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CONTENTS

EDITORIAL	1
ICHO - VI	2
ARTICLES & NOTICES	
Hinrich Rink - 150th anniversary	2
Historians of oceanography	4
Archival work at the MBA Library, Plymouth	5
From the Scripps Institution of Oceanography Archives	5
Request for information on Prince Albert I	6
NEWS & EVENTS	6
BIBLIOGRAPHY & BIOGRAPHY	9-26
MEETINGS	27

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EDITORIAL - *Geography, oceanography, and J.Y. Buchanan*

A century ago, the International Congresses of Oceanography provided important platforms for marine scientists. In 1895 and again in 1900 Otto Pettersson of Sweden described the "Copenhagen Programme" of marine research and the preparations underway for what became the International Council for the Exploration of the Sea before an audience of geographers. In 1895, Julien Thoulet of Nancy, France's first geological and physical oceanographer, and the English hydrographer H.N. Dickson, spoke at the London Congress and the Scot, John Young Buchanan (1844-1925), who had been chemist on "Challenger, provided what he called "a retrospect of oceanography during the last twenty years."

Buchanan's paper in 1895 was ostensibly a review of oceanography since the time of "Challenger, "coinciding with the publication of John Murray's masterly summary of the results, concluding the "Challenger" Reports. In reality, it was a review of his own contributions to ocean science during the great expedition and the following years and a prescription for science at sea at the turn of the century. He outlined the rapid demise of Wyville Thomson's "continuity of the Chalk" when extensive red clays and radiolarian oozes were discovered, and his demonstration that the red clays had a geological, not biological, origin, also his proof that the pressure error corrections of "Challenger"'s Miller - Casella thermometers had been too great. Always the consummate experimentalist, Buchanan described a way of adapting maximum - minimum thermometers to indicate temperature inversions. He espoused the use of special hydrometers used as a pycnometer to measure density (and thus salinity) rather than using chlorinity as their proxy. He also claimed the superiority of his method of determining free carbon dioxide in sea water to that of the Danish chemist J.P. Jacobsen. Recognizing that the problems of determining ocean currents had not been solved, Buchanan suggested a frontal approach: press into service the many private yachts capable of working on the open ocean to make measurements using a combination of celestial navigation, dead - reckoning, current meters and drogues. Finally, he defended "Challenger"'s use of hemp rather than wire ropes, explained the relevance of the discovery of deep-sea corals to John Murray's theory of coral reef formation, and commended the Prince of Monaco for his use of large baited traps to capture deep-sea animals.

Buchanan's essay of 1895 came at a time of transition in the marine sciences. Buchanan was not the first to invoke "Challenger"'s science nor to equate the birth of oceanography with the expedition. He made his belief explicit years later in his book *Accounts rendered of work done and things seen* (1919):

The Birth-day of Oceanography. When the "Challenger" sailed from Portsmouth in December, 1872, there was no word in the Dictionary for the department of Geography in which she was to work, and when she returned to Portsmouth in May, 1876, there was a heavy amount of work at the credit of the account of this department, and it had to have a name. It received the name Oceanography. It follows that the science of Oceanography owes its birth to the "Challenger" Expedition.

Then, referring to the first station taken by "Challenger":

Everything that came up in the dredge was new; the relation between the result of the preliminary sounding and that of the following dredging was new; and, further, from the picturesque point of view, it was the most striking haul of the dredge or trawl which was made during the whole voyage.

Consequently it may be taken that the science of Oceanography was born at Sea, in Lat. 25 45'N., Long. 20 14'W., on 15th February, 1873.

