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Editor of Newsletter

Eric L. MILLS  
Department of Oceanography, Dalhousie University  
Halifax, NS B3H 4J1 (Canada) Phone (902) 494-3437  
FAX (902) 494-3877. Telex (CCT) 7401468 OCGY UC  
E-Mail: emills@is.dal.ca

Text Preparation

Tammie Galliot  
Department of Oceanography  
Dalhousie University

## Editorial - History of oceanography and history of science

50 years ago, Gordon A. Riley's paper "Factors controlling phytoplankton populations on Georges Bank" was published in the *Journal of Marine Research*. Riley began his graduate study in embryology at Yale in 1934, but soon switched to limnology under the influence of G. Evelyn Hutchinson, then developing the programme of research and writing that made him one of the most influential ecologists of the twentieth century. While the first draft of his doctoral thesis on the copper cycle in a freshwater pond was being read in 1937, Riley had the chance to go to sea in the Gulf of Mexico. There and then he discovered that he liked working at sea, and that the techniques that he had developed for studying freshwater phytoplankton could be applied to the sea.

When Henry Bryant Bigelow, director of Woods Hole Oceanographic Institution, began to encourage the study of Georges Bank, seaward of Cape Cod and south of Nova Scotia, in an attempt to understand the factors controlling the lucrative haddock fishery there, Riley joined the research vessel "Atlantis" for a series of cruises between September 1939 and June 1941. Using statistical analyses of the environmental factors and experimentation with light and dark bottles he found that phytoplankton populations and production showed regular, predictable and quantitative links with environmental variables like light, nutrient levels and temperature. Initially he worked with multiple correlation analysis, then known and used by only a handful of ecologists and far more familiar to statisticians than to working scientists in the life sciences.

Riley's career was interrupted by the Second World War. At first he worked on marine fouling, then taught oceanography to naval officers. When the war ended he returned to basic research with business unfinished. Throughout the war he had pondered the difficulties of extending and making more general the increasingly more cumbersome and decreasingly intuitive results he was getting with multiple correlation analyses. The answer was to take a new approach and by 1946 he had done so. Beginning not with data but with a *priori* hypotheses about the biology of the organisms and their control, he turned his old method on its head. As he wrote, the way ahead might be cleared by "...developing the mathematical relationship on theoretical grounds and then testing them statistically by applying them to observed cases of growth in the natural environment."

The result was a profound innovation in biological oceanography. Using a simple differential equation, he described the changes in phytoplankton populations on theoretical grounds as due to the effects of population size, photosynthetic rate and respiration of the cells, and their consumption by grazers. Each term could be expanded on the basis of available knowledge to give a good approximation to the biology of the organisms. The ultimate test came in seeing how well the mathematical model could predict the changes observed on Georges Bank during the seasonal cycle of production. A picture resulted that accorded well with what was expected from statistical analyses and with observations on Georges Bank. Riley concluded modestly that "while these methods are obviously crude at the present time and need to be developed further, both by examination of other areas and by better experimental evaluation of constants, it does not seem too much to hope that they will eventually solve some of the problems of seasonal and regional variations that puzzle marine biologists today."

Riley's innovation in 1946 set a pattern of investigation that has continued in biological oceanography for the past 50 years. I have lingered over it because of its intrinsic scientific interest, but more because of the relevance it has for the history of science. Who outside the history of oceanography has even heard of Riley and has realized that his originality in 1946 has significance in the broader history of ecology? Recently the history of population ecology, the introduction and spread of statistical thinking, and, more broadly the equation of power and truth with quantitative knowledge, have been given book-length treatment without so much as a glance at the marine sciences. Is it too much to ask that historians of science cast their nets more widely, beyond the bounds of the classical disciplines of biology, physics, chemistry and the like, into the little explored waters of hybrid disciplines like oceanography? Once the initial difficulty of learning new ways of thought is overcome, they can expect some stimulating surprises that go well beyond the bounds of "wie es eigentlich gewesen." Using my example alone, why should a lone graduate student have considered it appropriate to analyse his subjects of study using advanced statistics, then to describe natural systems using differential

equations? How did the older world of Bigelow and the frontier being explored by Riley come together? What drives a scientist to work in an unpopular or unknown field for many unappreciated years, as Riley did? How can one explain the autonomous development of biological oceanography when it might have maintained close links with ecology?

There are some advantages to having the history of oceanography to ourselves. It is a fleeting pleasure that practically every aspect of the history of the marine sciences is a virgin field, full of intriguing problems and projects. But this is hardly sufficient to compensate for the lack of “critical mass” in the history of oceanography. Whom do you talk to when the new project opens up? How do you keep up with theoretical developments in the history and philosophy of science relevant to the limits of knowledge, the interaction of people and things, and many other topics in historiography? It is too much to expect that the history of oceanography will become a growth industry (Mainline history of science is having a hard enough time surviving in academia), but surely it is time that we became more evangelistic about the virtues and unexplored possibilities of our work.

