International Council for the
Exploration of the Sea

C.M.1966/N:1b
Hydrographical Committee

ICES Meeting

on

Service Hydrographique

Charlottenlund, 28/3-30/3-1966

Background Documents

1st Collection

ICES Meeting

on

Service Hydrographique

Charlottenlund, 28/3 - 30/3-1966

# A G E N D A

1. Opening of the meeting.
2. Election of chairman.
3. Transfer of data from national laboratories to the Service Hydrographique. Measures for speeding it up.
4. Quality control of data to be carried out in
   a) national laboratories
   b) Service Hydrographique.
5. Exchange of data with world and national data centres.
   a) With WDC-A and NODC (Washington).
   b) With WDC-B
6. ICES Oceanographic Data Lists.
   a) Evaluation of the delay in publication
   b) Facilities and staff needed for
      1. bringing the processing and publishing of data up to date
      2. continuously keeping the processing and publishing up to date.
   c) Additional means required for publication of data from joint investigations:
      1. Overflow Expedition 1960.
      2. Conjoint Herring Surveys 1960 and 1961.
      3. Baltic Expedition 1964.
      4. Skagerack Expedition 1966.
   d) Suggestions for improvement of the Data Lists.
      1. Preparation and issuing of catalogues.
      2. Inclusion of machine-generated values of $\sigma_t$, etc.
      3. Inclusion of machine-interpolated values for standard depths.
      4. Inclusion of charts and sections showing the horizontal and vertical distributions of temperature, salinity, etc., based on the data published in the lists.
7. Proposals for arrangement of the punched card holdings in the archives.
8. Evaluation of the increase of the working load of the Service Hydrographique caused by the extension of the work of ICES to the southern area.
9. Services to be expected from the Service Hydrographique in addition to the Oceanographic Data Lists:-
   a) Preparation and publishing of catalogues over punched card holdings.

b) Immediate circulation of information (including track charts) about receipt of data.

c) Inclusion of biological data in the collections (on punch cards, if convenient.)

d) Furnishing of copies of data (on punch cards or lists) on request (and at cost).

e) Continuation of the series (1876-1963) of monthly anomalies of surface temperatures for regions of the northern North Atlantic and an area off the eastern coast of Scotland.

f) Continuation of the series (1957-1961) of monthly means of surface temperature and salinity for areas of the North Sea and the north-eastern North Atlantic.

g) Continuation of the collaboration with the German Hydrographic Institute on monthly charts of the salinity distribution at various depths levels in the North Sea, and on an investigation of the haline stratification of the North Sea, based on salinity observations 1902-1954.

h) Publication annually of charts of surface temperature and salinity (and perhaps residual currents) for each month of the preceding year.

i) Promptly appearing charts of surface temperature and salinity for 10 day periods in selected regions.

j) Preparation and publishing of charts of temperature and salinity at a number of depth levels, based on data of certain cruises or surveys, if possible with occurrence of fish indicated. (Cf. the herring-hydrography charts prepared in the 1950s at the instigation of the biologists.)

k) Preparation of tables of mean monthly surface temperature and salinity for the years 1955 onwards. (Continuation of the tables of the ICES atlas: "Mean Monthly Temperature and Salinity of the Surface Layer of the North Sea and Adjacent Waters.)

l) Preparation of tables and diagrams of monthly surface temperature and salinity anomalies for 1905-1964, based upon the ICES atlas and its continuation.

m) Preparation of atlases like the ICES atlas for other areas:

   1. Barents Sea
   2. The seas around Iceland.

n) Working up of meteorological data:

   1. Compilation of wind records for sea areas.
   2. Preparation of tables on the wind conditions over the seas around Britain for the years 1950 onwards, as a continuation of the existing tables for the period 1900-1949.

10. When decision has been made as to which of the activities mentioned under item 9 are desirable the meeting should set up

    a) a priority list
    b) an estimate of the staff and facilities needed for these activities.

11. Other business.

ICES Meeting

on

Service Hydrographique

Charlottenlund, 28/3 - 30/3-1966

Participants:

| | |
|---|---|
| Denmark: | Mr. F. Hermann and Mr. H. Thomsen |
| Finland: | Dr. I Hela and Dr. F. Koroleff |
| France: | Dr. Ch. Allain |
| Germany (Fed.Rep.): | Dr. G. Tomczak |
| Netherlands: | Dr. R. Dorrestein |
| Norway: | Mr. R. Ljøen |
| Sweden: | Mr. A. Svansson |
| U.K.: | Mr. A.J. Lee and Mr. G.W. Andison |
| ICES: | Mr. H. Tambs-Lyche and Mr. J. Smed |

Observers:

| | |
|---|---|
| IOC: | Dr. K.N. Fedorov |
| SCOR: | Dr. W.S. Wooster |

ICES Meeting

on

Service Hydrographique

Charlottenlund, 28/3 - 30/3-1966

Terms of Reference

(According to C.Res. 1965/2:9

(a) to expedite the transfer of data to Service Hydrographique and to make detailed arrangements for quality control.

(b) to make detailed proposals concerning levels of staff and data-processing facilities required to meet the rapidly increasing demands on the Service Hydrographique from the ICES itself including the extension of the work to the south, and in connexion with the exchange of data with WDCs,

(c) to consider, in the light of these proposals, how the Service Hydrographique can best meet the demands of individual scientists, especially biologists, from member countries as illustrated by the wide range of needs suggested in the answers to the questionnaire.

