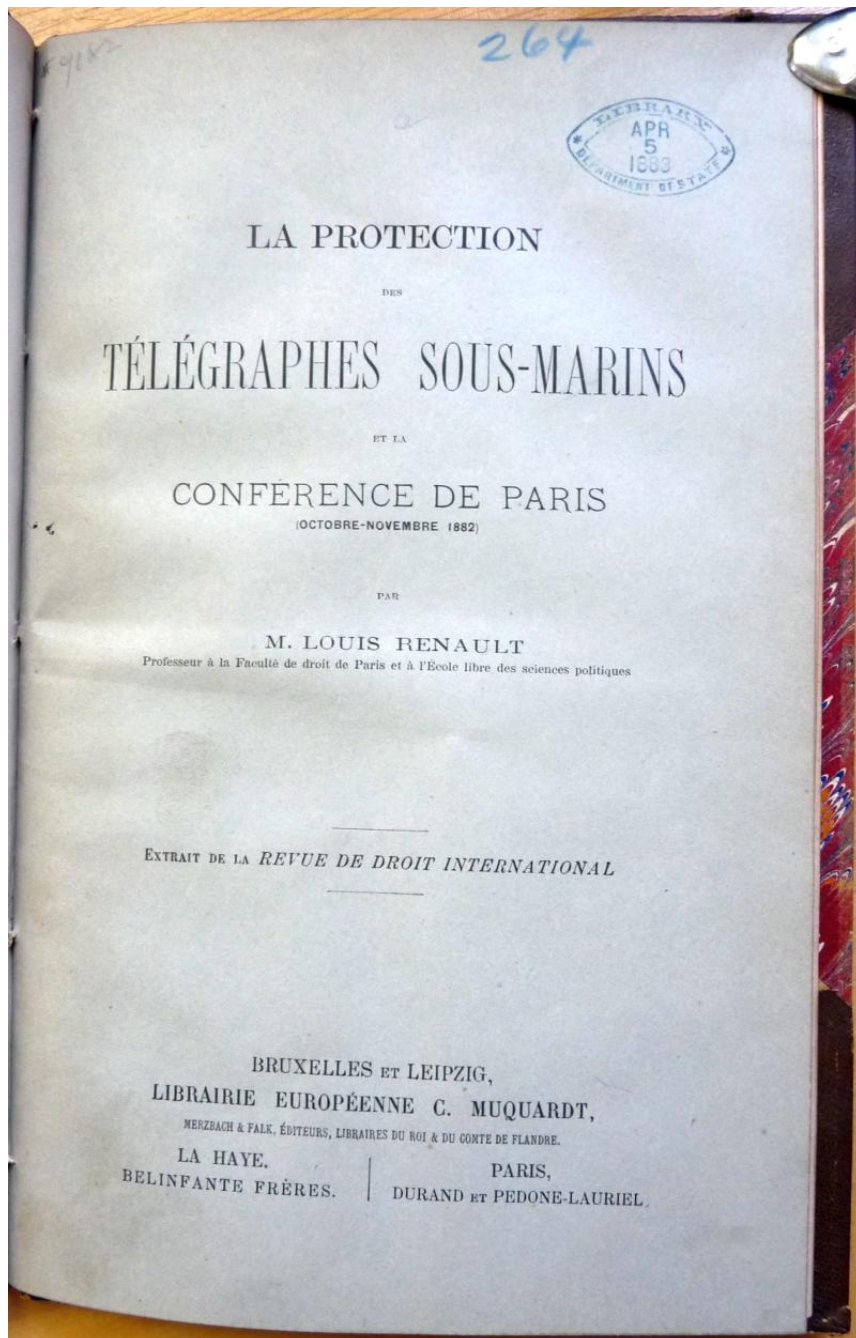


# ad HOC

## Newsletter 'Historie van de Oceanografie Club'

### Issue 22 – May 2025



Protection of submarine telegraph cables (Renault, Louis, 1882)

[KK]

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## Editorial

This is issue 22 of *ad HOC*, the newsletter of the 'Historie van de Oceanografie Club' ('History of Oceanography Club'), or HOC.

For your immediate attention: Please note the announcements for 2 conference events on **3 and 8 June 2025**, and a 3<sup>rd</sup> conference in October.

In this issue we offer no less than five publications. Two papers have a relation to Baltic research: one on Swedish hydrographic investigations by Ekman in the mid-19<sup>th</sup> century by Samuel Gutestrand Mandarić, the other on the Danish-DDR cooperation in the field of marine geology in the period 1989-1991, by Antoon Kuijpers *et al.* Why were Norwegian oceanographers on Madeira in June 1914? Manfred Stein has an interesting postcard in his collection. Jan Stel details the history of Dutch oceanographic and Antarctic research for the period 1979-2009, as viewed from a policy perspective. Anna Batzeli informs us about Digital Archives and Repositories that are of oceanographic historical interest.

Then there are – as usual – new publications, books and links, info on museums, and on other organisations. The 'Original' this time is on William Beebe.

All previous versions of *ad HOC* are on view/downloadable from our website: <https://www.historie-oceanografie.nl>. For new readers: since 2015 we aim at publishing in English. Links were working at the time of publication.

If you want to receive *ad HOC* – the annual newsletter the History of Oceanography Club – just send an e-mail with your name/affiliation to the secretary of HOC and you will be on the list. No costs are involved, and communication is by e-mail. *ad HOC* is disseminated as pdf file. Your contributions, in electronic format and in English, are welcomed and we appreciate if you would forward this *ad HOC* to your interested colleagues.

Kees Kramer, secretary and editor [kees.kramer@mermayde.nl]

## Cover

*"On 17–18 November 2024 two submarine telecommunication cables were disrupted in the Baltic Sea".* A new phenomenon? Certainly not. It was also of concern some 150 years ago, with submarine telegraph cables.

During 1881, several telegraph cables had been broken in the North Sea, it was believed, due to the negligence of fishermen; the ships tasked with repairing them had difficulty in carrying out their mission because they had been hampered in their movements by the fishing boats. The various English telegraph companies had approached their government and made several complaints; they requested changes in legislation and international arrangements.

International law dictated that each State undertook to ensure that the [sub-marine] line granted the same treatment as its own telegraph lines, that is to say that destruction and damage to the line would be punished in the same way as if it were the State's own lines. At the point of landing [the cable], on the territory of a State itself, damage is punished by the laws of that country; in the territorial sea it is still the law of the coastal country that will apply. Earlier conventions, however, do not provide for the case of destruction or damage which would be caused on the High Seas, the areas beyond the jurisdiction of States.

As early as 1869, the United States had taken the initiative in negotiations on this subject. They had not been content with the gap in international law, and clarified their ideas in a draft convention which was to be the basis for discussions at an international conference. It was e.g. suggested to call disruption an 'Act of Piracy', and that the

Convention would remain in force despite a state of war. The planned conference did not take place, however, as a result of the Franco-German War.

It took until the early 1880s that initiatives were undertaken to solve this gap in international legislation. Issues discussed were e.g. about who was responsible in case of damage: i.e. broken submarine cables and/or the fishing nets and/or anchors lost? Was it the nearby state or the telegraph company. What about hindrance to cable-lying ships vs hampering fishing activities?

The cover page relates to a conference that was organised in Paris, October-November 1882. 33 States participated, The International Telegraph Office in Berne also attended. The program comprised three distinct parts: the first deals with questions of criminal law, the second with the rights of ships, and the third with questions of civil law. Its aim was to protect the property of cables on the open sea and to regulate the use of the seas, seeking to reconcile the different and often opposing interests that may clash there: telegraphy, fishing and navigation.

After 2 years a multilateral treaty was accepted, the 'Convention for the Protection of Submarine Telegraph Cables' (Paris, 14 March 1884). In summary:

- The Convention applies outside territorial waters (Art.I),
- It is a punishable offence to break or injure a submarine cable, wilfully or by culpable negligence, in such manner as might interrupt or obstruct telegraphic communication (except when saving their lives or their ship) (Art.II)
- The owner of a cable who, on laying or repairing his own cable, breaks or injures another cable, must bear the cost of repairing the breakage or injury (Art.IV)
- Vessels which see the buoys showing the position of a cable when the latter is being laid, is out of order, or is broken, shall keep beyond a distance of one nautical mile; Fishing nets and gear shall be kept at the same distance (Art.VI)
- Owners of ships or vessels who can prove that they have sacrificed an anchor, a net, or other fishing gear in order to avoid injuring a submarine cable, shall receive compensation from the owner of the cable (Art.VII).

Based on:

Renault, Louis, [1882]. La Protection des Télégraphes Sous-Marins et la Conférence de Paris (Octobre-Novembre 1882). Extrait de la Revue de droit international, Librairie Européenne C. Muquardt, La Haye/Paris, pp.31

Convention for the Protection of Submarine Telegraph Cables, Paris, 14 March 1884. (27 Signatories) [KK]

## HOC news

### HOC website

HOC's website [www.historie-oceanografie.nl/](http://www.historie-oceanografie.nl/) provides information on HOC, and all issues of ad HOC can be viewed/downloaded. Most is in the English language, apart from the older articles that appeared in *ad HOC* at the start of HOC (they remained in Dutch).

## **In Memoriam Joris Gieskes (1934-2024)**

Prof. Dr. J.M. Th. M. (Joris) Gieskes, a marine chemist affiliated with Scripps Institution of Oceanography at UC San Diego for nearly six decades, died May 19, 2024 at his home in Del Mar, Calif. He was 90.

Prof. Gieskes was an expert in the geochemistry of marine sediments and pore water – water trapped in pores of rock or soil. He had taught and mentored dozens of students since he arrived at Scripps Oceanography as an assistant professor in 1967. His 2018 induction as an American Geophysical Union fellow recognized him “for his pioneering contributions to understanding chemical processes in the ocean, sediment and basalt through pore water analyses and ocean drilling.” But colleagues remembered Gieskes even more for his unflagging good humour and patience as a teacher and administrator. “I only remember him being supportive, he never got angry with anyone working under him,” said Timothy Shaw, a biogeochemist at the University of South Carolina who received his doctorate from Scripps in 1988. “He could sense when we were stressed about some test or experiment and he provided calm advice always.”



Gieskes formally retired from Scripps Oceanography in 2004 but was recalled to active duty the following years. In addition, he remained a fixture on campus as the organizer of the Tsaihua 'James' Chow lecture series. Additionally, Gieskes remained an active researcher into the present day, serving as a co-author on papers yet to be published. “I am now revising our recently submitted manuscript regarding lithium cycling in the Hikurangi margin sediments,” said Min Luo, a geochemist at Shanghai Ocean University in China. “We had a lot of discussion on the pore-water lithium isotope data back and forth”.

Gieskes was born April 23, 1934 in Helmond, The Netherlands. He received a bachelor's degree from the University of Pretoria in South Africa in 1960, and a masters degree in 1961 and PhD in 1964 from the University of Winnipeg in Canada.

Winfried Gieskes [gieskess@xs4all.nl]

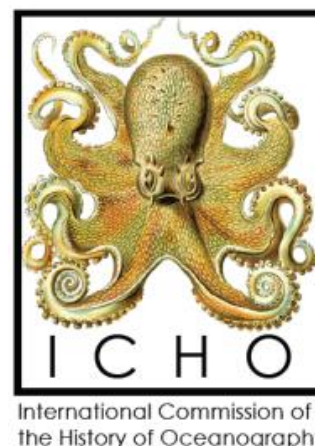
## **Other organisations**

### **ICHO - International Commission for History of Oceanography**

On the Official Website of ICHO (<https://oceansciencehistory.com>) you will also find the ICHO Bibliography and a crowdsourced [Zotero group library](#), that is updated on an ongoing basis. Because of European privacy laws, you will have to register to search its contents (<https://www.zotero.org/user/register>).

Announcement: Zotero Fest 6-10 June 2022  
<https://oceansciencehistory.com/2022/04/28/announcement-zotero-fest-6-10-june-2022/>

If you register to become a [member of ICHO](#) (-> our community/membership form) you will receive ICHO's bimonthly Newsletter by e-mail.





ICHO is linked to the H-Oceans initiative.

H-Oceans unites scholars across the humanities and social sciences who study the global oceans as sites with their own history.



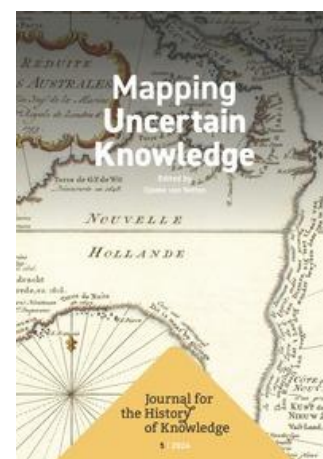
H-Oceans on World Oceans Day, June 8th. 2023

<https://networks.h-net.org/h-oceans>

## GEWINA

The Belgian-Dutch Society for History of Science and Universities (Belgisch-Nederlands genootschap voor wetenschaps- en universiteitsgeschiedenis / Société Belgo-Néerlandaise pour l'histoire des sciences et des universités), GEWINA, was founded in 1913. Articles, many in Dutch but also with contributions in English, are available online (<http://www.gewina.nl/in-english/on-gewina/>).

The 2024 volume 5 of the *Journal for the History of Knowledge* (JHoK), has 14 articles and includes the special issue 'Mapping uncertain knowledge'. Articles can be viewed on line (open access) at <https://journalhistoryknowledge.org/issue/view/883>.



## Challenger Society for Marine Science

The Society has a series of Special Interest Groups (SIG), including one on the History of Marine Science:

[https://www.challenger-society.org.uk/History\\_of\\_Marine\\_Science141](https://www.challenger-society.org.uk/History_of_Marine_Science141)

If you would like to join this Group, non-UK members are welcomed - contact John Gould [wjg@noc.ac.uk] with some info on your areas of interest/expertise on history topics, and your affiliation (past and or present) with approximate dates.



The Challenger Society Special Interest Group on the History of Oceanography organized a series of zoom webinars in 2025. The talks will be at 5pm UK time on Wednesday evenings (3rd Wed of the month).

Past presentations have been recoded and will be on-line soon via a link on the Challenger Society website.

The 2025 scheme:

January 2025: Philip Pearson:

Remembered Lives, The Remarkable Seamen of the Challenger Expedition.

February 2025: David Bowers, University of Bangor:

The Loch Ness Monastery: a Tale of Edwardian Scientists and Monks.

March 2025: John Gould, National Oceanography Centre:

From Swallow Floats to Argo, 50 years of Technology Development.

April 2025: Gwyn Griffiths, National Oceanography Centre:

Autonomous Underwater Vehicles in the Polar Regions: The First Fifty Years.

**Now:** → 21 May 2025: Jo Williams, National Oceanography Centre:

Using Citizen Science to Rescue Historical Tide Gauge Data

<https://noc-ac-uk.zoom.us/j/89895570379?pwd=oeLQzrhORcCXUhtyDopzSXAjYfUfWb.1>

17 September 2025: Gillen D'Arcy Wood, University of Illinois Urbana-Champaign:

The Wake of HMS Challenger.

## Arbeitskreis Geschichte der Meeresforschung

For the (German) Arbeitskreis 'Geschichte der Meeresforschung' (History of Oceanography working group), Manfred Stein is the contact person. (see also his contribution to this issue of *ad HOC*)

Manfred Stein [manfredstein@aol.com]

## Bedford Institute of Oceanography (BIO) Oceans Association

The Canadian Bedford Institute of Oceanography (BIO) Oceans Association (OA) was formed in 1998 by a group of retired public servants previously involved in Ocean Sciences and Hydrography who share an interest in BIO ([www.bio-oa.ca](http://www.bio-oa.ca)).



Their quarterly Newsletters 'Voicepipe', since 1998, are available as pdf: <https://www.bio-oa.ca/newsletters.php>

The Association has also made an annotated inventory of oceanographic equipment developed at BIO or under contract to BIO, and also some of the tools-of-the-trade used by BIO staff ashore and in the field. See the Equipment Archives 1963-2013 catalog, available in xls format <https://www.bio-oa.ca/docs/equipment.xls>

## Bangor University

Tom Rippeth reports on the Bangor University - School of Ocean Sciences Newsletter, intended for staff and alumni called The Bridge.



Previous editions can be downloaded from the site. <https://www.bangor.ac.uk/sos/newsletter>

## Conferences:

### 2<sup>nd</sup> National Ocean Science Conference 2025

Topic: 'Whose Ocean? Whose Future? Whose Responsibility?'

Where: Naturalis Biodiversity Center, Leiden, The Netherlands (<https://www.naturalis.nl/en>)

Date: **3 June 2025**, free admission

Join us by registering before the 18th of May

Registration: <https://airtable.com/apphoHJw9ZMfdZ8Mf/shrTSpbffcWnqxRuc>



### World Oceans Day

On **8 June 2025**, United Nations World Oceans Day will be celebrated in Nice, France, ahead of the 2025 UN Ocean Conference (9 – 13 June, 2025).

2025 Theme: 'Wonder: Sustaining what Sustains Us'.

<https://unworldoceansday.org/>



Subscribe to the newsletter: <https://oceanicglobal.myflodesk.com/unwod2025>

## Deutsches Schiffahrtsmuseum - DSM Conference

The German Maritime Museum - DSM is organizing a conference together with the Ca' Foscari University in Venice and the Deutsches Museum in Munich.

Topic:

*'Planetary Waters – A Challenge Between Abstraction and Empathy',*

When: 22-24 October 2025

Where: DSM, Hans-Scharoun-Platz 1, Bremerhaven, Germany,  
<https://www.dsm.museum/en/>

This interdisciplinary event will bring together scholars, researchers, and practitioners to explore public communication strategies that integrate the planetary scale of water studies while maintaining a focus on human-water relationships at the local level. The intertwined crises of climate change and biodiversity loss urge us to incorporate a planetary perspective into our thinking and actions more than ever before.

Call for papers: <https://www.dsm.museum/en/calendar/conference-planetary-waters-a-challenge-between-abstraction-and-empathy>



## Museums

### German Maritime Museum (DSM), Bremerhaven, DE

See the conference announcement above.

### Deutsches Meeresmuseum (DMM), Stralsund, DE

DMM ([www.deutsches-meeresmuseum.de](http://www.deutsches-meeresmuseum.de)) was founded in 1962.

See its history at

<https://www.deutsches-meeresmuseum.de/en/foundation/foundation-history/foundation>



### NAVIGO Visserijmuseum / National Fisheries Museum, BE

In 2024, the completely new NAVIGO Fisheries Museum opened its doors.

