolution on the Urgent Need of Continuing Oceanographic Work without Material Curtailment*

(Proposed by General Assembly)

Whereas, The great value of the oceanographic survey work conducted by various bureaus of the Government is universally recognized, and

Whereas, Any appreciable curtailment of this work would result in a real loss to geophysics from both practical and theoretical points of view, therefore be it

Resolved, That the American Geophysical Union hereby expresses its appreciation of the value of the oceanographic work conducted by various bureaus of the Government, and be it further

Resolved, That it urges, in accommodating governmental activities to necessarily reduced budgets, there should be no disproportionate curtailment in appropriations devoted to this part of the Government's service, and be it further

Resolved, That copies of this resolution be sent to the President of the United States, to the Secretary of Commerce, to the Secretary of the Navy, and to the Secretary of the Treasury.

(*II*) *Resolution on Gravity Work at Sea by United States Navy*

(Proposed by Section of Geodesy)

Whereas, Results of great scientific value have been obtained by observations of gravity at sea in the waters of the West Indies and adjacent regions by the two expeditions of the United States Navy, the first in 1928 and the second in 1932, and

Whereas, Satisfactory determinations of gravity at sea can be obtained only on board of a submerged submarine, therefore be it

Resolved, That the American Geophysical Union of the National Research Council expresses its high appreciation to the United States Navy Department for its contribution to science in making available submarines for the important work of determining gravity at sea and its hearty thanks to the officers and crews of these submarines for their able and ready cooperation, and be it further

Resolved, That the American Geophysical Union expresses the hope that the United States Navy will continue to contribute to this important scientific work by placing, whenever practicable, a submarine at the disposal of properly equipped observers desiring to undertake work of this sort, either in the waters adjacent to the United States or in mid-ocean, and be it further

Resolved, That copies of this resolution be sent to the President of the United States and to the Secretary of the United States Navy.

(*III*) *Resolution Regarding the Purchase of Apparatus for Determining Gravity at Sea*

(Proposed by Section of Geodesy)

Whereas, The determination of gravity at sea has long been recognized by scientific men as a means of discovering geophysical and geological facts of great value and importance in ocean areas, and

Whereas, The determination of gravity at sea with an accuracy approaching that attainable on land has repeatedly been proved to be possible, if carried out with a suitable multiple-pendulum apparatus on board a submarine, and has again been demonstrated by the observations aboard the U. S. submarine S-48, on the recent expedition to the waters of the West Indies during February and March, 1932, and

Whereas, The results of the several gravity-at-sea expeditions, on which the special multiple-pendulum apparatus has been used, have confirmed the high expectations of the scientific public, therefore be it

Resolved, That the American Geophysical Union of the National Research Council expresses the hope that an apparatus of the multiple-pendulum type may soon be secured by some organization or institution in this country, for use on submarines of our Navy, and be it further

Resolved, That copies of this resolution be sent to the President of the United States, to the Secretary of the United States Navy, and be distributed otherwise as, in the opinion of the Chairman of the National Research Council, may seem expedient.

(*IV*) *Resolution on Naval Observatory Time-Signals*

(Proposed by Sections of Geodesy and of Seismology)

Whereas, Organizations represented in several sections of the American Geophysical Union have benefited by the increase in the number of standard time-signals broadcast daily by the United States Navy during the past year, therefore be it

Resolved, That the American Geophysical Union expresses its hearty appreciation of the action of the United States Navy, especially the U. S. Naval Observatory and the Naval Communications Service, in furnishing this valuable time-service, and be it further

Resolved, That the United States Navy be requested to increase still further, if possible, the number of daily signals when conditions permit it to do so, and be it further

Resolved, That copies of this resolution be sent to the Secretary of the Navy, to the Superintendent of the U. S. Naval Observatory, and to the Director of Naval Communications.

(*V*) *Resolution on the Need of Non-Governmental Research Institutions in Meteorology*

(Proposed by Section of Meteorology)

Whereas, Urgent need exists for the training of students in advanced meteorological work, and

Whereas, Incident to the development of aviation and other lines of commercial activity, greater need exists than heretofore for the services of trained meteorologists, and corresponding opportunities for employment arise in civil and governmental departments, therefore be it

Resolved, That the American Geophysical Union expresses the hope that colleges and other educational institutions will provide for courses in advanced meteorology, and be it also

Resolved, That the Union specifically indorses the progress that has already been made along this line by the Massachusetts Institute of Technology, and urges the need for its continuance and ample support, and be it further

Resolved, That a copy of this resolution be sent to the President of the Massachusetts Institute of Technology.

