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GEOPHYSICS AT THE BRUSSELS MEETINGS, JULY 18–28, 1919[1]

UNDER the auspices of the International Research Council, which met at Brussels in the Palais des Académies, July 18–28, 1919, there was established, besides other international unions of astronomy, mathematics, physics, chemistry, biology, scientific radiotelegraphy, etc., the International Geodetic and Geophysical Union, consisting of the following sections and officers:

Since there were represented at Brussels this time only the countries of the Allies, it was concluded to defer complete organization of the sections until the entrance into the Union of other countries to be invited by the International Research Council. In the case of Section (*b*) (Seismology), since the agreement among nations belonging to the International Seismological Association, formed before the war, does not expire until April 1, 1920, it was necessary to postpone any organization, whatsoever, of the section. However, as the central office of the association is at Strasburg, it is fitting that it continue there when the Section of Seismology is organized. Professor E. Rothé has been appointed to the chair of geophysics, at the University of Strasburg, France. The rector of the university invited the delegates at Brussels to attend the opening, on November 11, 1919, of the university, now under French auspices.

The *Executive Committees of the Sections* were for the present limited to the president, vice-president and secretary, excepting in the case of (*e*) (Physical Oceanography) where Sir Charles Close (British Ordnance Survey)

[1] Basis of an account which the writer was requested to give before the combined meeting at Ann Arbor, September 4, 1919, of the American Astronomical Society, American Mathematical Society, and the Mathematical Association of America.

Section	President	Vice-President	Secretary and Director Central Bureau
a. Geodesy	William Bowie (U. S. Coast and Geodetic Survey)	Vincenzo Reina (Italian Geodetic Commission)	Lt. Col. G. Perrier (Army Geographic Service, Paris)
b. Seismology	Organization deferred		
c. Meteorology	Sir Napier Shaw (British Meteorological Office)	A. Angot (French Meteorological Bureau)	C. F. Marvin (U. S. Weather Bureau)
d. Terrestrial Magnetism and Electricity	A. Tanakadate (University of Tokyo)	Charles Chree (Kew Observatory)	Louis A. Bauer (Carnegie Department of Terrestrial Magnetism)
e. Physical Oceanography	.....	H. Lamb (University of Manchester)	G. P. Magrini (Hydrograpic Office, Venice)
f. Vulcanology	A. Riccò (Observatory Etna, Sicily)	H. S. Washington (Carnegie Geophysical Laboratory)	A. Malladra (Vesuvius Observatory)

and Mr. G. W. Littlehales (U. S. Hydrographic Office) were made additional members of the executive committee of that section.

The *officers of the International Union of Geodesy and Geophysics* are: President, M. Charles Lallemand (director, Levelling Service, France); general secretary, Colonel H. G. Lyons (Army Meteorological Service, Great Britain). These two officers, with the addition of the presidents of the Sections, who are the vice-presidents of the Union, constitute the *Executive Committee of the Union.*

According to the method of organization and the interpretation put upon the office of secretary, it is expected that the affairs of the unions and sections, between the triennial meetings of the General Assembly, will be largely conducted by the respective secretaries, as is the case also with regard to the general secretaryship of the International Research Council, to which Professor Arthur Schuster was reelected. Thus, according to the official or French version of the statutes of the Union, which were made to conform to those of the council, the secretary's duties are defined as follows:

> The secretary of a section shall act as director of its central bureau. He shall be responsible for the conduct of correspondence, the management of the resources, the custody of the documents, the preparation and issue of publications and such other matters as the General Assembly may refer to him.

Organization of Work.—In section (*a*) (Geodesy), which is to take the place of the former International Geodetic Association, it was decided to defer the appointment of committees and the organization of international research work in geodesy until the next general meeting (1922) of the Union, or until some previous special meeting. At a joint meeting of geophysicists and astronomers it was finally decided to leave to the International Astronomical Union the future international variation-of-latitude observations.

Section (*c*) (Meteorology) it was generally agreed could usefully and effectively supplement, by confining its work to research and fundamental problems in meteorology, the functions and work of the pre-war International Meteorological Committee. The latter, as it consisted of official weather-bureau directors, necessarily had to concern itself primarily with administrative and official meteorological questions. In the unavoidable absence of the elected president, Sir Napier Shaw, no organization of work was attempted except the passing of two resolutions to the following effect:

> (*a*) That there be appointed a Joint Committee of the International Astronomical Union and of the Section of Meteorology of the International Geodetic and Geophysical Union for investigational work on solar radiation.
>
> (*b*) That international work in atmospheric electricity, as far as possible, be placed under the direction of a committee nominated partly by the Section of Terrestrial Magnetism and Electricity and partly by the Section of Meteorology.

