REPORTS

TWELFTH ANNUAL MEETING OF THE AMERICAN GEOPHYSICAL UNION

THE twelfth annual meeting of the American Geophysical Union and the sessions of its sections were held in Washington, D. C., on April 30 and May 1, 1931.

The Sections of Geodesy, Meteorology, Volcanology, Oceanography, Seismology, and Terrestrial Magnetism and Electricity held their meetings April 30. The Section of Hydrology met May 1, and the meeting was concluded with the general assembly of the union on the afternoon of May 1.

Seven papers presented before the Section of Geodesy were devoted largely to progress reports on absolute determination of gravity, Mexican gravity stations, gravity work presented at the Stockholm meeting of the International Union, on graduation and calibration of precision-circles, on the astronomical establishment of points on an unsurveyed boundary in Canada, and on geodetic work during the past year in the United States. Harlan T. Stetson presented also some further investigations of the moon's influence on latitude.

In the Section of Seismology, following the consideration of proposals for the international intercomparison of recently developed types of instruments and study of seismic sea-waves, an interesting series of papers and informal communications was presented, including a paper on the origin of earthquake-waves, progress reports on the development of instruments, the use of precise triangulation and levels in California in seismological investigations, the registration of time-signals, and velocity of explosion-generated longitudinal waves in nepheline syenite. The secretary reported that following the resolution adopted at the eleventh annual meeting a grant had been provided by the Carnegie Institution of Washington, through its Advisory Committee in Seismology, to establish a seismological observatory at the Huancayo Magnetic Observatory in Peru.

At the meeting of the Section of Meteorology the first five papers were concerned chiefly with the International Polar Year proposed for 1932–33, the remainder of the program being devoted to considerations of the proposed International Cloud Atlas, atmospheric turbidity, measurements of color of the sea and the sky, and cyclical variations in precipitation, runoff, and lake-levels, and their relation to long-range forecasting.

The papers presented before the Section of Terrestrial Magnetism and Electricity included progress reports on the year's investigations and projects in the United States, a report on the proceedings of the International Section of Terrestrial Magnetism and Electricity at the Stockholm assembly, four papers bearing on extra-terrestrial considerations in the fields of the section, and four papers bearing on polar research. A significant feature of the first group was the indication of the large number of governmental, college, and commercial organizations in the United States and Canada which submitted progress reports, namely, twenty-one. The desirability of further magnetic and electric work in the polar regions of the earth and especially during the proposed International Polar Year of 1932–33 was indicated in the papers of the last group.

As in the other meetings, that of the Section of Oceanography was devoted almost wholly to progress reports of nine governmental bureaus and private research organizations engaged in oceanographic work, showing the wide-spread interest and rapidly increasing development. Besides these reports there were two papers telling of progress in Gulf Stream temperature-investigations and of the results obtained by duplicate measures of specific gravity of sea-water by the Knudsen and Plummet methods.

Following a paper on the solubility of water in granite magmas, reports were presented to the Section of Volcanology on Merapi and its eruptions, volcanoes of Katmai district in 1930, the Tertiary volcano at Cripple Creek, Colorado, and the Valles Mountain volcanic center of New Mexico.

The first annual meeting of the Section of Hydrology, organized in November, 1930, was very successful and well attended. Following a brief account by the chairman on the organization, activities, and plans of the section, twelve papers were presented upon various scientific aspects of hydrology. Robert E. Horton's paper on "The Field, Scope and Status of the Science of Hydrology" developed excellently the scientific possibilities of the section's field. Other papers of the program emphasized the absorption of precipitation and its penetration, glacier-measurements, organization and work of various governmental hydraulic stations and laboratories, the need for closer cooperation among students of stream work, studies in evaporation, relation of ground-water hydrology and Pleistocene geology of the Platte River Valley and adjacent areas, significant studies in hydrology on the Pacific coast, and reports on investigations in progress in hydrologic laboratories.