(VI) Resolution in Commendation of Geophysical Abstracts, Published as an Information Circular of the U. S. Bureau of Mines

(Proposed by Section of Terrestrial Magnetism and Electricity)

Whereas, The growth of interest in geophysics in recent years both from the practical and from the basic point of view has been very rapid, the extensive and increasing literature on this subject being scattered about in a large number of journals, and

Whereas, The *Geophysical Abstracts* compiled and published by the U. S. Bureau of Mines is supplying an important need by providing a helpful review and directory of the literature of geophysics, therefore be it

Resolved, That the American Geophysical Union hereby commends this undertaking and expresses its hope that the compilation and publication of the *Geophysical Abstracts* may be continued and extended, if possible, and be it further

Resolved, That a copy of this resolution be sent to the Director of the U. S. Bureau of Mines.

(VII) Second International Polar Year 1932–33

(Proposed by Section of Oceanography)

Whereas, During the Second International Polar Year 1932–33 various meteorological, magnetic, and hydrographical observations are to be made simultaneously in many widely separated regions by organizations representing various countries, and

Whereas, The United States Coast Guard has, in connection with the International Ice-Patrol Service and the *Marion* Expedition, obtained much valuable scientific data in the region of the Grand Bank and Davis Strait, and has the physical equipment and personnel suitable for continuing this work, therefore be it

Resolved, That the American Geophysical Union expresses its high appreciation of this work and its hope that the United States Coast Guard will find it possible to undertake further determinations during the Second International Polar Year of the interchange of water between the Arctic and Atlantic Oceans in the region of the Grand Bank and Davis Strait, and incidentally make such meteorological and magnetic observations as may be practical, and be it further

Resolved, That a copy of this resolution be sent to the President of the United States, to the Secretary of the Treasury, to Admiral F. C. Billard, Commandant of the United States Coast Guard, and to Dr. D. la Cour, President of the International Commission of the Polar Year 1932–33.

(VIII) Resolution on the Death of Alfred Judson Henry

(Proposed by Section of Meteorology)

Whereas, The death of Alfred Judson Henry has removed from the American Geophysical Union a member who has taken a particularly active part in its organization, especially in the organization of its Section of Meteorology, which he served as Secretary and in many other ways, and

Whereas, He rendered conspicuous service to geophysics through a series of notable contributions, particularly in climatology, forecasting, and the relations between weather and floods, therefore be it

Resolved, That the American Geophysical Union records its sense of great loss in the death of Alfred Judson Henry, not only because of his scientific attainments but also because of his fine personal qualities, and be it further

Resolved, That a copy of this resolution be sent to Mrs. Henry.

(IX) Resolution on the Death of Robert DeCourcy Ward

(Proposed by Section of Meteorology)

Whereas, In the death of Robert DeCourcy Ward, the American Geophysical Union has lost a member who, as a pioneer in the teaching of climatology and as an author of several outstanding authoritative works in this subject, particularly "The Climates of the United States," has contributed notably to geophysical science, and

Whereas, Professor Ward was possessed of a particularly attractive personality and a high sense of honor and right, therefore be it

Resolved, That the American Geophysical Union expresses its sense of profound sorrow on the loss of Robert DeCourcy Ward, distinguished scientist and splendid citizen, and be it further

Resolved, That copies of this resolution be sent to Professor Ward's family and to the President of Harvard University.

(X) Resolution on the Death of Louis Agricola Bauer

(Proposed by Section of Terrestrial Magnetism and Electricity)

Whereas, The American Geophysical Union has learned with profound regret of the death of Louis Agricola Bauer, founder and late director emeritus of the Department of Terrestrial Magnetism of the Carnegie Institution of Washington, and mindful of the active interest which he has taken in the affairs of the Union and of the important services he has rendered in the advancement of geophysics, particularly in the initiation and conduct of a magnetic survey of the earth and in the analysis of the results thus obtained, therefore be it

Resolved, That the American Geophysical Union, in general meeting assembled, records this expression of its sense of loss in the death of Louis Agricola Bauer, and be it further

Resolved, That copies of this resolution be sent to Dr. Bauer's family, to the President of the Carnegie Institution of Washington, and to the Acting Director of the Department of Terrestrial Magnetism.

W. J. Humphreys was elected chairman and Austin H. Clark vice-chairman of the union, both for the period 1932 to 1935, J. A. Fleming continuing as general secretary, his term expiring in 1934. Officers of the various sections were elected as follows to serve for the period 1932–1935:

GEODESY: *Chairman,* Henry G. Avers; *vice-chairman,* Donald C. Barton (C. H. Swick's term as secretary expires in 1934).

