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COMMISSION of OCEANOGRAPHY

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EDITORIAL - The Oceans

When I bought my copy in Woods Hole in 1959, The oceans. Their physics, chemistry and biology by Sverdrup, Johnson and Fleming was in its eighth printing. This remarkable volume is now 50 years old.

In 1938, when its authors began work on The oceans, there was no comprehensive textbook of oceanography in English. Only Krümmel's Handbuch der Ozeanographie (1907, 1911) deserved to be called a comprehensive text, though badly out of date. Albert Defant's Allgemeine Meereskunde (1929) dealt only with physical oceanography. George F. McEwen of Scripps Institution of Oceanography had planned a modern text on physical oceanography during the 1930’s, but his plan was thwarted by lack of finances and changes in his research.

The oceans arose from the arrival of Harald Ulrik Sverdrup (1888-1957) as director of the Scripps Institution of Oceanography in 1936. The most distinguished oceanographer of his era, Sverdrup had been a student of Vilhelm Bjerknes, had been with Amundsen on Maud in the Arctic, and had succeeded Bjerknes as Professor of Geophysics in Bergen. In La Jolla he set out to streamline and modernize the teaching of oceanography at Scripps and to focus the Institution’s energies upon a major research project, study of the California Current. He was joined in preparing a modern textbook of oceanography by two young colleagues. Richard H. Fleming (1909-1990), a Canadian from Victoria, B.C., had worked at Nanaimo, then taken a Ph.D at Scripps in 1935, the first of a new generation of broadly trained oceanographers. Fleming went on to a distinguished career at the University of Washington, including 26 years as chairman of its Department of Oceanography. Martin W. Johnson (1893-1984) had come to Scripps as a marine zoologist from the University of Washington in 1935. The rest of his career was spent at Scripps, where he became an authority on Pacific zooplankton.

Fleming provided the chemistry and geology in the new text, Johnson the biological chapters. But the greatest influence was Sverdrup, who, in addition to writing chapters on physical oceanography (including the best account to that time of dynamical oceanography) attempted to provide unifying threads. As he wrote in the first chapter, "Oceanography embraces all studies pertaining to the sea and integrates the knowledge gained in the marine sciences that deal with such subjects as the ocean boundaries and bottom topography, the physics and chemistry of sea water, the types of currents, and the many phases of marine biology". Later in the same chapter he made a plea for integrated, comprehensive oceanographic expeditions and investigations even more ambitious than those he had planned for the California Current, believing that only through such collaborative work could, in his words, a "unified science of Oceanography" be achieved.
Once *The oceans* emerged from the shadow of war it was a remarkable success. Generations of oceanographers used it as the Bible of their science. My mentor, Gordon Riley, learned physical oceanography by long and deep study of Sverdrup’s chapters; when I last saw his copy of the book, perhaps fifteen years ago, it had been nearly destroyed by constant use. *The oceans* was an important cause of the first great outburst of professional confidence in oceanography - and it came to signify that confidence to later generations.

There has never been another book like *The oceans*. When the time seemed right for a new synthesis of oceanography, in the early 1960’s, *The sea. Ideas and observations on progress in the study of the seas*, with its curiously diffident title, multiauthored and multivolumed, began to appear, with the aim of updating Sverdrup, Johnson and Fleming’s masterwork. It signalled the increase in scale of oceanographic research, its widened scope, and the increased fragmentation that is a hallmark of oceanography in the late 20th century.

Fifty years after its appearance, *The oceans* is text, historical monument, and an unexamined resource in the history of the marine sciences. That text and its authors deserve recognition a half century after the book’s publication - and they deserve the attention of historians of oceanography, who will find the book and its authors well worth their time.