Located at Vrijheidstraat 6, 8670 Koksijde-Oostduinkerke, Belgium

<https://www.navigomuseum.be/en>



### TréZOOR - Aquarium-Muséum, Liège, BE

In 1886, Professor Édouard Van Beneden, founder of the Zoological Institute, commissioned 77 glass animal models from the famous glassmakers **Léopold Blaschka** and his son **Rudolf Blaschka** to illustrate the zoology lessons. TréZOOR - Aquarium-Muséum de Liège, has a large number on permanent display.



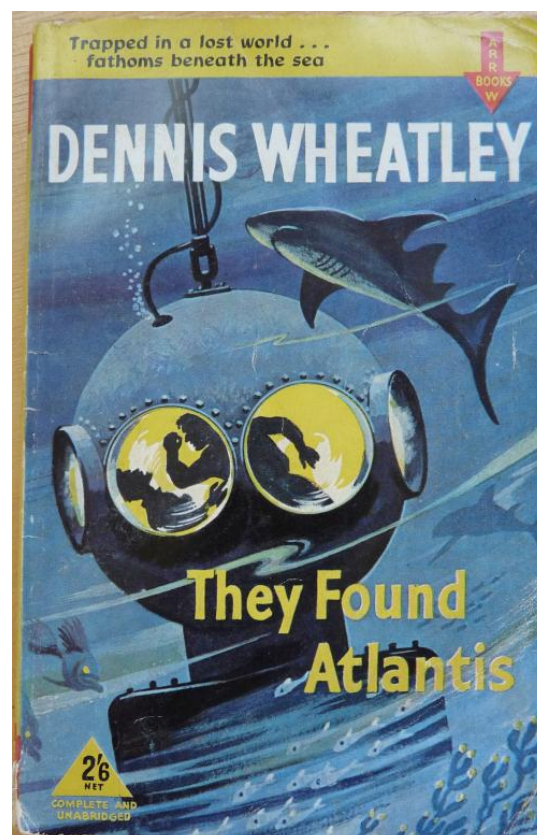
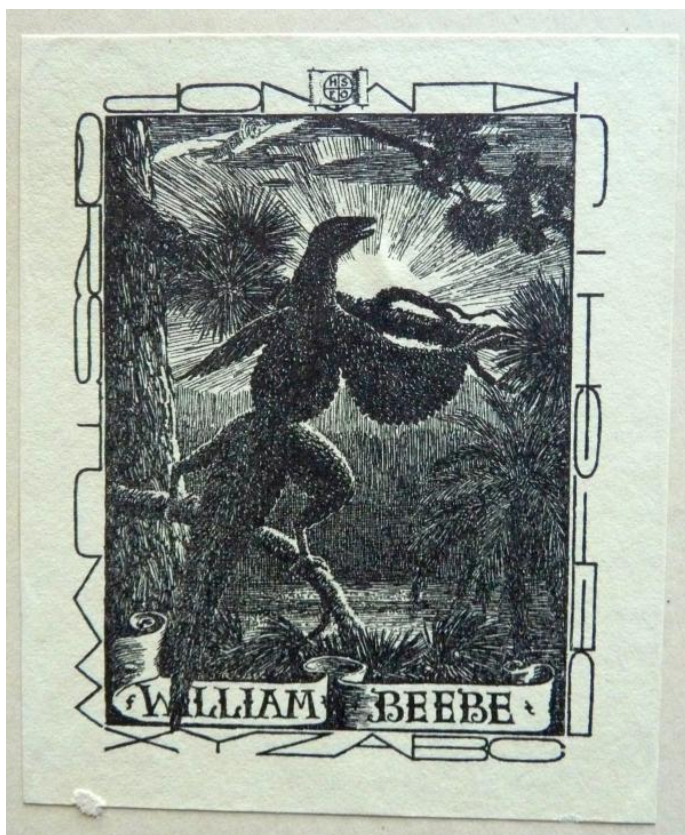
### American Institute of Physics, US

The Center for History of Physics at the American Institute of Physics has put together a new *virtual* exhibit which takes visitors on an interactive journey across the world's oceans aboard the Research Vessel *Vema*.

<https://history.aip.org/exhibits/vema/index.html>



## The Original



To the left is the *ex libris* <sup>1</sup> of Charles William Beebe, to oceanographers remembered for the numerous expeditions he conducted for the New York Zoological Society, such as the Arcturus mission in 1925, and his series of deep dives in the Bathysphere, together with its inventor Otis Barton, off the coast of Bermuda (Nonsuch Island) from 1930 to 1934. These bathysphere-'adventures' received much appreciation by the general public, and inspired authors like Dennis Wheatley (1897-1977) with 'They found Atlantis', a novel first published in 1936. The cover at right is from my copy of a 1958 edition <sup>2</sup>, but many editions had the fighting crew inside a bathysphere (obviously not Beebe and Barton).

The *ex libris* has his name (not Charles), the alphabet around a picture of a (flying?) animal; it does not depict the bathysphere, but then what is it? Charles William Beebe (1877-1962) was more than a marine biologist. He was an American naturalist, ornithologist, marine biologist, entomologist. For example, in his early career he studied pheasants, published in a 4-volume monograph. But: the *ex libris* is not a pheasant.

In 1915 Beebe published a contribution to the field of evolutionary biology, a hypothesis that the ancestors of birds passed through what he referred to as a 'Tetrapteryx stage', with wings on both their front and hind limbs.

The *ex libris* depicts this Tetrapteryx. <sup>3</sup>

<sup>1</sup> From Beebe's copy of : Sars, G.O., 1924 'Copépodes particulièrement bathypélagiques provenant des campagnes scientifiques du prince Albert Ier de Monaco

<sup>2</sup> Wheatley, Dennis, 1958. They found Atlantis. Arrow Books, The Anchor Press, Tiptree, pp.256

<sup>3</sup> [https://en.wikipedia.org/wiki/William\\_Beebe](https://en.wikipedia.org/wiki/William_Beebe)

## Articles

### Manfred Stein:

#### **Norwegian oceanographers on Madeira - discovered on historic postcard**

When reading ad HOC Newsletter 'Historie van de Oceanografie Club', Issue 21 – May 2024, I came across an article by Carmen Blaauboer & Taco de Bruin: "A peculiar postcard from the past". The authors were cleaning up the archive of the Royal Netherlands Institute for Sea Research (NIOZ), and came across an intriguing postcard from 1935.

This gave me the idea to check a postcard in my collection of historic postcards. I got this postcard on my 50th birthday which is already decades ago. The postcard was sent on 27 June 1914 from Madeira. The card is addressed to Prof. Dr. Bjørn Helland-Hansen in Bergen, Norway. Torbjørn Gaarder wrote the card, and it is signed by him, Fridtjof Nansen, Klaus Grein, Birkeland and Kaare Nansen (Figure 1a,b).

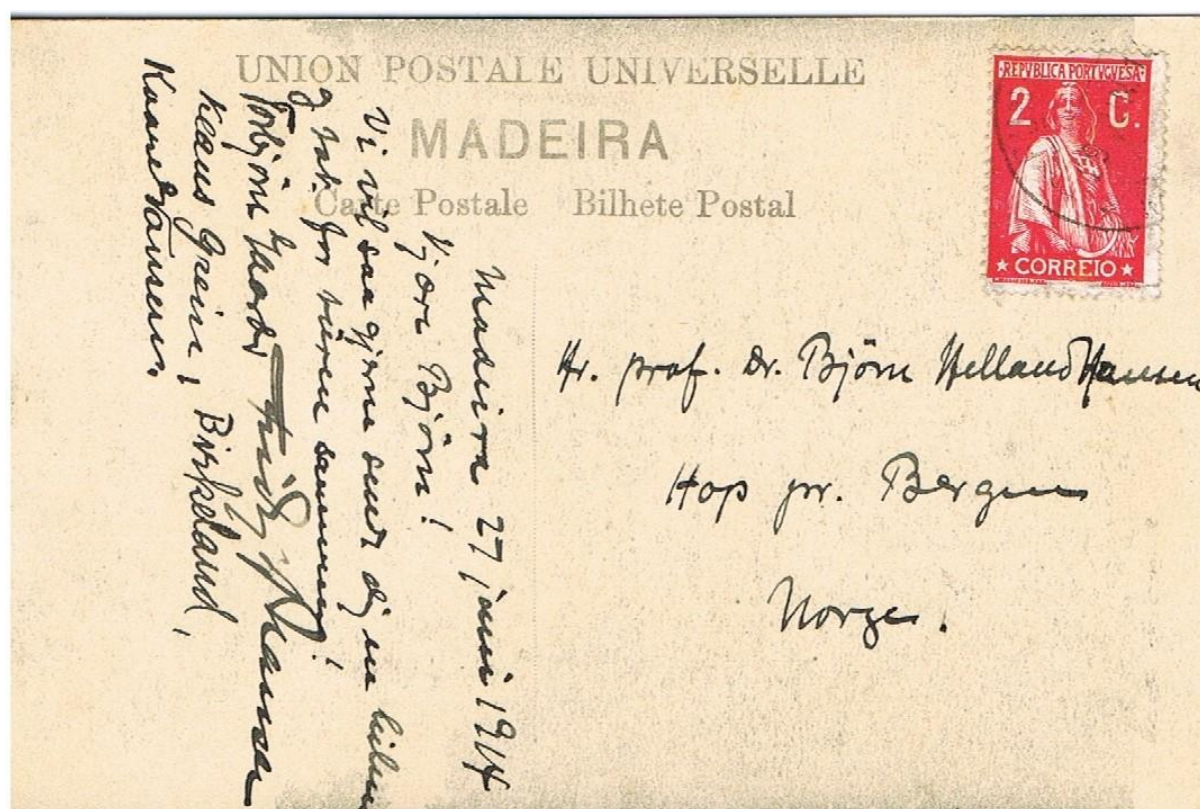


Figure 1a Postcard (recto) from Madeira (27 June 1914) to Prof. Dr. Helland-Hansen

The text on the postcard reads:

"Dear Bjørn, We would very much like to send you a greeting and thank you for the voyage together."

Who are these people? What did they do on Madeira, only some weeks before the outbreak of World War I?

**Bjørn Helland-Hansen** (1877-1957) (Figure 2) was a Norwegian pioneer of modern oceanography whose studies of the physical structure and dynamics of the oceans were instrumental in transforming oceanography from a science that was mainly descriptive to one based on the principles of physics and chemistry.



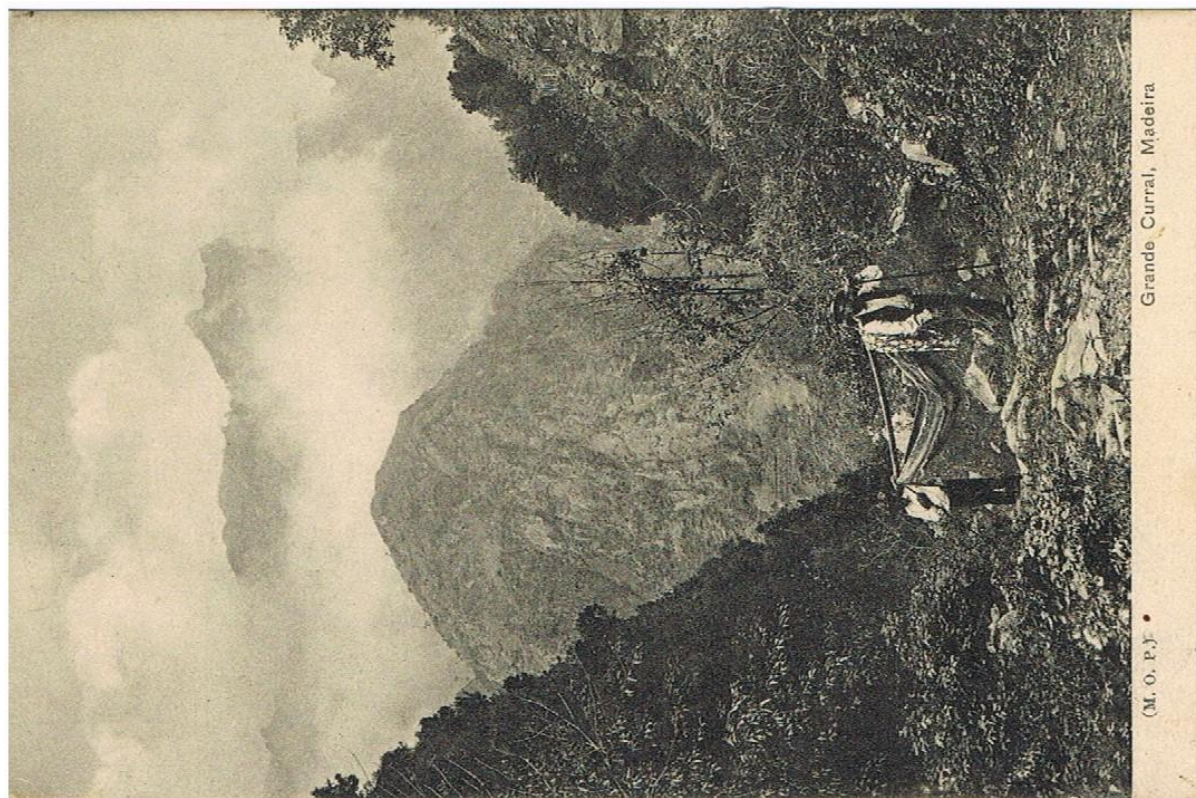


Figure 1b. Postcard (verso) from Madeira (27 June 1914) to Prof. Dr. Helland-Hansen

Most of Helland-Hansen's work was done in Bergen, where he was successively director of the Marine Biological Station, professor at the Bergen Museum, and first director of the Geophysical Institute, which was established in 1917 largely through his efforts. He was active in international scientific affairs and in 1945 was elected president of the International Union of Geodesy and Geophysics <sup>1</sup>.

**Torbjørn Gaarder** (1885-1970) (Figure 3) was an award-winning Norwegian chemist, known as a pioneer in biochemistry with studies of nutrients in soil and sea as his main area <sup>2</sup>. After studies in Copenhagen and the United States, in 1912 he became an assistant to the oceanographer Bjørn Helland-Hansen, who was researching the sea on MS 'Armauer Hansen'. He received his dr.philos. in 1917 and from 1921 worked at Bergen Museum as manager of the country's first biochemical laboratory at Marineholmen. He became a professor at Bergen Museum in 1931 and worked with Professor Oscar Hagem in physiological and biochemical experiments, while Nordhagen and Brinkmann were professors of biological systematics, anatomy and ecology. From 1948 the museum was part of the new University of Bergen, where he was also director of the chemistry lab from 1948 to 1955. His professorship was taken over by Olav Foss in 1954, but he continued to conduct research at the institute until 1965.

**Fridtjof Wedel-Jarlsberg Nansen** (1861-1930) (Figure 4) was a Norwegian polymath and Nobel Peace Prize laureate. He gained prominence at various points in his life as an explorer, scientist, diplomat, humanitarian and co-founded the Fatherland League.

He led the team that made the first crossing of the Greenland interior in 1888, traversing the island on cross-country skis. He won international fame after reaching a record northern latitude of 86°14' during his Fram Expedition of 1893–1896. Although he retired from exploration after his return to Norway, his techniques of polar travel and his

<sup>1</sup> [Bjørn Helland-Hansen | Pioneer of Oceanography, Marine Biology & Physical Oceanography | Britannica](#)

<sup>2</sup> [Category:Torbjørn Gaarder - Wikimedia Commons](#)

innovations in equipment and clothing influenced a generation of subsequent Arctic and Antarctic expeditions. He was elected an International Member of the American Philosophical Society in 1897.



Figure 2 Bjørn Helland-Hansen (ca 1917),  
© Public Domain



Figure 3. Torbjørn Gaarder (l) and Bjørn  
Helland-Hansen on bord MS 'Armauer  
Hansen',  
© marcus.uib.no: ubb-bs-fol-01263-019b

Nansen studied zoology at the Royal Frederick University in Christiania and later worked as a curator at the University Museum of Bergen where his research on the central nervous system of lower marine organisms earned him a doctorate and helped establish neuron doctrine. Later, neuroscientist Santiago Ramón y Cajal won the 1906 Nobel Prize in Medicine for his research on the same subject. After 1896 his main scientific interest switched to oceanography; in the course of his research he made many scientific cruises, mainly in the North Atlantic, and contributed to the development of modern oceanographic equipment.

As one of his country's leading citizens, in 1905 Nansen spoke out for the ending of Norway's union with Sweden, and was instrumental in persuading Prince Carl of Denmark to accept the throne of the newly independent Norway. Between 1906 and 1908 he served as the Norwegian representative in London, where he helped negotiate the Integrity Treaty that guaranteed Norway's independent status.

In the final decade of his life, Nansen devoted himself primarily to the League of Nations, following his appointment in 1921 as the League's High Commissioner for Refugees. In 1922 he was awarded the Nobel Peace Prize for his work on behalf of the displaced victims of World War I and related conflicts. Among the initiatives he introduced was the "Nansen passport" for stateless persons, a certificate that used to be recognized by more than 50 countries. He worked on behalf of refugees alongside Vidkun Quisling until his sudden death in 1930, after which the League established the Nansen International Office for Refugees to ensure that his work continued. This office received the Nobel Peace Prize in 1938. His name is commemorated in numerous geographical features, particularly in the polar regions, as well as in the Gordon Setter dog Nansen.



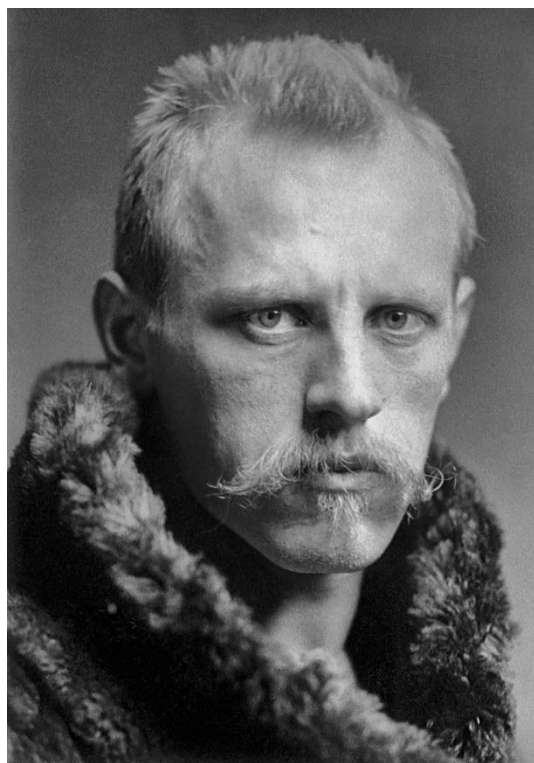


Figure 4. Norwegian scientist and diplomat Fridtjof Nansen (1897), © Public domain



Figure 5. Bernt Johannes Birkeland, portrait photo taken in connection with the Fram expedition. Photo: Anders Beer Wilse © Follo museum, MiA.