ICES Meeting

on

Service Hydrographique

Charlottenlund, 28/3 - 30/3-1966

# The Service Hydrographique of the International Council, 1902-49.

(Reprint of a report to C.M. 1949)

## Origin.

2.Conf. Internat. 1ere partie, p.19

In the "Programme for the hydrographical and biological work in the Northern parts of the Atlantic Ocean, the North Sea, the Baltic and adjoining Seas", approved by the International Conference held in Christiania in 1901 the establishment of an International Council with a permanent Central Bureau and an International Laboratory was recommended.

id., p.21

The purpose of the Central Bureau should be:-

"To give uniform directions for the hydrographic and biological researches in accordance with the resolutions drawn up in the programme of the present Conference, or in accordance with such modifications as may be introduced later with the consent of the states represented.

To undertake such particular work as may be intrusted to it by the participating governments.

To publish periodical Bulletins which shall contain the actual data obtained in the cruises of all the participating states at the earliest possible date, and also such other papers as may prove useful in coordinating the international work.

To make proposal for the graphic representation, scales, signs and colours to be used in the charts for the purpose of obtaining uniformity in the publications, the decision regarding which shall rest with the international council.

In connection with the investigations, to make application for the telegraph administrations for the purpose of obtaining determinations from time to time of the changes in the resistance of the cables which cross the areas in any direction".

As to the officials of the Central Bureau it was decided that should the General Secretary represent hydrographical science, one of his principal assistants should be a biologist, and vice versa. The other assistant should preferably be experienced in statistical work.

When the International Council was constituted on July 22nd, 1902 a biologist, Dr. P.P.C. Hoek, was nominated General Secretary. The first assistant to the Bureau should therefore be a hydrographer. In accordance with the wish expressed at the meeting of the Council Dr. Martin Knudsen was appointed first assistant.

Rapp. & Proc.-Verb. vol.IV,p.X

In the administrative report for the year 1904-05 is stated that the hydrographical work forms a separate division. The Service Hydrographique had been started.

Staff.

As mentioned above Dr. Martin Knudsen was in 1902 appointed hydrographical assistant to the Bureau. From that time and right up to 1948 he was leader of the Service Hydrographique and Hydrographic Consultant to the Bureau.

In the daily work Dr. Knudsen was from about 1903 assisted by Dr. Johan Gehrke, who held this position to his death in 1923.

In 1925 Dr. V.I. Pettersson was appointed to the vacant position as Hydrographer temporarily for one year. His service was later on prolonged and he held the position to 1928.

To get a more permanent arrangement a "Sub-Committee on Organization of the Service Hydrographique" was appointed by the Council at its meeting in Stockholm in 1927.

R.&P.-V. XLIX,p.54 On the proposal of this Sub-Committee the Council at its meeting in 1928 resolved:-

1. Professor Knudsen should be asked by the Bureau to be "Chef du Service Hydrographique" at the office in Copenhagen, and to undertake the general supervision of all hydrographical work in the service.
2. Dr. J.P. Jacobsen should be asked by the Bureau to be Hydrographer at the office in Copenhagen, and attend to the daily work.

The Service Hydrographique was in 1928 re-organized in accordance with this resolution. At about the same time Mr. A. Lomholt was appointed Hydrographical Secretary.

At the end of 1939 Mr. Lomholt wanted to leave his position and in 1939 mag. scient. Jens Smed was appointed Hydrographical Secretary.

R.&P.-V. 116,I,35 At its first meeting (in 1945) after the second world war the Council resolved "that the Service Hydrographique of the Bureau should be maintained and a suitable staff be at disposal. To begin with this staff may consist of the Hydrographer J.P. Jacobsen, the Hydrographical Secretary J. Smed and a full day clerical assistant". In his capacity of Hydrographic Consultant to the Bureau Prof. Knudsen continued as Head of the Service Hydrographique.

R.&P.-V. 117,I,38 Dr. Jacobsen died in 1946. At the meeting in Stockholm the same year the Council resolved "that the position of Hydrographer to the Council vacant as a result of the death of Dr. Jacobsen should be filled with Magister Jens Smed ... ".

In 1948 Professor Knudsen wanted to be released from his position as Hydrographic Consultant to the Council. At the proposal of the Hydrographical Committee the Council resolved:-

R.&P.-V. 124,I,44

"a) that no re-appointment as Hydrographical Consultant be made
b) that the Hydrographer of the Council be responsible for carrying out the work of the Hydrographical Department which is covered by the rules, recommendations or resolutions of the Hydrographical Committee;
c) that on matters which are not governed by the above rules, recommendations or resolutions, the Hydrographer of the Council should consult the Chairman of the Hydrographical Committee."

Furthermore, the Service Hydrographique has always had some clerical assistance. At present the routine work is carried out by Mrs. Holm (full-time assistant) and Mr. Alnøe (part-time assistant).

Activities.

R.&P.-V. XLIX, p.58

With regard to the work with which the Service Hydrographique has mainly been concerned reference might be made to the Report from the Hydrographical Sub-Committee on Organization of the Service Hydrographique, submitted in 1928. According to this report the Service Hydrographique should be engaged in the following activities:-

"1) to prepare the material for the publication of the Bulletin Hydrographique,
2) to undertake the rapid dissemination of hydrographical observations,
3) to combine data in diagrams and charts, for special areas,
4) to undertake the technical sponsorship of hydrographical publications of the Bureau,
5) to further unification of the work and collaboration between the workers in the several participating countries,
6) to draw attention to changes and amplifications which appear to be desirable in the hydrographical programmes,
7) to carry out any other hydrographical work that may be entrusted to it by the Council."