Picturesque events aside, Buchanan's presence at the International Congress of Geography in London in 1895, along with that of Dickson, Thoulet and Pettersson, speaks otherwise. Oceanography may have been "a special science," but its results were being summarized before an audience of geographers, not a community of marine scientists. "Oceanography" held different meanings in different places: for example, physical and chemical marine science in most of Europe; hydrography - and increasingly biology (including fisheries) in the United Kingdom. North America hardly entered the picture and would not for nearly a decade. Oceanography's roots were widespread in 1895, but the tree had no trunk. Perhaps the centenary of the International Council for the Exploration of the Sea in 2002 will give us more opportunity to explore its growth historically.

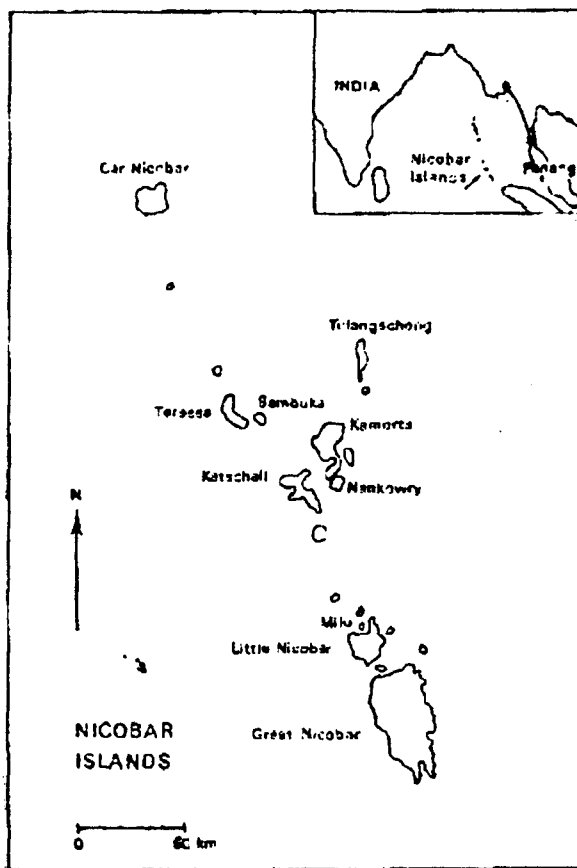
Eric L. Mills

ICHO-VI: THE NEXT INTERNATIONAL CONGRESS ON THE HISTORY OCEANOGRAPHY

The Sixth International Congress on the History of Oceanography (ICHO-VI) will be held in 1998 in Qingdao, Peoples Republic of China, under the sponsorship of the Commission of Oceanography, International Union of the History and Philosophy of Science, and The Pacific Circle. Professor Wu Baoling of the First Institute of Oceanography, State Oceanic Administration of the PRC, is organizer. More details should be available in next year's *History of Oceanography*, or by contacting Professor Wu.

HINRICH RINK - 150TH ANNIVERSARY OF HIS GEOLOGICAL INVESTIGATIONS ON THE NICOBAR ISLANDS, INDIA

In 1845-46 geological investigations were carried out for the first time on the Nicobar Islands. On June 25th the corvette *Galathea* of the Royal Danish Navy set out on her circumnavigation of the globe under the command of Steen Bille. On board were several scientists: a geologist, three zoologists, a botanist, three medical doctors, and persons who were to undertake ethnographical, physical, meteorological and commercial investigations. On her way, the *Galathea* was to call at the Nicobars, which had been under Danish sovereignty since 1756. The Nicobars make up an island chain consisting of about twenty small islands situated to the Northwest of Sumatra in the Bay of Bengal. Their original Danish name was Frederikøerne (Frederik's Islands) named after the Danish king, Frederik V. Several attempts to establish a colony on the islands had failed, however, as Europeans inevitably died of the dreaded "Nicobar fever", probably a severe malaria. In 1845 a final colonization attempt was to be made, this time on Pulo Milu at Little Nicobar. The purpose of the call at the islands was to estimate whether the islands had any commercial value for Denmark. So the duty of the geologist of the expedition was especially to search for tin, valuable minerals and coal.