Eric L. Mills

## THE GERMAN CHALLENGER OF NEPTUNE

On the Short Life and Tragic Death of Rudolph von Willemoes-Suhm (1847-1875) and a Memorial Plate on Graveyard in Holstein.

Many readers will be aware of the fact that a young German zoologist joined the scientific staff of the “Challenger” shortly before she departed in 1872. His name was Rudolph von Willemoes Suhm, born on September 11, 1847, in the small port city of Glückstadt on the Holstein (northern) bank of the River Elbe. There was no return for him; he died September 13, 1875, on board “Challenger” in the Pacific Ocean and was buried at sea.

There are a number of reasons why his work and career, especially the circumstances of his participation in the “Challenger” cruise, have not been perceived properly in the German marine community and the history of oceanography group in this country. First, he did not return and was not involved in the editing work of the reports. Certainly Buchanan is right when he stated in a comforting letter to Rudolph’s mother to Rendsburg, then the residence of his parents (letter from Montevideo, February 22, 1876): “In him I lost my best friend on board the ship and even after so many months the whole extent of the loss, which the expedition has sustained by his untimely death, has not been realized. Had he only lived a few years longer, there can be no doubt, that he would have handed down his name to posterity amongst the foremost of those, who rendered Germany famous in science; but even as it is, no man of his age has left a more indelible mark on the science of zoology.” This is confirmed by a short look at Suhm’s list of publications, as printed in an annex to the last “Challenger - Brief” he sent from Hawaii to Prof. C.v. Siebold of Munich University for the *Zeitschrift für wissenschaftliche Zoologie* (Vol. 26, 1876, following Siebold’s obituary, p.XCIV-XCVI). The references to Suhm in the Narrative volume of the Challenger Report are numerous, including then notes on different species. Some new species were named by him (*Willemoesia leptodactyla*, *Polycheles crucifera* and others), and some minor islands that were first charted on the cruise (Suhm Islands in Royal Sound, Kerguelen Island, and a coral island east of D’Enrecasteaux in the Nares Harbour area of the Admiralty Group in the Pacific Ocean) were named for him. After his return to England, as expressed in a letter to Professor C.v. Kupffer of Kiel University from Mindanao on January 30, 1875, he wanted to help Wyville Thomson edit the results and stay in Britain for a couple of years, but it is clear that he would have accepted a professorship at a German university, probably in Kiel succeeding his friend and tutor von Kupffer, who went from Kiel to Königsberg university in 1877. So a brilliant career was waiting for Willemoes-Suhm at home. But he did not return, and after a time his contribution to the “Challenger” cruise was forgotten. With the help of v. Kupffer, his mother Mathilde, nee von Qualen 1824 in Eutin, edited the letters she had received over the years and gave them to the Engelmann publishing house in Leipzig (1877). Another important source is a second set of “Challenger” letters Suhm sent to his Munich teacher and friend Prof. C. v. Siebold for publication. These notes were intended to inform the German scientific community about major results of the cruise parallel to the reports Wyville Thomson regularly supplied for *Nature*. Without going into details it should be noticed that the last letter sent to v. Siebold (No. VI) was written on board in July 1875 on the way from Japan to the Sandwich Islands, not long before he died. More important are the letters v. Siebold published in 1877 (*Von der Challenger- Expedition. Nachträge zu den Briefen*). As the letters Rudolph sent home, these communications were not intended to be published, so they contain many interesting personal and private details that might give us a better idea of Suhm’s character and personality. Nobody has looked at these sources again until recently. In 1984 the biologist G. Müller of Saarbrücken University re-edited the family letters and some of the communications sent to v. Siebold for a more popular series *Alte abenteuerliche Reiseberichte*. In his introduction he tried to integrate some facts he could find out about Suhm in the Detlefsen Museum in Glückstadt, the place he was born. No more sources were available locally with the exception of some photographs and books about the “Challenger” cruise given to the museum after Suhm’s mother died (1907). So a modern edition is easily available today. Merriman confessed that he had difficulties finding a copy of the 1877 edition and had to use a microfilm from the British Museum for his interesting and fascinating study of Wyville Thomson and Rudolph von Willemoes-Suhm, the senior and the youngest of the “Challengers of Neptune” on board “Challenger”. His appreciation of the life and work of the young German zoologist read and published at the “Challenger” Expedition Centenary in Edinburgh during the Second International Congress on the History of Oceanography in 1972 is moving in its warm understanding of Suhm’s circumstances. Merriman translated some of the letters to the mother in parts as well and included a reproduction of the portrait of Suhm from the 1877 *Challenger - Briefe*.

