

FIFTY YEARS AGO...



The *Hydrographic Review* of May 1929 carried a paper by the President of the Directing Committee, Rear Admiral A.P. NIBLACK, U.S. Navy, concerned with the cooperation of the IHB with other international organisations and reviewing the progress made during the first ten years of the Bureau's life.

" This Bureau owes its origin to the generosity and initiative of the British Government in inviting delegates of the maritime countries to a Hydrographic Conference in London, in June 1919, for the purpose of advancing the science of hydrography in general, and the practice of Hydrographic Surveying in particular, especially in those parts of the world where accurate charts are lacking; to co-ordinate the world's hydrographic work yet to be done; to bring about such international uniformity as may be possible in the character and substance of hydrographic publications; and in the adoption, by the various maritime governments, of as much uniformity as practicable in all aids to navigation of whatever character. At the suggestion of this London Conference, the International Hydrographic Bureau was created to sit permanently as a consultative committee, to co-ordinate international work and co-operate with other international organisations with which hydrography is affiliated.

This Bureau, organised in 1921, has, therefore, endeavoured to carry out its mission, as prescribed by its Statutes, and, incidentally, has tabulated at great expense and for all the maritime countries of the world, both as an argument for and as an aid to international uniformity (1) all the signs, symbols, and abbreviations used on hydrographic charts; (2) the same for coastal (hydrographic) aviation charts; (3) all the various systems of storm warning signals (some 26 in number) and the location of their signal stations; (4) all the life-saving stations and their equipment and the variegated signals they use; (5) all the buoyage and buoy-lighting systems of the world (some 26 in number); (6) the proposed limits of oceans and seas to prevent overlapping in publications; (7) the terminology in use in every maritime country for the forms of the ocean bottom; (8) the tidal harmonic constants of the various ports of the world; (9) lists of doubtful shoals and dangers in all the seas of the world, with a view to their further investigation; (10) a list of accurately determined geographical positions on the coasts of the world, for use in further surveying or in navigation; (11) new and improved instruments and aids to navigation; (12) observed range and visibility of the lights of lighthouses; (13) methods of surveying by air-craft; (14) echo sounding; (15) a catalogue of original charts; (16) improved methods of chart printing; (17) standards for meteorological observations at sea; (18) lists of all the coastal signals in use and of the stations at which they are exhibited; (19) the various and multitudinous signals used in the ports of the world; (20) ocean currents; (21) sound ranging in air and sea-water; (22) tables of meridional parts for chart making, and, (23) the illusive question of an international datum plane for determining levels above international low-water, or mean tide-level of the sea. This is only a partial list at that. "

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The standardisation of Radio Time Signals was becoming increasingly important to hydrographic surveyors making celestial observations for position on shore with theodolite or astrolabe. A note on the various available international radio time signals was extracted from a paper by Mr. G. BIGOURDAN submitted to the Académie des Sciences, Paris on 3 September 1928. BIGOURDAN described the latest system available as follows :

“ *NEW INTERNATIONAL SYSTEM OF RHYTHMIC TIME SIGNALS.* ”

As a result of the deliberations of the International Time Committee in 1925, the system of rhythmic sidereal time signals, hitherto transmitted by French stations, has been abandoned in favour of the New International System of Rhythmic Signals, which comprises a series of 306 signals transmitted in 300 seconds of Mean Time. At the commencement of each of the five minutes a dash (—) of half-a-second's duration is transmitted ; this dash is followed by a series of 60 dots (. . . . etc.), the final signal at the sixth minute being signalled by a dash. The signals 1, 62, 123, 184, 245 and 306 which coincide respectively with the beginning of a minute consist of dashes.

The following stations have adopted the new system : Rugby, Paris - Eiffel Tower, Bordeaux - La Fayette, Moscow, Leningrad and Saigon.

Older hydrographers may recall the days when they listened for these time signals in observers' tents on many a remote station whilst sweeping aside a myriad flying and crawling insects attracted by the kerosene lamp.

