

THE INTERNATIONAL METEOROLOGICAL ORGANISATION.

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HISTORICAL.

In August 1872, fifty-two Directors of meteorological institutes and other experts interested in meteorology met in Leipzig at a semi-official international conference convened by MM. BRUHNS of Leipzig, WILD of St. Petersburg and JELINEK of Vienna, with a view to international agreement as to the steps to be taken for settling a number of meteorological and climatological questions.

The meeting considered that an official institution should be founded for the purpose of placing meteorology on an international basis and that the first step to be taken should be the convening of an official congress for the following year, to be held in Vienna, to which Governments should be invited to send representatives.

The Congress met in Vienna in September 1873, under the presidency of MM. BRUHNS, BUYS-BALLOT and JELINEK.

Thirty-two Delegates of Governments were present.

The Congress created a Permanent Committee composed of seven members charged with the duty of taking the necessary measures for the carrying out of the resolutions of the Congress and of preparing for a new international congress of the same character which should meet five years later.

The Permanent Committee met at Utrecht in 1874, in London in 1876 and again at Utrecht in 1878 under the presidency of M. BUYS-BALLOT.

It convened the Second International Meteorological Congress of Delegates of Governments at Rome for the month of April 1879, after having prepared a draft organisation which, on general lines, resembles that which exists to-day. For this reason the Meteorological Organisation considers the year 1878 as the year of its creation.

Forty Delegates from sixteen countries took part in the Congress at Rome.

The Permanent Committee presented reports on its activities from the time of its creation as well as a draft scheme for an international meteorological organisation.

The Congress adopted a resolution which provided for the institution of a permanent body to be known as the "International Meteorological Committee", the Statutes for which had been drawn up at Utrecht in 1878.

The latter Committee was composed of nine members, nominated by vote of the Congress which could not appoint more than one delegate from each State. The Committee would remain in office until the following Congress; its members would themselves elect the executive officers and complete the Committee in case of death or retirement, by appointing new members.

The task allotted to the Committee was, in principle, that with which the first Permanent Committee had been charged.

The Executive Body of the Committee, composed of MM. WILD and SCOTT, convened a fresh International Congress in Munich in 1891 to which Directors of independent meteorological services all over the world were invited; thirty Directors attended the meeting.

This Conference decided to increase the number of members of the International Meteorological Committee to seventeen, and formed a special Commission of seventeen members to deal with questions relating to terrestrial magnetism.

Succeeding Conferences met in Paris in 1896 and at Innsbruck in 1905.

In the meanwhile the Committee had progressively entrusted its work relating to the study of scientific and technical questions to Commissions, which met more frequently than the Conference. The Chairmen of these Commissions submitted resolutions for the consideration of the Committee. This method proved satisfactory as the activities of the Commissions enabled more far-reaching investigations to be undertaken than would have been the case had they been entrusted to the personal investigation of members of the Committee.

Nevertheless, the Committee retained its control of all work undertaken and assured the continuation of the Conferences of Directors.

The Conference of Innsbruck considered that draft regulations for an international meteorological organisation should be prepared.

Those draft regulations should take into account the historical development of the existing organisation and should harmonise with the various resolutions adopted by the Conferences of Directors and the meetings of the International Meteorological Committee or of its Commissions. The International Meteorological Committee was charged with the preparation of this draft and the submission of it to the next Conference of Directors.

The Committee fulfilled this task at the meeting held in Paris in 1907, when it presented draft regulations.

The Conference of Directors convened at Utrecht in 1915 should have ratified these regulations of 1907, but the meeting did not take place owing to the events of 1914.

On the 3rd June 1919, Sir Napier SHAW, President of the Committee since 1907, after consultation with the Directors of the British, French and Italian Meteorological Services, invited eleven of his colleagues (mostly members of the International Meteorological Committee in 1914) to a semi-official conference which should reconstitute an international meteorological organisation.

The multifarious uses of W/T and the needs of the air services which had begun to develop justified such a conference of meteorologists whose duty it was to consider the measures to be taken for adapting meteorology to modern exigencies.

The meeting took place in London from 3rd to 9th July 1919.

Shortly after, on 30th September, 1919, an official Conference of Directors under the Presidency of M. ANGOT, Director of the French Meteorological Service, which was convened by the Government of the French Republic, took place in Paris.

The Agenda included the ratification of the above-mentioned draft of the Regulations for the International Meteorological Organisation, prepared in 1907; a series of general questions; the appointment of the Commissions charged with the carrying out of the study of scientific and technical questions; and the discussion (begun before the War) of measures to be taken to ensure international publication.