**Klaus Grein** was on board MS 'Armauer Hansen' during an oceanographic cruise to the Azores. He made the photo shown in Figure 7. During the stay in Valle dos Fusnos, Azores, Klaus Grein made a photo showing Fridtjof Nansen who visited the islands in connection with the cruise.

**Bernt Johannes Birkeland** (1879-1955) (Figure 5) was originally intended to be the meteorologist on board Fram during the expedition across the Arctic Ocean. In the absence of an oceanographer, Birkeland was also expected to be responsible for the oceanographic work on board. He had worked for several years at the Meteorological Institute in Kristiania (now Oslo) and, like the terrestrial magnetism specialist and doctor Harry Edmonds, was to join the expedition in San Francisco on its way north.

Birkeland told the newspapers that he planned to make measurements of air pressure, temperature and humidity at different heights, and also to make measurements of atmospheric electricity and to photograph the northern lights. In early 1910, Birkeland was in Alta, on Norway's northern coast, to assist Professor Carl Størmer in studying and photographing the aurora borealis.

Birkeland, however, withdrew from the Fram expedition before departure, not long before the expedition's new plan to head for the South Pole was announced to the crew and the rest of the world. It was thought after the Fram expedition that Birkeland would join Amundsen for the postponed voyage across the Arctic Ocean, but when this finally happened with Maud in 1918, Birkeland was not involved.

Birkeland was employed as director of the Meteorological Observatory in Bergen, and later head of the Norwegian Meteorological Institute's climate department in Oslo. Together with Theodor Hesselberg, Birkeland contributed to some of the first observations and surveys of global warming in the 20<sup>th</sup> century.



Both the National Library of Norway and the State Archives in Bergen hold letters related to Birkeland's participation in Amundsen's voyages.

In chapter 11 of Amundsen's book 'Die Eroberung des Südpols' (Amundsen, 1912) Birkeland deals with the preliminary processing of the meteorological observations done in Framheim. An example of the records during June and July 1911 is given in Figure 5a.

Höhe über d. Meere: 11m  
Druckkorrektur: 1.85 bei 759.4

1911  
Juni

Framheim.

Südl. Breite: 78° 38'  
Länge Ö. Gr.: 195° 30'

Tag	Luftdruck Normaldruck mm			Lufttemperatur C			Absolute Feuchtigkeit mm			Relative Feuchtigkeit Prozente			Richtung und Geschw. d. Windes m/sec.			Bewölkung	Anmerk.
	8 <sup>a</sup>	2 <sup>a</sup>	8 <sup>p</sup>	8 <sup>a</sup>	2 <sup>a</sup>	8 <sup>p</sup>	8 <sup>a</sup>	2 <sup>a</sup>	8 <sup>p</sup>	8 <sup>a</sup>	2 <sup>a</sup>	8 <sup>p</sup>	8 <sup>a</sup>	2 <sup>a</sup>	8 <sup>p</sup>		
1	732.5	733.9	733.8	-18.5	-18.5	-19.3	0.9	1.0	0.9	86	91	92	E 4.4	E 1.5	0.0		W. I.
2	735.3	736.8	735.1	-17.6	-17.0	-18.4	1.1	1.1	1.0	92	93	93	E 4.4	S 1.1	0.0		W. I.
3	731.6	731.1	731.2	-14.5	-15.4	-17.4	1.3	1.2	1.0	86	87	84	E 13.6	E 0.5	0.0		W. I.
4	729.4	728.8	725.6	-22.0	-21.4	-22.1	0.7	0.6	0.6	84	86	80	S 0.4	0.0	0.0		W. I.
5	724.1	727.7	725.7	-31.0	-25.0	-19.0	0.2	0.5	0.9	82	86	91	E 3.3	E 2.4	E 3.4		W. I.
6	726.3	729.7	729.2	-14.6	-16.6	-11.0	1.3	2.0	1.9	90	96	97	E 0.1	E 7.5	E 4.6		W. I.
7	729.2	726.6	724.9	-15.1	-14.5	-12.3	1.4	1.4	1.7	95	93	94	E 2.1	0.0	0.0		W. I.
8	726.2	727.4	727.4	-24.0	-26.0	-23.4	0.6	0.5	0.3	88	85	84	S 4.1	S 2.0	0.0		W. I.
9	725.0	724.8	724.9	-21.0	-20.6	-19.9	0.8	0.8	0.9	89	90	90	E 5.2	E 3.4	E 3.8		W. I.
10	725.9	726.9	724.3	-21.0	-22.5	-24.1	0.7	0.7	0.6	88	88	88	E 4.0	E 6.0	E 4.6		W. I.
11	726.9	725.5	723.5	-24.0	-23.3	-25.0	0.6	0.6	0.5	87	86	87	E 2.3	E 3.0	E 1.6		W. I.
12	732.2	733.6	734.1	-34.8	-36.8	-42.0	0.2	0.1	0.1	66	80	74	0.0	SSW 1.0	0.0		W. I.
13	735.5	736.9	737.3	-31.5	-31.2	-34.0	0.3	0.3	0.2	83	83	82	E 2.1	E 4.0	E 4.2		W. I.
14	737.9	738.8	738.8	-34.0	-34.0	-41.0	0.1	0.1	0.1	80	80	79	E 6.4	E 7.4	E 6.7		W. I.
15	735.9	734.2	732.3	-36.3	-34.0	-42.0	0.2	0.1	0.1	80	86	86	ENE 1.8	0.0	0.0		W. I.
16	727.7	728.2	730.1	-48.0	-50.0	-51.8	0.1	0.0	0.0	83	83	82	S 1.5	0.0	0.0		W. I.
17	734.4	734.2	733.2	-47.3	-46.0	-44.3	0.1	0.5	0.6	83	90	91	E 4.4	NW 1.9	N 2.0		W. I.
18	740.1	740.0	739.5	-25.0	-27.7	-25.6	0.5	0.4	0.5	88	90	91	NW 3.2	E 5.3	E 5.3		W. I.
19	748.7	748.2	747.8	-34.3	-33.0	-40.0	0.2	0.3	0.1	87	84	86	ENE 1.4	0.0	0.0		W. I.
20	739.1	739.2	738.1	-45.4	-47.8	-36.8	0.1	0.1	0.2	84	84	87	SSW 2.6	0.0	0.0		W. I.
21	739.9	725.5	725.3	-31.0	-28.3	-35.8	0.3	0.4	0.2	87	88	86	SW 4.4	SW 8.0	SSW 11.0		W. I.
22	726.4	728.0	729.7	-46.0	-48.5	-46.1	0.1	0.0	0.1	82	82	82	WNW 3.7	0.0	0.0		W. I.
23	731.4	731.4	731.7	-47.0	-45.8	-44.9	0.1	0.1	0.1	82	82	82	E 6.0	E 6.8	E 6.3		W. I.
24	732.7	733.6	733.8	-46.2	-51.5	-53.8	0.1	0.0	0.0	83	82	82	0.0	0.0	0.0		W. I.
25	732.7	731.2	729.6	-58.3	-57.2	-58.0	0.0	0.0	0.0	82	81	82	0.0	S 1.1	WNW 2.0		W. I.
26	730.9	731.5	732.7	-51.7	-49.0	-47.0	0.0	0.0	0.1	83	82	83	0.0	E 0.8	E 0.0		W. I.
27	735.7	737.4	737.4	-41.2	-36.3	-42.0	0.1	0.2	0.1	84	85	84	NE 4.8	E 9.0	E 4.4		W. I.
28	745.9	746.5	746.1	-51.0	-54.0	-53.3	0.0	0.0	0.0	82	82	82	E 5.6	ENE 4.0	0.0		W. I.
29	743.9	741.2	739.6	-56.0	-53.0	-47.0	0.0	0.0	0.1	81	82	79	0.0	0.0	S 1.1		W. I.
30	735.3	732.9	730.7	-45.0	-41.0	-38.7	0.1	0.1	0.1	82	82	80	0.0	SW 3.8	SSW 6.8		W. I.
31	733.5	733.5	733.5	-34.8	-33.8	-34.0	0.4	0.4	0.4	85	86	86	3.2	3.1	2.8		W. I.

Höhe über d. Meere: 11m  
Druckkorrektur: 1.85 bei 759.4

1911  
Juli

Framheim.

Südl. Breite: 78° 38'  
Länge Ö. Gr.: 195° 30'

Tag	Luftdruck Normaldruck mm			Lufttemperatur C			Absolute Feuchtigkeit mm			Relative Feuchtigkeit Prozente			Richtung und Geschw. d. Windes m/sec.			Bewölkung	Anmerk.
	8 <sup>a</sup>	2 <sup>a</sup>	8 <sup>p</sup>	8 <sup>a</sup>	2 <sup>a</sup>	8 <sup>p</sup>	8 <sup>a</sup>	2 <sup>a</sup>	8 <sup>p</sup>	8 <sup>a</sup>	2 <sup>a</sup>	8 <sup>p</sup>	8 <sup>a</sup>	2 <sup>a</sup>	8 <sup>p</sup>		
1	732.1	734.2	737.5	-47.5	-53.6	-47.5	0.1	0.0	0.1	81	79	80	SW 1.4	0.0	0.0		W. I.
2	741.0	743.4	744.9	-34.0	-37.5	-38.5	0.2	0.2	0.2	82	86	86	0.0	SW 5.4	SW 8.6		W. I.
3	742.9	742.7	740.3	-45.4	-47.0	-48.0	0.1	0.1	0.1	83	84	84	SW 7.7	0.0	SSW 3.6		W. I.
4	742.2	738.5	735.0	-35.0	-38.0	-34.1	0.2	0.2	0.2	87	86	88	ENE 4.6	E 1.0	SSW 4.3		W. I.
5	727.6	731.1	721.4	-29.9	-31.8	-37.4	0.3	0.3	0.2	87	88	86	E 3.3	SW 1.7	SSW 6.1		W. I.
6	724.8	728.9	731.3	-36.4	-37.6	-43.0	0.2	0.2	0.1	86	87	84	WSW 3.8	SW 2.5	S 3.1		W. I.
7	724.4	740.2	744.6	-42.8	-41.8	-42.0	0.1	0.1	0.1	87	87	87	SSW 3.0	0.0	S 1.9		W. I.
8	741.7	736.5	733.7	-34.0	-24.4	-25.4	0.2	0.6	0.5	90	91	92	E 4.3	SSW 1.5	E 9.4		W. I.
9	725.8	728.1	727.2	-15.2	-17.3	-17.3	1.4	1.2	1.2	97	99	98	E 11.3	E 7.4	E 7.4		W. I.
10	726.3	731.1	721.1	-20.0	-12.6	-17.4	0.4	1.8	1.2	97	98	98	E 2.0	SSW 5.5	E 12.0		W. I.
11	724.6	724.6	725.5	-26.5	-31.0	-33.5	0.5	0.3	0.3	98	93	94	0.0	S 4.4	E 2.0		W. I.
12	728.8	729.5	721.5	-22.0	-17.0	-17.0	0.9	1.2	1.2	98	97	98	E 5.2	E 7.4	SSW 2.0		W. I.
13	721.7	720.4	719.7	-21.0	-31.2	-36.5	0.8	0.3	0.2	97	94	93	0.0	SW 3.4	S 2.0		W. I.
14	722.0	725.6	727.5	-43.4	-39.0	-30.0	0.1	0.1	0.4	90	91	95	0.0	E 3.8	NW 2.0		W. I.
15	731.7	732.6	732.8	-37.0	-42.0	-37.0	0.2	0.1	0.2	92	90	92	WSW 1.1	0.0	0.0		W. I.
16	731.4	730.7	730.8	-30.1	-28.0	-31.5	0.4	0.4	0.3	95	92	92	E 9.4	E 6.2	E 6.4		W. I.
17	735.1	736.3	736.6	-40.0	-41.6	-36.8	0.1	0.1	0.3	92	83	86	0.0	0.0	E 5.0		W. I.
18	734.4	731.9	730.1	-26.4	-27.0	-23.3	0.3	0.5	0.6	89	90	88	SSW 6.0	SSW 7.3	E 2.7		W. I.
19	726.1	726.2	726.1	-44.7	-45.6	-48.8	0.1	0.1	0.1	90	87	87	0.0	WSW 4.0	SW 9.3		W. I.
20	726.3	725.2	724.9	-46.2	-48.2	-49.0	0.1	0.1	0.0	87	87	87	WSW 5.5	SSW 5.6	SW 7.0		W. I.
21	720.1	723.3	725.2	-49.0	-43.2	-30.0	0.0	0.1	0.4	84	88	92	0.0	SSW 1.4	ENE 2.0		W. I.
22	731.3	734.3	735.4	-25.9	-33.8	-36.0	0.5	0.3	0.2	94	92	92	NE 4.6	E 6.8	E 4.6		W. I.
23	734.5	735.2	737.2	-28.0	-28.8	-34.3	0.4	0.4	0.2	88	89	89	E 0.2	E 7.0	E 4.1		W. I.
24	741.2	741.6	741.2	-31.8	-30.1	-31.0	0.3	0.3	0.3	90	90	90	ENE 5.6	E 3.5	ENE 5.1		W. I.
25	739.5	738.8	738.7	-27.7	-26.9	-27.7	0.4	0.5	0.4	91	92	92	E 3.0	E 3.6	ENE 8.6		W. I.
26	742.7	742.5	743.0	-33.0	-40.2	-45.0	0.3	0.1	0.1	91	92	91	E 3.6	E 1.8	E 5.0		W. I.
27	744.1	744.0	743.8	-51.0	-50.8	-50.0	0.0	0.0	0.0	91	89	88	SSW 2.4	S 1.2	0.0		W. I.
28	741.4	741.7	740.8	-52.0	-48.0	-39.7	0.0	0.1	0.1	88	89	91	0.0	SSW 1.2	S 2.3		W. I.
29	740.0	739.1	737.5	-39.7	-41.2	-45.0	0.1	0.1	0.1	91	91	89	SSW 2.2	SSW 0.8	0.0		W. I.
30	733.5	733.7	735.7	-40.0	-43.8	-48.0	0.1	0.1	0.1	87	90	88	S 5.1	SW 3.3	0.0		W. I.
31	743.1	741.2	740.6	-47.0	-47.2	-47.8	0.1	0.1	0.1	88	88	88	0.0	SSW 2.0	WSW 1.3		W. I.
31	733.1	733.2	733.1	-35.7	-36.4	-36.3	0.3	0.3	0.3	90	90	90	3.4	3.7	4.1		W. I.

Figure 5a. Meteorological observations done in Framheim, June - July 1911 (Birkeland, 1912)

**Kåre Nansen** (1897-1960) was the son of Fridtjof Nansen and Eva Helene Sars. He immigrated to New York in 1937. Kaare Nansen was on board MS 'Armauer Hansen' during an oceanographic cruise to the Azores (see Figure 7).

### MS 'Armauer Hansen'

In 1912, Bergen Museum had the MS 'Armauer Hansen' built at Lindstøl's mechanical workshop in Risør. The vessel had lines based on the Collin Archer type, built as sailing

galeas with an auxiliary engine. The 'Armauer Hansen' was one of the world's smallest research vessels (72 feet long) and was used by the Biological Station and later the Geophysical Institute (Figure 6). The vessel has been on voyages to the Norwegian Sea, at Svalbard, in the Atlantic and the Mediterranean. In 1959 the ship went out of service.



Figure 6. MS 'Armauer Hansen'  
© Marcus (uib.no)



Figure 7. On board the marine research vessel 'Armauer Hansen', before 1914.  
From the left:  
Illit Grøndahl, Kåre Nansen, Fridtjof Nansen and Bjørn Helland Hansen.  
They are together on an oceanographic cruise to the Azores, where scientific investigation of this part of the Atlantic was carried out.  
Photo: K. Grein.  
National Library of Norway - Wikipedia



## Postcard

What did this 'Postcard-Group' do on Madeira? Did they wait for a ship? Did they come by ship?

My interpretation of the historic photos of MS 'Armauer Hansen', provided by the National Library of Norway (e.g. Figure 7), and the detailed cruise track (Figure 8) is as follows: The 'Postcard-Group' came to Madeira by ship, i.e. MS 'Armauer Hansen'. They left Madeira on 27 June 1914 with the same ship, after sending the postcard to Prof. Helland-Hansen.

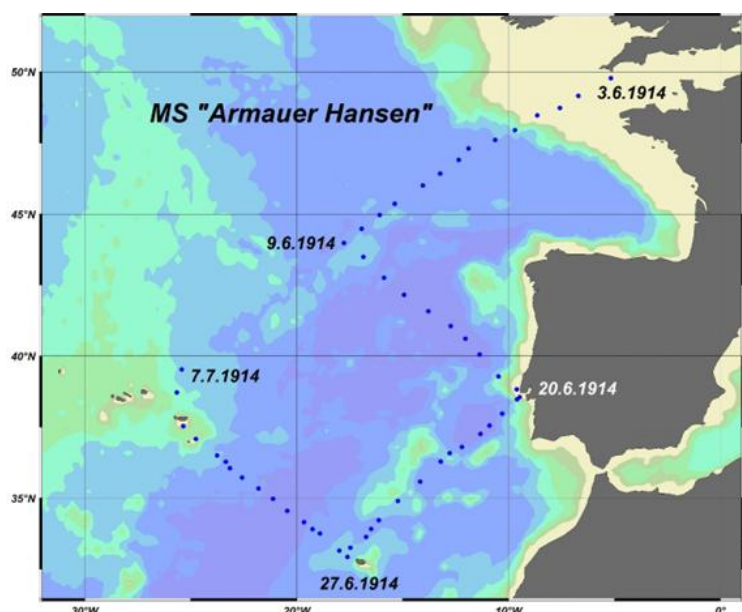


Figure 8. Cruise track of MS 'Armauer Hansen' between 3 June 1914 and 7 July 1914

My interpretation of the handwritten text on the postcard ("Dear Bjørn, We would very much like to send you a greeting and thank you for the voyage together") is as follows: Helland-Hansen left the MS 'Armauer Hansen' already in Lisbon. Maybe, these deep-water stations - off the Celtic Sea (3-9 June 1914) - were of major interest for him (see Figure 9, measurements during 1914 and 1938), or other duties ashore were the reason for him to leave the ship in Lisbon. The 'Postcard-Group' went on towards Madeira and the Azores (see Figure 10).