This was the state of the art in this matter, and now it is up to the German side to come up with a new approach.

We know the main facts of Rudolph's life and career, short as they were, reading the obituaries (C.v. Kupffer in Willemoes-Suhm 1877, and in *Kieler Zeitung*, Abendausgabe of November 25, 1875, p.4764; C.v. Siebold in *Zeitschrift für wissenschaftliche Zoologie*, Vol. 26, 1876, p.XCI-XCIV; Thomson in *Nature*, Vol. 13, 1876, p.88-89; cp. *Challenger Report, Narrative* Vol. I, 2nd Part, 1885, p.769-771). To understand his curriculum vitae it will be appropriate to distinguish three circles or levels. The first is the local and regional level until he left school with the Abitur at the respected Johanneum school in Hamburg on March 20, 1866. This period is restricted to different places in Schleswig-Holstein in northern Germany. The second phase involves his time as a student and Privatdozent until he first met Thomson in Edinburgh on October 14, 1872. The third global phase is his time on board "Challenger" until his death. In this note new light will be thrown upon the first and regional level. This is where the story begins - and, as will be shown later, ends again. It was clearly a task for local historians of oceanography to find out more about the family background and Suhm's childhood and youth, as all the places where he lived are in Holstein and quite close to Kiel. Furthermore Willemoes-Suhm, although never a student in Christian-Albrechts-University in Kiel, had closer relations to academic circles there than known up to now. So he fits quite well into the long and successful tradition of marine research in this Baltic port city that soon was to become the leading naval establishment after the foundation of the German Empire in 1871. "Rudolph von Willemoes-Suhm, son of the Kammerherr Landrath von Willemoes-Suhm, a native of Schleswig-Holstein, was born September 11th, 1847" (quotation from *Challenger Report, Narrative*, Vol. I, 2nd Part, 1885, p.769). Although the "Challenger" files clearly state that he was a German, many contemporaries and authors in later years sometimes were not so sure whether he was German or Danish or more a Dane than a German. This is a complex matter for those not familiar with the regional history in those days and needs a comment. It is connected to the political problem of Schleswig-Holstein in 1848, which was so complicated that even the British Prime Minister negotiating a truce and treaty between Denmark and the German states almost went mad about it. This national ambiguity of the Willemoes-Suhm family might be one important reason why Rudolph's participation in the "Challenger" cruise had a low profile in a country that evolved as a leading rival to British sea power in the next decades and was more concerned organizing its own national cruises on "Gazelle", "National" or "Valdivia". It is known that the masters of "Challenger" and "Gazelle" met while their ships made a port call on their way back in Montevideo in February 1876 to coordinate their homeward cruise tracks. In Germany the "Gazelle" circumnavigation from 1874-1876, which started and ended in Kiel harbour and was not primarily concerned with deep sea biology, was perceived as a competitive enterprise in many ways.

According to new genealogical research work the Willemoes-Suhm family has a Danish background. A member of the Willemoes family, probably Rudolph's grandfather, was a leading figure in the defence of Copenhagen when the British fleet attacked the Danish capital to destroy the naval forces in the days of the Napoleonic wars. That is why there is a Willemoesgade in Copenhagen. Rudolph's father Peter Friedrich was born in Odense on the island of Fyn in 1816. His father Martin was accepted into the Danish nobility in 1820. Rudolph's father grew up in Holstein, however, where the grandfather had military assignments in Plön and Itzehoe. From 1838-1843 he studied law at Kiel University and started an administrative career in the duchy of Holstein, which had a very peculiar constitutional status, as the Danish king was the sovereign of this duchy between the Eider and Elbe, although it remained a German territory with a special administration. The career of Rudolph's father reflects the localities where the future zoologist grew up. In 1846 he was married to Mathilde Ida Albertina von Qualen in Itzehoe. She was born in 1824 as daughter of the last Danish envoy to the court in Eutin, then an independent church territory. Rudolph's father had moved to Glückstadt in 1844, where he was active until 1852 as Stadtpräsident and from 1850 onward, Bürgermeister. Afterwards he was transferred to Wandsbek (1852-1856) and Altona to direct the police affairs in both cities that were later incorporated into Hamburg. In 1864, after the German-Danish War, he has to resign because of his evident Danish sympathies. For two years he went to Leutersdorf on the Rhine. In 1866, however, Peter Friedrich Willemoes-Suhm came back to Holstein as a respected regional administrator and served as Landrat in Rendsburg (1866-1877) and in Segeberg, where he died on December 19, 1891. As many others he had accommodated himself to the new Prussian order in the province. So, Rudolph von Willemoes-Suhm was a German from a formal and constitutional point of view despite of his Danish family background, and he held a German passport when he came to Edinburgh with the Danish Faeroer Expedition on board the "Phoenix" in 1872 to take on coal in Leith and meet Thomson.