In the following some details concerning the main activities of the Service Hydrographique will be given.

Bulletin Hydrographique. Already in the programme for the hydrographical work, unanimously adopted on the International Conference in Stockholm in 1899, it is said:-

Conf.Int. 1899,p.3

"The observations, meteorological as well as hydrographical, made on board the special steamers at the time of the survey in the typical months are to be immediately worked out under the supervision of the central bureau for publication in a Bulletin, wherein the conditions of the sea and the atmosphere are to be represented by tables and synoptical charts in cooperation with the meteorological institutes of the nations represented".

From the first days of the Council preparation of the BulletinHydrographique was therefore the principal task of the Service Hydrographique. The same view is stressed in 1928 in the report from the abovementioned Sub-Committee on Organization of the Service Hydrographique in the following words:-

R-&P.-V. XLIX,p.60

"A scientific Service Hydrographique centered in Copenhagen will always be essential to the Bureau because the Bulletin Hydrographique is a hydrographical necessity".

For a detailed account of the Bulletin throughout the years the reader is referred to the report "Bulletin Hydrographique 1902-1946", distributed before the Edinburgh-meeting, 1949.

Rapid Dissemination of Hydrographical Data. During a few years (1926-1928) this task was fulfilled by distribution of a quarterly bulletin (Bulletin Hydrographique Trimestriel) multicopied by photozincography, in addition to the usual Bulletin. When the Bulletin Trimestriel was discontinued in 1928 a new arrangement was made according to which all data received for publication in the Bulletin Hydrographique immediately were sent to the printers for preparation of "off-prints" which were then distributed. With the re-arrangement of the Bulletin from the 1932-issue this method was no more practicable. In later years the lists received have, therefore, been typewritten on transparent sheets which may be copied by the ozalid method. Copies are supplied on application to the Service Hydrographique.
- For further details the reader is referred to the above-mentioned report, "Bulletin Hydrographique 1902-1946".

Hydrographical Card Index. At the middle of the thirties captain Nellemose, the then Administrative Secretary, started a hydrographical-biological card index recording observations from areas investigated by the member-countries. Information on this card index as regards number of index cards, areas covered etc. may be found in the Administrative Report for 1942-45. In 1945 the Consultative Committee appointed a Sub-Committee for Consideration of the Card Index. The Sub-Committee submitted a detailed report containing proposals for the future arrangement of the Card Index. In accordance with these proposals the Hydrographic Card Index has since 1946 been under the supervision of the Service Hydrographique. Much work has been done in checking and completing the Card Index. Copies of index cards have been supplied on request.

R.&P.-V. 116, II, p.17

R.&P.-V. 117, I, p.38

Mean Charts and Tables. Based on data collected during periods of some length various mean charts and tables of temperature and salinity for certain areas have been worked out by the Service Hydrographique. Thus a supplement to the Bulletin 1906-1907 gave a "short general review of hydrographical conditions in the seas investigated by the International Council, with 23 plates representing mean values of salinity and temperature in the North Sea".

In this connection should also be mentioned the paper named "Variations de la température de l'eau de surface dans certains carrés choisis de l'Atlantique pendant les années 1900-1913", published 1919 in the series Bulletin Hydrographique, and another paper of the same nature, "Variations de la température de l'eau de surface de la Mer du Nord pendant les années 1905-1914", published 1922 in the same series.

In 1933 the Service Hydrographique published an "Atlas de température et salinité de l'eau de surface de la Mer du Nord et de la Manche".

Finally it should be mentioned that the Service Hydrographique has now commenced preparations for elaboration of mean charts of temperature and salinity for standard depths in the North Sea.

Unification of work. The Service Hydrographique has repeatedly contributed to unify work and to further collaboration.

As an example might be mentioned that Dr. J.P. Jacobsen, the then Hydrographer to the Bureau was chairman of the Sub-Committee which in the thirties worked out a proposal for nomenclature and units to be used for the indication of the content of constituents of sea water.

R.&P.-V, 107, III, p.1

As another example of more recent years might be mentioned that the Service Hydrographique in 1946 was asked by the Hydrographical Committee "to co-ordinate the activities of different countries in regard to the sampling from commercial vessels and lightships, to get the best coverage of the waters in which the Council is interested, and to systematize methods".

R.&P.-V, 117,I, p.38

Publications. Throughout the years several papers have been worked out and published by the staff of the Service Hydrographique, generally at the instigation of the Hydrographical Committee or the Hydrographic Consultant. A list of publications is given below.

Moreover the Service Hydrographique has formerly had the technical sponsorship of the hydrographical publications of the Bureau, for instance of the hydrographical papers in the series Publications de Circonstance and of the hydrographical sections of the Rapports Atlantiques.

List of publications.

In addition to the Bulletins Hydrographiques and papers published in this series the following papers have been prepared by members of the staff.


1903 Martin Knudsen: On the Standard-Water used in Hydrographical Research until July 1903. - Publ.de Circ., No. 2.

" " " Über den Gebrauch von Stickstoffbestimmungen in der Hydrographie. - Publ.de Circ., No. 4.