I acknowledge the help given to me by the World Ocean Database of NOAA. They provided information on the Norwegian Research Vessel 'Armauer Hansen' which did the cruise tracks as shown in Figures 8 and 10.

The positions NW and W of Madeira were occupied on 25 June and 27 June 1914. So, possibly on 26 June 'Armauer Hansen' called port on Madeira. The 27 June position was done at 1:00 GMT (Figure 11), the next position - on the way to the Azores - at 18:00 GMT on the same date.

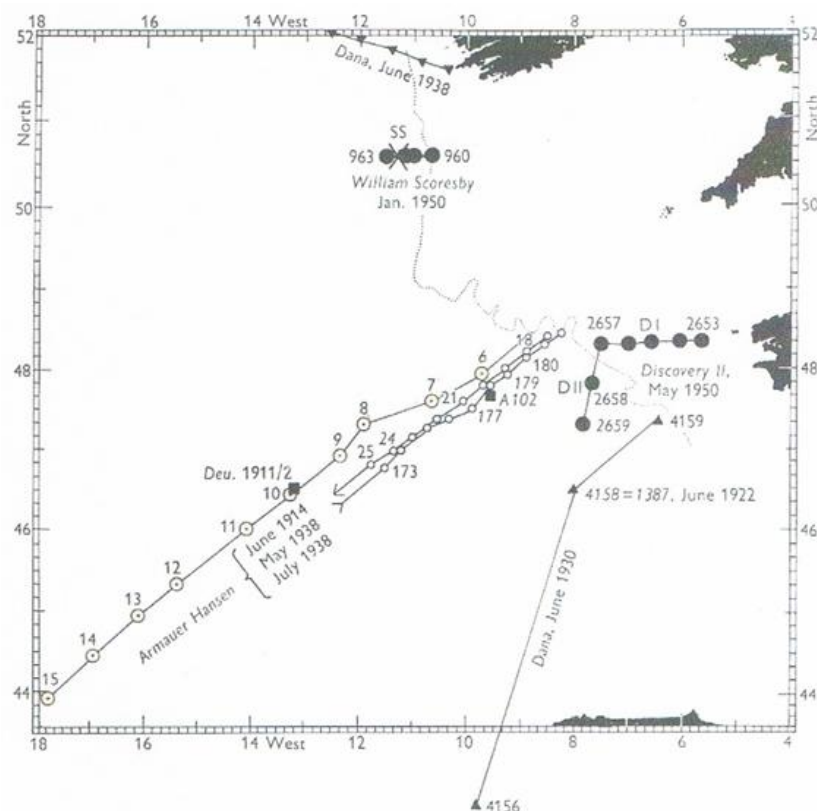


Fig. 8. Positions of deep stations off the continental slope of the Celtic Sea: ⊙, *Armauer Hansen* stations in June 1914; ○, *Armauer Hansen* stations in May and July 1938; ▲, *Dana* stations in June 1930 and one in June 1922; ▼, *Dana* stations in June 1938; ■, *Deutschland Reihe 2* in May 1911 and *Altair* station 102 in July 1938; ●, stations by R.R.S. *William Scoresby* in January 1950 and by R.R.S. *Discovery II* in May 1950; ×, position of the Irish station SS.

Figure 9. Positions 6 to 15 of MS 'Armauer Hansen' 1914 (Cooper, 1952)

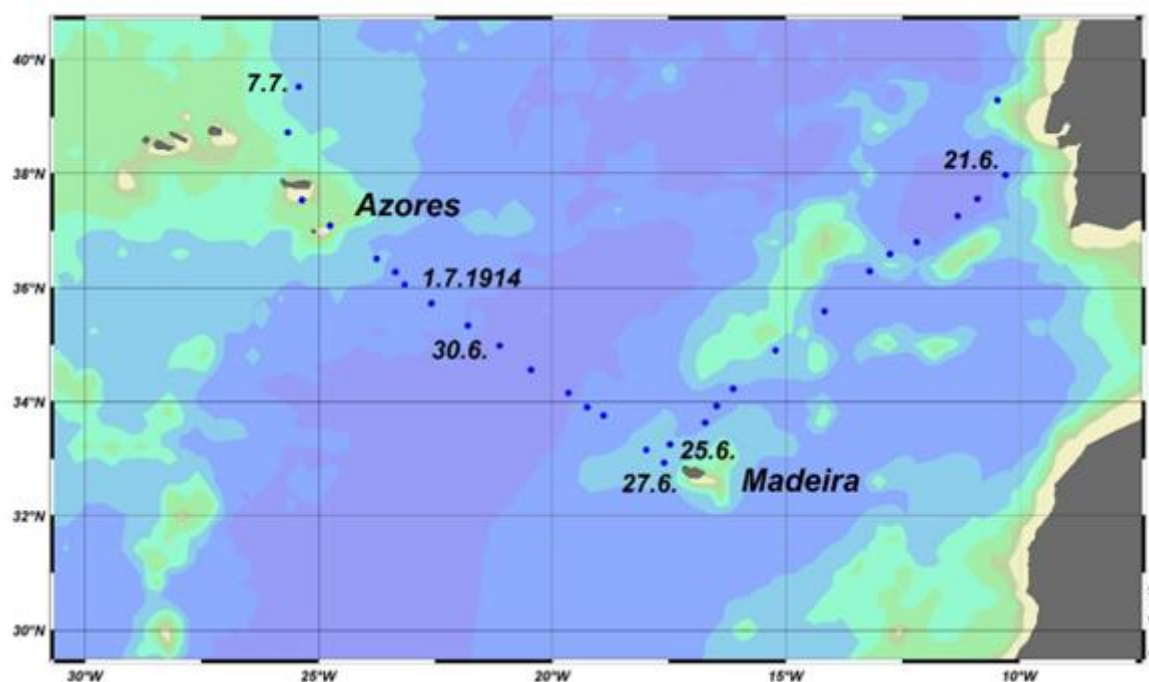


Figure 10. Cruise track of MS 'Armauer Hansen' in the Madeira and Azores region

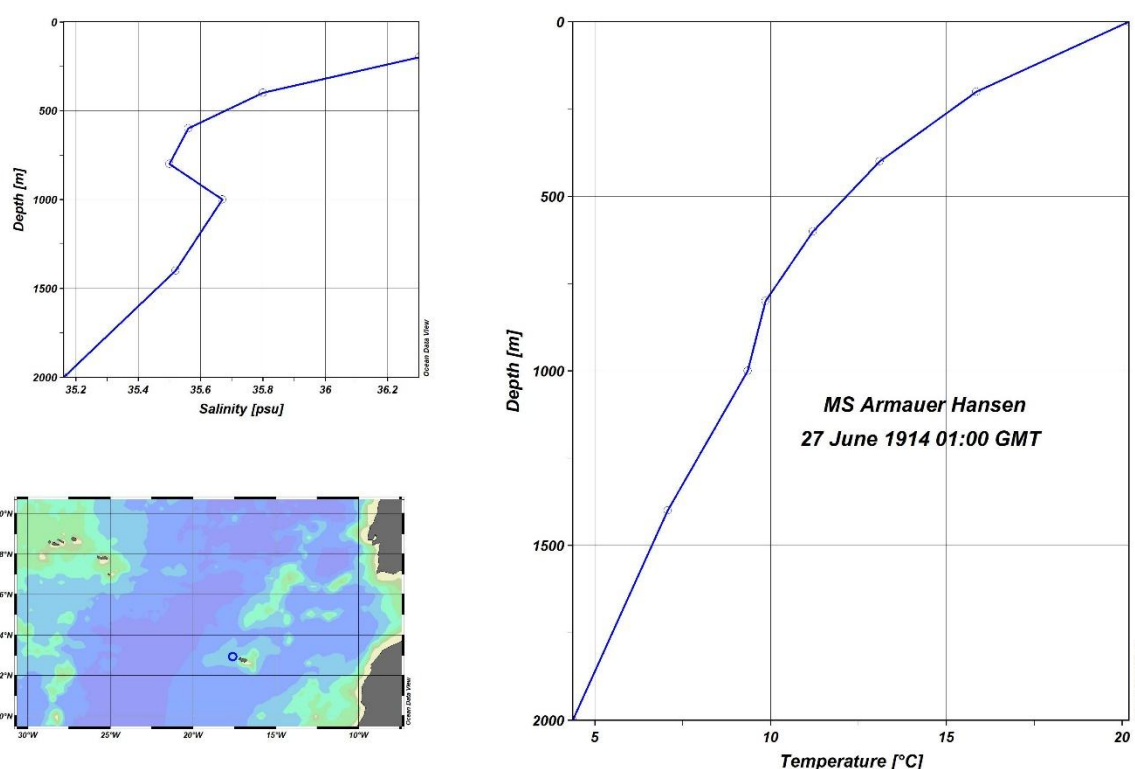


Figure 11. Temperature and Salinity profiles west of Madeira on 27 June 1914, 01:00 GMT

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## Samuel Gutestrand Mandarić: The History and Findings of Swedish Hydrographic Research: Insights from the Bohuslän Coast in the Late 1860s

### Summary

This article explores the pioneering hydrographic research conducted by Fredrik Laurentz Ekman along the Bohuslän coast in the late 1860s. Using specially designed oceanographic instruments, Ekman systematically collected water samples from various depths, ranging from the surface to the ocean floor, across a study area extending from Vinga in the Gothenburg archipelago to Strömstad in northern Bohuslän. His investigations revealed significant salinity variations, with levels increasing with depth, contributing to a more detailed understanding of seawater composition. Ekman's meticulous methodology and innovative sampling techniques provided a foundation for future hydrographic research. By advancing measurement methods and deepening the understanding of salinity variations, his work influenced subsequent developments in marine science.



## Early Hydrographic Research in Scandinavian Waters

The history of Swedish hydrography can be traced back to the summer of 1868, when Fredrik Laurentz Ekman (1830-1890) conducted specialized investigations on seawater salinity in the Bohuslän archipelago.<sup>1</sup> Mapping water characteristics was driven by both intra-scientific motivations and other justifications, with a primary objective of assessing the commercial viability of extracting salt from coastal seawater in Bohuslän.<sup>2</sup> Initial observations conducted in the archipelago revealed significant variations in salinity, which in turn spurred further explorations during the subsequent summer.<sup>3</sup>

In the summer of 1869, Ekman conducted chemical and physical oceanographic surveys at various locations along the coast, from Vinga in the Gothenburg archipelago to Strömstad in northern Bohuslän. Seawater was examined through sampling using oceanographic instruments specifically designed for this purpose, from the surface down to the ocean floor at each respective location. Prior to this, two salinity determinations had been conducted in the Skagerrak region, one by Adolph Strecker (1822-1871) in Sandefjord, Norway, and the other by Johan Georg Forchhammer (1794-1865) between Skagen and Hirtshals, Denmark.<sup>4</sup> Strecker's marine survey took place in the 1850s during his tenure as a professor of chemistry at the university in Kristiania (now Oslo). The chemical analysis of the surface water sample from Sandefjord, located slightly west of the estuary of the Oslo Fjord, indicated a salinity level approximately half of those obtained in the open waters of the North Sea.<sup>5</sup> Strecker's findings align with earlier experiments conducted by Forchhammer, a professor of mineralogy and geology at the University of Copenhagen, which demonstrated the existence of local variations in seawater salinity, particularly near the coast, accompanied by a clear percentage decrease. The chemical analyses conducted in Sandefjord provided evidence that the relative proportions of salts present in the seawater were essentially identical to those observed in the North Sea.<sup>6</sup>

The water sample from the coast of North Jutland was determined by Forchhammer and constituted a part of a systematic study on the chemical composition of seawater, which was published in the late 1850s.<sup>7</sup> The thesis was based on an analysis work spanning over fifteen years, involving surface water samples from various parts of the world's oceans, a significant contribution of which was collected during the Danish corvette *Galathea's* circumnavigation from 1845 to 1847.<sup>8</sup> The chemical analysis of the water sample taken between Skagen and Hirtshals revealed a higher salinity compared to the results obtained by Strecker in Sandefjord. By presenting a large number of determinations from other oceanic regions, Forchhammer was able to provide evidence that although the salinity varied to some extent, for example, due to runoff and evaporation, the composition of sea salt remained highly consistent.<sup>9</sup> In other words, the constituents of salt occurred in practically constant proportions.

## Ekman's Oceanographic Surveys and Findings

Fredrik Laurentz Ekman's chemical and physical oceanographic survey in the late 1860s was the first conducted from the Swedish side of the Skagerrak.<sup>10</sup> The study was carried

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<sup>1</sup> Ekman, 1870, p.3.

<sup>2</sup> Svansson, 2002, p.358; Svansson, 2006, p.22.

<sup>3</sup> Ekman, p.7; Ekman, 1870, p.3.

<sup>4</sup> Forchhammer, 1855, pp.177ff.

<sup>5</sup> Strecker, 1855, p.182.

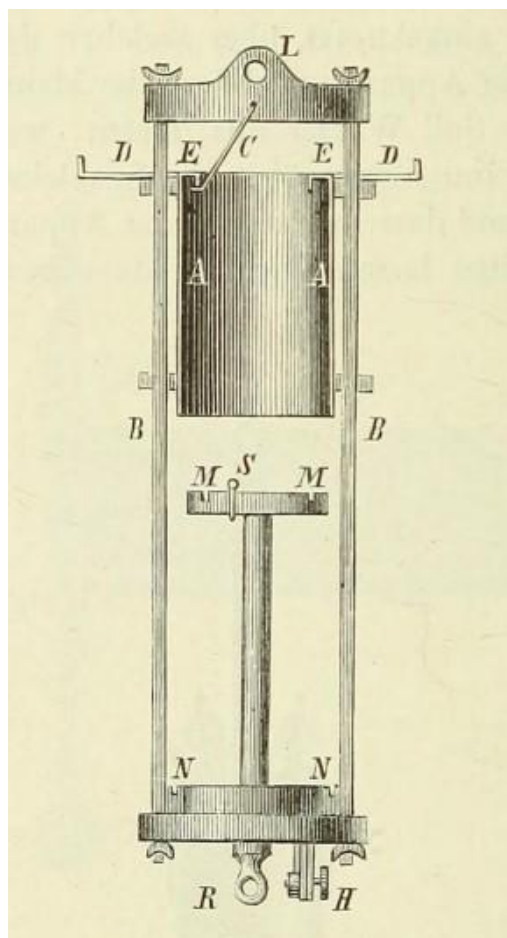
<sup>6</sup> Ibid., p.181f.

<sup>7</sup> Forchhammer, 1859, pp.1-48

<sup>8</sup> Ibid, p.5.

<sup>9</sup> Forchhammer, 1865

<sup>10</sup> Ekman, 1870, p.3; Gislén, 1929, p.20.



out using specially designed oceanographic instruments, adapted to enable sampling at various depths.

Based on preliminary investigations in the Skagerrak and Kattegat, which convinced Ekman of the rapid fluctuations in salinity at different depths, an uninsulated water sampler was constructed. Given the specific conditions along Sweden's west coast, Ekman recognized the importance of designing the sampler to minimize the transfer of water from upper layers to deeper strata.<sup>11</sup>

The water bottle consisted of a cylindrical structure open at both ends, smoothly gliding along two parallel rods with a ring-shaped disc positioned at the top, creating resistance against the water (see Figure 1).<sup>12</sup> Consequently, during the hoisting process, the cylinder was pressed downward, and its edges firmly engaged with grooves filled with a mixture of wax and tallow. This carefully designed configuration enabled the cylinder to form a complete seal, effectively isolating the water inside from the surrounding environment the moment the hoisting commenced.<sup>13</sup> Assuming a continuous and controlled lowering of the instrument, water could flow freely through the cylinder, ensuring that the collected sample provided a reliable result at the intended depth.<sup>14</sup>

Figure 1. Ekman's non-insulated waterbottle from 1869. From Wittmack, 1881

The collected water samples were determined for density, temperature, and salinity. A larger number of samples were taken to the Technical Institute in Stockholm, where Ekman worked as a lecturer, for precise determination of density through weighing.<sup>15</sup> In addition, a selection of samples underwent in-depth chemical analyses, such as determination of existing salt constituents and calculation of the total salt content in relation to the water's chlorine content.<sup>16</sup> This meant that Ekman's chemical investigations aligned with Forchhammer's previously conducted analysis work on the composition of seawater, which had shown, through analysis of a large number of water samples, that the chlorine content relative to the total salt content was practically constant. By titration with silver nitrate, the amount of chlorine could be determined, and then the total salinity was calculated using a coefficient derived from processing empirical data.<sup>17</sup> Forchhammer's chemical analysis work indicated that the general coefficient for the world's oceans was 1.812. This factor could then be used to multiply the chlorine amount in percent or parts per thousand, thus determining the total salinity.<sup>18</sup> Based on the results of four water samples: Hållö (surface sample), Pater Nosterskären (surface

<sup>11</sup> Ekman, 1893, p.7.

<sup>12</sup> Rubenson, 1880, p.52f.

<sup>13</sup> Ekman, 1876, p.4; Wittmack, 1881, p.34f.

<sup>14</sup> Ekman, 1875, p.8; Ekman, 1876, p.4f.

<sup>15</sup> Ekman, 1870, p.3.

<sup>16</sup> Ibid., p.3f, 43.

<sup>17</sup> Forchhammer, 1865, p.219ff.