It is said that Suhm's early and keen interest in natural history was fostered by Dr. Pflingsten of the Schleiden educational establishment in Wandsbek. Rudolph started to publish and lecture about ornithology before he left the Johanneum gymnasium in 1866, his early papers appeared in the journal *Der Zoologische Garten* in Frankfurt.

Suhm first went to Bonn University to study law, but apparently he did not want to follow in his father's

footsteps, for one year later he went to Munich to study zoology with Prof. C.v. Siebold (1804-1885), who realized very soon that Suhm could become a good scientist. From April 1869 onward Suhm was a student in Göttingen, where he got his doctor's degree with a thesis about the anatomy and development of some parasites. Afterwards he specialized in marine biology. He went to the Mediterranean and visited Genoa and La Spezia. Then, in summer 1870, he came to Kiel, met Prof. C.v. Kupffer (1829-1902) and began to collect marine samples in Kiel Bight under his guidance. The result of his Baltic studies was accepted as "Habilitationsschrift" in Munich and published under the title *Biologische Studien über niedere Tiere*. Prof. v. Siebold asked him to come back to Munich and be his assistant. At the very young age of 24 years Rudolph von Willemoes-Suhm was promoted Privatdozent at Munich University on December 18th, 1871, and started lecturing. This in brief is the survey of the promising academic career of the German participant in the "Challenger" cruise.

Rudolph von Willemoes-Suhm died on September 13, 1876, at sea near Hawaii. The Narrative of the Challenger Report, Vol. 1, First Part, 1885, p.20 says: "On the voyage to Tahiti, Dr. R. von Willemoes-Suhm died after a short illness from erysipelas". Thomson informed the family from Tahiti. The *Challenger-Brief* (1877, p.177-179) incorporate a letter Buchanan sent to Suhm's father from Valparaiso on November 25th, 1875, explaining the circumstances of the death of the 28 year old son: "...He was buried at sea on the morning of the 14th with the customary ceremonies. I need hardly say that his death caused the greatest grief among all on board, where his personal merits and scientific eminence had secured the respect and love of all. Every one joins me in the expression of their sympathy for you in your present severe affliction, and as some slight mark of respect for his memory we wish to send a memorial tablet, to be put up in the church or burial place of his home..."

It was to be Suhm's last voyage that leads back home to Holstein: we know from the *Challenger Narrative* (Vol. 1, 2nd Part, 1885, p.771) that "a tablet to the memory of Rudolph von Willemoes-Suhm has been erected in his native place by his colleagues in the Challenger." Obviously this was done some time after "Challenger" had returned to England, because the *Challenger-Briefe*, edited by his mother and published in 1877, has a photograph of this memorial stone ("Grabmonument") at the end, probably taken on the day the stone was erected because there is a fresh wreath on top of it. Following local sources it became evident that the tablet was at the entrance of the graveyard of a church in Itzehoe "Gleich neben dem Eingang", as the local newspaper reported in a commemorative article about Willemoes-Suhm on September 13, 1900 (Büchner 1972). According to the local church register, Mathilde von Willemoes-Suhm, Rudolph's mother, was living there in Klosterweg 3 and died on January 11, 1907. At Itzehoe Kloster the Schleswig-Holstein nobility had a foundation and facilities to support unmarried and widowed female members, and that is the place where she went after her husband's death. But, as Büchner stated in his 1972 paper, nobody knew anything about a memorial stone. Glückstadt and Rendsburg were other places where the stone might have been, but all efforts to find it were in vain. Then, in January 1996, on a casual visit in the provincial town of Bad Segeberg about 30 miles south of Kiel on the Route 404, I was successful. The minister of St. Marien Church, questioned about this matter after the Sunday service, knew nothing about Willemoes-Suhm, marine biology or a vessel named "Challenger", but remembered an English inscription on one of the tombstones of his four extensive graveyards in the vicinity of the church. He described the way and site, and there it was, still in a good, unbroken condition, although weathered and no longer as white as it was once: the vanished "Challenger" memorial stone with the tablet given to the family by Wyville Thomson, John Murray, John Young Buchanan, Henry Nottidge Moseley and John James Wild had survived on the family's grave (Graveyard No. II, SE section close to the fence). The present location certainly is different from that on the 1877 photograph. So it is likely that Rudolph's mother, who had such an intimate relation to her son - there are no letters to the father - took the memorial stone with her from Segeberg to Itzehoe when the father died to have Rudolph's memorial near by. Rudolph's brother Josef, who had lived with his mother in Itzehoe until her death in 1907, or somebody else, later arranged to have the "Challenger" memorial stone transferred to the family burial place in Segeberg. So the detailed history of this stone document remains a mystery. The main point is that it still exists and that this fact is made known to the international marine community. The Institut für Meereskunde at Kiel University meanwhile has approached the church committee in Segeberg and offered help to do some restoration work. Furthermore it was suggested that this memorial monument, being no tombstone, be transferred again, in case the burial place of the Willemoes-Suhm family should be abandoned one day. The museum in Glückstadt or a marine research institution near the present site would be appropriate locations to tell future generations of oceanographers that there was a German participant on board the "Challenger" circumnavigation who died under tragic circumstances 121 years ago. The impressive memorial stone measuring about 1.60 x 1.00 m certainly is another symbol of the fact that marine research has been an international affair ever since