" " " Gefrierpunkttabelle für Meerwasser.- Publ. de Circ., No. 5.

1904 " " $\sigma_t$-Tabelle. Anhang zu den 1901 herausgegebenen Hydrographischen Tabellen. - Publ. de Circ., No. 11.

1905 " " On the influence of the East Icelandic Polar Stream on the climatic changes of the Faroe Isles, the Shetlands and the North of Scotland. - R.&P.-V., III, C.

1906 " " On the determination of temperatures by measuring the resistances in telegraph cables. - R.&P.-V., VI, p.(40).

" " " and Kirstine Smith: The salinity of the North Sea and Adjacent Waters Calculated on the basis of Observations from the Period August 1902-May 1905. - R.&P.-V., VI, p. XXVI.

1907 " " Salzgehaltbestimmungen des Oberflächenwassers als Hilfsmittel bei Positionsbestimmung an Bord. - Publ.de Circ., No. 38.

" " " Some remarks about the Currents in the North Sea and Adjacent Waters. - Publ. de Circ., No. 39.

" Johan Gehrke : Mean Velocity of the Atlantic Currents running North of Scotland and through the English Channel. - Publ. de Circ., No. 40.

1909 " " Über Farbe und Durchsichtigkeit des Ostseewassers. Mit einer allgemeinen Theorie des Zusamenhanges zwischen Farbe und Durchsichtigkeit in natürlichen Gewässern. - Publ. de Circ., No. 45.

" " " Beitrag zur Hydrographie des Finnischen Meerbusens. - Finnländische Hydrographisch-Biologische Untersuchungen, No. 3.

" Martin Knudsen: Eine Wasserschöpfer zur Benutzung während der Fahrt des Schiffes. - Publ. de Circ., No. 50.

1910 Johan Gehrke : Beiträge zur Hydrographie des Ostseebassins. - Publ. de Circ., No. 52.

1911 Martin Knudsen: Über Bestimmung von S', Meersaltzgehalt des Brackwassers. Publ. de Circ., No. 56, p. 3.

1913 Martin Knudsen; Johan Gehrke and Rolf Witting: Hydrographical Section in "Mémoire sur les travaux du conseil permanent international pour l'exploration de la mer pendant les années 1902-1912". - R.&P.-V., XVI, 1ère partie, p. 56.

1922 Johan Gehrke : On the After-Effect of Ice Winters upon the Deep-Sea Temperatures of the Kattegat. - Publ. de Circ., No. 75.

1922 Martin Knudsen: On Measurement of the Penetration of Light into the Sea. - Publ. de Circ., No. 76.

| | | |
|---|---|---|
| 1923 | Martin Knudsen: | Some new Oceanographical Instruments. - Publ. de Circ. No. 77. |
| 1923 | Johan Gehrke : | Further Investigations on the After-Effect of the Ice-Winters upon the Deep-Sea Temperature of the Kattegat. Publ. de Circ., No. 81. |
| 1925 | Martin Knudsen: | L'emploi de l'Eau Normale dans l'Océanographie. - Publ. de Circ., No. 87. |
| 1928 | V.I. Pettersson: | Apparatus for quantitative Measurements of Plankton in situ. - Journ. du Cons., III, p. 351. |
| 1929 | Martin Knudsen: | A Frameless Reversing Waterbottle. - Journ. du Cons., IV, p. 192. |
| 1930 | J.P. Jacobsen : | Remarks on the Determination of the Movement of the Water and the Intermixing of the Watersheets in a vertical Direction. - R.&P.-V., LXIV, p. 59. |
| " | " " " : | The Mixing of Water Masses in the Sea. - R.&P.-V., LXVII, p. 19. |
| 1933 | Service Hydrographique: | Atlas de Température et Salinité moyenne de l'Eau de Surface de la Mer du Nord et de la Manche. |
| 1934 | J.P. Jacobsen: | Temperature and Salinity at the Surface of the North Sea and the English Channel. (Description of the Methods used in preparing the Atlas published in 1933.) |
| 1943 | " " " : | The Atlantic Current through the Faroe-Shetland Channel and its Influence on the Hydrographical Conditions in the Northern Part of the North Sea, the Norwegian Sea, and the Barents Sea. - R.&P.-V., 112, p. 5. |
| 1943 | Jens Smed : | Annual and Seasonal Variations in the Salinity of the North Atlantic Surface Water. - R.&.P.-V., 112, p. 77. |
| 1947 | " " : | Monthly Anomalies of the Surface Temperature in the Sea round South Greenland during the Years 1876-1939. - Ann. Biol., II, p. 17. |
| " | " " : | The Variation from Year to Year of the Surface Temperature in the Southern North Sea. - Ann. Biol., II, p. 44. |
| " | " " : | The Inflow of Atlantic Water into the North Sea through the Orkney-Shetland Channel. - Journ. du Cons., XV, p. 27. |
| 1948 | " " : | Hydrographic Conditions in the Faroe-Shetland Channel in August 1946. - Ann. Biol., III,p.10. |
| " | " " : | Monthly Anomalies of the Surface Temperature in some Areas of the North-Western North Atlantic in 1876-1939 and 1945-1946. - Ann. Biol., III, p. 12. |
| " | " " : | Hydrographic Conditions at the Northern Entrance to the North Sea in August 1946. - Ann. Biol., III, p. 40. |

1949 J.P. Jacobsen (†) : Some Characteristic Features in the Variation of Surface Temperature in the North Atlantic.- Journ. du Cons., XVI, p. 17.