<sup>18</sup> Ibid., p.221.

sample), Fjällbacka archipelago (10 fathoms), and Kosterfjorden (100 fathoms), Ekman determined the coefficient to be 1.811 (see Figure 2).<sup>19</sup>

Hafsvatten från	A.	B.	C.	D.
	Paternoster- skären, hafeytan.	Hafvet ½ mil vester om Hällö fyr, ytan.	Hvalösundet i Fjällbackaskär- gården, 10 famnar.	Kosterfjorden 100 famnar.
Vattnets salthalt.....	2.081 %	2.587 %	2.999 %	3.501 %
Vattnets chlorhalt.....	1.1509 %	1.4254 %	1.6614 %	1.9374 %
Saltefficienten eller saltmängden relativt till en vigtsdel chlor ..	1.817	1.815	1.805	1.807

Figure 2. Displays the water's salinity and chloride content, as well as the salinity coefficient at Hällö, Pater Nosterskären, Fjällbacka archipelago, and Kosterfjorden. From Ekman 1870

The hydrographic surveys conducted along the Bohuslän coast revealed significant salinity variations within the Skagerrak, with salinity levels increasing with depth. The water exhibited a salinity range from approximately 1.5 percent near Gothenburg to 3.5 percent in the deep waters of Kosterfjorden.<sup>20</sup> Ekman divided his study area into a southern part, Kattegat, and a northern part, Skagerrak. The boundary between these marine regions can be illustrated by a transverse line approximately aligned with Marstrand in southern Bohuslän and Skagen at the northern tip of Jutland.<sup>21</sup> Surface salinity ranged from about 2.5 percent in Skagerrak to an average below 2 percent in Kattegat. The study also revealed that variations in salinity ceased at a depth exceeding 30 fathoms. This conclusion was based on measurements taken from geographically diverse areas such as Gullmarsfjorden, Pater Nosterskären, and Kosterfjorden, all of which indicated values between 3.3 and 3.4 percent at approximately 30 fathoms depth.<sup>22</sup> Ekman explained these findings by noting that the seawater in Skagerrak, along the coast of Bohuslän, experiences a significant influx of fresher water while also being subjected to a stronger current from the ocean.<sup>23</sup> Ekman proposed that a current from the North Sea flows along the northern coast of Jutland and then turns toward southern Bohuslän, reaching the coast north of Marstrand. From there, the current follows the Swedish coast in a northerly direction, merging with the incoming southerly current from Kattegat. Together with the Göta River, these currents contribute to the dilution of seawater. The current then turns southwest along the Norwegian coast, influenced by water from Norwegian rivers and mountains, before ultimately returning to the North Sea.<sup>24</sup> Ekman emphasized that this pattern is generally prevailing, but he also noted that the current direction is not constant and can occasionally be reversed due to the influence of wind.<sup>25</sup> Local impacts on seawater salinity through the inflow of fresher water were primarily assessed to occur from the surface down to a depth of two fathoms.

The marine survey conducted along the Bohuslän coast revealed that wind exerted an influence on the salinity of the Skagerrak. Ekman believed that fjord water exhibited

<sup>19</sup> Ekman, 1870, p.32.

<sup>20</sup> Ibid., p.16ff.

<sup>21</sup> Ibid., p.22.

<sup>22</sup> Ibid., p.16ff, 22f.

<sup>23</sup> Ibid., p.23.

<sup>24</sup> Ibid., p.22f.

<sup>25</sup> Ibid., p.23.

higher salinity when the wind blew from the land compared to when it blew from the sea. This was explained by the fact that the landward wind contributed to the movement of surface water out of the fjord, while the seaward wind enclosed it within the fjord.<sup>26</sup> Similar circumstances were deemed applicable to the open sea in Skagerrak. Consequently, the longer the landward wind persisted, the deeper layers of fresher surface water could be present. As wind direction exhibited seasonal variations, periodic changes in salinity could be established.<sup>27</sup>

In conjunction with the marine survey, two winter observations were conducted in Gullmarsfjorden. The fjord was covered by ice during these periods, with thicknesses of approximately 0.5 and 1.5 feet, respectively.<sup>28</sup> The measurements demonstrated a significant increase in salinity in the upper water layers between the different sampling occasions. However, the salinity at a depth of ten fathoms remained almost the same. According to Ekman, one contributing factor to this observation was the ice cover, which protected the surface water from the influence of wind and wave movement, thus preventing a substantial mixing of the upper water layers in Gullmarsfjorden.<sup>29</sup>

### Conclusion: The Legacy of Ekman's Research

Fredrik Laurentz Ekman's pioneering hydrographic research along the Bohuslän coast in the late 1860s stands as a landmark contribution to oceanographic science, both within Sweden and in the broader global scientific community, significantly advancing the understanding of seawater composition. Ekman's investigations revealed the complex variations in seawater salinity and chloride content, which both confirmed and broadened the scope of earlier studies conducted by scientists such as Adolph Strecker and Georg Forchhammer. By developing and employing specialized instruments specifically developed for oceanographic sampling, Ekman gathered valuable data on the distribution of salinity in both the Skagerrak and Kattegat regions. His work laid the foundation for future hydrographic studies, advancing marine science through more precise and systematic methodologies for measuring and analysing seawater composition.

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<sup>26</sup> Ibid., p.26.

<sup>27</sup> Ibid., p.27.

<sup>28</sup> Ibid., p.18.

<sup>29</sup> Ibid., p.34.

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## **Antoon Kuijpers, Dieter Lange & Wolfgang Matthäus: *Joint Danish-East German (DDR) marine geological investigations in the Baltic Sea during the years 1989-1991***

### **Background and cooperation start-up**

With this contribution we will present a review of the history of Danish-East German joint seabed investigations in the Baltic Sea, a project which started in early 1989. Later that year the timing of this initiative turned out to immediately precede a historical breakup of the existing 'East-West' political situation in Germany and elsewhere in Europe. Our contribution will focus solely on activities in the field of marine geology during the period 1989 - 1991, and not refer to other marine research in Denmark or in the German Democratic Republic (Deutsche Demokratische Republik, DDR) at that time. It is further emphasized that, apart from mentioning a few historical milestones, this review does not present a complete overview of the DDR marine research history, for which may be referred to other publications (e.g. Brosin 1996; Lange *et al.* 2011; Matthäus 2019, 2023). It should be noted, however, that closer contacts between Danish and DDR marine institutions had started already in the 1980s. Within that context, in 1983, the Danish Minister of the Environment, Christian Christensen, had visited Warnemünde. Later, in 1987, from the 10 members of the expert panel for evaluation of the environmental effects caused by the Danish 'Fixed Great Belt Link Project' (1988-1998) only one expert had been invited from 'behind' the 'Iron Curtain', and this was a scientist from the Warnemünde Institute of Marine Research (Storebaelt, 1994).

Previously, during a number of years in the 1970s the Danish 'Belt Project' had been run and conducted multi-disciplinary oceanographic studies in the Belts and Sound. At the end of that decade this was followed by a national plan of systematic seabed mapping in the inner Danish waters east of Jutland. The organization made in the 1980s responsible for this mapping was the Danish Nature and Forest Agency, Ministry of the Environment, with its department for seabed research ('Havbundsundersøgelser'). The investigations aimed, among others, on studying the distribution of marine resources such as sand and gravel. At the end of 1988 the work planning for the next year envisaged mapping of an area in the Baltic Sea south and southeast of Denmark, bordering DDR territory. Although at that time the 'cold war' was slowly getting 'milder', the military 'East-West' pacts (Warsaw, NATO, resp.) were in practice still existing. With the aim of getting a better understanding of seabed structures and processes when looking also beyond national boundaries, the seabed mapping group in Denmark decided to contact the 'Institute of Marine Research' in Warnemünde, officially the 'Institut für Meereskunde Warnemünde', Akademie der Wissenschaften der DDR' (in short 'IfM Warnemünde'). Late 1988 a letter was sent to 'IfM Warnemünde' with the proposal to join forces and organize together marine geological research cruises in selected Danish and DDR Baltic Sea areas. A few months later, in February, a positive response from the Director was received (Figure 1), soon followed by a successful meeting in Warnemünde for the start-up of joint research activities. Within this context, border procedures when entering the DDR in those years can be characterized as 'unforgettable', and also a few other experiences



made in early spring 1989 outside the meeting in Warnemünde were highly memorable. Practically, contacts between Copenhagen and Warnemünde at that time were, however, excellently facilitated by a well-functioning, direct train connection between Copenhagen and East Berlin. In the 1990s this was replaced by a public traffic solution in Denmark depending for part of the journey on time-consuming, local bus service. Moreover, at the same time the ferry terminal in the center of Warnemünde close to the location of 'IfM Warnemünde' was moved away from the town to the Rostock industry harbor east of Warnemünde.

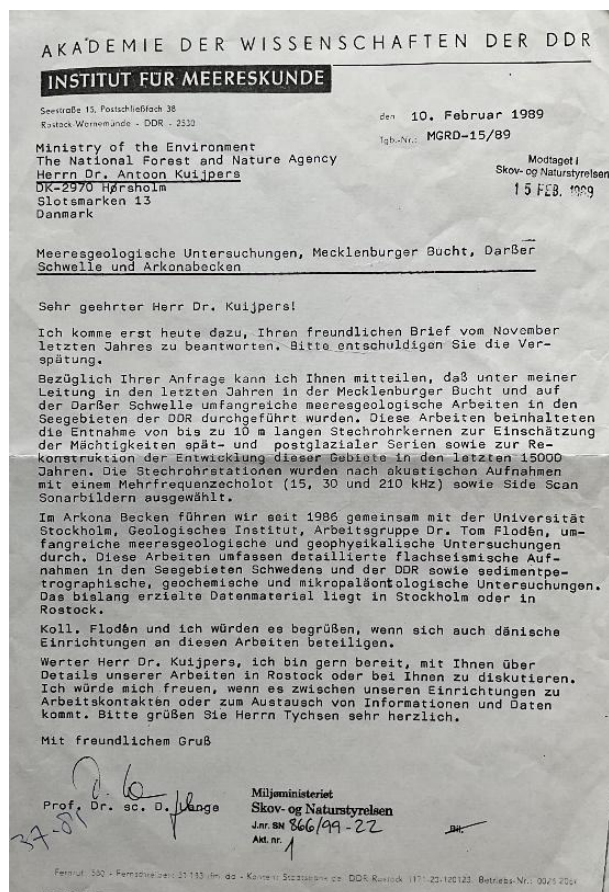


Figure 1. Correspondence from 'IfM Warnemünde' at the start-up of Danish-East German (DDR) joint seabed investigations, February 1989

In the early 1990s the marine geology group of the 'Nature and Forest Agency' was transferred to the Geological Survey of Denmark (DGU) and later integrated in the Geological Survey of Denmark and Greenland (GEUS). Within the framework of the planned cooperation, the main input provided by the Danish existed in acoustic and shallow seismic equipment (e.g. boomer). A relatively small vessel, MV 'Marie Miljø' (Figure 2), operated by the Ministry of the Environment with help of a crew from the Danish Navy, was used for shallow-seismic data acquisition, but had, however, no facilities to collect longer sediment cores.

The 'IfM Warnemünde' had 2 research vessels (Figure 3), of which the larger one was the RV 'A. v. Humboldt' built in 1967 and owned by the institute since 1970. Later, between 1992 and 2004, the vessel was an important research platform of the 'Institut für Ostseeforschung' (IOW, see further below).

The second vessel was the RV 'Professor Albrecht Penck' built in 1951 and used by the 'IfM Warnemünde' since 1960. The latter vessel could likewise stay and continue its function as a research vessel under flagship of the 'IOW' (until 2010). The RV 'Professor Albrecht Penck' had initially played an important role in the early history of the 'IfM Warnemünde' as it had been used during the first Atlantic research cruise (Gulf of Guinea) organized by the institute in 1964 (Matthäus, 2007). In the following period between 1970 and 1979 the larger, ocean-going RV 'A. v. Humboldt' had acted as a research platform during several expeditions in the North Atlantic and tropical Atlantic, followed in 1980 by an expedition in the Indian Ocean, and in 1989 by a research cruise in the Eastern central Atlantic. Both vessels, but more in particular the RV 'A. v. Humboldt', were well-equipped to take longer sediment cores, and with this facility they provided an excellent contribution to the planned joint sea-going work in the Baltic. In particular, the vibro-corer developed on behalf of the 'IfM Warnemünde' in the 1960s and 1970s could be used to collect up to 9 m long sediment cores (Matthäus, 2019).

Since 1960 the 'IfM Warnemünde' had become an integrated institute of the 'Akademie der Wissenschaften der DDR'. However, for political and financial reasons during the 'cold war' international cooperation had not been easy (Matthäus, 2023). For details and a historical overview of marine geological and coastal research in Warnemünde in the

earlier period (1950 and 1970) of the DDR can be referred to 'IOW' Marine Science Report No 111 (Matthäus, 2019a). As one of the first pioneers having started marine



↑ Figure 2. MV 'Marie Miljø', Danish Ministry of the Environment, operated with a crew from the Danish Navy (wikipedia.org)



⇒ Figure 3. 'IfM Warnemünde' emblem of RV 'A. v. Humboldt' and RV 'Professor Albrecht Penck' (courtesy W. Matthäus)

geological research in Warnemünde had been Otto Kolp (1918-1990) (Matthäus, 2019b). In the early 1970s the DDR achieved international diplomatic status as a state, which led to better political conditions for international cooperation. In 1973 the 'IfM Warnemünde' could join the Intergovernmental Oceanographic Commission (IOC) of UNESCO. Soon after, in 1975, the DDR became also a member of International Council for the Exploration of the Sea (ICES) and became a member of the Helsinki Commission (HELCOM). The latter organization, in which the 'IfM Warnemünde' has played an active role, had been established in order to help protecting the environment of the Baltic Sea and improve collaboration of the Baltic member states.

### Joint sea-going activities in the years 1989-1991

At the planning meeting in Warnemünde, early spring 1989, two joint sea-going activities had been agreed on for that year, whereas joint planning involved a further activity in the first part of 1990. The first campaign should include an extension of the grid of shallow seismic profiles south of Denmark into DDR waters off Warnemünde, and was planned for September 1989. The second joint research cruise of that year would take place in early October and would include acoustic investigations and sediment coring in the Danish-DDR border zone in the central Baltic between the Danish island of Bornholm and Danish mainland. After having sent a Danish notification for asking permission to work in DDR territorial waters, it took not more than a few months, i.e. a normal time span, until the Danish Embassy in East Berlin had received a positive response from the DDR authorities. This included permission to carry out shallow seismic investigations in the designated DDR waters off Warnemünde in the period applied for, i.e. September 1989. This permission did not have many restrictions, on condition that an 'observer' from the 'IfM Warnemünde' must be on board the Danish vessel while sailing in East German waters. After having successfully completed its shallow seismic data acquisition in Danish waters, MV 'Marie Miljø' with its crew from the Danish Navy crossed the borderline, and was about to start work in DDR waters, as on the bridge of MV 'Marie Miljø' an urgent message was received: sender was NATO Headquarters in

Brussels. The message included the order to immediately leave DDR territory, as one had realized that a NATO navy crew had been entering territory of the Warsaw Pact. In this way this first planned research activity came to an end; a second attempt was more successful (see below). Meanwhile the other, second planned campaign west of Bornholm with RV 'Professor Albrecht Penck' (Figure 4) could be carried out as scheduled. During this cruise on October 7<sup>th</sup> the participants on board had the opportunity to experience the 40<sup>th</sup> Anniversary of DDR, among others by listening to a radio speech by Erich Honecker and some additional words by the master of the RV 'Professor Albrecht Penck'. At this historical occasion, a few national drinks in the form of 'Anker Gold' and 'Rostocker' beer were of course not absent.

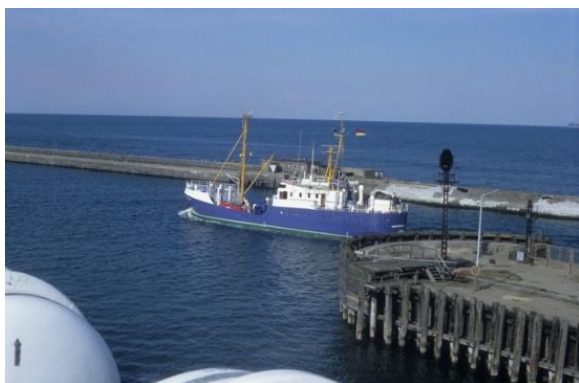


Figure 4. RV 'Professor Albrecht Penck' leaving Warnemünde harbor



Figure 5. Sediment retrieval from the VKG-6 vibro-corer on deck of the RV 'A.v. Humboldt'

For spring 1990 – meanwhile the Berlin Wall had fallen, November 9<sup>th</sup> 1989 – a major cruise activity had been planned which included, among others, the collection of 6 m long sediment vibro-cores with RV 'A. v. Humboldt' in Danish waters. As the DDR was still existing, the diplomatic procedure for handling the official notification was via the Danish Embassy in East Berlin. The cruise was scheduled for April to start in the week before the Easter Holidays, and should include also most of the following week. However, after having left harbor, until the Friday before Easter the RV 'A. v. Humboldt' had still no permission to enter Danish waters, and thus was forced to wait outside Danish waters. Repeated telephone and telegram contact attempts with the Danish Embassy in East Berlin remained unanswered, with the vessel still waiting over the Easter weekend. Finally, a (positive) response was received, and vibro-coring work (Figure 5) could start. After successful completion of the cruise, RV 'A. v. Humboldt' made a port call in Copenhagen (Figure 6) to deliver the many sediment cores taken during these days after Easter. At one of the coring sites an almost 5 m long core was retrieved, containing a few meters of glacial till overlying about half a meter of tertiary limestone, an astonishing and impressive sequence to retrieve with a vibro-corer. As a result, in Denmark it was decided to investigate the possibility of buying this highly effective sediment coring device which was realized shortly after (Figure 7).



Figure 6. Port call of RV 'A. v. Humboldt' in Copenhagen, April 1990



After the unsuccessful attempt in September 1989 to conduct shallow seismic investigations in DDR waters, a renewed notification was sent to East Berlin for asking DDR permission for another cruise with MV 'Marie Miljø', scheduled for June 1990. A positive response came soon, and planned shallow seismic profiling off Warnemünde with a representative from 'IfM Warnemünde' on board could finally be carried out. However, communication between DDR state institutions apparently did not well function anymore. Suddenly a DDR coast guard vessel appeared during the profiling work, starting to circle around MV 'Marie Miljø', and urgently asking what the Danish vessel was doing (Figure 8). Apparently, responsible regional authorities had never been informed by East Berlin. Fortunately, owing to intervention of the 'IfM representative' the profiling work could be completed without further problems (Figure 9).