The report of the general secretary at the general assembly of the union showed a total membership of

222 and gave some account of the relations of the union with the international body. At the fourth general assembly of the International Union of Geodesy and Geophysics held at Stockholm, Sweden, from August 14 to 23, 1930, there were present some 302 delegates and guests representing thirty-six countries. The United States was represented by a total delegation of 27, including 14 delegates of the union. The report showed that the interest in geophysics and geophysical applications has continued its rapid growth in the United States and that the activities of the American Geophysical Union have made substantial contribution in forwarding this growth. The general secretary also reported briefly on the progress of the plans for the Jubilee International Polar Year, on the Wilkins-Ellsworth Trans-Arctic Submarine Expedition, and on the cable advice recently received from the general secretary of Aeroarctic that the *Graf Zeppelin* was to make a polar flight leaving Germany July 20 for the purpose of testing equipment assembled for scientific observations in the Arctic, as a trial preliminary to the exploratory flights from Friedrichshafen to Fairbanks and return planned for 1933.

The following five resolutions were unanimously approved:

(1) *Resolution on gravity at sea* proposed by the sections of Geodesy and Volcanology—

WHEREAS, The United States Navy Department, in cooperation with the Carnegie Institution of Washington, conducted a gravity-campaign in 1928, during which observations were made under the direction of Dr. F. A. Vening-Meinesz, Member of the Dutch Geodetic Commission, at many points in the Caribbean Sea, the Gulf of Mexico, and the Atlantic Ocean to the northward of Porto Rico, thus adding materially to the knowledge of the crust of the Earth in the regions covered, and furnishing data for the figure of the Earth, and

WHEREAS, Much additional information about gravity at sea should be obtained, therefore be it

Resolved, That the American Geophysical Union of the National Research Council recommends to the Navy Department that it give thought to the question of continuing its work on gravity at sea and of securing the necessary soundings to supplement such work, especially in the waters of the West Indies including the Caribbean Sea, and be it further

Resolved, That a copy of this resolution be forwarded to the Secretary of the United States Navy.

(2) *Resolution on international cooperation in the study of tidal waves* proposed by the sections of Seismology and Oceanography—

WHEREAS, A communication has been received through the Department of State and the National Research Council from M. Hubert, Secretary of the Commission of the International Union of Geodesy and Geophysics for the Study of Tidal Waves, suggesting and inviting participation of the United States in studying tidal waves and various phenomena associated with them, therefore be it

Resolved, That the American Geophysical Union indorses the plan of the Commission and recommends the participation by organizations and individuals of the United States who may be concerned, and in order that a suitable plan for such participation may be developed, the chairmen of the sections of Seismology and Oceanography are authorized to appoint two members from each Section as a joint committee, and be it further

Resolved, That a copy of this resolution be sent to the Secretary of the Commission of the International Union of Geodesy and Geophysics for the Study of Tidal Waves.

(3) *Resolution on comparisons of new types of seismological instruments developed in the United States with various types developed in Europe* proposed by the Section of Seismology—

WHEREAS, The Director of the Central Seismological Bureau of Strasbourg, France, has indicated the great desirability of direct comparisons of new types of seismological instruments developed in the United States with various types developed in Europe, and has offered the facilities of the Central Bureau for this purpose, preferably with the cooperation of an American seismologist, therefore be it

Resolved, That the American Geophysical Union indorses this plan, and be it further

Resolved, That a copy of this resolution be sent to the Director of the Central Seismological Bureau of Strasbourg.

(4) *Resolution commemorating fiftieth anniversary of General Greely's participation in the first International Polar Year* proposed by the Section of Meteorology—

WHEREAS, The American Geophysical Union is lending its influence toward the successful completion of the work of the Jubilee International Polar Year, 1932–33, and

WHEREAS, All the world recognizes in Major-General Adolphus W. Greely, U. S. A., retired, the leader of the Lady Franklin Bay Expedition, 1882–83, of the First International Polar Year, the outstanding figure in Arctic exploration on this continent, therefore be it

Resolved, That the American Geophysical Union record its high appreciation of General Greely's abundant contributions to our knowledge and its earnest wishes for the long continuance of his good health, and be it further

Resolved, That a copy of this resolution be sent to General Greely.

(5) *Resolution on the death of Franklin G. Tingley* proposed by the Section of Meteorology—

WHEREAS, The members of the American Geophysical Union have learned with profound regret of the death of

Franklin G. Tingley, late Chief of the Marine Division of the United States Weather Bureau, therefore be it

Resolved, That the American Geophysical Union record its profound regrets over this loss not only to its own personnel but also to the world of science in general, and especially to oceanography and meteorology, and be it further

Resolved, That a copy of this resolution be sent to Mr. Tingley's family.