Eric Mills
James Rennell was born in 1742. When his father, a soldier, was killed in action he was adopted by a local clergyman, the vicar of Chudleigh in Devon, and through his influence entered the Royal Navy at the age of 14. The end of the Seven Years War in 1763 found him in India and his commanding officer advised him to enter the service of the East India Company as his prospects there would be better than in the navy in time of peace. Rennell took this advice but his interest in survey work soon led to his appointment as Surveyor-General of Bengal. In 1777 he was able to retire with a substantial pension, granted to enable him to publish his work. For the remaining years of his life (he died in 1830) he lived in London, pursuing a wide variety of geographical and scholarly interests. As well as producing maps of India, he was involved in encouraging African exploration and the critical study of historical geography. His work gained him an international reputation and he was regarded as the foremost British geographer of his day. However, throughout this period of over 50 years Rennell was also engaged in collecting information about ocean currents and charting their course, using data collected from printed sources, from observations made for him by friends and colleagues, from logbooks and from bottle floats. The project originated through his experience on the homeward voyage from India, of the Agulhas current off the Cape of Good Hope and of the uncertainties of navigation about the Scillies, which he suggested could be due to the presence of a current, since named after him. Rennell collected information worldwide but only part of his work, that dealing with the Atlantic Ocean, was published, after his death, in a book, *An Investigation of the Currents of the Atlantic Ocean*, and a series of charts. He was the first to show the individual surface currents of the Atlantic as part of a wider system, initially caused, he believed, by the effect of the prevailing winds blowing over the sea surface and subsequently modified by the influence of topography.

A one-day meeting on **JAMES RENNELL AND HIS PLACE IN OCEAN-ATMOSPHERE CIRCULATION STUDIES** was held jointly by the Royal Meteorological Society’s Specialist Group on the History of Meteorology and Physical Oceanography and the Challenger Society for Marine Science at the Department of Oceanography, Southampton University on Saturday 14 March 1992. About 40 people, including the present Lord Rennell of Rodd, heard talks dealing with various aspects of Rennell’s life and work and about how ideas on ocean circulation have developed since his day.

In the first paper, **James Rennell: his life and work**, Dr. John Woods, head of the Natural Environment Research Council’s marine sciences division, described Rennell’s career, his interest in ocean currents and some of the results he obtained. He illustrated the latter not only with Rennell’s own charts but with some remarkable slides of data from the World Ocean Circulation Experiment, which he had presented in a lecture to the Royal Geographical Society a few days earlier, showing how modern techniques have increased our knowledge and understanding of phenomena Rennell observed. In a paper on **James Rennell and his descendants: discovery, patience and scientific method**, Gwyn Griffiths of
the James Rennell Centre for Ocean Circulation (an offshoot of the Institute of Oceanographic Sciences Deacon Laboratory, established at Southampton University’s Chilworth site two years ago, to carry out work for the United Kingdom’s participation in WOCE) looked at the information available to Rennell about conditions in Arctic regions, where exploration was being carried on by naval and independent expeditions from 1818 onwards, searching for a northwest passage. Michael Bravo-Dobrée (Cambridge University) set James Rennell’s work on currents in the context of British hydrography in the early 19th century and showed how geographical thinking was affected by political and international tensions in the era before 1815.

In Wind versus density circulation: a 19th century controversy, Margaret Deacon (SUDO) showed how Rennell dominated British thinking on ocean currents until the 1870’s when the idea that circulation might be due to density differences, already popular with American and continental authors, caused heated discussions that played a significant role in obtaining support for the Challenger expedition.

John Gould (IOSDL) looked in greater detail at The surface circulation of the Atlantic, then, since and now and showed how modern knowledge interprets phenomena observed by Rennell, with special reference to the Gulf Stream and Rennell’s current. In the final talk, Deep circulation: 20th century developments, Professor Henry Charnock (SUDO) gave a fascinating account of work on the circulation of the North Atlantic in the 1950’s when following the prediction and subsequent confirmation of the existence of a Western Boundary Current by the distinguished American oceanographer Henry Stommel, who died earlier this year, a British expedition using neutral-buoyancy floats, developed by John Swallow to search for a return current, discovered the existence of eddies in the deep ocean.

It is hoped that the papers given at this meeting will be published in a future edition of the Challenger Society’s journal Ocean Challenge.