1949 Jens Smed : Monthly Anomalies of the Surface Temperature in the Sea round Iceland during the Years 1876-1939 and 1945-1947. - Ann. Biol., IV, p. 11.

" " " : Monthly Anomalies of the Surface Temperature in Areas of the Northern North Sea. - Ann. Biol., IV, p. 57.

" " " : The Increase in the Sea Temperature in Northern Waters during Recent Years. - R.&P.-V., CXXV, p. 21.

" " " : Monthly Anomalies of the Surface Temperature in Areas of the North-Eastern North Atlantic during the Years 1876-1939 and 1945-1948. - Ann. Biol., V, p. 10.

Jens Smed

ICES Meeting

on

Service Hydrographique

Charlottenlund, 28/3-30/3-1966

# S u m m a r y

of the results of the inquiry carried out in 1965 amongst the members of the Hydrographical Committee on the Service Hydrographique and on ICES Oceanographic Data Lists.

(Reprint of document C.M. 1965, Hy 4)

## A. The significance of the Service Hydrographique and of ICES Oceanographic Data Lists.

A questionnaire was mailed to the members of the Hydrographical Committee. In due time sixteen answers were received, mainly from the senior members of the Committee.

In most answers reference was made to the needs of hydrographers and biologists; two answers referred particularly to the needs of biologists only, and one to the needs of hydrographers only. Also the interests of climatologists and meteorologists were emphasized in some answers.

The main question presented to the hydrographers concerned the degree of desirability of continuing the existence and services of the ICES regional data centre, that is, of the ICES Service Hydrographique. In the questionnaire the reason for this particular inquiry was explained, a.o., as follows:

"Throughout the years the Service Hydrographique of ICES has been functioning as data centre for the ICES region. In this capacity it has collected data, has scrutinized them and arranged and published them in the series Bulletin Hydrographique, now replaced by ICES Oceanographic Data Lists. Finally the data have been stored as punched cards, copies of which have been furnished on request (at cost).

Everybody knows that the Oceanographic World Data Centres, A (Washington) and B (Moscow), have now been in function for a number of years. These Data Centres, which cover all oceans and seas of the world, are expected to receive all data resulting from "declared national programmes". The data collected by the ICES countries in the ICES region are delivered to the World Data Centres A and B via the Service Hydrographique of ICES. The World Data Centres do not regularly publish the data received; but from time to time they issue catalogues of their holdings, and copies of the data may be had on request (at cost).

In view of this situation it seems appropriate to consider whether a continuation of the ICES regional data centre is wanted. At least in two events someone has expressed the thought that the World Data Centres A and B could cover the needs of ICES hydrographers and biologists. Should this opinion be veracious and sensible, a complete abolishment of the ICES Service Hydrographique might be considered".

As expected, all the members answering the inquiry, most of them after having consulted their biological colleagues, felt that the continuation of the ICES regional data centre is necessary for the marine scientists

of the ICES countries. It was emphasized (among others by Dietrich) that the Oceanographic Data Centres A and B are operated effectively as far as the oceans are concerned but the regional tasks of the ICES scientists can there scarcely be dealt with as needed. The Service Hydrographique, on the other hand, is (as stressed by Thomsen) under the complete control of ICES which can make all decisions regarding its activities.

It is also emphasized (by Thomsen) that the Service Hydrographique functions as a clearing house to which each member state sends its data and, in return, receives the data (in the form of ICES Oceanographic Data Lists) of all other member states. "This is in striking contrast to W.D.C.s to which countries deliver data free of cost, but have to pay if they want data from a W.D.C. If a country decides that this is a bad bargain nobody can force that country to send its data to the W.D.C.s"

The Soviet members of the Hydrographical Committee (Fedosov and Veselov) are the only ones who have direct national experience with a World Data Center (B). For this reason their remarks, given especially with reference to the needs of ICES biologists in connection with the utilization of sea resources, is of a particular interest:

"The Service Hydrographique of ICES carries out a great amount of work on systematic collection of extensive regional oceanographic data.

With the establishment of World Data Centres A and B the oceanographic data of international and large regional expeditions are concentrated in these two Centres. Any researcher may receive information from these Centres in the form of microphotography, both on the basis of mutual exchange and at low cost. In connection with the above said the activity of the Service Hydrographique of ICES will be advisable if:

(a) on the basis of mutual exchange it provides the World Data Centres with the oceanographic primary data missing in these Centres. It concerns first of all the oceanographic data of regional and episodic observations made by certain vessels. Up to the time being the World Data Centres are not yet able to collect the data. The delivery of these data has to be organized as interlibrary exchange.

(b) The work of the regional data centre of ICES has to be drawn nearer to the aims of fishing. With this purpose all scientific problems solved in the Hydrographical Committee of ICES have to be up to the interests of biologists and specialists of fisheries organizations."

It is, as mentioned by Thomsen, an advantage for ICES scientists to have the hydrographical data collections in the ICES headquarter which they have good opportunity to visit. This "will facilitate the planning of publications such as the North Sea Atlas issued in 1962, but also the planning of less comprehensive investigations in which an individual scientist is interested".

For these reasons the retaining of the Service Hydrographique as the ICES Regional Data Centre is indispensible.