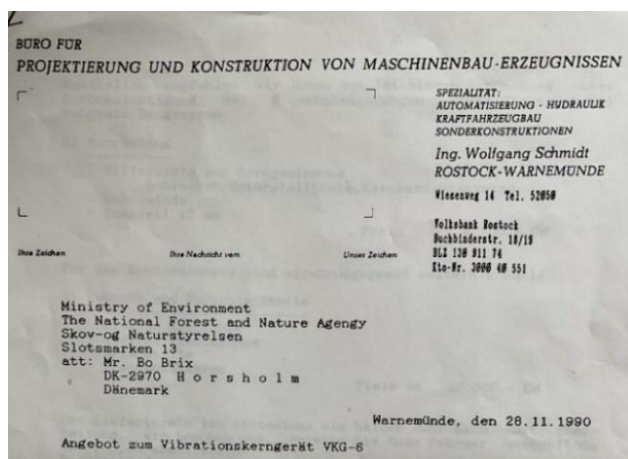


Figure 7. After having seen impressive coring results during the joint RV 'A.von Humboldt' cruise in April 1990, the Danish Ministry of Environment bought a VKG-6 vibro-corer in Warnemünde (for DM 125.400)



Figure 8. DDR coast guard vessel asking MV 'Marie Miljø' off Warnemünde what the Danish vessel was doing there, June 1990

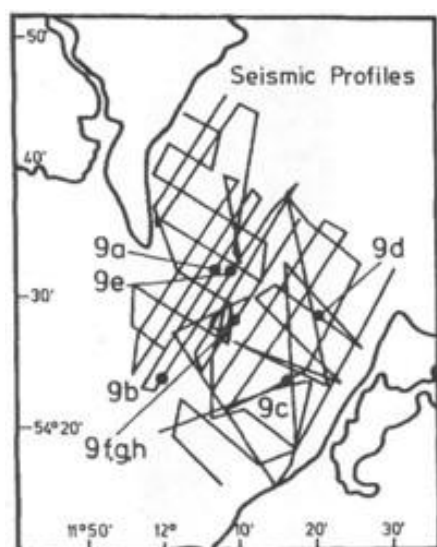


Figure 9. Grid of shallow seismic tracks between Denmark and East Germany including profiling lines in DDR waters made during the cruise with M/V 'Marie Miljø', June 1990

### New era with further cooperation

At a special and, for most of the attendants, a sad meeting held in the auditorium of the 'IfM Warnemünde' in December 1991 the official announcement was made that after December 31<sup>st</sup> 1991 'IfM Warnemünde' would not exist anymore, but that a new

In the following period until the end of 1991 further joint cruises with RV 'Professor Albrecht Penck' were made. A memorable experience during these cruises on board the DDR vessels was the wake-up procedure: at 05:15 h the cabin door was smashed open by the crew, and cabin light fully turned on with the words 'reise, reise' (get up), although work on deck with heavy gear of the vibro-corer normally did not start before 08:00 h. A compilation of results from all these joint cruises conducted in the period 1989 to 1991 could be presented during the Second Marine Geological Conference 'The Baltic' held at the 'IfM Warnemünde' 21-26 October 1991. At the same time this conference represented the last major international scientific event arranged at the 'IfM Warnemünde' as a part of the 'Akademie der Wissenschaften der DDR' (Lemke *et al.* 1992).

institution would take over under the name of Institute for Baltic Sea Research (Institut für Ostseeforschung Warnemünde, IOW) which fortunately would employ most of the people having previously worked at the 'IfM Warnemünde'. Owing to a wise and clever strategy of the institute's director and management, both nationally and internationally, the status of a marine research institution thus was not lost, despite of some political attempts to stop institutional marine research in Warnemünde. For a detailed report of institute activities and developments during the final years of the 'IfM Warnemünde' and first years of the 'IOW' (1990-1994) see Fennel (2018). In the following decades Danish – (East) German marine geological cooperation in the Baltic continued, which after 1992 has resulted in a long series of peer-reviewed publications (e.g. Lemke *et al.* 1999, 2001). Later on, this close bi-lateral cooperation remained not restricted to the Baltic Sea only, but could occasionally be extended to marine geological research in tropical waters of the Atlantic (Yucatan Strait, US Virgin Islands Caribbean Sea) and to Arctic waters, where in 2002 during an expedition of RV 'A. v. Humboldt' marine geological investigations were carried out in West Greenland fjords around Nuuk, capital of Greenland.

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Illustrations: Apart from Figures 2 and 3 all documentary and photographic material belong to a private collection (courtesy A. Kuijpers)

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**Jan H. Stel:*****Ships are passing by, a Policy Analysis*****A personal view on Dutch marine and Antarctic research 1979-2009****Summary**

The developments outlined in this paper took place at a time when the Dutch government stimulated marine research in the broad sense. This was during the Netherlands Council for Marine Research (NRZ, 1980-1988), at the Royal Netherlands Academy of Arts and Sciences, and then during the Marine Research Foundation (SOZ, 1988-1994) as part of the newly established Dutch Research Council. In this context four science-policy initiatives are discussed under the umbrella of *Ships are passing by*, as research vessels are a visible and iconic feature of marine research.

The first issue relates to the wish of the Dutch government to develop a national program for sea research. Despite a significant investment of at least some fl. 120 million (value in 2024: some M€ 125), this national programme did not mature. The execution of the Snellius-II Programme with RV Tyro played a catalysing and crucial role in this effort. Secondly, the successful participation in the international Ocean Drilling Programme, through a new European consortium is described. It gave challenging opportunities to the Dutch marine geoscience community. RV JOIDES Resolution's last Arctic expedition, Leg 403, was concluded in Amsterdam on August 2, 2024, after which a demobilization period took place. This ended an era of deep-sea drilling that started in 1968. Thirdly, the development of the Dutch Antarctic Research Programme by the NRZ and SOZ was accomplished, and led to the current NWO National Polar Programme. Fourthly, the fruitful and initiating Dutch role in the development of operational oceanography since the 1980s, is briefly sketched.

**Introduction**

As a maritime nation the Netherlands had a keen interest in ocean research. Yet, the first steps from the North Sea to the open ocean turned out to be rather difficult. The coordination of this research effort was channelled through various organizations, like the Nederlandse Commissie voor Zeeonderzoek, NCZ (Dutch Commission for Sea Research, 1962-1988), the Nederlandse Raad voor Zeeonderzoek, NRZ (Netherlands Council for Marine Research, 1980-1988) at the Royal Netherlands Academy of Arts and Sciences (KNAW), and the Stichting Onderzoek der Zee, SOZ (Marine Research Foundation, 1988-1994) as well as, to a lesser extent, the Stichting Aardwetenschappelijk

Onderzoek (Dutch Geoscience Foundation, 1994-1998) at the Dutch Research Council, NWO (SOZ, 1992).



Figure 1. RV Tyro returns in Den Helder, the Netherlands, after successfully completing the Snellius-II Expedition, the largest Dutch post-World War-II oceanographic expedition in the 20th century.

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There was a need for a joint plan, additional funding and testing of the willingness to co-operate. Plans were formulated, proposals for research vessels were made, and some large-scale projects were funded and implemented, but a dedicated new research vessel for civil marine research, was not feasible. Instead, a new hydrographic survey vessel of the Royal Navy, Hr.Ms. Tydeman (A906), was commissioned on November 10, 1976, offering 30% of her ship time for civil research (Figure 2). Moreover, funding was provided by the Dutch government for chartering cargo vessels for research (van Bennekom, 2001). This option was also pioneered by Prof. Bas Collette during his 'Kroonvlag' project <sup>1</sup> (1967-1980) on board liners of the KNSM (Koninklijke Nederlands(ch)e Stoomboot-Maatschappij / Royal Netherlands Steamship Company). During such charters it was demonstrated that MV Tyro proved to be particularly suitable for scientific research, as the ship was equipped with an adjustable propeller (van Bennekom, 2001) and passen-ger accommodation.



Figure 2. Hr.Ms. Tydeman, during one of the CANCAP expeditions (left). Dr. Jaap van der Land watching his diving team (right). © Nederlands Instituut voor Militaire Historie, NIM

As ocean research is expensive, as a consequence it needs international coordination. For this the Intergovernmental Oceanographic Commission, IOC was established in 1960, within UNESCO. In the same year, the Zoölogisch Station (Zoological Station) in the Netherlands, founded in 1876, was renamed into the Netherlands Institute for Sea Research, NIOZ. In 1969 the institute moved from Den Helder to its new facilities at 't Horntje, near the ferry terminal at the island Texel (van Bennekom, 2001).

The most striking international research program initiated and developed in the Netherlands was the Cooperative Investigations of the Caribbean and Adjacent Regions (CICAR, 1970-1972), through the IOC. The effort was very successful and led to the establishment of IOCARIBE, within the IOC. IOCARIBE stands for Cooperative marine science activities of the IOC in the Caribbean and adjacent regions. The internationalization process, which started with the establishment of a UNESCO Commission in the mid-1950s, within the KNAW, turned out to be very successful, and the Netherlands became an influential member of the IOC. Meanwhile, national ocean research was gaining momentum through developing 'Vaarplannen' (Charter Plans) for 1974-1978 and 1978-1982 by the NCZ. In these 'Vaarplan'-documents an increase of ocean-going cruises was foreseen, and partly accepted by the government (SOZ, 1992).

In 1978 the Minister for Science Policy with the Directorate General for Science Policy under Dr. E. (Egbert) van Spiegel, took over the coordination of oceanographic research from the Ministry of Education and Research. That situation apparently caused quite some resentment. When I was introduced by Mr. Storimans to some top officials of the Ministry of Education and Science at my first working day in The Hague as the new coordinator for ocean research, we were back on the street, within an hour. "Just go to Science Policy" was the advice. So, we did.

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<sup>1</sup> See *ad HOC* issue 17, 2020

Storimans was a consultant who, on request of the Ministry for Science Policy, analysed the experiences with the 'Vaarplan' programs. (SOZ, 1992). One of its short comings was the lack of a widely supported, long-term national plan for oceanographic research. He advised to reorganize the current organization. This advice was anticipated by in the NCZ/KNAW report: 'Towards a Dutch Council for Marine Research' (van der Land, 1979; SOZ, 1992). These suggestions mostly were taken over (Science Budget 1980-1981) and should lead to a strengthening of this research field.

As a consequence, the existing NCZ was transformed into the Nederlandse Raad voor Zeeonderzoek, NRZ, (Netherlands Council for Marine Research) in 1980, which was based at the KNAW, and chaired by SBN Jan C. Kreffer. A small executive office was developed at the Academy too (Stel, 1983). The Council was given a number of tasks, such as:

- Allocate and manage its research funds, which also allowed the temporary appointment of scientific staff.
- Taking care of operational activities for the implementation of inter- and multi-disciplinary projects, both at the North Sea and within the Snellius-II Program (1982-1987).
- Maintaining national and international contacts.
- Stimulate marine research aimed at possible future application.
- Promote coherence between basic and applied research.
- Liaise with intergovernmental (e.g. IOC/UNESCO) and scientific organizations (e.g. Scientific Committee on Oceanic Research, SCOR, of the International Council of Scientific Unions (ICSU; now the International Science Council, ICS), and the Scientific Committee on Antarctic Research SCAR of the same organization. During the NRZ the national SCOR Committee was part of this Council).
- Develop a nationally coordinated program for marine research.
- Promote transfer of knowledge and technology to developing countries in relation with the exploration of national Exclusive Economic Zones, EEZs.

The practical steps to be taken were:

- Convert the existing 'Vaarplan' Committee into an Operational Committee for Marine Research, which was to program all Dutch marine research.
- Establish four permanent science committees, being: physical oceanography, chemical oceanography, marine geosciences, and marine biology.
- Develop a support office at the KNAW.

Finally, it was stipulated that the new structure would be evaluated after five years.

### **MS Tyro, an innovative freighter**

On Saturday June 17, 1967 the christening ceremony of MV Tyro took place at the ships yard of Van der Giessen-De Noord in Krimpen aan de IJssel in the Netherlands. It was Mrs. N.B. Hudig-Kleyn van Willigen, spouse of one of the shipping company directors of the Firm Hudig & Veder in Rotterdam, who popped the bottle of champagne against the ships' hull. She wished her a safe journey (Figure 1). However, a time of rapid changes and developments in shipping, lay ahead. MV Tyro had a turbulent life.

The vessel was owned by the shipping company Maatschappij Zeevaart, which had a small fleet of cargo vessel. Tyro was a specialized roll on/roll off (RORO) cargo vessel with an innovative design.



Two large doors on the starboard side allowed for loading and unloading of pallets and containers, as well as to transport livestock. For the purpose of conventional loading and unloading, the Tyro had two deck cranes, was equipped with refrigeration and freezer rooms, and had a passenger accommodation of 12 persons. Tyro's carrying capacity was 1,500 tons (Figure 3).



Figure 3. MS Tyro during the christening ceremony on June 17, 1967 (left), as a RORO freighter with containers, and as a chartered research vessel (right). Source: Stichting Maritiem-Historische Databank and NIOZ (right)

The Ministry of Education and Science pulled out all the stops, both to give the Snellius-II Programme (below) and the policy experiment a good chance of success. An additional investment of fl. 3 million (in 2024 value M€ 3.5) was made to secure the ship's capacity. MV Tyro was bought in 1982, rebuilt, and accommodated at the KNAW, where the new NRZ was based too. Roughly half of this grant was spent to buy the ship. The other half was used to modify her into a containerized research vessel. The use of converted 20-ft size standard shipping containers for ocean-going research was, as said, pioneered by Bas Collette, and developed further by the NIOZ marine technicians.

Tyro's conversion was done at Niehuis and Van den Berg, a ship repair company in Rotterdam, and overseen by NIOZ marine technicians, also taking care of the national pool of oceanographic equipment established under the NRZ since 1981. A special shed was built at NIOZ with an additional grant of fl. 300.000. (SOZ, 1992). The cargo ship was equipped with a system of container lockers and to facilitate access gangways between the various fixed container positions. An imposing A-frame was fitted at the stern for towing airguns, bottom dredges and plankton net fishing (Figure 6). Finally, the passenger's accommodation was doubled to some 22 persons (SOZ, 1992).

NRZ selected a new shipping company capable in operating vessels worldwide and, in our case, especially the Indonesian waters. The NRZ director negotiated a new contract, which included key personnel, like the ship's captain L.J. (Leen) Blok and the ship's chief engineer Jan Konijnendijk from Hudig & Veder, the former owner of the ship. Due to this we had to say farewell to Visser & Visser Chartering BV, who had served us very well during many years. I remember Wim Visser as an excellent professional and a good friend.

RV Tyro, being a fully containerized research vessel was unique, became an indefatigable workhorse for NRZ's ocean-going research (Figure 4). The flexibility of this containerised approach was impressive. A simple reshuffling of research containers in the ship's cargo holds

Containers also are rather practical to construct research stations on land. This was done during the Snellius-II Programme in Surabaya and Gresik, some 40 km north of this city.

During the Indian Ocean Programme (IOP, 1990-1995), a containerized land base of three containers, was established at Jadini Beach Hotel. Our Kenyan colleagues from the Kenya Marine and Fisheries Institute, KMFRI, smoothly welded a pointed roof on top of them, which they covered with dried palm leaves.

Finally, containers were also used at the Antarctic Peninsula to build the Dutch Dirck Gerritsz Laboratory, which was officially opened on January 27, 2013 by Crown Prince Willem Alexander.

and decks, allowed for a relatively easy and fast change between the various expeditions, even within research themes. (Stel, 1997, 1998a, 1998b).



Figure 4. RV Tyro was a unique and fully containerized research vessel. View of the container deck and inside a research container. © SOZ/Fred Hoogervorst.

### The Snellius-II Programme (1982-1987)

The idea for a second oceanographic Snellius Expedition in Indonesia, to commemorate the 50<sup>th</sup> anniversary of the famous Snellius Expedition (1929-1930), originated in the mid-1970s. In December 1978, a workshop for this purpose was organized by IOC/- UNESCO and the Indonesian Institute of Sciences LIPI (Lembaga Ilmu Pengetahuan Indonesia). Prof. Dr. A.A.Th.M. van Trier, Minister of Science Policy, discussed this idea in 1980 with his colleague Prof. Dr. Ing. B.J. Habibie, the Indonesian Minister for Research and Technology. After returning to the Netherlands, Minister Van Trier requested the NRZ to explore the idea, which happened in 1981. It showed an overwhelming interest. And hence the Snellius-II Programme was born (Stel, 1985d).

The Dutch interest in a second Snellius Expedition did not come out of the blue either. In 1968, Egbert van Spiegel visited the Geological Institute in Groningen and met the world-renowned geologist Prof. Ph.H. Kuenen, who had participated in the first Snellius Expedition. Kuenen had regularly sent letters home, which he later turned into a diary. He then used that diary to write a fascinating popular science book: 'Kruistochten over de Indische diepzeebekkens' (Kuenen, 1941). This book is adorning my bookcase for decades as a pleasant memory to him and our Geological Institute. During this visit Kuenen also discussed the need for a new Snellius Expedition with Van Spiegel (pers. comm. Bert Boekschoten).



Figure 5. MV Tyro was bought to facilitate the execution of the Snellius-II Programme in 1982-1987. © SOZ/Fred Hoogervorst (left) and NIOZ.

As a consequence, the big challenge in the 1980s was the execution of the Snellius-II Programme. This Programme not only was an exciting scientific endeavour, but also a policy experiment (Stel, 2001). It was an Indonesian-Dutch follow-up of the Snellius Expedition (1929-1930) on board H.M.S. Willebrord Snellius, which was in turn an addition to the Siboga Expedition (1899-1900). (SOZ, 1992: de Witte, 1984).

The political setting during which this expedition was executed differed considerably from these previous two expeditions, which took place in colonial times. The Second Snellius Programme, however, was a joint endeavour of the Indonesian and the Netherlands' governments. For this a formal agreement was signed by the Dutch minister of Education and Science Policy, Drs. Wim Deetman, and the Indonesian State Minister for Research and Technology, Dr. Ir. Ing. B.J. Habibie.

Wim Deetman was Minister of Education and Science (1982-1989). His ministry, again included the then disbanded Ministry of Science Policy. Deetman's main political task was implementing major budget cuts. Within this context it was a miracle that the Snellius-II Programme was saved just in the nick of time, thanks to interventions by Van Spiegel, as he once told me. The oceanographic community owes a lot to him.

NIOZ technicians loaded the freshly painted vessel in the Port of Den Helder, where she left on May 28, 1984 for the largest Dutch, post-World War-II expedition ever. For me the question was: would the ocean-going science community make its research and policy promises true, or not? Yet, most scientists did not consider such a question at all, they just wanted to perform their science. Many years later, during the Indian Ocean Programme (IOP), I understood that some of them did not understand capacity building activities at all, which were an intrinsic part of the Snellius-II Programme. They are no 'citizens of the world' in the sense of the Flemish philosopher Ulrich Libbrecht (Libbrecht, 2001).