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"The 19th century Parliamentary papers are the most important, the most detailed, and the most accessible printed source for the history of that century." Thus its Editor, Peter Cockton, opens the "Introduction" of the Parliamentary Papers, 1801-1900 (Cambridge, Chadwyck-Healey 1991). The microfiche series now continues beyond 1900, with integral annual indexes.

The documents most likely to interest historians of the marine sciences are the Reports of Select Committees (composed of MPs and members of the House of Lords) and Command Papers (presented to parliament from outside, for instance by royal commissions or government departments). The common format is by way of interview with expert witnesses, plus written communications, with a note of existing legislation bearing on the subject, with the Chairman's formal report. Useful headings include Fisheries, Navy, and Submarine Telegraph Cables, but valuable information might be gleaned from Ports and Harbours, Whaling, etc. The prudent researcher is recommended to read the Guide's Introduction carefully before plunging into these deep waters.

Through the century, Parliament concerned itself with the business of Fish and Fisheries. The Report on the state of Channel Fisheries in 1833 investigated the accelerating decline of fisheries since 1815, with the consequent hardship to south coast fishermen. Evidence was taken on the number of British and Foreign boats working the Channel and southern North Sea grounds, the types of nets, trawls, and other equipment employed, the nature and volume of their catches, and the damage that was observed to spawning grounds. It also proposed legislation which would preserve the fishery and protect the fishermen's livelihood. (In parentheses it might be remarked that a century and a half later, the Channel fishermen are again complaining in the same fashion that foreign boats are overfishing their stocks and causing hardship.) Other Reports dealt with the South Devon Fisheries in 1817, the Irish Fisheries in 1849, and, frequently, Salmon Fisheries in the United Kingdom and in Scotland. Oysters, Shellfish in general, and Seals also came under scrutiny. Of the Annual Reports of Fish Commissions recorded in Parliamentary Reports from 1882 onwards, the most informative is the 12th Annual Report of the Fisheries Board for Scotland, 1894, where Henry Dickson gives a vivid picture of scientists trying to carry out their programmes under the joint handicaps of poor instruments and appalling weather.

The Navy head includes naval expeditions; the Ross Arctic Expedition was scrutinised in 1834. A select Committee on Arctic Expedition reported in 1854-55 as to whether Captain M'Clure's expedition, which sailed in 1850, had earned a share in the government reward for the discovery of the North West Passage. Detailed evidence was taken on the vessels' progress and the conditions that they encountered, as Captains Collinson and Kellett both claimed a share in the reward.
Parliament was much engaged with Submarine Telegraph Cables after 1860, but many of the reports are limited to the political and financial aspects of laying, maintaining and subsequently nationalising certain lines. Enquiries made before laying cables are more fruitful, as the nature of the sea bed and the problems of sounding for survey and for laying are debated by the various expert witnesses, some of whom spoke of their previous deep-sea experiences. In 1861 a joint committee consisting of the Privy Council for Trades and the Atlantic Telegraph Company heard testimony on the feasibility of laying and operating a cable from Britain via Iceland and the Faeroes to Canada. 1882 saw the publication of correspondence between the Board of Trade and the telegraphy companies on the subject of protecting from injury submarine cables and vessels engaged in laying and repairing such cables. The injury to cables and vessels engaged in laying and repairing such cables. The injury to cables was caused by ships anchoring carelessly, or, more often, by fishing gear.

The proposed trans-Pacific cable linking North America to the Australasian colonies generated much discussion and enquiry during the 1890's. A Command paper of 1899 heard evidence from hydrographers as well as telegraph engineers and reveals how little was known about the depths and sea bed structures over which this very long cable was to run.

Handlists of Chadwyck-Healey's current microfiche and printed publications in this series can be obtained from Chadwyck-Healey, Cambridge Place, Cambridge CB2 1NR, United Kingdom, and Chadwyck-Healey Inc., 1101 King Street, Alexandria, VA 22314, U.S.A.

