FIFTY YEARS AGO...

The *Hydrographic Review* of July 1926 demonstrates much technical progress and real international cooperation in the hydrographic and related fields. British, French and Italian echo-sounders were described in detailed, illustrated articles, and there is an interesting paper on the exact determination, in 1920, of the difference of longitude between Paris and Greenwich required for the amendment of the French charts. But first, sad news :

1. Death of the President of the Directing Committee :

" It is with very great regret that the Bureau announces the death of the President of its Directing Committee, Admiral Sir John Franklin PARRY, K.C.B.

" He was taken ill in May 1925 shortly after his return from Cairo, where he had attended the International Geographical Congress as the representative of the Bureau. Though he was able, in the early stages of his illness, to return to his work occasionally, he never recovered his strength and he died in England of heart failure on 21 April 1926. .....

" The Directing Committee informed the States Members by Circular Letter No. 2-R/10-H of 1926 that no election to fill the vacancy would be held. Director J.M. PHAFF automatically became President of the Directing Committee. .....

"Admiral PARRY first joined H.M. Surveying Service in April 1884, being appointed to H.M.S. *Triton*, surveying on the East Coast of England.

" From August 1900 to February 1903 he held the important post of Chief Civil Assistant to the Hydrographer (Admiral Sir William WHARTON, K.C.B., F.R.S.), and from that post assumed command of H.M. Surveying Ship *Egeria*, surveying in British Columbia, where he remained until 1906. He was then appointed in command of H.M. Surveying Ship *Merlin*, surveying in the Red Sea and North West Coast of Borneo, but remained only till the end of that year, being incapacitated through sickness. He was appointed again to H.M. Surveying Ship *Egeria* in 1908, where he remained with her surveying in British Columbian waters till April 1910, when he completed his hydrographic work afloat. .....

" Appointed Hydrographer of the Navy on 1 September 1914, Captain PARRY held this post throughout the war until 31 August 1919. ..... His last important work before retiring as Rear Admiral and from being Hydrographer was to preside over the International Hydrographic Conference in London in June 1919, when 45 delegates, representing 25 nations, met to discuss the standardization of hydrographic charts and publications and kindred subjects.

" After retirement Sir John PARRY was employed as a member of the International Hydrographic Conference Committee until June 1921, when it was

dissolved; on the same day he was elected a Director of the International Hydrographic Bureau, Monaco, and having received the highest number of votes he became President of its Directing Committee, which post he held to the day of his death .....

" Admiral PARRY's high ability as an organizer was of the greatest value to the International Hydrographic Bureau in its early days, and it is largely due to his cooperation with the late Monsieur RENAUD that the International Hydrographic Bureau owes its conception and present organization. "

2. Adhesion of States :

" Poland. By letter dated 13 July 1926, Poland now adheres to the Bureau, and the States Members were informed by Circular Letter No. 21-H/16-R."

3. The place of the Bureau among other International Organizations inside and outside the League of Nations is described by Rear Admiral NIBLACK, a Director of the IHB, on page 19 :

" The Organization of the League of Nations has had only a slight reaction on some of the 350 or more International Organizations which were in existence before the Covenant of the League was drawn up, but it has had a more decided influence on those which came into existence subsequent to the creation of the League, and particularly on the International Hydrographic Bureau. Many of these original International Organizations were created as a medium of exchange of information, of technical study, of collaboration in the assembly of data, of protecting the weak and for advancing the interests of religious sects and political agencies, and also of ethnical and economic classes. ... About five per cent deal with agriculture, commerce and industry; five per cent with communication and transport; thirteen per cent with labour; eight per cent with medicine and hygiene; five per cent with economics and finance, eight per cent with jurisprudence, rights and forms of of government; twenty per cent with arts and sciences; twenty per cent with humanitarianism, religions, morals and education; five per cent with sports and tourism; two per cent with feminist movements; one and a half per cent with proposed international languages; one per cent with armaments, etc., etc. As to geographical distribution, 71 have headquarters in Switzerland, 60 in Belgium and France each, 62 in Great Britain, 45 in Holland, 17 in the United States of America, 16 in Germany, 9 in Italy, 5 in Denmark, 2 in Sweden, and the others scattered.

" As to character, they may be divided into four classes. The largest, comprising about 65% of the total, and made up as to the membership of individuals who voluntarily join and subscribe to its maintenance. The next largest class, about 20% of the total, is that of groups of individuals in various countries. ... Some of this second class are "semi-public" in that Governments often appoint representatives to be present and participate in their meetings. The third class is composed of public international organizations created by collective treaties or covenants, or, like the International Hydrographic Bureau, created by the agreement of the countries concerned. To this class, representing about 5% of the total, the States Members contribute from their budgets for maintenance or upkeep. There are, in fact, twenty eight of these organizations.

Admiral NIBLACK's list includes the :

CENTRAL BUREAU OF THE CHART OF THE WORLD (au millionième) founded in 1913, headquarters at Southampton, England, in which 41 States are represented.