The joint committee entrusted with the work involved in the resolution on international cooperation in the study of tidal waves consists of H. F. Reid, *Chairman,* Perry Byerly, N. H. Heck, and H. A. Marmer.

J. A. Fleming was reelected general secretary of the union to June 30, 1934.

The scientific session following the business session was devoted to a symposium on time-signals sponsored by the sections of Geodesy and Seismology. This symposium included the following papers and discussion:

(a) United States Naval Observatory time-service, by J. F. Hellweg; the Chairman expressed the thanks of the meeting to Captain Hellweg for his paper and his expressed desire to do everything possible in meeting the needs for more frequent time-signals.

(b) Time-signals for electrical and physical measurements, by Frank Wenner; discussed by Messrs. Bowie and Heyl.

(c) Time-signal needs for geodetic work, by Edwin J. Brown; discussed by Messrs. Bowie, Hubbert, Hellweg, and Brown.

(d) H. E. McComb, Secretary of the Section of Seismology, then read short communications from Messrs. James B. Macelwane (expressing regret that because of illness he could not prepare the paper "Time-signal needs of the seismologist"), H. O. Wood (two), and B. Gutenberg, all emphasizing the need of broadcasting time-signals at more frequent intervals and the necessity of carefully controlling wave-lengths to prevent variation from day to day; Messrs. Heck and Hellweg made detailed comments on these communications which were further discussed by Messrs. Brown, Sollenberger, and Reid.

(e) Establishment of world-time, by F. W. Lee (read by Frank Wenner); discussed by William Bowie.

(f) The service available from the standard-frequency transmitters of the Bureau of Standards, by J. H. Dellinger.

(g) The accuracy of the primary-frequency standard of the Bureau of Standards, by C. G. McIlwraith.

(h) Informal communications—Upon invitation of the Chairman, informal communications with particular reference to the papers presented in the symposium were given by Messrs. C. W. Horn of the National Broadcasting Company and H. A. Affel and Warren A. Marrison of the American Telephone and Telegraph Company and Bell Telephone Laboratories.

The marked success of the meetings of the sections and of the union hinged largely upon the excellence of the program developed and the arrangements made by the Committee on Meetings, consisting of Messrs. Frank Wenner, *Chairman,* H. A. Marmer and F. W. Sohon.

JNO. A. FLEMING,
General Secretary

SCIENTIFIC APPARATUS AND LABORATORY METHODS

A SIMPLE AUTOMATIC PRESSURE REGULATOR FOR FILTRATION

IN biology especially definitely controlled pressures on filters are very desirable in as much as the nature of the filtrate is determined not only by the kind of filter used but also by the pressure on the filter. In many instances biologists have neglected to state the pressure at which the filter was operated. The pressure may be regulated to some extent by the pump itself or by a hand-operated air leak. By neither of these means is a pressure obtained which is constant for any length of time. To improve the situation a simple pressure regulator has been devised by means of which a filter may be operated at any pressure for any length of time.

The whole apparatus is so simple that it can be made by any one whose ability at glass blowing does not much exceed the making of a T-tube. Fig. 1 shows a drawing of the apparatus. A 10 cc or 20 cc syringe (a partially broken one may be used) is cut off at one or both ends. The plunger is also cut off. The longer the plunger is, however, the less oil will leak past it at high pressure. A glass tube *b* is fitted with a side arm and a guide as shown in Fig. 1. The guide is just a piece of heavy walled glass tubing cemented in place in tube *b*. Paraffin makes a satisfactory cement. Tube *b* is also provided with a slight flare at the top. Tube *a* may be either a solid or a hollow glass rod, preferably of such diameter that it fits snugly into the guide, but moves freely. If the rod is hollow, holes may be drilled above and below the guide to insure rapid equalization of the pressure throughout the system. If tube *a* fits loosely in the guide, no such holes are necessary. If tube *a* is solid, a groove may be cut along one side. The tube *a* is enlarged as shown in the illustration, and it is ground into tube *b* as a stopper is ground into a bottle. Over the ground end of tube *a* is fitted a piece of thin, soft rubber tubing. A very effective air valve is thus formed. To keep the valve closed a spring is placed