### *Bilateral cooperation*

The Snellius-II Programme was a bilateral partnership between the NRZ (Stel, 2001) and the Indonesian Institute of Science, LIPI. This partnership was composed out of two key elements, the implementation of a joint research expedition in the central and eastern Indonesian waters, and the execution of an impressive capacity building programme. The Programme, except the outward and homeward voyages, formally started in November 1982, and ended exactly five years later with a symposium in Jakarta.

The Programme consisted of a planning phase (November 1982 - June 1984), an execution phase, being the Expedition (July 1984 - October 1985), and an elaboration phase (October 1985 - November 1987). The most spectacular part of the programme, the Snellius-II Expedition (1984-1985) itself, was executed by the Dutch RV Tyro and five smaller Indonesian research vessels, a helicopter and a small plane. Research was organized into five themes, being (1) Geology and Geophysics of the Band Arc and

In my research for this story, I came into contact with Ivon Stelloo, one of the daughters of Tyro's captain Jaap Stelloo. From her I learned that Leen Blok was initially his first mate (later to become captain of Tyro), while Jan Konijnendijk was his chief engineer. They were close friends.

Through our contacts, pleasant memories surfaced, which she wrote to me and from which I quote.

For instance, she wrote that the MV Tyro was an innovative, state-of-the-art RoRo vessel. But new technology tends to give surprises. For instance, on leaving Rotterdam and near Hoek van Holland, suddenly everything fell silent. Captain Stelloo then had the choice of either colliding with a tanker or crashing the ship at the pier of Hoek van Holland, which he chose.

I was a little perplexed when she told me that her father complained about the attitude of the expedition leaders toward him. According to the law, the captain is the ship's boss. But the expedition leaders apparently often thought otherwise as 'they' had rented the ship. I soon ran into the same problem with two expedition leaders. Something we even had to lay that down in a Captain-Expedition Leader Regulation.

Ivon mentioned that friendships developed between passengers who regularly sailed with MV Tyro, and her father, Captain Stelloo.



adjacent areas, (2) Ventilation of Deep-Sea Basins, (3) Pelagic Systems, (4) Coral Reefs, and (5) River Input into Ocean Systems (de Witte, 1984).



Figure 6. RV Tyro was equipped with and imposing stern A-frame (left), Indonesian stamp 'Ekspedisi Snellius II' (middle) and a yellow winch for bottom samples. © NRZ/Fred Hoogervorst (left), Wikipedia and NIOZ.

For the execution of this Programme, KLTZ (ret.) Th.G. (Dick) Loeber, having extensive international experience as a hydrographer and commander of a.o. Hr.Ms. Tydeman, was added to the NRZ office. Dick learned Bahasa, became 'our man in Indonesia', performed miracles and was highly appreciated.

### Capacity Building

Transfer of know-how and educational assistance was an important aspect of the capacity building activity during the Snellius-II Programme. A large number of junior and senior Indonesian scientist came to the Netherlands for technical and analytical training. During the expedition on-board training was given to junior scientist and technicians, who are a vital condition for performing oceanographic research. An analysis of the scientific participants of the Snellius-II Expedition shows that 39% of the participants were Indonesian scientists, and 4% were international (non-Dutch) scientists. A similar analysis of the technical support shows that this was overwhelmingly taken care of by the Dutch, underpinning the need to train marine technicians within a capacity building effort too (SOZ, 1991, 1992; Stel 1995a, 1997b).

During the third phase of the Programme, some 70 Indonesian scientists came to the Netherlands, within a special fellowship program for training on data analysis, data handling, the preparation of writing joint reports and scientific papers. This fellowship program was made possible by Official development assistance (ODA) funding, which was made available through the Dutch Ministry of Education and Science. As a rule, the Indonesian fellows stayed in the Netherlands for three to six months. Some stayed for several years to obtain a PhD. An analysis of this effort showed that half of this capacity building effort was implemented by the relatively small marine geoscience community. A leading Indonesian science manager refers to the Snellius-II Programme, as laying the basis for the development of a modern Indonesian marine science capability (Soegiarto, 1997; SOZ, 1992; Stel, 1990d, 1994, 1997b, 1998a,b).

Finally, the scientific output of the Programme with some 300 papers, was excellent too (NRZ, 1988-1990; two books). An analysis showed that almost half of this came from Theme 1. So, from a scientific perspective one could conclude that the Snellius-II Programme was an overwhelming success (Boekschoten, 1988). For most scientists and technicians, who just see this Programme merely as an expedition, that was indeed the case. However, the funders, the Ministry of Education and Science and as a consequence the members of the NRZ and the various science managers, also had to look at this Programme in a broader context (Stel, 2001). This is where the Capacity Building activities, and especially the task of developing a National Marine Research Programme, play an important role. From that perspective, there were indeed major shortcomings of this policy experiment with a total estimated cost of some fl. 30 million (in 2024 value some

ME 35) (SOZ, 1992) that did play a decisive role in the planned evaluation of the NRZ stimulation by the Ministry.

### Outreach

Both the NRZ and the SOZ were actively supporting educational research programs at sea, like the Floating University: Training-through-Research (TTR), initiative of the Lomonosov Moscow State University. This initiative started in 1991, and was supported by IOC/UNESCO. Currently, a similar international program is part of the UN Ocean Decade (2021-2030). Moreover, the first ODP promotion documentary was made by the SOZ director and TV-maker Aart Gisolf. Finally, these activities resulted in Ocean Literacy activities by the author. (Koutsopoulos & Stel, 2021).



Figure 7 Indonesian RV Hatiga. Film crew arrives (left), Landing on Ceram and cover booklet De Snellius II Expeditie © NIOZ

Public information (Stel, 1998, Wiese *et al.*, 1992, 1994a,b) has always been an important task of especially the NRZ, and SOZ office, too. Yet, it was not an initiative of the NRZ office to make a cinematic report of the Programme (Figure 7). Someone at the Ministry of Science Policy and the Rijksvoorlichtingsdienst (Dutch Government Information Service, RVD), financed five films about the Snellius-II Programme. The first two general films concerned the cooperation between both countries, by introducing the notion of Partners in Science, and a general introduction of the Expedition, were produced by Ronny Erends, a famous Dutch documentary filmmaker and producer. These films were for the general public. The other three thematic films were produced by Han van Gelder, and were mainly intended for students in Indonesia and in the Netherlands. The premiere of these films took place at the Tropenmuseum (currently Wereldmuseum) in Amsterdam, and was attended by Queen Beatrix.

A booklet 'De Snellius II Expeditie. Een Indonesisch - Nederlands oceanografisch onderzoekproject 1984-1985', written by Hans de Witte of the Ministry of Science Policy, was published by the NRZ to inform the general public (de Witte, 1986). A number of popular science papers was published in a. o. in the Garuda inflight magazine (Stel & Post, 1987) in Orion, a bimonthly orienteering magazine Netherlands/Indonesia, etc. (Kielich, 1984; Stel, 1985a, b, d, 1986a, 1989a). Finally, a television programme was produced by the SOZ office with Aart Gisolf, a featured television producer.

### RV JOIDES Resolution – access through a European consortium

Marine geoscientists were proposing to participate in the world famous and unique Deep Sea Drilling Project, DSDP, from the early 1980s. Especially Prof. Jan van Hinte was a key driver here. However, the ZWO Stichting Aardwetenschappelijk Onderzoek Nederland (Netherlands Earth Science Research Foundation, AWON, 1973–1979) did not appreciate this. As a geologist, I also was convinced that this would be an interesting opportunity for our marine geoscientist community.

Jan van Hinte took me to a DSDP meeting in Austin, Texas, USA. Regarding breakfast, a world of new possibilities for fried eggs, opened up for me in Texas. More important was the meeting, which was both exiting and convincing. However, the high annual cost to participate as a full member, was a serious obstacle. Although Science Policy was basically in favour, it could not justify to invest such costs for the small Dutch marine geoscience community. Jan gave up. I did not. The idea was to create a European consortium for this, which was not easy.



Figure 8. A drone capture of RV JOIDES Resolution in the Antarctic's. Drill samples collected by this state-of-the-art floating laboratory provided us with an understanding of life on Earth and climate change. © Thomas Ronge & IODP

A remarkable and decisive moment was a conversation at the Academy, between Prof. Bob van Lieshout, director of the Nederlandse Organisatie voor Zuiver-Wetenschappelijk Onderzoek (Dutch Research Council, ZWO) and Dr. Dirk van der Mei, director of the KNAW office, which I attended at Dirk's request. In the beginning I was completely ignored, and started wondering why I was invited at all? This finally became clear when Van Lieshout, who also was Vice-Chairman of the European Science Foundation (ESF), made some disparaging remarks about 'someone who thought that developing a European consortium to participate in DSDP was a good idea'. Dirk looked at me, and I said enthusiastically: "that's me". Then I finally understood why I was invited to this conversation that, by the way, I will never forget.

Van Lieshout quickly picked up the idea and together we began to explore the possibilities. I convinced Egbert van Spiegel to visit the RV JOIDES Resolution (Figure 8) in Bremerhaven, after which he pledged a substantial contribution. Thanks to Bob, with whom I had an excellent working relationship, we were able to develop a European consortium of small European countries, like the Netherlands, Belgium and Italy. (Stel, 1985c).

Some three years later, ESF President Prof. E. Seibold, signed a treaty with the National Science Foundation of the USA in Annapolis, USA, in a seventeenth century inn, and during a joint meeting of the Ocean Drilling Council and the JOIDES Executive Committee (Stel, 1986b). That Treaty regulates the participation of twelve small European countries forming the European Consortium for Ocean Drilling, ECOD, in the Ocean Drilling Program (ODP), the second phase of ocean drilling. This gave a large European



marine geoscientist community access to the state-of-the-art floating capabilities of JOIDES Resolution.

However, on August 2, 2024, RV JOIDES Resolution arrived in Amsterdam after her last Leg 403, Expedition 403 - Eastern Fram Strait Paleo-Archive, in the Arctic. She became a ship that passed by. Her Chinese successor DV Meng Xiang, which means 'Dream', is a brand-new, \$470 million, 180-meter-long ship, which might continue JOIDES Resolution legacy (Xu, Y., *et al.*, 2024). May be, this ship will make the dream of the old Mohole Project (1957–1966) come true. After all, it was that dream which initiated scientific ocean drilling activities. Anyhow, this NRZ initiative and that odd discussion at the Academy, gave the Dutch geoscience community unique and exciting opportunities, which they used well.

### ORP Arctowski – to develop the Dutch Antarctic Research Programme

In December 1989 Drs. Ed Nijpels, former Minister of Housing, Spatial Planning and the Environment (VROM, 1986-1989) and myself, joined a German Antarctic Treaty Inspection on board RV Polarstern (van Giesen, 1990; Nijpels & Stel, 1990; Stel 1989c-h), the ship which will soon be replaced by RV Polarstern II. We were invited by Prof. Gotthilf Hempel, director of the Alfred Wegener Institute for Polar and Marine Research, AWI, in Bremerhaven. This institute played a crucial and catalysing role in the development of the Dutch Antarctic research programme. For this inspection, the Station Commander of the Polish Arctowski Station also had raised the Dutch flag to welcome us. Later this station was the operational base for the first and only Dutch Antarctic Expedition, organized by the SOZ (Wiese *et al.*, 1992). Extensive lobbying by the SOZ office and IUCN-NL, resulted in an annual budget increase to fl. 1,2 million in 1989 (SOZ, 1990).



Figure 9. ORP Arctowski, a Polish Navy survey vessel launched in 1982 and named after the famous Polish scientist and explorer Henryk Arctowski (1871-1958), made a port call in Scheveningen to load the equipment for the first and only, Dutch Antarctic Expedition 1990-1991. She left port on November 3, 1990, to sail to Arctowski Station (right) at the Antarctic Peninsula. © Wikipedia

Almost a year later, Ed Nijpels, along with SOZ chairman Dr. Jaap van der Land, threw the mooring lines of ORP Arctowski in Scheveningen harbour (Figure 9). Both the ship and the station were hired by the SOZ for the Dutch Antarctic Expedition (1990-1991). This expedition was a condition for the Netherlands to become a full member of the Antarctic Treaty. The negotiations, which did not go so well, started during the Antarctic Treaty Consultative Meeting, ATCM in Paris, October 1989.

I remember Peter Verbeek of the Ministry of Foreign Affairs calling me from the meeting in the middle of the night in Washington, where I was attending an ODP Executive Meeting, asking: "What is the cost to organize an expedition to Antarctica, and is this still possible this year?" Without any Antarctic experience, I estimated the cost at fl. 1 million, and the execution during the 1989/1990 Antarctic season was impossible. Pieter was able to continue his negotiations, and I had to organize this expedition. In October 1990 the Netherlands became a voting member of the Antarctic Treaty.

On December 1, 1990, the expedition of 22 persons left the Netherlands. The team included Mr. Tom van Spanje (SOZ) for logistic support, journalist Kees Wiese (Wiese *et al.*, 1992) and filmmaker Rolf Orthel with his cameraman Peter Brugman. Orthel made a 40-minutes documentary 'Natte Sneeuw' (Wet Snow) that was broadcasted on Dutch TV on November, 29, 1991. He also made the documentary 'Antarctica: a Ticket to Eternity' (1995) about the motivation of polar explorers in the nineteenth century.

Prof. Wim Wolf was the expedition leader. Just before Christmas, the SOZ showed its appreciation by delivering a Poinsettia (*Euphorbia pulcherrima*), in Dutch known as kerstster, to the partners of the expedition members. In addition, a newsletter was provided throughout the expedition. At the end of the expedition ODP Arctowski returned the expedition members to Ushuaia. They arrived in the Netherlands on February 4, 1991. The first and only Dutch Antarctic Expedition was successfully concluded.

The Dutch Antarctic Research Programme was initiated during the early 1980s, by a number of directors of research institutions, like Prof Jenne J. Zijlstra, NIOZ, the Geological Survey (RGD) and the Institute for Marine and Atmospheric research Utrecht (IMAU) with Prof. Hans Oerlemans, an authority in a field of research on the response of ice sheets and glaciers to climate change. They asked Dr. E. van Spiegel of the Science Policy Department of the ministry of Education and Science policy for a grant. This grant of fl. 300.000, was obtained under the condition that the NRZ office, later the SOZ office, would take care of its coordination and development. At the ministerial level, five ministries were involved in this program, while at that level the research effort was coordinated by the Interdepartmental Antarctic Consultation Commission, chaired by Mr. Pieter Verbeek.



Figure 10. The close cooperation with AWI was crucial for developing the Dutch Antarctic Research Programme. Left: RV Polarstern and right Dr Saad El Naggar, author and AWI Logistics director Dr. Hartwig Gernandt in front of a Dutch windmill, which was a contribution to the Neumayer III Station. © AWI and author.

Because there was no intention at all to build a new facility or a station in Antarctica, and given the relatively small and fragmented size of the scientists involved in this research, a tailor-made approach to Dutch Antarctic research was needed. To this end, several agreements were signed with research organizations or institutes, working in Antarctica. The starting point was the quality of the Dutch research offered, and a contribution to their logistic costs. These agreements concerned cooperation with the Alfred Wegener Institute (AWI) in Germany, the British Antarctic Survey (BAS) in the United Kingdom, Antarctica New Zealand, Australian Antarctic Division, etc. (SOZ, 1992). Especially the close scientific and logistic cooperation with AWI was crucial for developing the Dutch Antarctic Research Programme (currently included in the Netherlands Polar Programme).

When the Ministry of Economic Affairs unexpectedly ended its subsidy, it was through bridging funding from the SOZ for the Dutch participation in the ESF European Polarstern Study, EPOS, in 1987-1988, that the Programme was continued (SOZ, 1992) (Figure 10). Moreover, the proactive role of the SOZ office in successfully lobbying for several budget increases and raising awareness should be noted (Stel, 1990 a-c; Wiese *et al.*, 1992). The quality of Dutch Antarctic research is high, but without the activities of the

NRZ and SOZ offices, this research field would not have reached maturity and the Netherlands Polar Programme, NPP, would ever have emerged and flourished (NWO/NPP, 2021).

However, these initiatives often were not well understood or were considered by scientists to take science funding away from the very small budget. In my opinion, it just was a consequence of the *modus operandi* during the build-up phase of the Dutch Antarctic Programme. The active participation by the SOZ office in the COMNAP network was just contribution to the programme, as well as creating the needed good will. This good will turned out to be crucial in organizing the totally unexpected Royal visit to Rothera, which led to the development of the Dirck Gerritsz Laboratory. There are several examples how these initiatives, like the participation in the establishment of a new airlink between Cape Town in Southern Africa to the Novolazarevskaya runway at Dronning Maud Land, turned out to be important for Dutch Antarctic scientist, and unfortunately even during sad accidents.



Figure 11. The visit of HRH Prince Royal and HRH Princess Máxima to the British Rothera Research Station in January 2009, was a success (left). Unloading (right) of the containers named 'Blijde boodschap' and 'Geloof' at the Rothera. These containers were transported on board the logistics vessel RRS Ernest Shackleton of the British Antarctic Survey, BAS. ©.Author (left) and BAS.

Unfortunately, interest in this research within NWO was low. Even participation in the 2007-2008 International Polar Year (IPY) was not a given, which it obviously was for me. Again, the SOZ network was both crucial in changing this attitude, and in establishing high-level contacts, such as with Ed Nijpels, then Commissaris van de Koningin (Commissioner of the Queen) in Friesland, and through him, the Royal Family for the formal opening of the Dutch contribution to the IPY in Leeuwarden, by Queen Beatrix.

The organization of Crown Prince Willem Alexander and Princess Máxima's visit to Antarctica, which was a mission Impossible for me, due to the botched invitation during the opening of the Dutch IPY in Leeuwarden, was successfully concluded in Punta Arenas, on February 10, 2009 (NWO, 2009). This led to a further expansion of Antarctic and finally polar research, as well as the establishment of the Dirck Gerritsz Laboratory (Stel, 2009).

The Dirck Gerritsz laboratory at the British Rothera Research Station was officially opened by Crown Prince Willem Alexander on January 27, 2013, four years after the royal visit to this station (Figure 11). In constructing this Laboratory, again the use of containers has been successfully applied by NIOZ. The four mobile laboratories carry the names of four ships, Hoop (Hope), Liefde (Love), Blijde Boodschap (Annunciation) and Geloof (Faith). The names refer to four of the five ships of the fleet of the Dutch merchant and explorer Jacob (Jacques) Mahu (1564-1598), trying to find a new trade route to the Spice Islands. Yet, despite their historical accuracy, I do not like these silly names at all (Verlinden, 2024). But perhaps it is a token of appreciation for the effort it took to shape the Antarctic research Programme.