The name of the geologist was Hinrich Johannes Rink (1819-1893). He was born in Copenhagen and educated in physics and chemistry. He was now asked to join the *Galathea* Expedition and was especially requested to investigate signs of lowerings of land areas, to study the formation of corals and to make geological investigations on the Nicobars.

When *Galathea* made a stop in Calcutta, Rink was so eager to initiate his investigations that he left for the Nicobars on an English ship and arrived at Little Nicobar on Christmas Eve day, 1845. The island was covered with dense, tropical forest, so he had to confine his investigations to the coastal areas. Here he studied the magnificent reefs and the outcrops of sandstone and shale, which in places contained some coal.

In Calcutta the expedition had bought an old paddle steamer, *Ganges*, which soon appeared to be the habitat of hordes of white ants. Using this ship the rest of the members of the expedition arrived at Little Nicobar. *Ganges* served as a stationary vessel, and thus overnight onshore stays could be avoided. At the northern islands of Nankowry and Kamorta *Ganges* now joined *Galathea*, and the scientists continued their various investigations, while the naval officers carefully carried out depth recordings and hydrographic surveys. The northern islands are not so high as the southern ones, which attain altitudes up to about 700m. Rink noted that the hills consisted of a meerschaum-like claystone which was penetrated by a plutonic rock resembling serpentinite. Then they returned to Little and Great Nicobar. On the latter island Rink observed a coal-bearing sandstone similar to the one on Little Nicobar. 19 members of the expedition, among them Rink, decided to spend a night on Great Nicobar, a decision that turned out to be fatal. Eight days later they were all hit by the fever, and four of them died. Rink, in feeble condition, was brought to a hospital in Georgetown on Pulo Penang, Malacca.

He recovered and returned to Little Nicobar. Here Rink had a hut as a depository for his collections. With untiring energy he proceeded with his investigations on the islands of Nankowry, Bambuka and Tillangschong. Inland on Bambuka he found proof of land upheaval, namely coral rocks at an altitude of 60-80 feet. By the end of May the crew of *Ganges* suffered greatly from fever, and as the stores of medicine and provisions were running low, the ship had to leave the islands. Soon after its departure Rink had another attack of fever which ultimately put an end to his participation in the expedition. At the end of the year he was back in Copenhagen.

Rink's careful geological investigations showed that there were no valuable minerals nor coal suitable for mining on the Nicobars. The coal which he had found was only scattered lumps imbedded in sandstone or shale, and was of poor heating value. He considered it to be of Tertiary age, which later investigations have confirmed. His collections of rocks from the Nicobars are now kept in the Geological Museum of the University of Copenhagen. Some of the rocks were shown in an exhibition in 1993, the centenary of Rink's death. In 1848 the Fifth Meeting of Scandinavian Scientists was held in Copenhagen, on which occasion Rink presented a paper "Om Korallrevene ved Nikobarøerne" (On the coral reefs of the Nicobar Islands) and also gave a brief account of the islands and the geological structure. Also in 1848 his book "Die Nikobarischen Inseln" was published (188 pages). In this book, which has never been translated from German into any other language, he gives an account not only of his geological investigations, but also of the climatic conditions, the population and its stage of culture. The text is provided with some sketches by the author, a skilled artist, who made several watercolours from the islands. Rink's very careful description of the Nicobars was for many years the only one existing of the geology of the islands. A hundred years later van Bemmelen wrote in "Geology of Indonesia" (1948): "Our knowledge of the Nicobars largely depends on observations of Rink, v. Hochstetter and Gee".

In 1848 Denmark gave up the Nicobars. The ill-fated colonization efforts had cost lots of lives due to the unhealthy tropical climate and the "Nicobar fever". In 1868 the islands were taken over by the British without any compensation, and since 1947 they have belonged to India. Rink dedicated the rest of his life to a remarkable effort for the benefit of Greenland, both as a geologist and as an administrator. His name is inseparably tied to the history of this Arctic country.