It should be added that not only hydrographers and biologists have an interest in the ICES Data Centre, but also (as stressed by Eggvin) meteorologists, shipping people, harbour authorities and others, especially for the study and forecasting of fog and ice formation.

This need of climatology and meteorology for the results of the Service Hydrographique is also emphasized by Dietrich.

Dietrich adds that ICES should feel, in respect of the future, more responsibility for the ICES area and, in respect of the past, be more proud of the work done in the ICES area.

B. Suggestions how to make the Service Hydrographique more useful to the hydrographers and biologists.

The members of the Hydrographical Committee presented for further consideration the following suggestions how to make the Service Hydrographique still more useful to the hydrographers and biologists. (In the following the suggestions are quoted without any comments at this stage).

1. Improvement of the Oceanographic Data Lists.

The Oceanographic Data Lists to be improved by the inclusion of
(a) machine-generated values of sigma-t etc.
(b) charts and sections showing the horizontal and vertical distributions of temperature, salinity etc. based on the data included in the lists. (Lee)

2. How to make the use of the Oceanographic Data Lists more effective.

Publication, at regular intervals, of lists of cruises from which data have been received, to be arranged according to sea areas. (Groen)

Would it be possible for the Service Hydrographique to issue a general pamphlet for "customers" giving
(a) the kind of data stored and approximate numbers of observations in various regions and years,
(b) the most convenient way to apply for data (pre-printed forms ?) and the approximate cost of delivering data (cards or print-outs or averages (condensed information) etc.) (Dorrestein)

3. Expeditious production of the Oceanographic Data Lists.

Institutions should be urged to send their oceanographic observation data to the Service Hydrographique with much less delay than hitherto. Effective, rapid and modern methods should be used for handling the raw material. (Eggvin)

More expeditious production of the Oceanographic Data Lists, pre-supposing additional qualified staff. (Tait)

More staff to the Service Hydrographique so that the time lag between date of observation and date of appearance of the Oceanographic Data Lists can be shortened. (Sælen)

Distribution, la plus rapide possible, sous une forme peu couteuse, des relevés de température et de salinité faits par les pays membres. (Leloup)

4. Monthly charts of surface temperature and salinity (incl. area anomalies) and residual currents.

Re-consideration of the question of periodical production of temperature and salinity and current distribution charts, provided these can be produced within 1-2 months of data collection, pre-supposing additional staff. (Tait)

The re-issue of the Monthly Synoptic Charts of Temperature and Salinity but in a somewhat different way to formerly in that they should
(a) come out speedily and possibly through the media proposed by Eggvin,
(b) include maps showing the temperature and salinity anomalies in various geographical fields both by their magnitude and by a classification based on multiples of the standard deviation for each field for the month in question. (Lee)

Concentration on the prompt issue of partly digested data, e.g. area anomalies of temperature and salinity, and also temperature and salinity charts. (Craig)

Promptly appearing monthly charts of surface temperature and salinity and residual currents (as Lumby did in earlier years) probably not feasible; member-countries would have to send their data within a month. Once a year a series of such monthly charts and other graphical summaries would perhaps be convenient. (Dorrestein)

5. Preparation of additional atlases, tables and diagrams.

The publication of tables and diagrams of monthly temperature and salinity anomalies for the period 1905-64 based on the data published in the ICES atlas Mean Monthly Temperature and Salinity of the Surface Layer of the North Sea and Adjacent Waters, to supersede those published by Smed in various Annales Biologiques. (Lee)

The issue of tables of mean monthly surface temperature and salinity for the decade 1955-64 as an appendix to the ICES atlas Mean Monthly Temperature and Salinity of the Surface Layer of the North Sea and Adjacent Waters. (Lee)

The issue of atlases (like the ICES atlas Mean Monthly Temperature and Salinity of the Surface Layer of the North Sea and Adjacent Waters) for other sea areas, e.g., Barents Sea and/or the seas around Iceland. (Lee)

The mechanical storing and publication of data to be continued, also as a final goal the preparation of a paper showing in many examples the relationship of hydrography and fishbiology in the different parts of the ICES-area. (Dietrich)

6. Meteorological records.

Compilation of wind records for sea areas, where manpower allows. (Craig)

The issue of tables giving the wind conditions over the seas around Britain during the period 1950-64 as an appendix to the paper by Dietrich et al. (Wind conditions over the seas around Britain during the period 1900-49, German Hydrographic Institute, Hamburg, 1952). (Lee)

7. Advertising the Oceanographic Data Lists.

The existence of the Data Lists etc. to be made known to university scientists in the ICES-area and elsewhere. (Hult)

The general pamphlet for customers (as suggested under 2) would also have some advertising value. I think the Service Hydrographique has to do some advertising for itself, for the benefit of all marine scientists in our area. (Dorrestein)

8. Use of the Service Hydrographique by the biologists.

The ICES biologists should be guided how to make use of the hydrographic data when tackling their own problems. For the time being the lacking ability of the biologists to handle hydrographic data is the greatest drawback in the effective use of the Service Hydrographique. (More or less according to Dietrich)

The biologists should be encouraged to work out a code for punching of biological data. (Tomczak)

A combination of the hydrographical and biological data for showing relationships between the two groups should be aimed at. (Tomczak)