The work of section (*d*) (Terrestrial Magnetism and Electricity) could be more com-

pletely organized than that of the other sections, as it happened that there were present at Brussels six members of the pre-war International Magnetic Commission of the International Meteorological Committee, viz: Agnot (France), Bauer (U. S. A.), Chree (England), Palazzo (Italy), Schuster (England), and Tanakadate (Japan). After the election of the officers on July 24 and discussion of the status of work of the pre-war International Magnetic Commission, the following eight resolutions were passed:

1. That a committee be appointed to consider the best method of securing an adequate comparison of the magnetic instruments in use in different countries, and to consider as to the best method of measuring the magnetic elements in absolute units.

2. That the Section of Terrestrial Magnetism and Electricity concurs in the resolution of the Meteorological Section that international work in atmospheric electricity should be as far as possible placed under the direction of a committee nominated partly by the Section of Terrestrial Magnetism and Electricity, and partly by the Section of Meteorology.

3. That the Section of Terrestrial Magnetism and Electricity would welcome cooperation with the International Union of Scientific Radio-telegraphy in the investigation of the electric phenomena of the higher atmosphere.

4. That a committee be appointed on the systematic exchange of magnetic curves.

5. That special committees be appointed from time to time for the investigation and report on specific problems in terrestrial magnetism and electricity.

6. That the Section of Terrestrial Magnetism and Electricity would welcome cooperation with the International Astronomical Union in investigating the relationships between solar and terrestrial magnetic and electric phenomena.

7. That the ex-officio members of the executive committee be empowered to elect additional members to serve until the next ordinary meeting of the Union.

8. That the executive committee consult with the executive committees of other sections of the Union and report to the general secretary of the Union the amount of funds annually required by the Section during the period of the present convention.

The executive committee of the Section of Terrestrial Magnetism and Electricity on July 25, in order to carry into effect these resolutions, appointed ten committees, the complete composition of which was deferred until the entrance into the Union of other countries. Thus the committee-plan of distribution of international researches in terrestrial magnetism and electricity (atmospheric electricity, earth currents, polar lights, radiotelegraphy-strays, etc.), as adopted by the International Astronomical Union, was also followed in section (*d*) as, in fact, generally in the other sections, as far as they could be organized.

Annual Funds.—The basis of votes and financial contributions is that adopted by the International Research Council, viz:

Population of Countries	Number of Votes on Scientific Questions	Number of Units of Financial Contributions
Less than 5 millions	1	1
Between 5 and 10 millions..	2	2
Between 10 and 15 millions..	3	3
Between 15 and 20 millions..	4	5
Over 20 millions	5	8

Each country may include the native inhabitants of its colonies in its population. Self-governing dominions have a separate voting power according to above scale. It is expected that there will be at least fifty contributing units, hence, the total annual funds which may be available for the international researches of a Union will be about 50 times the unit of contribution, whatever that be finally. The funds are to be obtained, by the International Research Council, through a national research organization, academy, or governmental agency.

It is not possible under the present statutes, for a country to join only one or more of the sections of the Geodetic and Geophysical Union. In this respect, then, the organization of the new international associations (unions) differs from the pre-war ones—a country could join, for example, only the International Geodetic Association, not, necessarily, also the International Seismological Association. As a matter of fact, however,

practically all civilized countries were adherents of the various existing international bodies. Hence the aggregate money contribution per county joining the new international bodies will probably not be any more, more likely less, than under the old system.

The organization of the new international bodies may appear to be not as simple, or perhaps not even as independent, as the former ones. Thus, for example, instead of having such a brief and convenient name as "International Geodetic Association" we would have now "Section of Geodesy of the International Geodetic and Geophysical Union." (The International Research Council does not insist upon having its name also added.) Many of the geophysical delegates from the various represented countries, it appeared, would have preferred the name. "International Geophysical Union," in accordance with the original proposal. However the executive committee of the International Research Council, at its preliminary meeting in Paris last May, adopted the expanded name on the motion of the representative of Italy.

Most likely there will naturally come into use simplified designations, as, for example: International Geodetic Section (or committee), International Seismological Section (or committee), etc. This would conform to the corresponding names for the "national sections," as they have been tentatively called in the United States, or "national committees," as they are called in England and France.