Denmark has a long tradition of scientific expeditions depending on the cooperation between science and navy. Thus, in 1950-1952 a Danish frigate, also named *Galathea*, set out on a deep-sea expedition around the globe. In 1951 it called at the Nicobars, but this time there was no geologist on board. In Denmark the Nicobars are not forgotten, thanks to the specimens now treasured in the museums. On the Nicobars, however, there are scarcely any traces left from the time when the Danish flag floated over the islands. But the memory of the first Danish *Galathea* Expedition is still kept in two place names on Great Nicobar: Galathea River and Galathea Bay. Gunni Jørgensen, Geological Museum, University of Copenhagen, Denmark

HISTORIANS OF OCEANOGRAPHY

Professor Johann R.E. Lutjeharms holds the Chair of ocean climatology at the University of Cape Town, where he is also the director of the Centre of Marine Studies of that University. He was educated both at the University of Washington in Seattle (Ph.D. 1977) and the University of Cape Town (D.Sc. 1992).

His main interest is in the large-scale ocean circulation patterns in the general vicinity of Southern Africa and their influence on weather and climate, particularly the greater Agulhas system and the Southern Ocean south of Africa.

His interest in the history of science in general, and the history of oceanography in particular, stems from his fascination with the role played by the philosophical attitude of individual researchers on their science and how this affects how science progresses. A case in point is the "disappearance" of pre-war German research on the Indian Ocean. A very solid knowledge base on this ocean was laid by workers at the *Institut für Meereskunde* of the *Universität Berlin* in the 1930's, but when interest in this ocean again revived after the war, in the late 1950's and 1960's, this work had been forgotten or was ignored. Why? Were later workers ignorant of this work, was it considered politically incorrect to pay attention to it, were people just incapable of reading German, or were the results considered too old to be of any value? Prof. G. Kortum of the *Institut für Meereskunde* at the *Universität Kiel* and I are working on this subject together.

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ARCHIVAL WORK AT THE MBA LIBRARY, PLYMOUTH

The report of the Marine Biological Association of the United Kingdom for 1993 contains the following information (on p.62):

The MBA has a large collection of archival material, relating to the formation and history of the Association, the Laboratory and its scientists. The Library collection includes personal and scientific papers, letters, notebooks and other documents, illustrations, photographs and pictures. There is additional archival material in other parts of the Laboratory on the early history and development of the Laboratory, the research programmes, staff, visiting workers, buildings, ships, aquarium, finance and administration... Since January 1993 efforts have been made to identify, rescue, sort and list the archival material which should be preserved, catalogued and made accessible to bona fide researchers and historians... Two databases have been established, one listing staff and Council members since the formation of the MBA, and the second giving brief details of the sets of personal and Laboratory papers, and records of photographs of individuals, ships, buildings, equipment etc.

In addition, the serials list database has been revised, and more than 10,000 books from before computerization were added to the computer database. A preliminary inventory of the Plymouth archival collection has been prepared and a detailed catalogue is being planned. (Information from Allen Varley via Jacqueline Carpine-Lancré)

FROM SCRIPPS INSTITUTION OF OCEANOGRAPHY ARCHIVES

Deborah Day, SIO Archivist, announces the availability of the following guides and/or publications.

1) *A guide to the Carl Henry Eckart papers* (1902-1973). Manuscript Collection MC 22, by Deborah Day. University of California at San Diego, Archives of the Scripps Institution of Oceanography. SIO Reference Number 95-5.

Most of Eckart's papers are in the Library of Congress. SIO Archives contain his books, reprints, and the manuscript of his last book.

2) *A guide to the Winfred Emory Allen papers (1873-1947)*. Manuscript Collection MC 23, by Deborah Day. University of California at San Diego, Archives of the Scripps Institution of Oceanography. SIO Reference Number 95-6.