9. Necessity of solving the financial problems.

The deficient financial base of the ICES hinders the publication of the ICES material. (E.g., we had to go begging at governmental agencies for the printing costs of the atlas Mean Monthly Temperature and Salinity of the Surface Layer of the North Sea and Adjacent Waters. The same was the case with the printing of the IGY-Atlas which is now handled by the British Admiralty.) The restricted means are also hindering other scientific cooperation: mutual programmes and symposia. Active colleagues try to make their way with Unesco and FAO. (Dietrich)

10. The role of the Consultative Committee.

The ICES Consultative Committee should activate and stimulate the work of the scientific committees, especially that of the Hydrographical Committee. (More or less according to Dietrich)

Ilmo Hela

ICES Meeting

on

Service Hydrographique

Charlottenlund, 28/3-30/3-1966

## Activities of the Service Hydrographique, 1964-1965.

(Reprint of document C.M. 1965, Hy 11)

ICES Oceanographic Data Lists. Of this series which replaces the series Bulletin Hydrographique 8 volumes have been published during the year, viz.:

| | | |
|---|---|---|
| 1958, | No. 5 | XI + 284 pp. |
| 1958, | No. 6 | XIII + 199 pp. |
| 1958, | No. 7 | XI + 192 pp. |
| 1959, | No. 2 | XXIII + 194 pp. |
| 1958, | No. 8 | XII + 286 pp. |
| 1959, | No. 3 | XIII + 213 pp. |
| 1959, | No. 4 | XIV + 224 pp. |
| 1959, | No. 5 | XVIII + 158 pp. |

Other volumes are in preparation. The publications are multilithed, and also this work is carried out by the staff.

Punching System. An appendix to the manual "ICES Oceanographic Punch Cards", describing the amendments adopted by the Hydrographical Committee in 1964, was circulated.

Punching Work. This has been continued, and the main part of the data for the years 1957 onwards are now on punched cards.

Exchange of data. The following institutions have been furnished with copies of data, or with mean values derived from them:-

Service Hydrographique de la Marine, Paris:
54,000 punched cards from the area 59°N-63°N, 1°W-9°W of the Norwegian Sea have been furnished, i.e. all data from this area for the period 1902-1956.

Deutsches Hydrographisches Institut, Hamburg:
Copies of all Hydro Master Cards from a certain area within the limits of 42°N-72°N, 65°E-75°W for the years 1957 onwards were delivered, totalling 8,000 cards.

Oceanographic Laboratory, Edinburgh:
Monthly averages during the years 1959-1960 of surface temperature and salinity over a great many areas, covering the North Sea and the northern North Atlantic, were calculated and delivered as monthly charts.

National Oceanographic Data Center, Washington:
50,000 punched cards were delivered this year as part of an exchange arrangement.
In return we have from the National Oceanographic Data Center, Washington received about 400,000 punched cards, covering the Bulletins Hydrographiques of the years 1949,1950,1951,1952,1953, 1955.

Data Quality Control. The data received have been checked. Doubtful data have given rise to a considerable amount of correspondence.

Study of Temperature Variations. Monthly anomalies of the surface temperature during 1962 and 1963 were calculated for the standard areas $A_1$-N of the northern North Atlantic and for the standard Area F off the eastern coast of Scotland. The anomalies will be published in Annales Biologiques, vols. XX and XXI.

Other Activities. 13th-16th July the Hydrographer visited the German Hydrographic Institute to discuss with Dr. Tomczak and Dr. Goedecke details of a joint project of monthly mean salinity charts for a number of levels in the North Sea.

As usual the Service Hydrographique has acted as secretariat to the Hydrographical Committee and its sub-committees.

Jens Smed

ICES Meeting

on

Service Hydrographique

Charlottenlund, 28/3 - 30/3-1966

and

3rd Meeting of the IOC Working Group on Data Exchange

Charlottenlund, 31/3 - 2/4-1966.

# The ICES Service Hydrographique, its Development as a Regional Data Center and its Relation to the World Data Centres.

The Service Hydrographique has existed as a regional oceanographic data center since the early days of the International Council for the Exploration of the Sea (ICES). The member countries have sent regularly their oceanographic observations in the North Atlantic - including the North Sea, the Baltic, and the Transition Area - to the Service Hydrographique for publication in the series Bulletin Hydrographique. During a period of years the data collected by the Woods Hole Oceanographic Institution were also published in this series.

As observations accumulated during the years it became increasingly evident that it would be convenient to have an index, arranged geographically, of all data that had been made available to the oceanographic community by way of publication in the series Bulletin Hydrographique. Such and index, with the data arranged according to positions of stations, was prepared in the 1930s on the basis of the Bulletin Hydrographique, and was supplemented by data from other available sources. This index, which covered temperature and salinity, consisted of cards filled in by writing and of excerpts from the series Bulletin Hydrographique. The index was continued up to 1956 incl. For the years 1932-1956 the Bulletin was based on this index.

The hydrographic index turned out to be most useful. When people asked us for information on the amount of data available in a certain region, or requested copies of the data in the region, we had only to look over the relevant 1°-fields of the index and to copy these data, instead of going through all volumes of the Bulletin. The index was also widely used by the Service Hydrographique as basis for working out mean values, anomalies etc.

The steadily incrasing amount of oceanographic data collected annually during the first half of the 1950s meant a considerable increase of the work required for keeping the index up to date. And then came the plans for the International Geophysical Year (IGY) 1957-58. In 1955 the leading oceanographers of the world decided to set up an extensive oceanographic programme to be carried out during the IGY. A main part of this programme was the so called Polar Front Survey in the northern North Atlantic. As this survey was chiefly to be carried out in the ICES area the organization of it was left to ICES.

