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NOTES, ABSTRACTS, AND REVIEWS.

INTERNATIONAL METEOROLOGICAL COMMITTEE.

[Reprinted from *Nature* (London), Oct. 6, 1921, pp. 194-195.]

The first meeting, for general purposes, of the international committee appointed by the conference of directors of meteorological institutes and observatories held in Paris in 1919, in continuation of the committees which have organized international meteorology from the Congress of Vienna in 1873, was held during the week September 12-17 in London. Those attending as members were Sir Napier Shaw (president), M. A. Angot (vice president), Prof. E. van Everdingen (secretary), Col. F. A. Chaves, Director Hesselberg, Commandant Jaumotte, Dr. Maurer, and Capt. Ryder; as presidents of commissions, Prof. Bjerknes (Bergen), of the Commission for the Study of the Upper Air; Col. E. Gold, of the Commission for Weather Telegraphy; and Col. Saconney, of the Commission for Aerial Navigation; and, as savants whose assistance would be useful in the deliberations of the committee, Col. Delcambre, Dr. Gorczyński, Col. Matteuzzi, Dr. Melander, Prof. T. Okada, Dr. G. C. Simpson, Dr. A. Wallén, Dr. S. Fujiwhara, and Mr. L. F. Richardson.

The business opened with the election of two members of the committee—Director Wallén, of Sweden, to fill the sixteenth place, which was left vacant at Paris, and Prof. T. Okada, of Tokyo, in succession to Prof. Nakamura, of the same institute, resigned. It concluded with the election of Col. Delcambre, director of the Office Météorologique National of France, and Dr. G. C. Simpson, director of the Meteorological Office, London, to the places vacated at the end of the meeting by M. Alfred Angot, Directeur Honoraire du Bureau Central Météorologique, and by Sir Napier Shaw, now Professor of Meteorology in the Royal College of Science, under the rule which requires the 16 (ultimately 20) members of the committee to belong to different countries and to be directors of independent meteorological institutions.

Apologies for absence were received from Prof. Eginitis, of Athens; Mr. H. A. Hunt, of Melbourne; Prof. Nakamura, of Tokyo; Prof. Palazzo, of Rome; Sir Frederick Stupart, of Toronto; and Dr. G. T. Walker, of Simla.

The chief business of the meeting was to receive reports from the commissions for special departments of meteorological work. Of these, two—namely, the Commission for the Study of the Upper Air and the Commission for the Meteorology of the Polar Regions—had met in Bergen in the last week of July of this year. The Commission for Weather Telegraphy had held a meeting in London in November of last year to formulate new codes for the transmission of information, from land stations and from ships, respectively, in pursuance of certain provisions of the peace treaty. That commission held further meetings in the week ending September 10 of this year for the discussion of details in the light of experience already obtained. In the same week meetings were held of the Commission for Maritime Meteorology, for Aerial Navigation, and a joint meeting of the three commissions concerned with the speedy transmission of meteorological information was held to consider points of common interest. Meetings of the Commission for Réseau Mondial were also held.

The chief recommendations discussed were: (1) By the Commission for the Study of the Upper Air, inviting observations of the upper air from land and sea and proposing to resuscitate the practice of preparing and issuing an international publication of the results for the upper air contributed by the various countries, and to obtain subventions for the purpose of providing for the cost of compilation and editing, as well as of printing and distributing. The total annual sum required was estimated at £4,000. (2) By the Commission for Weather Telegraphy, setting out an agreed code for land stations and, jointly with the Commissions for Maritime Meteorology and Aerial Navigation, two alternative codes for ships at sea, between which a selection should be ultimately made so that one form of message shall become universal. (3) By the Commission for Maritime Meteorology, proposing suitable cooperation for the collection of oceanographical data. The formulation of the codes and the approach to a final solution of the questions involved are a matter for warm congratulation.

The Commission for the Réseau Mondial recorded its thanks for the volumes which the British Meteorological Office had already published, and expressed a desire for their continuance. At the same time the question of daily charts for the globe was raised, and Col. Matteuzzi urged the daily issue of reports of pilot balloons with the object of obtaining a general view of the streams of air.

On the initiative of Col. Delcambre, a new commission was set up for the further study of clouds; and on the initiative of Col. Saconney it was recommended that rewards should be offered for valuable observations, notes, or photographs spontaneously contributed by aviators and others.

Prof. Okada, on behalf of Prof. Nakamura, urged the industrial and economic, as well as the scientific, importance of a speedy publication by all institutes of a summary of the weather month by month.

Some time was devoted to the question of the application of meteorology to agriculture, and the commission appointed at Paris for that study was enlarged by the addition of a number of names of experts on the agricultural or biological side of the various subjects involved. It was also decided that application of the study of weather to forestry should be included.

The report of the Polar Commission dealt with the provision that had been made at Obispo, Spitsbergen, Bear Island, Jan Mayen, Lerwick, and in northern Canada and elsewhere, for geophysical investigations during Amundsen's proposed drift across the Pole. It was decided to unite the Polar Commission with the Commission du Réseau Mondial. Dr. Simpson was appointed president of the united commission.

At the meeting on September 15 Col. F. A. Chaves, of the Azores, well known to all meteorologists for his enthusiasm for the subject, announced that the Portuguese Government had appointed Sir Napier Shaw, M. Angot, and Prof. E. van Everdingen to the dignity of Commander of the Order of Santiago da Espada in recognition of their services to international meteorology, and that he expected to be able to present the insignia on behalf of his Government before the close of the meeting.