To order, contact Carolyn Rainey, SIO Archives 0175C, UCSD, 9500 Gilman Drive, La Jolla, CA 92093-0175, USA. Hard copy is US \$4.00; Word Perfect 5.1 file and DOS floppy disk also available for US \$5.00 mailing fee. Available on World Wide Web by searching <http://orpheus.ucsd.edu/sio/archives>. According to Deborah Day, Allen retired as assistant professor of biology, a very modest rank for one so long associated with Scripps. He had a long and very serious argument with T. Wayland Vaughan which led Vaughn to recommend that he be disciplined. This controversy is well documented in the collection and interests me principally because Allen charged Vaughan with breaking faith with the founders. I think that their dispute may shed some light on events at the time that Scripps moved from biology to oceanography.

3) *William E. and Mary B. Ritter Memorial Fellowship Lectures*. Printed versions of two are available currently: Eric L. Mills. 1993. *The Scripps Institution: origin of a habitat for ocean science*, and Robert Marc Friedman. 1994. *The expeditions of Harald Ulrik Sverdrup: contexts for shaping an ocean science*. You may order a copy of these by sending a cheque payable to "UC Regents" for US \$10.00 per lecture to Carolyn Rainey, SIO Archives 0175C, UCSD, 9500 Gilman Drive, La Jolla, CA 92093-0175, U.S.A.

REQUEST FOR INFORMATION - PRINCE ALBERT I

The Archives of the Oceanographic Museum of Monaco keep many documents about the oceanographic activities of Prince Albert I of Monaco. For about forty years the Prince had close scientific relationships in Europe and America.

It would be worthwhile locating archives, especially letters, dealing with the scientific endeavours of Prince Albert and his main assistants: Dr Jules Richard, Baron Jules de Guerne, Charles Sauerwein, Henry Bourée, etc.

I would be extremely grateful to anyone who could give me the reference and the location of documents relating to this subject. Documents thus found will allow me to publish a "chronology" of Prince Albert I of Monaco. This "chronology", with its notes and references, would facilitate further studies on the oceanographic activity of the Prince, or the publication of the letters exchanged between the Prince and his correspondents.

Please address replies to: Mme J. Carpine-Lancré, Musée océanographique, Avenue Saint-Martin, MC 98000, MONACO.

NEWS AND EVENTS

CENTENARY OF ICES, 1902 - 2002. The International Council for the Exploration of the Sea, inaugurated in Copenhagen in 1902, has played a preeminent part in European marine science during the 20th century. Preparations are beginning for a commemoration of ICES's centenary in 2002, with emphasis on its historical importance. It is likely that the commemoration will involve special lectures, symposia, and a variety of publications. Expressions of interest in taking part are solicited from historians, who might like to contribute to symposia or publications. Please contact either Dr. Michael Sinclair, Bedford Institute of Oceanography, P.O. Box 1006, Dartmouth, NS B2Y 4A2, CANADA (e-mail: m.sinclair@bionet.bio.dfo.ca) or Prof. Eric L. Mills, Dept of Oceanography, Dalhousie University, Halifax, NS B3H 4J1, CANADA (e-mail: emills@ac.dal.ca).

100 YEARS OF MARINE SCIENCE IN SOUTH AFRICA. The first recognised marine scientist who worked in South Africa was John D. Gilchrist. He was appointed by the Department of Agriculture of the then Cape of Good Hope in 1895 and held many offices, including a Chair at the university in Cape Town. To commemorate the

centenary of his arrival a number of meetings and events are planned. In August of this year there will be a launch of the centenary celebrations in Cape Town with a special poster and postage stamp. The annual National Marine Day of South Africa will have this centenary as its theme, a special commemorative publication on the history of various marine matters in South Africa will be published, special workshops are to be held and an international conference, FishAfrica, will take place from 30 November to 2 December 1995. To conclude the festivities, the 9th National Oceanographic Conference for southern Africa will be held in Cape Town in November of 1996. This will be followed by the final symposium on the last phase of the Benguela Ecology Programme (BEP) and a special symposium to commemorate John D. Gilchrist. The latter will consist of 8 invited lectures on various aspects of his work and how the scientific legacy he has left has developed since. More information on these events and especially on the Gilchrist commemorative symposium may be sought from Dr. A.I.L. Payne, Sea Fisheries Research Institute, Private Bag X2, Roggebaai 8012, South Africa; phone: +27 21 402 3105; fax: +27 21 25 2920.