The result of the adoption of the Regulations approved by the Conference of 1919 was that the Organisation decided to remain a private tripartite body, composed of the Conferences of Directors, the International Meteorological Committee and the Commissions. Seven Commissions were appointed. These Commissions held various meetings during the succeeding years.

The Commissions met, particularly, almost all members being present, during the Conference of Directors held at Utrecht in 1923, and presented reports to the Conference.

The Committee was then re-elected and nominated Professor VAN EVERDINGEN as President.

Various Commissions met later in London, Paris, Davos and Zurich, and their reports were examined by the Committee at a meeting in Vienna in October 1926. It was at this meeting that the question (which had been discussed so often during the past fifty years) of the foundation of an International Meteorological Bureau or the creation of a permanent Secretariat of the International Meteorological Organisation was finally settled.

It was decided to create a permanent Secretariat under the direction of the President to act as a clearing house for documents and responsible for organising the meetings of the Committee and Commissions.

The Directors of various Meteorological Services were enjoined to approach their respective Governments in support of the request for the credits necessary for the functioning of the Secretariat.

The Committee called a new Conference of Directors for September 1929, at Copenhagen.

Nearly all the Commissions had met during the previous week in the same city.

The Conference decided to appoint a Sub-Commission to draw up the final draft of the Statutes of the International Meteorological Organisation in accordance with the principles of the existing Regulations and to communicate these Statutes through official channels to the Governments.

But the Governments showed no haste in responding to the appeal of the International Meteorological Organisation and the reason for their attitude may perhaps be explained by the fact that there were already two official international bodies with analogous functions, viz:-

The International Geodetic and Geophysical Union in the scientific field;

The International Commission for Air Navigation in the field of applied meteorology.

In this latter field, however, the International Meteorological Organisation had already realised that meteorology would develop on parallel lines to aeronautics and

had decided to set up a "Commission for the application of Meteorology to Air Navigation".

But this Commission apparently was never convened after 1923 for, as stated during the discussion at Copenhagen, a more active body, more rapid in its decisions and above all of an official character — without a doubt the International Commission for Air Navigation is referred to — has actually been substituted for it.

The final amendments were made to the Statutes of the Organisation at the meeting of the Committee at Locarno in 1931.

These Statutes read as follows in their present form:—

STATUTES OF THE INTERNATIONAL METEOROLOGICAL ORGANISATION.

ARTICLE I.

The International Meteorological Organisation, created at Utrecht in 1878, revised at Paris in 1919, at Utrecht in 1923, at Copenhagen in 1929, and at Locarno in 1931, shall comprise:—

1. The Conferences of Directors.
2. The International Meteorological Committee.
3. The Secretariat of the Organisation.
4. The Commissions of the Organisation.

ARTICLE II.

Conferences of Directors.

1. The principal functions of the Conferences of Directors shall be to discuss administrative questions and the means for carrying them out; to promote agreement as to the methods of observations and calculation; to decide what co-operative researches should be undertaken and to create the necessary Commissions as required; purely theoretical questions shall not be within the province of the Conferences.

2. The Conferences shall consist of the Directors of independent State meteorological services (*réseaux*) of all nations.

3. Conferences shall be summoned by the International Meteorological Committee and must be held at least every six years. The Committee may also summon extraordinary Conferences when there are urgent questions to be submitted to them. A meeting must be summoned if it is demanded by a quarter of the members of the Conference.

4. The President of the Committee shall give notice of a meeting a year in advance by circular letter addressed to the members of the Conference (and to the Presidents of the Commissions). The precise date and place of meeting shall be decided by a vote of the Committee.

5. The President of the International Committee shall summon directly all the members to the Conferences. The Secretariat shall prepare a list of members of the Conference and shall publish it each year after bringing it up to date.

6. The members of the Conference shall have the right to be represented if they are not able to take part personally in the Conference. The substitute must belong to the Service represented or be a former director of that Service; he must not be a member of the Conference in any other capacity.

7. Decisions shall be taken by a majority of the votes of the members present, unless a vote by countries (1) shall be demanded. A single member shall have the right to demand such a vote.

8. The Conference of Directors shall appoint the International Meteorological Committee whose authority shall end at the following ordinary meeting of the Conference.

9. The Conference shall choose its own President who shall retain office throughout the session.

ARTICLE III.

International Meteorological Committee.

1. Each member of the Committee must belong to a separate country and must be a member of the Conference.

2. The Conference of Directors shall fix the number of members of the Committee.

3. The Committee shall have the right to complete its number in the event of the resignation or death of any of its members.