INTERNATIONAL BUREAU OF THE UNIVERSAL POSTAL UNION, founded in 1874, at Berne, with 176 countries, colonies and territories as members.

INTERNATIONAL BUREAU OF THE TELEGRAPHIC UNION, founded in 1868, Berne — 77 States Members.

INTERNATIONAL COUNCIL FOR THE EXPLORATION OF THE SEA, founded in 1902, Copenhagen — 9 States Members.

" There is a fourth class, some eighteen in all, recently created and growing out of the League of Nations, to distribute and organize the work of the League. .....

" As most of the three classes of international organizations first named meet only at intervals of five or six years, or at the call of a small secretariat, a great many have a Permanent Committee which meets oftener than the full Conference, and which arranges for the meeting of the latter. .....

" The International Hydrographic Bureau is the only one of all the international organizations which sits permanently and continuously except the Secretariat of the League of Nations. This Bureau is, therefore, so to speak, really the Permanent Committee of the International Conference of Hydrographers of twenty states, not counting colonies or political sub-divisions. The Bureau has its headquarters in Monaco, because (1) the late Prince Albert of Monaco was deeply interested in the closely allied science of oceanography; (2) it is very central geographically with reference to all of the States Members; (3) it is on the sea; (4) Monaco is the seat of important oceanographic research; and (5) it has ample hotel accommodation and conference halls for the meetings of International Conferences. While other international organizations meet only at long intervals, pass resolutions and adjourn for five or six years, leaving a small secretariat to get out reports of the meetings, carry on a desultory correspondence and keep up interest in the work until the next conference without, however, being able to arrive at any definite results, this Bureau carries on constant correspondence with its States Members, conducts studies on all matters of hydrographic interest, publishes information, makes proposals, secures votes which may give the same definite conclusions as a Conference itself could give. It also finishes up the work of one Conference and prepares the Agenda for the next. This is very important because, as a rule, international conferences have not always the necessary information at their meetings to determine the relation of what they are proposing to do to that which other conferences have done, or their relations to existing practices in all countries of the world which they may be seriously upsetting by ill-considered changes. This is intended as a statement of fact, and not as a criticism. ....."

4. A very interesting technical paper on the Galvano-plastic Method in chart printing was contributed by Mr. H. SUNDBERG of Sweden. Writing in an introduction, the Hydrographer of Sweden, Captain G. REINIUS, emphasizes the utility of this method for keeping chart plates up to date :

" In 1922, arrangements were made for the establishment of an entirely modern galvano-plastic department within the offices of the Hydrographic Office. It then became obvious that systematic investigation and experiments must be carried out in order to endeavour to obtain further data of the galvano-plastic working methods.

" The programme of these investigations included the following main points:

1. General investigation of the progress of precipitation, and the factors which influence it.
2. Galvano-plastic precipitation of "alto" and "basso" plates.
3. Galvano-plastic precipitation for correction of the plates of nautical charts.
4. Experiments for finding a more rapid method of precipitation for the correction of nautical charts.

" These investigations, which were carried out during the latter part of 1923, and throughout the whole of 1924, were entrusted to Mr. H. SUNDBERG, Civil Engineer.

" Since they have now been completed and have given good results, it seems quite natural that the advantages gained thereby should be published in an adequate form, so as to add, to some extent, to the improvement of this detail in the production of nautical charts.

" The accounts, as well as the recipes, given in the following article by Mr. SUNDBERG, are of course unreservedly presented for use, should occasion arise, by any Hydrographic Service which may be interested in the matter. At the same time I desire to add that the Royal Swedish Hydrographic Office will be pleased to supply any further information that may be desired ".

Mr. SUNDBERG's method for chart correction, taken from his very comprehensive article, reads :

" According to an old method, still exclusively practised at certain Hydrographic Offices, the parts intended for correction are hammered up from the

back of the "basso" plate, whilst the front is resting against a level iron surface. Any new engraving that may be needed is then applied after polishing. In the case of somewhat larger corrections, the electrolytical procedure, more reliable in the long run, is now used at the Swedish Hydrographic Office. Experience has shown that cracking of the plates is out of the question. Besides this, the electrolytic method of depositing is advisable also for filling up troublesome old holes at the back of the plates caused by hammering-up.

" The precipitation itself might be executed most quickly according to Bailey's impinging method. The solution is forced at great speed through a pipe in which a conducting piece of copper is inserted. The plate is applied as the second electrode (cathode at the filling up of copper, anode at the removal of the same); and the electrolyte is connected with a continuous current circuit. To be entirely effective, however, this method requires constant supervision. At the Swedish Hydrographic Office another arrangement has therefore been chosen, and a method of precipitation has been worked out with special regard to the provisos that the electrolysis itself can take place without having to be watched and that the correct engraving, as well as the surface of the plate, should not in any way be spoiled or altered.

" Electrolytical correction is executed by means of smaller baths applied to parts of the horizontally placed plate. The principle is thus the same as that employed at the Danish Hydrographic Office (according to a description in the *Hydrographic Review*, Vol. I, No. 2, 1924, page 28). The procedure itself, however, has been greatly changed in Sweden, for reasons of time-saving and convenience.