PROFESSOR M.J. DUNBAR. Max Dunbar of McGill University died in Montreal earlier this year at the age of 80. A biological oceanographer all his working life, he both loved the history of science and made it. The following is edited slightly from an obituary in the Canadian newspaper, the Globe and Mail. "Prof. Dunbar was professor emeritus of oceanography at McGill University, where he was a researcher and lecturer since 1946. He died just hours after the publication of his latest book, a collection of autobiographical notes titled *Essay from a Life*, said his friend and publisher, a professor of Danish. Scottish-born, Professor Dunbar first travelled to Greenland in 1935 when he was a student at Oxford University. His diaries from those expeditions have also been published. Prof. Dunbar, who immigrated to Canada in 1939, visited Greenland and Canada's north repeatedly over the ensuing decades, becoming an expert in Arctic oceanography. He also became fluent in Danish and between 1941 and 1946 served intermittently as Canada's consul-general to Greenland. In 1991 he was granted an honorary doctorate by the University of Copenhagen. An unabashed lover of books, from scientific tracts to poetry, Prof. Dunbar often said that he never left McGill University because it has one of the finest libraries in the world. Before his death he asked that, in lieu of flowers, donations be made to Fontanus Publications, a project designed to publish scholarly works based on collections in the university's libraries".

THE US NAVY AND OCEANOGRAPHY. In October 1995 the U.S. Navy Memorial Museum in Washington, D.C. will open its first exhibition exclusively on the history of oceanography. Employing instruments from the Woods Hole Oceanographic Institution, the Museum staff will explore the relationship between the U.S. Navy and oceanographers as it developed between World War I and the 1960's. In addition to the rich collection of artifacts, including reversing thermometers, bathythermographs, current meters, and transducers, the visitor will enjoy the poetry of retired Woods Hole technician Dana Densmore and the caricature art of University of North Carolina oceanographer Conrad Neuman. The exhibit is sponsored by the U.S. Naval Historical Center, the Woods Hole Oceanographic Institution, the Office of Naval Research, the Oceanographer of the Navy and NAVOCEANO. After display in Washington, the exhibition will travel. Museums wishing to be on the schedule can contact Dr Gary Weir in Washington, D.C. at (202) 433-3891 or via e-mail at gweir@dtic.dla.mil.

INSTITUT FUER MEERESKUNDE IN BERLIN (1900-1946), betwixt scientific ambition and German interest at sea, a meeting in Berlin, 26-29 September 1996. When the German Reich was founded in 1871, Germany regarded herself as an international power, vying for prestige with Great Britain. German industry built warships and Kaiser Wilhelm II personally encouraged the traditionally land-oriented German public to become more interested in the sea. To pursue this aim the Institut fuer Meereskunde was founded in 1900 in Berlin. A marine museum was added in 1906. They had both public and scientific programmes and became well known scientifically especially for the German South Atlantic Expedition in the "Meteor" in 1925-1927. The history of the Berlin Institut and Museum reflects the development of German marine science and oceanographic research from the Kaiserreich and the Weimar Republic until the National Socialist dictatorship. The conference is intended to elucidate aspects of their development and to evaluate the contribution of their scientists. The following topics will be considered: history of origin; famous figures; conflict between research and national marine interests; expeditions and relations abroad; public role; and later German marine institutions. The Museum of Transport and Technology in Berlin will display historic exhibits from the original marine museum. Hosts of the conference are a working committee of the German