When the general business of the meeting was concluded, and after the completion of the number of 16 members, it became necessary to hold a meeting of the reconstituted committee in order to make appointments to the presidency and vice presidency, which had become vacant by the retirement of Sir Napier Shaw and M. Angot. By a unanimous vote of the committee Sir Napier Shaw was invited, and consented, to act as

president until the conference in 1923. Prof. E. van Everdingen was elected vice president, and Dr. Hesselberg, Director of the Meteorological Institute, Christiania, secretary.

It was agreed, on the invitation of Prof. E. van Everdingen, that a conference of directors of meteorological institutes and observatories should be held in Utrecht in 1923, either in the spring or autumn, as may be found the more convenient.

AMERICAN MEMBERS OF INTERNATIONAL COMMISSIONS.

The following names are those of American meteorologists who are members of the various commissions of the International Meteorological Committee:

Prof. C. F. Marvin, Chief of the U. S. Weather Bureau, Washington: International Commission for Meteorological Telegraphy; International Commission for Marine Meteorology; Commission du Réseau Mondial et de la Météorologie Polaire; International Commission for the Investigation of the Upper Air.

Dr. H. H. Kimball, Weather Bureau, Washington: International Commission for Solar Radiation.

Prof. J. Warren Smith, Weather Bureau, Washington: International Commission for Agricultural Meteorology.

Maj. W. R. Blair, Signal Corps, Washington: International Commission for the Application of Meteorology to Aerial Navigation.

Dr. C. G. Abbot, Smithsonian Institution, Washington: International Commission for Solar Radiation.

Dr. L. A. Bauer, Carnegie Institution, Washington: International Commission for Terrestrial Magnetism and Atmospheric Electricity.

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RELATION OF COASTAL CURRENTS AND WINDS ON THE PACIFIC COAST.[1]

By H. A. MARMER.

[Abstract reprinted from *Jour. Washington Acad. of Sciences*, Oct. 4, 1921, pp. 397-398.]

This paper presented the results of an investigation of the speeds and directions of the current along the Pacific coast of the United States brought about by local winds. The investigation was undertaken primarily for the purpose of aiding the mariner and was based on observations made under the direction of the Coast and Geodetic Survey by members of the crews of the five light vessels stationed along the coast from San Francisco Bay to the Strait of Juan de Fuca. The apparatus used for measuring the speed and direction of the current was necessarily the simplest, and consisted of a 15-foot current pole, a log line graduated to knots and tenths for a run of one minute, a stop watch, and a pelorus. The wind velocity was estimated in accordance with the Beaufort scale.

Since the current as observed is the resultant of a number of different currents due to various causes, such as tides, winds, river discharge, and differences in density, the observations are tabulated with reference to various arguments. Thus by tabulating with reference to time of tide at a near-by port for periods of 29 days, the tidal current is derived. This current on the Pacific coast, offshore, is of the rotary type, the direction of rotation being clockwise, and shows considerable diurnal inequality. The wind current is derived by tabulating the observations with reference to winds of particular velocity and direction; then by summing for each such wind a large number of observations, the tidal current may be considered as very nearly eliminated.

In the present investigation the observations were tabulated with reference to winds from a given direction divided in groups covering a range of wind velocity of 10 miles. The results derived show that on the Pacific coast, at a distance of from 4 to 10 miles from the land, winds from 10 to 70 miles per hour will give rise to currents from one-fourth of a knot to over a knot; and this current will set, not in a direction of the wind, but in a direction of about 20° to the right of the wind. This has an important bearing on navigation, since winds blowing parallel to the coast or even away from the coast may give rise to currents tending to set a vessel on shore.

In the results presented for each of the light vessels the effect of fresh-water run-off at the light vessels stationed off San Francisco, Columbia River and Swiftsure Bank was sufficiently large in some cases to change the direction of the current brought about by winds of moderate velocity from the characteristic deviation of 20° to the right of the wind direction. But with increasing wind velocity the direction of the current approximated toward the direction of 20° to the right of the wind.

[1] Presented before Philosophical Society of Washington, May 21, 1921.

RESISTANCE OF AIR TO THE MOVEMENT OF SPHERES AND THE ASCENSIONAL RATE OF PILOT BALLOONS.

By C. E. BRAZIER.

[Abstracted from *Comptes Rendus* Oct. 17, 1921, pp. 644—646.]

Formulæ for the computation of the ascensional rate of pilot balloons are of the general form $V=m[A/(A+B)^{2/3}]^n$ in which A and B are the ascensional force and weight of the balloon respectively. But ascensional rates computed from formulæ based upon various determinations of m and n differ widely from one another. In order to determine some criterion for the correct values of these constants, the author has compared data obtained from ascents made by Rouch, Porte, Cave, and Dines, with certain aerodynamical studies made by Eiffel and Maurain upon spheres in moving air as observed in the wind tunnel.

In the equation $R=\frac{K\rho\pi D^2V^2}{4\rho(15°\text{C.},760\text{mm.})}$, in which R is the resistance of the sphere, K the coefficient of resistance, ρ the specific weight of the air, D the diameter of the sphere, and V the speed of the air current, the value of K varies according to the Reynold's number which is defined as $N=VD\rho/\eta$ (η being the viscosity of the air). Between the limits $N=100\times10^3$ and 300×10^3, K is in a large measure a function of the turbulence in the current of air.

It was desirable to compute the values of N and K from two and three theodolite balloon ascents and see if the laboratory relations between the two terms hold in the free air as well as in the wind tunnel. This study involved five assumptions: (1) That the balloon was spherical; (2) that the specific weight of hydrogen is 0.1 kg. per liter; (3) that one may neglect (*a*) the influence of water vapor on the specific weight of air, (*b*) the volume of the balloon envelope, (*c*) the pressure due to the tension of the balloon, (*d*) the difference in temperature between the gas in the balloon and the ambient air, and (*e*) the loss of ascensional force due to diffusion through the rubber; (4) that the mean ascensional speed is reached