4. When a member of the Committee shall cease to be a Director he shall remain a member of the Committee until the next meeting of the Committee.

5. The Committee may co-opt in a consultative capacity persons whose advice is likely to prove of service.

(1) *This word means all self-governing countries, e. g. the Dominion of Canada.*

6. The Committee shall appoint an Executive Council consisting of the President and four of its own members. The functions of the Executive Council shall be governed by bye-laws approved by the Committee.

7. During the intervals between the meetings of the Conference the Committee shall supervise the carrying out of the decisions of the Conference, receive and approve the reports of the Commissions and take all steps necessary for the development of international meteorology.

8. The Committee shall elect its own President who shall retain office until the next ordinary meeting of the Conference.

9. The retiring President shall not be eligible for immediate re-election if he shall have served for more than four years. This clause shall not be operative until 1935.

10. The Committee shall keep in touch with the international organisations which deal with geophysics, particularly with the International Union of Geodesy and Geophysics, in such a way as to ensure co-ordination between the work carried out by these organisations and by the Committee.

11. The Committee shall meet at least every three years in full session. A year in advance the bureau of the Committee shall inform the members of the Committee and the Presidents of Commissions by circular letter of the meeting of the Committee and ask them to designate by vote the time and place of the meeting.

ARTICLE IV.

Secretariat of the International Meteorological Organisation.

1. A Secretariat under the direction of the President of the International Meteorological Committee shall be charged with the organisation of the meetings of the Conference, Committee and Commissions, and with the publication of the reports. It shall receive all documents relative to the meteorological services of the whole world, and shall give as much help as possible to the President of the Committee and the Presidents of the Commissions in the execution of their work.

2. The costs of the Secretariat shall be met by voluntary subscriptions from the national meteorological services in the proportion of 4000 gold francs for a large country, 2000 gold francs for a country of medium size and 1000 gold francs or a lesser sum for other countries.

3. The Executive Council of the Committee shall be responsible for the budget of the Secretariat and a statement of accounts shall be sent annually to all members of the Conference.

4. The Secretariat shall ultimately be located in Switzerland. (1)

5. The composition of the Secretariat and the salaries of its personnel shall be fixed by the Executive Council of the Committee.

ARTICLE V.

Commissions.

1. Each Commission appointed by the Conference or by the Committee must include at least one member of the Committee. In the cases of newly created Commissions the first President shall be nominated by the Conference or by the Committee.

2. Once constituted, Commissions shall have power to co-opt additional members and to arrange their own procedure.

3. Presidents of Commissions who are not members of the Committee shall be invited to attend the meetings of the Committee and to take part in its discussions in a consultative capacity. The Presidents shall present a report on the work of their Commissions at the commencement of each meeting of the Committee, or of the Conference.

4. The Commissions shall meet at least once every three years. The date and place of meeting of a Commission shall be fixed by the President of the Committee and the President of the Commission acting in consultation. Decisions shall be taken by a majority of the votes of the members present, unless a vote by countries shall be demanded.

5. Any member who wishes to bring up a subject for discussion at a meeting of a Conference, the Committee or a Commission, shall previously request the President concerned to put the question on the agenda paper, and shall send a short report on it to the Secretariat at least two months before the meeting. The Secretariat shall distribute copies of all such reports to the members of the Committee or Commission in question and to members of the Conference who express a wish to receive them.

In addition, for studying question of details the Commissions appoint Sub-Commissions. Some of these Sub-Commissions are appointed by two Commissions. The Sub-Commissions report to the Chairmen of the Commissions and submit their resolutions at the meetings of the Commissions with a view to their adoption and approval. The Commissions fix the duration of the appointment of the Sub-Commissions.

(1) *The seat of the Secretariat is at present in the Netherlands (194, Utrechtsche weg, De Bilt) where the President of the International Meteorological Committee resides.*

In the *Revue Aéronautique Internationale* N° 3 of March 1932 a chronological table of the meetings of the Conferences and Commissions will be found; this gives an outline of the activity of the International Meteorological Organisation.

In it will also be found the list of the decisions of the International Meteorological Organisation as well as the programme of forthcoming meetings. Among the recent meetings of the *Commission of Marine Meteorology* may be mentioned that held at Hamburg in the month of April 1932. The programme of the meeting was drawn up with the object of discussing:-

The maps of the Northern Hemisphere prepared by the *Deutsche Seewarte*;

The system of gale warnings;

Mr. PETERSON'S proposals to introduce observations of the salinity of the oceans in the regular observations on board ships;

The abridged manual for shipboard observations and the meteorological log;

The proposals of the Sub-Commission for the radiometeorological organisation of the oceans.