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Extracts from *Nature*, the London science journal, list the conclusions drawn from Dr. VENING MEINESZ's famous world voyage in a submarine to make gravity measurements. It is interesting to compare them with those which may be drawn today. The development over the last 25 years or so of gravimeters housed on gyro-stabilized platforms for surface ship use has enabled continuous gravity surveys to be carried out oceanwide.

“ The Dutch submarine “ K XIII ”, 800 tons, left Holland via the Panama Canal bound for Surabaya, and performed the voyage of 20 600 miles in 200 days, 112 of which were sailing days.

During the voyage, 113 measurements of gravity were made by Dr VENING MEINESZ with free hanging apparatus ; 15 observations were made at harbours of call. Later 26 measurements were made in four profiles perpendicular to the Java Deep.

A list of the provisional results of Dr MEINESZ' observations in the Atlantic and Pacific is published in the Proceedings of the Amsterdam Academy of Sciences.

The conclusions are principally the following :

1. In the Atlantic and Pacific there are excesses of gravity extending over large areas. As has been explained by Dr W. BOWIE and C.H. SWICK, both of the U.S. Coast and Geodetic Survey, these may be caused partially by a depression of the geoid with regard to the spheroid. The final computations will show in how far this circumstance may account for the excesses.

2. It is unlikely that the longitude terms introduced by HELMERT and by HEISKANEN in the formulae will agree with the values of gravity obtained in the oceans.

3. In the Pacific there exists a remarkable parallelism between the variations of the anomalies and of the sea-depths.

4. The observations made above the four deeps all show a remarkable defect of gravity in the middle of the deep. The excesses on the borders do not make

the impression that they may be ascribed to an excess of mass below the deeps, required for isostatic compensation, but give rise to the supposition of tangential pressure in the earth's crust.

5. The observations at the foot of the continental slopes give greater values of the gravity than should be the case according to the current theory.

6. The results obtained in the Banda Sea, especially near the double range of islands, show a large excess at the inside, that gradually changes into a very noticeable defect at the outside, where the tangential pressures which are probable in this part of the archipelago should make an excess probable. The great anomalies are accordance with the general view that in this part of the world the earth-crust was recently, or is still at present, weak.

7. In general, the results obtained at sea give the impression of greater regularity than those obtained on land. This agrees with what was expected. The outer layer of water immediately below the observer is homogeneous and the disturbing masses in the solid crust are farther away. Moreover, the deformation caused by erosion is absent".

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A glance at the advertisers in this issue shows that three were promoting echo sounding machines : Henry Hughes and Son of London presented their Marks II - V, the first two for the use of ocean liners and Mark V for hydrographic surveys in 30 to 4 500 fathoms, with " scale reading in fathoms and metres or fathoms and feet ". The Société de condensation et d'applications mécaniques of Paris showed a photograph of the LANGEVIN-FLOISSON super-sonic sounding machine with the following basic instructions. " To take a sounding : (1) Press the door-catch button ; (2) Start the phonic motor by hand. The machine commences immediately to take a sounding every second, and will continue to do so until the door is closed ". Behm-Echolot Gesellschaft m.b.H. of Kiel were promoting the Behm-Echo-Depth-Sounder and announced " All instruments are fitted up in the Workshops of the inventor of the echo-sounder, Dr. h.c. BEHM ".

J.D. POTTER, the London-based Chart Agent, was advertising in the Review as he still does today. In advertising a pamphlet entitled " The Production of an Admiralty Chart " a quote from " *The Shipping World* " is reproduced.

" A chart is one of the essentials of the navigator and the information concentrated on the surface of that sheet of paper is his guide to security. He relies upon it as he relies upon his compass, which is a mechanical device for taking advantage of a phenomenon of nature. The chart is not such ; it is a work of human art, the result of information gathered from many sources and compiled with great care and accuracy. Yet few seamen, and still fewer landmen, know anything about the work which is necessary to produce this invaluable guide to navigation. In a little book published by Mr. J.D. POTTER, 145, Minories, London, E. 1., this information is given in full detail. The work is a reprint of an article by Mr. Gerald R. HAYES, Cartographer in the Hydrographic Department of the Admiralty. "