“Challenger” set sail to study the seas as a common heritage of science and mankind.

The inscription of the tablet reads:

IN MEMORY  
OF  
RUDOLPH VON WILLEMOES-SUHM  
NATURALIST  
WHO DIED ON THE 13TH OF SEPTEMBER 1875  
AND WAS BURIED AT SEA  
IN THE SOUTH PACIFIC OCEAN  
ERECTED BY HIS MESSMATES ON BOARD  
H.M.S. CHALLENGER

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Gerhard Kortum, Institut für Meereskunde an der Universität Kiel, Düsternbrooker Weg 20, D-24105 Kiel, Germany.

## WHAT'S IN A NAME?

Lists of equipment supplied to expeditions often describe apparatus by a personal name. Massey's log, Kelvin compass, are well-known examples; Massey being the maker, and Lord Kelvin the designer. In other instances the identity of the person concerned has been forgotten. The Baillie sounder, one of the most successful and long-lived of the detaching-weight sounders, outlived its creator, a man whose many talents have been overlooked in recent times.

Charles William Baillie was born c.1844 and entered the Royal Navy in 1859, being promoted in 1870 to Navigating Lieutenant and First-Class Surveyor. He was serving on HMS "Sylvia" in the China Seas when he devised his detaching-weight sounder, sending a model and drawings to the Hydrographer of the Royal Navy. On 4 June 1873 Richards, the Hydrographer, instructed the Captain Superintendent at Chatham to prepare an example, and subsequently a number of these sounders were sent out to HMS "Challenger". The Baillie sounding tube was far sturdier and heavier than its predecessors, could work in the deepest waters encountered by "Challenger", and was able to penetrate into soft sediment to capture a long core before slipping the iron weights and being hauled in.

In 1870 plans had been laid to establish a Japanese Navy modelled on that of Britain, a British gunnery training officer was brought in, and a school of navigation proposed. The following year a number of young Japanese officers went on board "Sylvia" to learn about nautical surveying. Baillie took employment at the Imperial Naval College, Hoke, in 1873, being appointed Director of Nautical Studies in 1877. He retired from the Royal Navy in 1878 and resigned from his directorship in 1879.

During these years, Baillie did not lose sight of his sounder, and in July 1874 he wrote to ask how it had been received. The Hydrographic Department responded in August, in its usual verbose style: "The sounding machine known by Mr. Baillie's name is an improvement on a similar machine first used in the "Hydra". It has been very successfully used in the 'Challenger' and therefore if their Lordships so approve, Mr. Baillie's question might be answered in the affirmative."

Thus encouraged, Baillie wrote in October 1875 asking for a reward for his invention, which he had not patented. He was awarded 30 guineas. The Hydrographer added: "Navigating Lieutenant Baillie's invention is one of the most simple and efficient that has yet been made in connection with disengaging the sinker in deep sea sounding. It is the machine now used in all our surveying ships and throughout a three years' trial in the 'Challenger' it has not once been found wanting, and it has been selected by the German and Norwegian governments for deep sea exploration."

Baillie was back in England by July 1879, and was recruited by the Hydrographer as an assistant in the Marine Department of the Meteorological Council, at a salary of £200 per annum. His first task was to continue and complete the study of sea temperatures and currents of the Pacific Ocean, as reported by ships' captains. In March 1888 he succeeded Henry Toynbee as Marine Superintendent, with its salary of £350. In February 1892 he was working on monthly charts of the Red Sea, and proposing a new method of depicting the wind frequency, speed and direction. He then dealt with similar charts of the South Indian Ocean and by June 1899 was submitting specimen charts of the South Atlantic.

In July 1899 the Council received a letter from Conyers Baillie, announcing the sudden death of his father on 24 June at Broadstairs, and were moved to record their appreciation of his zeal and ability. He was only 55. He was buried in the Royal Naval cemetery at Greenwich.

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I am grateful to Richard Campbell for permission to examine the Hydrographic Office Archives and to Maurice Crewe of the National Meteorological Library, Bracknell, for his provision of xerox copies from the Minutes of Proceedings of the Meteorological Council.