Thus the IGY would evidently give rise to a great increase in the flow of data. Furthermore, it became clear that oceanography was now "exploding", so that the great amount of data for the IGY would be no isolated event; on the contrary, the annual amount of data could be expected to rise even more in future years.

It was obvious that in order to cope with such amounts of data a mechanizing of the hydrographic index would be highly desirable, not to say a necessity. In 1957 a decision to that effect was made, and the ICES Hydrographical Committee set up a Sub-Committee to consider the problems involved in a mechanizing of the index. Professor Hela, who already had considerable experience in the use of punch cards in science, was nominated Chairman of the Sub-Committee - a capacity in which he served until 1962 when he was followed by Professor Sælen.

The first step was to find out which types of punch cards were in use already for such purposes. To this end the Chairman approached a number of institutions among which may be mentioned U.S. Hydrographic Office, U.S. Weather Bureau, World Meteorological Organization (WMO), Dutch Meteorological Office, British Admiralty, German Hydrographic Institute, Geophysical Institute of the University of Bergen, Norwegian Fisheries Directorate, a number of Japanese authorities, and various oceanographic institutions in U.S.S.R. The information received can briefly be summarized as follows.

The U.S. Hydrographic Office had, in 1950, introduced a set of hydrographic codes to be used in a hydro master card, a hydro detail card, a BT master card, and a BT detail card. Also the Geophysical Institute of Bergen and the Oceanographic Section of the Norwegian Fisheries Directorate had introduced hydro cards. Furthermore, for maritime meteorological data a WMO code was in use. No other institutions or organizations reported use of punch cards for oceanographic data. No code for marine chemistry was reported at all.

With the above information in mind it was decided to make the ICES scheme for hydro and BT stations compatible, as far as possible, with that of the U.S. Hydrographic Office which would probably be widely used. Without changes the Hydrographic Office system could not be taken over as we had to pay attention to the interests of fisheries biology whereas the Hydrographic Office had to cover other interests - in submarine acoustics, for instance.

The ICES system was adopted by the Council in 1958 and was later published as a small manual "ICES Oceanographic Punch Cards". The manual was widely distributed to marine institutions all over the world, and the institutions were urged to use the ICES system, as universal use of the same system would greatly facilitate exchange of data.

Introduction of a hydro chemistry card for punching of marine chemical observations was delayed with a few years, awaiting agreement among the chemists on the units to be used. As soon as this agreement was arrived at the hydro chemistry card was adopted. Again, information about the card was widely circulated.

When the Hydro Master Card and the Hydro Depth Card had been agreed upon the Service Hydrographique started punching the relevant material, and the collections now comprise the data for 1957 onwards. Part of this material has been received from the institutions in the form of punched cards, and in future the institutions delivering their data in other forms will be charged for the punching here, according to a decision by the Bureau of ICES.

The procedure at the Service Hydrographique is now as follows:-

1. Hydrographic data are received from the member countries, either as punched cards or on forms. In the former case the cards should be accompanied by a print-out of the cards.

2. The data are screened by going them over in detail, and by plotting of station positions.

3. Doubtful values are dealt with by correspondence with the delivering institutions.

4. The corrections received are introduced into the punched cards or the forms.

5. The data received on forms are keypunched.

6. The keypunching carried out here is checked by means of a verifier.

7. The punched cards are sent to a service bureau for listing on multilith masters.

8. The printed multilith masters are arranged in volumes, each volume furnished with track charts showing the positions of the stations contained in the volume, and with an introduction explaining the codes and units used and giving other relevant information.

9. Each volume is multilithed, by the staff of the Service Hydrographique, in about 400 copies.

10. After binding, about 250 volumes are distributed to marine laboratories etc. in the member countries, to World Data Centres, to our exchange relations and to the bookseller who had the series in commission. A stock of about 150 copies is stored.

11. A copy of the punched cards is shipped to the U.S. National Oceanographic Data Center (NODC) with whom we have an arrangement for exchange of cards. (The delivery to NODC at the same time counts as delivery to World Data Centre A.) In return we receive copies of cards covering the data published in the series Bulletin Hydrographique. These data are already on punched cards in the U.S. NODC. As the said institutions adopted the system used by U.S. Hydrographic Office - a system that, as explained above, is compatible with the ICES system - no technical difficulties are involved in such an exchange. It should be mentioned that in the year 1964/65 a total of 400.000 punched cards were received from U.S. NODC.

12. Copies of data, either in the form of punched cards or on lists, are delivered to laboratories in member countries, on request and at cost.

13. On the basis of the data received monthly means of surface temperature and surface salinity in fields of 1° latitude by 2° longitude of the north-eastern North Atlantic (including the North Sea) are calculated.

14. A catalogue based on the track charts of the data hitherto published will be issued, and loose-leaf track charts to go into this catalogue will be supplied as future data lists appear.

15. When all available data of a certain year have been included in the archives of punched cards tables of the holdings arranged geographically will be issued.

16. The punched cards are stored in the archives of the Service Hydrographique for future use, e.g., as mentioned under 12 above.

---

In this way the Service Hydrographique tries to fulfill the tasks of a regional data center, its region being the ICES area. It is to be regretted, however, that lack of funds has caused some delay in carrying out the programme of processing explained above.

Jens Smed