SEISMOLOGY: *Chairman,* Frank Wenner; *vice-chairman,* F. W. Lee (H. E. McComb's term as secretary expires in 1933).

METEOROLOGY: *Chairman,* W. R. Gregg; *vice-chairman,* C. F. Brooks; *secretary,* O. H. Gish.

TERRESTRIAL MAGNETISM AND ELECTRICITY: *Chairman,* J. A. Fleming; *vice-chairman,* Seth B. Nicholson; *secretary,* E. O. Hulburt.

OCEANOGRAPHY: *Chairman,* H. B. Bigelow; *vice-chairman,* H. A. Marmer; *secretary,* C. O. Iselin.

VOLCANOLOGY: *Chairman,* N. L. Bowen; *vice-chairman,* E. S. Larsen; *secretary,* R. E. Gibson.

HYDROLOGY: In this section O. E. Meinzer, R. E. Horton and H. N. Eaton continue as chairman, vice-chairman and secretary, respectively, their terms all expiring in 1933.

The scientific session following the business matters was devoted to a symposium on the application of geophysics to ocean basins and margins, and included the following papers:

(a) Introduction, by Richard M. Field.

(b) "Problems of Island Arcs and Ocean Deeps," by Walter H. Bucher.

(c) "The Structure of the Bartlett Trough," by Stephen Taber.

(d) "Seismic Zones as Related to Relief of Ocean Bottom," by N. H. Heck.

(e) "Interpretation of Gravity Anomalies and Sounding Profiles Obtained in the West Indies by the International Expedition to the West Indies in 1932," by Harry Hammond Hess.

(f) "Sounding the Depths of the Ocean for Mapping the Conformation and Topography of the Bottom," by G. W. Littlehales.

(g) "The Applications of Seismic Methods to Submarine Geology," by E. DeGolyer.

(h) "Torsion-balance Surveys in Southwest Louisiana and Southeast Texas," by D. C. Barton.

(i) "Experiences of a Seismologist with 'Seismic Methods,'" by A. L. Day.

The reading of the papers was followed by an illuminating discussion with constructive comments, emphasizing particularly the close relationships holding between geological and geophysical investigations.

The communications from members of the national committees of our neighbors in Canada and Mexico showed continued active international cooperation between those countries and the United States, and reported on the progress of governmental activities and on results of geophysical researches stimulated by the national committees.

The success attending the meetings in 1932 was the result largely of the careful and thoughtful development of the program and arrangements made by the committee on meetings of the union, consisting of Messrs. Frank Wenner (*chairman*), R. M. Field, R. E. Gibson, H. A. Marmer and F. W. Sohon, S.J. The union is particularly indebted to Professor R. M. Field, who suggested and arranged for the speakers in the symposium on the application of geophysics to ocean basins and margins. The large attendance and constructive discussions during the general assembly of the union and the meetings of its sections afforded material evidence of the rapidly expanding interest in geophysics in America.

The complete *Transactions* of the thirteenth annual meeting of the union, involving 85 papers in addition to progress reports submitted by various organizations interested in geophysical work and including the annual reports of eight permanent committees of the Section of Hydrology, were assembled, edited and published by the general secretary of the union as a special publication of the National Research Council. This volume of 401 pages came from the press in the first week of July, thus only a little more than two months after the meeting. Over fourteen hundred copies of the volume were distributed in the United States and abroad by the middle of July. This prompt publication and distribution was made possible by planographing the manuscripts and illustrations.

JNO. A. FLEMING,
General Secretary

SCIENTIFIC APPARATUS AND LABORATORY METHODS

THE USE OF "NEMBUTAL" AS AN ANESTHETIC FOR MICE

SODIUM Ethyl (1 Methyl Butyl) Barbiturate, trade name "Nembutal," is being used quite extensively as an anesthetic in veterinary practice. We have recently tried it on mice, and found it to be quite satisfactory. It is easily administered by injecting into the peritoneal cavity with a fine hypodermic syringe.

It has decided advantages over ether or other gaseous anesthetics. Our experience shows that doses sufficient to anesthetize for a period of up to one hour are perfectly safe. In fact, single doses, large enough to anesthetize for three to four hours, seldom result in death. Repeated doses may be safely administered, prolonging the hypnotic effect over a period of six or eight hours, with entirely satisfactory results.

Similar doses may produce a considerable difference in the time of hypnosis even in the same mouse at different times, depending probably on the condition