The following is an extract of the resolutions adopted during the session:-

I. — *Denomination of the Subdivisions of Marsden's ten-degree Squares.*

The MARSDEN'S chart dividing the globe's surface into continuously numbered 10 degree squares is in use for denoting ocean areas since the second half of the last century.

Copy of form N° 1011 of the British Meteorological Office shows the subdivision of the Marsden's chart into 5 degree squares lettered *a, b, c, d*, for latitude North and latitude South, but only for longitude West. For longitude East different manners in denominating the 5 degree squares have been used. *An international agreement for denominating the 5 degree squares does not exist.*

On the introduction of the Hollerith (Powers) system in 1921 by the Marine Division of the British Meteorological Office, in 1923 by the Dutch Meteorological Institute, it was necessary to subdivide the MARSDEN squares into 1 degree squares numbered from right to left for longitude West (in accordance with the denomination of the 5 degree squares in form 1011), from left to right for longitude East, as shown on figure below.

It is proposed to adopt this denomination of the sub-1 degree squares and the sub-5 degree squares of the MARSDEN 10 degree square as an international one.

WEST		EAST		
99		90	90	99
d	c	c	c	d
b	a	a	a	b
09		00	00	09
09		00	00	09
b	a	a	a	b
d	c	c	c	d
99		90	90	99

NORTH

SOUTH

II. — The Commission recommends that when wind forces on the Beaufort Scale are grouped the following four main groups should be employed:-

0	calm,
1, 2, 3,	light and gentle winds,
4, 5, 6, 7,	moderate and strong winds,
8, 9, 10, 11, 12,	gales and hurricanes.

When for any purpose smaller groups are required they should be subdivisions of these four main groups.

III. — When describing whirlwinds and similar phenomena the direction of rotation should be given always as seen from above.

IV. — The Commission is of opinion that the meteorological problems of air navigation over the oceans require co-operation between all the Commissions interested. With this object it proposes to set up a joint Sub-Commission with the Commission for the Upper Atmosphere and the Commission for the Application of Meteorology to Air Navigation.

V. — The Commission requests the International Meteorological Committee to express in the strongest terms possible the undesirability of modifying the international ships' code to meet local needs. If any meteorological service considers the International Code unsuited for its needs, an entirely different code should be adopted which cannot be mistaken for the International Code.

VI. — The Commission desires that in ships' reports the surface temperature of the water shall be given in whole degrees Celsius.

VII. — With regard to salinity observations between the ports of Western Europe and the East coast of North America it is recommended that they should be taken over the whole area at least twice a day. If this programme should be too extensive, the observations East of 40° W. of Greenwich could be limited to the part between 20° and 15° W. of Greenwich; West of 40° W. of Greenwich they should be taken strictly over the whole area.

VIII. — Water samples for measuring salinity should be taken actually at the surface for the time being, until the time when the differences of temperature and salinity between the surface water and the condenser water have been established by observation.

IX. — The Commission is not yet in a position to recommend universally the adoption of the signal for hurricane of the Lisbon Convention, but recommends the circulation of a proposal to all services interested that it should be adopted as an international signal to indicate a severe storm or hurricane, which signal might be used together with the international signal for direction.

X. — The Commission recommends that the services of the Far East should adopt all the international local storm signals. If they are unable to do this it is recommended that they should eliminate from their local storm signal system all symbols which occur with another meaning in the international system.

XI. — The Commission appreciates the work which has been accomplished in the China Seas Storm Signal Code, as revised at Hong-Kong, and is very glad that unification in this respect has been arrived at in the Far East. Before however recommending it for universal application the Commission would like to try to amplify the code by eliminating the less important parts, and to devise night signals.

XII. —

XIII. — The Commission is of the opinion that the arrangement of the meteorological log according to the code for ships' reports cannot yet be universally recommended, and would in all cases limit the use of such a log to ships which take their observations in a synoptic manner. It welcomes the proposal to concentrate in one central place the

codes used either independently or in combination with the existing international ship-board log, and to put these codes at the disposal of those interested.

XIV. — The Commission appreciates the work carried out up till now by the *Deutsche Seewar:e* for making the international map of the Northern Hemisphere.

XV. — The Commission recommends that during the Polar Year observations of the aurora should be made on board ship and that this should be done in the parts of the oceans proposed by the Sub-Commission of the Association of Magnetism and Terrestrial Electricity of the International Geodetic and Geophysical Union, and according to the programme of that Sub-Commission.