Society of Marine Research and the Geographic Institute of Humboldt University, Berlin. It is held in conjunction with the first German Scientific Historians Conference to be held in Berlin in 1996. Potential contributors or those wishing further information should contact Walter Lenz, Zentrum fuer Meeres- und Klimaforschung, Universitaet Hamburg, Bundesstrasse 55, D-20146 Hamburg [telephone +49(0)40 4123 4523; fax +49(0)40 4123 5235; e-mail: lenz@dkrz.d400.de], or Prof. Dr Joachim Marcinek, Geographisches Institut, Humboldt Universitaet, Unter den Linden 6, D-10099 Berlin [telephone +49(0)30 30875 609; fax +49(0)30 30875 646].

HISTORY OF GEOLOGY. A second supplement to W.A.S. Sarjeant's *Geologists and the history of geology: an international bibliography from the origins to 1978* is in preparation. However, it may not be published unless there are sufficient advanced orders. The supplement, 2350 pages, covers 1985 to 1995, and costs US \$299.50 before publication, US \$365.00 after publication. For order forms contact Dr Sarjeant at the Dept of Geological Sciences, University of Saskatchewan, Saskatoon, Saskatchewan S7N 5E2, CANADA.

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MEETINGS AND CONFERENCES

17-19 SEPTEMBER 1995. THE CHALLENGER LEGACY. A meeting planned originally to coincide with the opening of the Southampton Oceanography Centre (now delayed). Invited papers on the development of oceanography since "Challenger." Speakers include Anita McConnell, A.L. Rice, H.L. Burstyn, E.L. Mills, Rosalind Marsden and R.M. Friedman. The conference will be over before this newsletter is mailed, but a publication is planned. For information: Dr Margaret Deacon, Dept of Oceanography, University of Southampton, Highfield, Southampton SO17 1BJ, UNITED KINGDOM.

10-12 APRIL 1996. ARCHIVES OF THE SCIENTIFIC REVOLUTION. At the Royal Society, London. Includes discussion of papers of Galileo, Boyle, Huyghens, Leibniz and Newton. Contact: Prof. Michael Hunter, Dept of History, Birkbeck College, University of London, Malet St, London WC1E 7HX, ENGLAND.

11-12 APRIL 1996. EMPIRES OF NATURE. At Wadham College, Oxford. Relationship of empires to natural history, field work, exploration, and museums. Contact: Jane Pickering, University Museum, Parks Road, Oxford OX1 3PW, ENGLAND (e-mail: jane.pickering@oum.ox.ac.uk).

10-13 JULY 1996. SCIENCE MATTERS: THE ROLE AND ACHIEVEMENTS OF SCIENCE IN GREEK ANTIQUITY. At the University of Liverpool. Contact: Dr J.C. Tuplin, Dept of Classics and Ancient History, University of Liverpool, 12 Abercromby Square, Liverpool, ENGLAND.

23-26 JULY. CROSSING BOUNDARIES, 3RD BRITISH-NORTH AMERICAN JOINT MEETING OF THE BSHS, CSHPS, AND HSS. In Edinburgh. Local organizer: Dr John Henry, Science Studies Unit, University of Edinburgh, 2 Buccleuch Place, Edinburgh EH8 9JT, SCOTLAND.

25-30 JULY 1997. XXth INTERNATIONAL CONGRESS OF THE HISTORY OF SCIENCE. In Liège. First circular, indicating interest in further mailings from Centre d'Histoire des Sciences et des Techniques, Université de Liège, Avenue des Tilleuls 15, B-4000 Liège, BELGIUM.

LATE 1996 OR 1997. The American Philosophical Society Library plans to sponsor "Surveying the record: North American exploration to 1900" and would like expressions of interest. Contact Dr Edward C. Carter II, Librarian, The American Philosophical Society, 105 South 5th street, Philadelphia, PA 19106, U.S.A.

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