Anita McConnell, 46 Defoe House, Barbican, London EC2Y 8DN, United Kingdom.

FROM THE SIO ARCHIVES  
Scripps Institute of Oceanography Archives  
University of California, San Diego

1995-1996 SIGNIFICANT ACQUISITIONS AND ADDITIONS TO COLLECTIONS

**Robert Siple Arthur (1916-1995)**

Papers, 1940-1989

.8 cu ft.

The collection consists of two manuscript boxes of papers of physical oceanographer Robert S. Arthur which largely document his career as a professor of oceanography at the Scripps Institution of Oceanography. The collection includes course notes for UCLA Meteorology 103, SIO Oceanography 110 (1956, 1961), Oceanography 210 (1948-1949), Oceanography 210b and 211 (1951), courses taught by RSA. The collection also includes extensive notes on students of oceanography 1938-1959. These notes were apparently compiled for a report by the Committee on Education and Recruitment of the American Society of Limnology and Oceanography in 1960. The collection includes dated and labelled colour slides of the Scripps Institution of Oceanography and of the University of Washington Friday Harbor Laboratory taken in 1950.

**Theodore Robert Folsom (1908-1989)**

Papers, 1941-1985

2 cu ft.

Addition to the papers of physicist Theodore Robert Folsom. This includes biographical files and photographs documenting TRF's early career, and teaching files, laboratory notebooks and project files documenting his work during the period 1982-1985.

**Edward Allen Frieman (b1926)**

Papers, 1952-1986

15 cu ft.

Papers include correspondence, manuscripts of lectures and publications, subject files, teaching files, reprints, notes and calculations. Papers largely document EAF's years as a plasma physicist at Princeton University (1952-1979), but include some papers and a scrapbook documenting his work as director of energy research in the United States Department of Energy (1979-1981), and some papers documenting his years as Executive Vice President of Science Applications International Corporation (1981-1986). The collection includes a small amount of material concerning his appointment and work as Director of the Scripps Institution of Oceanography and Vice Chancellor of Marine Sciences, UCSD. The papers also include some documentation of EAF's work as a science advisor to government.

**Walter Heiligenberg (1938-1994)**

Papers, 1960-1994

8 cu. ft.

The collection includes correspondence, research reports, audio tape recordings of experiments, photographs, slides, figures for papers, teaching files including lecture notes, reading lists and syllabi, appointment calendars, a field notebook and other material documenting the scientific career of neurobiologist Walter Friedrich Heiligenberg. The collection largely documents Heiligenberg's research at the Scripps Institution of Oceanography (1972-1994) and includes little material documenting Heiligenberg's work at the Max Plank Institute, although the collection includes photocopies of Heiligenberg's correspondence with Konrad Lorenz.

**Sheldon Levin**

Class Notes, 1944

1 volume

Lt. (j.g.) Sheldon Levin, USNR, was assigned to the Scripps Institution of Oceanography during the summer of 1944 to take a course in sea, well and surf forecasting methods taught by Harald U. Sverdrup and Walter H. Munk.

Levin's notebook includes mimeographed class handouts, notes on lectures, and detailed descriptions of sea, swell and surf forecasting techniques. Military meteorologists used these techniques to predict surf conditions for allied landings in Europe, North Africa and the Pacific during World War II.

**Walter Heinrich Munk (b1917)**

Papers, 1955-1996

3 cu ft.

Additions to the papers of geophysicist Walter H. Munk. Includes travel files, documentation of ATOC project, subject files, correspondence with Roger Revelle and Henry Stommel.

**Melvin Norman Adolph Peterson (1929-1955)**

Papers, 1959-1995

17 cu. ft.

The papers consist of two series, papers documenting marine geologist Melvin N.A. Peterson's life and early career, and papers documenting his work on the Deep Sea Drilling Project (DSDP). The first series includes biographical information, correspondence dated 1959-1991, notes and manuscripts of publications, laboratory notebooks, and subject files including files relevant to the Pacific Research Foundation and files documenting MNAP's position as chief scientist for the National Oceanic and Atmospheric Administration. The DSDP series files generated and collected by MNAP during his years as principal investigator and project manager of DSDP. The files include copies of evaluations of DSDP conducted by the National Science Foundation, DSDP subcontractor reports, DSDP program plans, and other material. Some of the material in this series duplicates files in the Deep Sea Drilling Project records, also at SIO Archives.

**James Marion Snodgrass 1908-1994**

Papers, 1937-1994

38 cu. ft.

This is a substantial addition to the papers of James M. Snodgrass, oceanographic instrumentation designer and developer, who headed the Scripps Institution of Oceanography Special Developments Unit from its creation in 1951 until 1974. Snodgrass is credited with the design of the first generation of electronic oceanographic instrumentation. The accession includes correspondence documenting JMS's education and early career, subject files, manuscripts of lectures, photographs and blueprints of instruments and films of their deployment at sea, office calendars, and project files.