" At the same time due consideration has been given to the circumstance that the hardness of the copper should not be allowed to fall below that of the bottom layer (that of the cold rolled plate).

" The procedure is comparatively simple. The area of a "basso" plate, in which engraving is to be filled up, is covered with asphalt varnish and surrounded with wax. The thin layer of varnish facilitates the observation of the engraving and makes it possible to erase the parts to be filled up with copper. Round the whole a border of plastic clay is applied. At the top, and parallel to the plate, an anode of copper is attached; the cathode consists of the plate itself. The cell formed in this manner is dipped and rinsed with water and an acid copper sulphate solution is poured on. The electrolysis is effected by means of an external supply of current from an accumulator battery with a current efficiency of 1.2 and 2.4 volts. The correct intensity of the current is regulated on a switchboard by means of a sliding resistance and an ammeter. The rate of precipitation is controlled by means of a voltmeter.

" The greater part of the precipitation takes place at a low current density, without any stirring, and may therefore be left without supervision even by night. During those seasons when the temperature of the room may be expected to sink so low that good precipitation may be endangered, the plates may be electrically heated from underneath. Accordingly, the upper part of the precipitation table consists of a large metal covered shallow box, in which is inserted a resistance loop of nichrome wire.

" It is also possible, however, at the Swedish Hydrographic Office to work very quickly when precipitating without any great alterations. By using a solution with a higher percentage of vitriol and by a stronger air blast, the time for the electrolytic action may be lowered to one hour. Notwithstanding this, it is not necessary to watch the procedure very carefully. The air necessary for ventilation is obtained from a centrifugal fan which is directly motor driven. The air is supplied through tubes of ebonite and its speed is regulated by the inlet cocks. "

5. Under the regular feature "Notes and Queries" the following question was dealt with: Is it possible to transmit cartographic drawings by telegraph? In view of current applications of facsimile transmission for oceanographic and meteorological forecasts, it is interesting to reproduce pages 197-199, which read as follows :

" Numerous attempts have been made during recent years to send drawings and photographs by telegraph, either by wireless or by wire or cable.

" Successful experiments, carried out in America, France, Germany and Great Britain, show that under certain conditions this might very well be done in practice.

" In principle, a sensitized receiving surface is swept by a very narrow pencil of light which passes successively over closely adjacent parallel bands on the surface. The relative intensity of this pencil varies in proportion with the intensity of the radio or cable current emitted and this is governed by the intensity of light after passing through or being reflected from similar parallel bands on the picture or drawing which it is required to transmit.

" In practice a photographic film of the picture or drawing is rolled round a cylinder which is rotated on a screw thread which causes it to advance in the direction of its axis. The pitch of the thread is equal to the width of the pencil of light which is directed on the film. This pencil, after passing through the film, acts on a photo-electric cell in proportion to the lights and shades of the picture. The varying intensity of the light when it reaches the cell causes the variations in the current transmitted.

" At the receiver a similar arrangement is used; a cylinder turns and advances in synchronism with the sending cylinder, the synchronism being maintained by electrically operated tuning fork governors. A so-called "light valve", actuated by the intensity of the current received, controls by means of a movable diaphragm the light which falls on the sensitized receiving film; this diaphragm opens and closes an aperture onto which a pencil of light is directed, thus making a close reproduction of the original picture or drawing. There are two methods.

" If an image of the aperture be thrown onto the sensitized film, the light passing through will record the length of the aperture as governed by the light-valve.

" If a diffused light is allowed to fall on the aperture the lines will always be of the same width as the aperture, but the intensity of the light will vary in accordance with its length as it is covered and uncovered by the diaphragm.

" In the *Rivista Marittima* (July-August 1925, pages 390-396) there is a discussion of a work entitled "Vision by radio: radio-photographs and radio-photograms" by C. G. JENKINS, in which attention is directed to the great value of the transmission of parts of charts, as demonstrated experimentally at Fort Leavenworth.

" Regular services of telegraphic transmission of autographs and drawings are now being used in France by means of the Edouard BELIN method or "Otautograph" which reproduces the lines of the drawing with a certain degree of accuracy.

" Telephotography should eventually be capable of being applied to nautical and hydrographic purposes (e.g. for accurate reproduction of parts of charts, insets or other small plans and charts, or chart correction slips).

" The attention of readers is called to this possibility and they are requested to supply the Bureau with any information which they may have on this subject."

This article was concluded by a reproduction of a weather map of the North Atlantic as transmitted daily to the German ship *Westphalia* at sea by Dr. DIECKSMANN's process, which was tested by the Deutsche Seewarte in April 1926 (see *Annalen der Hydrographie und Maritimen Meteorologie,* Mai 1926, pp. 205-206). It is remarkable that fifty years later weather facsimile receivers, which are relatively simple and cheap and are independent of language problems, are still quite a rarity on vessels otherwise fully equipped.