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CENTENAIRE DE L'OBSERVATION DU COURANT CÔTIER EL NIÑO,
CARRANZA, 1892 - CONTRIBUTIONS DE KRUSENSTERN ET DE
HUMBOLDT A L'OBSERVATION DU PHÉNOMÈNE "ENSO" (RESUMÈ)

Le centenaire de l'observation du courant côtier "El Niño" et des pluies exceptionnelles de 1891 dans le nord Perou, est l'occasion de reconstruire les premiers textes qui ont été consacrés à ce phénomène majeur des interactions océan-atmosphère; aujourd'hui, 100 ans après, il suscite toujours autant d'intérêt du fait de son étroite connexion avec des crises climatiques aux conséquences parfois dramatiques. C’est en 1895 à Londres au sixième congrès international de géographie que Pezet fit la synthèse des trois articles de langue espagnole, ceux de Carranza (1892), de Carrillo (1893) et d’Eguiguren (1894), consacrés au courant côtier "El Nino" observé en 1891. L’examen critique de ces textes conduit à réfuter l’assertion selon laquelle Lariguet (1827) aurait dès 1822 observé le contre courant côtier "El niño" "paraissant sortir du golfe de Guayaquil". Le contre-courant qu’il décrit au sud de 16°S est associé au courant de Humboldt et est lié à la dynamique de l’upwelling côtier.
Les anomalies observées par Krusenstern en 1804 lorsqu'il traversa la zone équatoriale du Pacifique à bord de "la Nadjejda" vers 146°W, et la relation par Humboldt du voyage "extraordinaire" d'un galion de Manille, "contre le courant de rotation", au sud de l'équateur, qui eut lieu probablement en 1791, témoignent des effets d'un El Niño sur l'ensemble du bassin équatorial de l'océan Pacifique; elles sont les premières manifestations rapportées de conditions de type "ENSO" dans l'océan Pacifique.

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FIFTH INTERNATIONAL CONGRESS ON THE HISTORY OF OCEANOGRAPHY

The highlight of 1993 for historians of oceanography will be the Fifth International Congress on the History of Oceanography, to be held at the Scripps Institution of Oceanography, University of California at San Diego, 7-14 July. The Congress is titled "Oceanography: the Pacific perspective", Several symposia centered around the subject of the Pacific are being planned, but other contributions will not be excluded. Programme chairs are P.F. Rehbock of the University of Hawaii and Keith Benson of the University of Washington. Local arrangements are in the hands of Deborah Day, archivist of the Scripps Institution of Oceanography. Support has been offered by the International Council for the Exploration of the Sea, the Scientific Committee on Oceanic Research, the International Association for Physical Sciences of the Sea, the International Association for Biological Oceanography and the Commission of Oceanography, International Union of History and Philosophy of Science. Symposium papers will be published later as a monograph.

For information and later announcements, contact
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HONORARY DOCTORATE TO MARGARET DEACON. On May 19, 1992 Margaret Deacon was awarded the degree of LLD (Honoris Causa) at Dalhousie University, honouring her contributions to the history of oceanography during more than 20 years. Her best known work, Scientists and the sea (1971) has been followed by a series of distinguished papers and books, including a major bibliography of the history of oceanography soon to be published by Garland Press.

RITTER FELLOWSHIP TO R.M. FRIEDMAN. Robert Marc Friedman of the Department of History, University of California at San Diego, is the 1992 winner of the Scripps Institution of Oceanography’s W.E. and M.B. Ritter Memorial Fellowship in the History of Marine Sciences. Known for his work on V.F.K. Bjerknes and the Bergen School of meteorology, Friedman is at work now on the oceanographic work of H.U. Sverdrup.

RIGHTS TO OCEANIC RESOURCES. Rights to oceanic resources. Deciding and drawing maritime boundaries, edited by D.G. Dallmeyer and Louis De Vorsey, Jr. (1989), published by Martinus Nijhoff is available at a substantially reduced price from Professor DeVorsey, Department of Geography, University of Georgia, Athens, Georgia 30602, U.S.A.