**NEW GUIDE**

Riccardi, Danielle, Deborah Day and Monica Peffer. *A Guide to the George Francis McEwen Papers (1882-1972)*. Manuscript Collection MC 21 (9.2 linear feet), La Jolla, CA, SIO Reference Series No. 96-3 (January 1996), 40 p.

The guide will shortly be available on the SIO Archives Web Page at <http://scilib.ucsd.edu/sio/archives> and a hard copy can be ordered at cost of \$9 (\$4 for reproduction, \$5 for postage). A cheque for \$9 payable to UC REGENTS and an order can be sent to:

Carolyn Rainey  
Scripps Institution of Oceanography  
Archives 0175C  
University of California, San Diego  
9500 Gilman Drive  
La Jolla, CA 92093-0175C  
FAX: (619) 534-5269

Deborah Day, Scripps Institution of Oceanography Archives, La Jolla, California 92093-0175, USA

## NATIONAL CATALOGUING UNIT FOR THE ARCHIVES OF CONTEMPORARY SCIENTISTS

The National Cataloguing Unit for the Archives of Contemporary Scientists (NCUACS), a small unit funded by various charitable grants and located at the University of Bath, England, was established in April 1987 under the auspices of the Royal Society to locate, sort, index and catalogue the manuscript papers of distinguished contemporary British scientists and engineers. It is the successor to the Contemporary Scientific Archives Centre at Oxford which operated along similar lines for fourteen years.

The NCUACS is based in the University Library where facilities are available for the computerisation of the catalogues. It is supervised by an Advisory Committee under the Chairmanship of the Vice Chancellor of the University of Bath which reports back to the University Senate and the Council of the Royal Society.

What are 'archives of contemporary scientists'? They may, and do, vary with individuals and disciplines. They include, in addition to correspondence of all kinds, professional or technical documents such as laboratory notebooks, experimental drawings and calculations, lecture notes, engagement diaries and travel journals. The material will often also reflect the important role played by leading scientists in aspects of public life which affect many areas outside their professional work - whether as members of official committees, councils or advisory bodies, or through their personal influence as writers and thinkers. Their impact on social, economic, political or religious development will be of great potential interest to future historians.

The NCUACS is **not** an archive. It does not retain the collections it processes. That is why it can run on a small staff. It offers a multi-disciplinary service, nationwide, flexible and fast. Documents entrusted to its care by scientists, their families or colleagues are sorted, catalogued and indexed, and then placed in an appropriate national or university library in accordance with the wishes of the donors. They are thus available to scholars subject to any agreed restrictions of confidentiality or library rules of access.

The catalogues, one for each collection, are sent to the Royal Commission on Historical Manuscripts for incorporation into the National Register of Archives and, as catalogues of national standing, are distributed by them to regional centres including the copyright libraries as research copies. Copies of all the catalogues may be purchased from the NCUACS, and terms are available on request.

The NCUACS produces twice-yearly Progress Reports on its work which are distributed free of charge to interested libraries, institutions and individuals. It does not offer reader space.

If you would like to know more about the NCUACS, or receive its Progress Reports, please write to the Archivist, National Cataloguing Unit for the Archives of Contemporary Scientists, the Library, University of Bath, Claverton Down, Bath BA2 7AY, United Kingdom (telephone: 1225 826826; fax: 1225 826229; email: [lispbh@bath.ac.uk](mailto:lispbh@bath.ac.uk)).

## NEWS AND EVENTS

**RITTER FELLOWSHIP TO MARGARET DEACON.** The William E. and Mary B. Ritter Memorial Fellowship in the History of Ocean Sciences for 1996/1997 has been awarded by the Scripps Institution of Oceanography, La Jolla, California, to Margaret Deacon of the Dept. of Oceanography, University of Southampton. Dr. Deacon will visit La Jolla in the spring of 1997 to present the Fellowship lecture and seminars.

**SCHUMAN PRIZE AWARD.** Helen Rozwadowski of the University of Pennsylvania was awarded the History of Science Society's Ida and Henry Schuman Prize for 1995 for her essay "Small world: forging a scientific maritime culture", which will appear soon in the journal *Isis*. Her work deals with the cultural changes accompanying the development of oceanography during the 19th century.

**NEW WHOI ARCHIVIST.** The new archivist at Woods Hole Oceanographic Institution is Margot Brown, McLean Laboratory, Woods Hole Oceanographic Institution, Woods Hole, MA 02543, USA. Fax: (508) 457-2183. e-mail: mbrown@whoi.edu.