The basic idea of retention of the name of section (or of committee) is, of course, that the particular branch of geophysics represented by the section is to be considered as but a part of the broad, general subject of geophysics. The fruitful, fundamental idea is that there will be at least once in three years a general symposium on the main branches of geophysics, rather than independent, uncoordinated meetings on special branches. In that respect there is certainly a great gain in the new organization of geophysical bodies over the old ones. And as far as independence is concerned, it is to be said that the manner of organization admits of much elasticity and large freedom of action of any section apart from the Union to which it may belong, or of the Union apart from the council.

The present convention is to continue for twelve years, beginning January 1, 1920, subject to renewal and modification at the end of this period. The general meetings are to take place every three years when there will be opportunity for changes in organization or statutes, as future experience may suggest. It will not be necessary for a union to meet at the same place as the council, or for all the various unions to meet together. A section may furthermore call a special meeting when found necessary.

The *objects of the International Geodetic and Geophysical Union* are stated in the official version as follows:

1. To promote the study of problems concerned with the figure and physics of the earth.
2. To initiate and coordinate researches which depend upon international cooperation and to provide for their scientific discussion and publication.
3. To facilitate special researches, such as the comparison of instruments used in different countries.

In conclusion, it may not be amiss to say that the six sections of the International Geodetic and Geophysical Union as finally established were in general accord with those the American Geophysical Delegates were instructed to recommend. The French had originally proposed but two sections, Geodesy and Meteorology, to which was added a third, Seismology, in the Royal Society proposals. However, as the result of preliminary, informal meetings at Brussels of the various national delegations, discussion soon developed practical unanimity in the proposals to have each main branch of geophysics represented by an independent section. The resolutions passed by section (*c*) (Meteorology) and (*d*) (Terrestrial Magnetism and Electricity) are good illustrations of the provisions taken also as to cross-relationships

between sections of a union or between different unions.

As far as the future advancement of the particular subjects of Terrestrial Magnetism and Terrestrial Electricity are concerned, it is believed that a step of fundamental importance was taken at Brussels by the assignment of these subjects to a section by itself rather than relegating or subordinating them to some other branch of geophysics with which they might have but a very remote, or even but a purely administrative connection.

Besides receptions tendered by the burgomaster (Adolf Max), the Minister of Education, the Minister of Foreign Affairs, opportunity was afforded for a visit and reception on July 26 at the Uccle Royal Observatories, to whose director, Monsieur G. Lecointe, the signal success of the local arrangements is to be largely ascribed.

Let us hope that the powerful stimulus given geophysical research by the International Research Council will bear the desired fruit and bring about in each country adequate recognition of the needs for the advancement of our knowledge of the physics of the earth!

LOUIS A. BAUER

A MEDICAL SCHOOL, IN THE WAR AND AFTER

LADIES and gentlemen of the classes entering the Cornell Medical College, on behalf of the President, the Acting Dean and the Faculty, I bid you welcome! A year ago the college opened under the shadow of the world war and saddened also by the death of our great dean, William Mecklenburg Polk. Today the college reopens with its ranks filled, with new men added to its staff, and with important departments remodeled on modern lines. Dr. Polk's policy of reorganizing one department after another upon sound scientific principles has been continued since his death.

The war brought to every one the opportunity for public service and the lesson will not be lost. The participation of our college in the war is a cause for quiet satisfaction, and perhaps we may pause for a moment to glance at some of the activities of the institution which has been or is to be your intellectual home. A member of our faculty gave up his practise and went to Washington to assume control of important matters there. On speaking to him of his unselfishness, he replied that his lot was not worthy of sympathy when contrasted with the sacrifice of the many young second lieutenants in the medical service, who had their wives and babies at home to be supported by the meager salary paid by the government. This generous sentiment was illustrative of the spirit that spent itself freely for the welfare of the country.

In 1914 Dr. Stimson, a veteran of our Civil War, went from this college into the front trenches with the Belgians and showed them by candlelight antiseptic methods for the treatment of wounds. He returned there again in 1916 and was planning a third trip before he died in 1917.

One of our professors took the New York Hospital unit to France. Another was chief officer in charge of all the pathological laboratories in France. We visualize such men as healing the wounds of those hurt in battle or seeking out new methods of cure in the laboratories behind the lines.

One of the women graduates of this college went abroad as secretary to the head of the Bellevue Hospital unit. When later the chief of that hospital went to the front he left her in charge of the base hospital, the younger men remaining there willingly recognizing her superiority.

Another of our professors was at first chosen to standardize surgical dressings for the American Red Cross. He also trained 135 army surgeons in the surgery of war wounds. This course aroused their enthusiasm both when it was given and later in retrospect abroad, and it brought the comment from the Surgeon-General's Office that it was the best constructed and most comprehensive course given in the country. This

[1] An address of welcome to the students of the Cornell University Medical College, September 29, 1919.