MUSEUM OF THE WORLD OCEAN. The central maritime museum of the republic, the Museum of the World Ocean has been founded in Kaliningrad, Russia. It will house and exhibit material about travellers and oceanologists, and their contribution to ocean exploration. The research vessel Vitiaz will become the main exhibit. It was involved in 30 years of research and 65 expeditions. Vitiaz explored the great depths of the Marianas Trench, discovered new animals (eg. Pogonophora), and visited 100 ports in 49 countries. Support of the Museum and of Vitiaz is necessary, and its director S.G. Sivkova appeals for patrons, scientific assistance, and financial help. Financial contributions to Ost-West Handelsbank, Frankfurt-am-Main, 47405 Germany, account #090049804 in International Bank for Economic Cooperation, Moscow and account N07012034 in Investbank, Kaliningrad, Russia. For information, contact S.G. Sivkova, Director, Museum of the World Ocean, Gorky Street 113, Kaliningrad 236029, Russia (phone 27 53 45).
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(1991-1992, with additions from earlier years)

Jacqueline Carpine-Lancre


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at the deep-sea floor, pp. 3-7, 2 fig. - Cambridge; New York; Port Chester: Cambridge University Press.


JACKSON (P.B.N.), 1991. The first use of diving for marine biological research in South Africa. *Ichthos*, no. 30, pp. 9-12, 3 fig.


JONES (R.W.), 1990. The *Challenger* expedition (1872-1876), Henry Bowman Brady (1835-1891) and the *Challenger* Foraminifera. *Bulletin of the British Museum (natural history), historical series*, vol. 18, no. 2, pp. 115-143, fig.


PERES (J.M.), 1992. Des océanographes face à la mer. La Station marine d'Endoume. Marseille, la revue culturelle de la ville, no. 163, pp. 30-31, 2 fig.


This new section supplements the very limited biographical material found in the annual CURRENT BIBLIOGRAPHY. It is limited to works published in 1991 and 1992, and includes biographical notices of all kinds, including obituaries and announcements of awards of notable persons who are likely to be, or are, significant in the history of the marine sciences. Your comments and additions to this bibliography are welcome; they will be included in future editions of this newsletter.


MEETINGS

14 NOVEMBER 1992. ASTRONOMY IN NINETEENTH-CENTURY BRITAIN.
Contact: Dr. Frank James, The Royal Institution, 21 Albemarle St., London W1X 4BS, England.

26-29 DECEMBER 1992. HISTORY OF SCIENCE SOCIETY ANNUAL MEETING,
WASHINGTON D.C., with the American Historical Association. Contact:
Theodore M. Porter, Department of History, University of California 90024-1473,
U.S.A.

22-23 APRIL 1993. SIR JOSEPH BANKS: A GLOBAL PERSPECTIVE. At the
Royal Society, London. Contact: Society for the History of Natural History, The
Natural History Museum, Cromwell Road, London SW7 5BD, England.

7-14 JULY 1993. FIFTH INTERNATIONAL CONGRESS ON THE HISTORY OF
OCEANOGRAPHY, La Jolla, California, U.S.A.
See account under news and events.

9-11 JULY 1993. WILLIAM GILBERT AND THE ELIZABETHAN WORLD.
University of Essex, England. Elizabethan science in social and intellectual
context, including early modern physics, commerce, and navigation. Contact:
Prof. Ludmilla Jordanova, Department of History, University of Essex, Wivenhoe
Park, Colchester CO4 3SQ, England.

22-29 AUGUST 1993. XIXTH INTERNATIONAL CONGRESS OF HISTORY OF
SCIENCE, Zaragoza, Spain. Contact: Professor Mariano Hormigón, Facultad de
Ciencias (Matemáticas), Ciudad Universitaria, E-50009 Zaragoza, Spain.

8-11 SEPTEMBER 1993. TECHNOLOGICAL CHANGE, Rhodes House, Oxford,
England. Contact: Professor Robert Fox, Modern History Faculty, Broad Street,