**XXth INTERNATIONAL CONGRESS OF THE HISTORY OF SCIENCE.** The Commission of Oceanography is sponsoring a symposium titled "History of marine sciences - science and technology at sea" during the Congress, which will be held in Liège, Belgium, 20-26 July 1997. Contributed papers are welcome. Please contact Margaret Deacon, Dept. of Oceanography, University of Southampton, Southampton Oceanography Centre, Southampton S014 3ZH, United Kingdom, as soon as possible.

**JOHN YOUNG BUCHANAN.** A one-day symposium, "The life and oceanographic times of John Young Buchanan, 1844-1925" will be held at the Southampton Oceanography Centre on Saturday, 23 November 1996. Chemist on the oceanographic voyage of HMS "Challenger" 1872-1876, Buchanan has been described as a "consummate experimentalist"; he was involved in many aspects of the developing science of oceanography, but has remained a little known and somewhat enigmatic figure. For programme and registration details contact Margaret Deacon, Dept. of Oceanography, University of Southampton, Southampton Oceanography Centre, Southampton S014 3ZH, United Kingdom (Fax: 1703 593 059).

**CHANGE OF E-MAIL ADDRESS:** Eric Mills' e-mail address has changed from "emills@ac.dal.ca" to "emills@is.dal.ca", effective 1 August.

**SCIENTISTS AND THE SEA.** Margaret Deacon's important monograph on the history of oceanography, *Scientists and the Sea 1650-1900*, published in 1977 and long out of print, is being reprinted by Scholar's Press. For information contact Ashgate Publishing Inc., Gower House, Croft Road, Aldershot, Hants GU11 3HR, U.K. (phone 1252 331551; fax 1252 344405; e-mail: gower@cityscape.co.uk).

**ICHO-VI.** At the time this letter is being prepared, no information is available on the Sixth International Congress on the History of Oceanography, scheduled to be held in Qingdao, China in 1998. Readers of this newsletter might try contacting Prof. Wu Baoling, First Institute of Oceanography, 26003 Qingdao, PR of China.

## BOOK NOTICE

Song (Zhenghai), 1995. *Ancient Chinese Marine Culture*, 241 pp. Guangdong Education Press, Guangzhou [in Chinese with English CONTENTS].

As in other fields like Chinese traditional medicine, Chinese traditional marine culture is difficult to understand world wide. This is one of the main interests of Professor Song Zhenghai and his colleagues in the Institute for History of Natural Sciences, Chinese Academy of Sciences. He and his colleagues introduced some preliminary information on Chinese traditional oceanography for the first time to scholars abroad during the IV International Congress for History of Oceanography at Hamburg in September 1987, and have published a series of papers and monuments in recent years. His present book *Ancient Chinese Marine Culture* provides valuable materials about the understanding of oceanography in ancient China and its applications to various field including biological resources, natural disasters, navigation, war and philosophy. His idea about the Chinese marine culture includes agricultural features and many essential differences from conventional marine culture may be of interest. This is a good reference both for Chinese and for foreigners.

Ye Lonfei, South China Sea Institute of Oceanology, Guangzhou 510301, China.

## MEETINGS AND CONFERENCES

23 NOVEMBER 1996. THE LIFE AND OCEANOGRAPHIC TIMES OF JOHN YOUNG BUCHANAN, 1844-1925. A conference at the Southampton Oceanography Centre devoted to Buchanan, who was the chemist on HMS *Challenger*, 1872-1876. Details from Margaret Deacon, Dept. of Oceanography, University of Southampton, Southampton S014 3ZH, England.

14-16 MARCH 1997. SURVEYING THE RECORD: NORTH AMERICAN SCIENTIFIC EXPLORATION TO 1900, sponsored by the American Philosophical Society Library. To examine new approaches to scientific expeditions and surveys and to bring together older and new generations of scholars. Information from North American Exploration Conference, American Philosophical Society Library, 105 South Fifth Street, Philadelphia, PA 19106-3386, USA; fax (215) 440-8579; e-mail "ecarter@mail.sas.upenn.edu".

20-26 JULY 1997. XXth INTERNATIONAL CONGRESS OF THE HISTORY OF SCIENCE, in Liège, Belgium. Devoted to the general topic "Science, technology and industry," but papers on many other topics will also be presented. For information: Université de Liège - Prof. R. Halleux, Centre d'Histoire des Sciences et des Techniques, 15 ave. des Tilleuls, B-4000 Liège, Belgium.

9-12 AUGUST 1999. ECLIPSE 99: NAVIGATIONAL STIMULUS TO THE HISTORY OF SCIENCE, at the University of Plymouth. Coinciding with the next total eclipse of the sun, it will explore the impact of navigation on the history of science. Offers of papers and information: P.G.H. Seymour, Institute of Marine Studies, University of Plymouth, Drake Circus, Plymouth PL4 8AA, England.

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