In 2016, an overview of fifty years of polar research 'Door de kou bevangen' (Overcome by the cold), was published (Buma, *et al.*, 2016). It is a well-illustrated and well written book, in which polar scientists explain their research. Unfortunately, the description of the development of the Dutch Antarctic Programme is either not well researched or written from a perspective that is ignoring simple facts as given in this paper.

For me ORP Arctowski is just a ship passing by. Yet, some years later Dr. Stanislaw Rakusa, the Polish representative in the Council of Managers of National Antarctic Programs, COMNAP, told me that with hiring both the Arctowski Station and ODP Arctowski, we saved the Polish Antarctic research programme. The cost of the Dutch Antarctic Expedition was fl. 980.000.

### Developing operational oceanography

EUREKA, the public network for international cooperation in R&D and innovation, was established by the Paris Declaration of 17 July 1985, which was an agreement between 18 countries and the European Commission to foster competitiveness and market integration, and to encourage R&D cooperation. As a consequence, EUREKA countries jointly are increasing the productivity and excellence of its industries, supporting employment as well as contributing to national economic growth. This is done by encouraging international collaboration between companies, research organizations and universities in the various member countries. Currently EUREKA includes 47 countries in Europe and beyond. Since 1987, the Eureka Secretariat is established in Brussels, Belgium. EUROMAR was the marine part of EUREKA. Its office was part of the SOZ office.

In line with the wider objectives of NWO, the First EUREKA-EUROMAR Technology Market was jointly organized by the SOZ and the Rijkswaterstaat, and chaired by Prof. Egbert. K. Duursma. Egbert was both SOZ and EUROMAR chairman, and proposed the idea and concept. Some 60 industrial and scientific organisations from 12 European countries participated in this Market. The Market, which took place on board RV Tyro, from September 6-8, 1988 in the harbour of Scheveningen, was based on the principle of 'offers' and 'demands' for technological expertise of diverse background in and outside the traditional marine communities (Stel, 1989b). The Market led to, or stimulated, the development of a large number of new products and marine observation systems, such as Seawatch (SOZ, 1988; Hansen & Stel, 1997; Stel, & Mannix, 1996). In 1989, six new Dutch proposal initiated during this Market, received EUREKA funding with a total value of about fl. 78 million (SOZ, 1990). The development of operational oceanography, based upon innovative technology and innovative monitoring capabilities, like Seawatch etc., was leading to a rapidly increasing understanding of ocean space.

The use of mobile container laboratories was advocated by both the NRZ and its successors, and the IOC, as a tailor-made capacity building instrument (Stel, 1986a).

Moreover, based upon more than 20 years of experience with these laboratories the EUREKA-EUROMAR MOSES project was initiated and completed to develop standardized and optimized research containers. MOSES stands for Mobile Station for Environmental Services (van den Berg *et al.*, 1994).

This reached a new phase with the Global Ocean Observing System, GOOS, an initiative of the IOC/UNESCO, in March 1991. This initiative was a direct outcome of the Second World Climate Conference in Geneva, in 1990. It also was driven by many nations' needs to improve climate change forecasts, manage marine resources to mitigate the effects of natural disasters, and to use the coastal zone and coastal ocean more effectively. By this operational oceanography became a mega-science, having both public and private benefits (Stel, 1994; Tindemands, 1997). Jointly with the Rijkswaterstaat/RIKZ, Delft Hydraulics and the Royal Netherlands Meteorological Institute (KNMI), and despite a lack of interest from the Dutch marine science community, the SOZ office played a major role in this, both through the IOC and EuroGOOS. GOOS was developed at the global, regional and national level (Kullenberg & Rebert, 1997). For the IOC, the SOZ was

involved in the initiation of the North-East Asian Regional GOOS (NEAR-GOOS), the Southeast Asian Global Ocean Observing System (SEAGOOS), IOCARIB-GOOS, GOOS Africa as well as in capacity building.

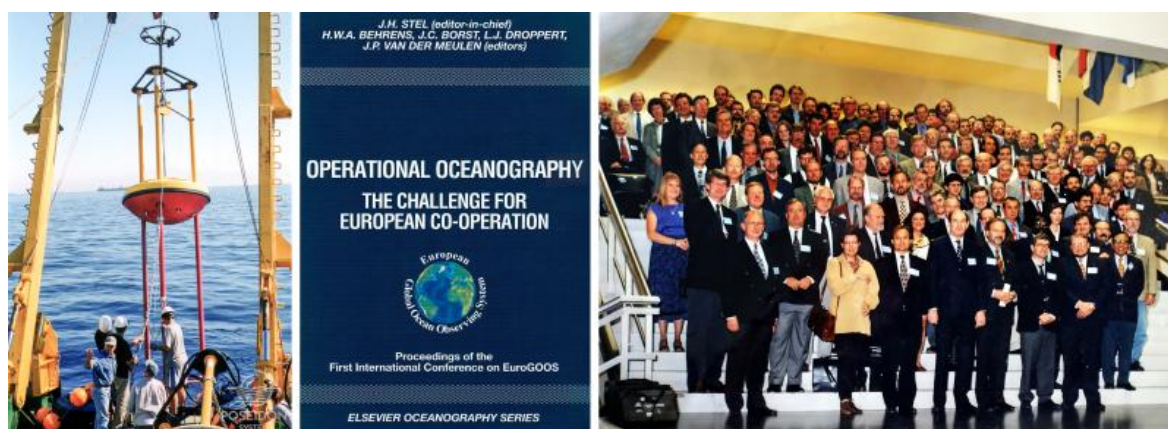


Figure 12: The first EUROMAR Technology market was successfully organised in RV Tyro's hold in Scheveningen harbour in 1988. This Market stimulated the development of innovative technology, like the Seawatch monitoring system (left), which was a contribution to the Global Ocean Observing System. The first EuroGOOS symposium (right) was organized by RIKZ, KNMI and SOZ, in 1996, in Den Haag. © Poseidon System, Greece, author and EuroGOOS office, Brussels

The development of EuroGOOS, founded in 1994, and currently a regional GOOS, especially was a high priority (Ehlers, 2002), while it was widening its focus (Santoro & Stel, 2006; Stel, 2006). Today's Copernicus Services, partly is the result of EuroGOOS, and links innovative scientific developments with modern operational forecasting. Copernicus offers a wide range of services such as seasonal weather and climate forecasting.

The first International Conference on EuroGOOS, was organized in 1996 in The Hague by the National Institute for Coastal and Marine Management, RIKZ, the KNMI and the SOZ. (Stel, *et al.*, 1997a). The conference is recognized as the starting point for a new phase in operational oceanography both at the European and international level. Currently, five regional operational oceanographic systems exist within EuroGOOS in: the Arctic (Arctic ROOS), the Baltic (BOOS), the North West Shelf (NOOS), the Ireland-Biscay-Iberian area (IBI-ROOS) and the Mediterranean (MONGOOS). The 10<sup>th</sup> EuroGOOS International Conference was organised on October 2-5, 2023 in Galway, Ireland. This conference was addressing the challenges of the UN Decade of Ocean Sciences for Sustainable Development (2021-2030). The EuroGOOS office is based in Brussels.

### RV Tyro decommissioned – troubled times, budgetary cuts and refocussing

At the end of the Snellius-II Programme, times were changing. The NRZ wrote an outlook for the future of Dutch oceanography (NRZ/Kramer, 1986). As said before, the Ministry of Science Policy became a department within the Ministry of Education and Science, under minister Wim Deetman. Yet, despite some concerns, the interest and support for oceanography remained at the top level, being E. van Spiegel. This is well expressed in the following quote from the Science Budget 1986, p. 34: *"The world sea is still very incompletely explored; much scientific research will be needed to map this largest part of our planet. Given the increasing scientific and social importance of marine research, which is recognized worldwide, there is a challenge for the Netherlands to maintain, and if possible, strengthen, its position in this field."*

It was a time of robust reorganization and budgetary cuts. For instance, the geological institutes in Groningen (where I studied) and Leiden were disbanded in the mid-1980s. Activities were provisionally concentrated in Utrecht and Amsterdam. Around the same time, the Vening Meinesz Laboratory (VML) was also closed.

In 1988, ZWO, the Netherlands Organisation for Pure Scientific Research, was renamed to NWO, the Netherlands Organisation for Scientific Research. The change of the 'Z' into an 'N' indicates a broader mission than just promoting pure scientific research. NWO also had to focus on societal applications of basic research. In the same year the operational activities of the NRZ were transferred to NWO under the SOZ, with an earmarked budget from the Ministry of Education and Science/Science Policy for annually fl. 6,6 million (value in 2024: some M€ 7) for five years (1988-1993). In 1990, NIOZ also became part of NWO, which intervened firmly because of many financial setbacks. This was no time to get impatient, which some people did, however.



Figure 13. RV Tyro, Indian Ocean Programme, 1990-1995. Left RV Tyro off the coast of Kenya and (right) containerized land facility at Jadini Beach Hotel © SOZ/Fred Hoogervorst

During the execution of the Indian Ocean Expedition (1992-1993) with RV Tyro (Figure 13), stormy times dawned for the Dutch marine science community, the SOZ and the various research vessels serving it. Within NWO, the pressure on the SOZ, which was the odd man out, was increasing. At the end of 1993, this organization merged with AWON into the Dutch Geoscience Foundation, GOA, which became active on January 1, 1994. This move by NWO, effectively reduced the SOZ's earmarked budget for Dutch oceanography, which, incidentally, had been expected by the SOZ office for many years. The results of the Indian Ocean Programme were published in 1995-1995, by GOA (van der Land, 1994-1995). In 1994, a popular science book 'De Halve Oceaan' (The Third Ocean), was published (Wiese *et al.*, 1994a,b), as was in 1995 a popular science paper (Stel 1995b). In 1996, a documentary about the Indian Ocean Program (IOP), 'Aan de andere kant van de Oceaan' (On the Other Side of the Ocean), was published by GOA and the Nationaal Natuurhistorisch Museum (National Museum of Natural History, NNM), currently known as Naturalis Biodiversity Center, in Leiden.

In 1991 RV Pelagia was taken into service, replacing RV Aurelia. Currently she is the Netherlands' largest sea-going research vessel. Due to a lobby of the ocean-going scientists at NIOZ a 6,000-meter cable was installed on the ship to allow for working in ocean space.

In June 2004, Hr.Ms. Tydeman finally was taken out of service. She was not replaced, partly due to a lack of interest from the oceanographic community. Currently she is supporting Ocean Wide's touristic polar activities as MV Plancius.

In April 1994 RV Tyro, which was purchased to secure the execution of the Snellius-II Programme and had become a well-know, unique multifunctional containerized research vessel, was sold by NWO/GOA. The new owner, Trading Ltd., San Lorenzo, Honduras, changed her name into JIHAD II (Figure 14).

RV Tyro's sale did not go off without a hitch. Some researchers still dreamed of keeping the ship and putting it to full use for marine research. With the various research programmes the Dutch government had, during almost 20 years, at least additionally invested some fl. 125 million (in 2024 value: some M€ 127) in marine research. However, the trees no longer grew into the sky. Times were changing. But RV Tyro was a much-loved ship that had earned her spurs. After all, two of the three major expeditions of the 20th century were successfully carried out with RV Tyro. Internationally this was noticed. Due to the impressive and successful implementation of the Snellius-II Programme, the Netherlands was no longer the largest small country in



European oceanography. It had become the smallest large country. Unfortunately, this position was rapidly changing due to many institutional reorganisations, and a low priority of this research area within NWO.



Figure 14. In 1988, the formal transfer of RV Tyro from the KNAW in Amsterdam to NWO in The Hague, took place off the coast of Scheveningen. © NIOZ and SOZ/Fred Hoogervorst

For some it was hard to digest that their beloved vessel was divested. Tempers became heated, frustration grew, and eventually led to a thoughtless and unamiable outburst, in which SOZ Board member and NIOZ director from 1990 to 1996, Prof. Wim Mook, was taking an active part. The discussions got personal, however, and was thrown into the street by a.o. an anticipated series of four publications with the high-profile title 'The holy war for Tyro'. (Linsen, 1994a-c). This spoiled the credit that was build up since 1979 even more.

Somehow, just the first part of this series four, was published in *Bionieuws*. After reading a 55-page draft of these four papers, that Lex Linsen had faxed to me, I had had enough and was completely fed up with the imputations, etc. However, during my research for this paper I contacted the current editor in chief of *Bionieuws* Mr. Gert van Maanen, to obtain copy of this first publication, which I had never seen. Fortunately, the published text (Linsen 1994b,c) was more decent, and somewhat less tendentious than the draft. Van Maanen confirmed that the other three papers were never published. Most likely this was caused by a reorganization, during which Linsen left the organization.

In any case, this ugly campaign to preserve this beloved, fully containerized research vessel, was harmful. It might even have been a tipping point. My conclusion is that, even after, from a scientific perspective (van der Land, 1994-1995) a rather successful execution of the Indian Ocean Expedition (1992-1993), Dutch marine research ended up in a lock-in situation for many years.

### *Many years later*

Coincidentally, late last year I noticed a protest poster about animal rights by DierAnimal, a bilingual Belgian political party for animal rights. Their poster depicted cows and a livestock vessel, in which I immediately recognized the MV Tyro, currently named Elbeik. That touched me. Further investigations revealed that, after a fire off the Spanish coast in August 2021, the vessel was detained in the port of Tarragona (Figure 15). It was eventually sold as scrap for € 88,000 to Rota Shipping Inc. in Turkey. Because of that sad end, I decided to write this story as a final attempt to make things clear. Perhaps now, apart from a few die-hards, people might better understand why RV Tyro had to be sold.

After a number of difficult years, NIOZ has recovered, and even became 'Royal' on its 125<sup>th</sup> birthday in 2001. It is (and was) a fascinating institute, where excellent research is performed. In hind-sight, the replacement of RV Aurelia, a dedicated North Sea research vessel, by RV Pelagia, distorting the supply and demand ratio for ship-time in the early

1990s turned out to be a golden touch for Dutch oceanography in the end. Transferring the entire organic biogeochemistry group of Prof. Jan de Leeuw in 1993, from Delft University of Technology to NIOZ, was such an opportunity too. Unfortunately, merging NIOZ and the Centre for Estuarine Marine Ecology (CEME) in Yerseke, only happened in 2012. In my opinion this should have happened after the Snellius-II Programme. Last year, an international evaluation committee rated NIOZ again, as excellent!



Figure 15. After a fire, MV Elbeik was detained by the port authorities, and eventually sold for scrapping, at Ambelakia, Salamis in Greece in late 2024. © Port de Tarragona and shipspotting.com/Nektarios Papadakis (right)

### Acknowledgement

The author would like to thank the editor of *ad Hoc* for the opportunity to express his views on the national developments outlined in this paper. This is unfortunately necessary, as historiography by scientists, up to now (mostly) has ignored the activities of the NRZ and SOZ.

Furthermore, I would like to thank a number of people who helped me write this review. I would like to thank Drs. Taco de Bruin for his relentless help in finding the illustrations and Mr. Marc De Schryver for his assistance in editing the pictures used in this paper. In addition, I would like to thank Prof. Bert Boekschoten, Dra. Friede van Essen and René Malherbe for their valuable suggestions and last but not least, Dr. Godela von Kirchbach for the English corrections.

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Professor of Ocean Space and Human Activity, University Maastricht, the Netherlands  
(1999-2020)

## Publications

### [Digital] Collections

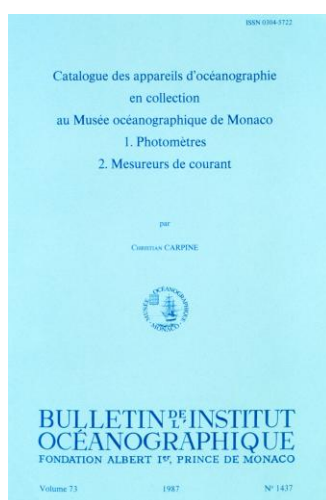
#### Federal Maritime and Hydrographic Agency

The Bundesamt für Seeschifffahrt und Hydrographie– BSH allows you to search in the journal 'Annalen der Hydrographie und maritimen Meteorologie', since 1873 (although initially under a different name). Five Registers help you to locate your topic, albeit, apart from the period 1873-1890 not all volumes are accessible on -line yet:

<https://digitale-bibliothek.bsh.de/viewer/toc/124048/1/>



#### History of Oceanography Collection, NOAA



Featuring the 'Bathymetric Maps Collection' and 'Expeditions and Cruises'.

In addition, the 'The Early Instruments - Collections of the Oceanographic Museum at Monaco', edited by Christian Carpine, former curator of the Oceanographic Museum at Monaco, and published by that institute in the Bulletin de l'Institut Océanographique (1987-1999) have been digitized.

<https://www.noaa.gov/digital-collections/categories/4438?page=4>



#### American Institute of Physics

The Center for History of Physics at the American Institute of Physics has put together a new *virtual* exhibit which takes visitors on an interactive journey across the world's oceans aboard the Research Vessel Vema. <https://history.aip.org/exhibits/vema/index.html>



#### Anna Batzeli:

#### *Diving into History - Digital Archives and Repositories of Oceanography's Past*

The official website of the International Commission of the History of Oceanography (<https://oceansciencehistory.com/category/archives/>) and the Woods Hole Oceanographic Institution (<https://www.whoi.edu/what-we-do/understand/data/>) provide initial mappings of archives, collections, and digital repositories related to the history of oceanography.

This brief article aims to highlight both well-known and lesser-known online repositories that house collections and items related to the history of oceanography, which are not included in the lists mentioned above. These repositories include the UC San Diego Library, the National Oceanographic Library at the University of Southampton, Archives Portal Europe, and Europeana.



**UC San Diego Library** (<https://library.ucsd.edu/dc/collection/bb20151229>)

The UC San Diego Library offers access to 15,163 digital objects, including images, texts, and audiovisual recordings, from archival collections related to the Scripps Institution of Oceanography and the development of oceanography and marine science at the University of California, San Diego. These materials include faculty papers, administrative records, and documents from community members who contributed to key research. Additionally, the collection features materials gathered by the former Scripps Institution of Oceanography Archive, including films and photographs. All content is housed within the Special Collections & Archives at the UC San Diego Library.

The online repository includes the following collections: Capricorn Expedition Photographs, Carl L. Hubbs Papers, Charles Atwood Kofoid Papers, Edna Watson Bailey Photographs, Edward Sheldon Barr Papers, Eugene Cecil LaFond Papers, Explorations: Video Editions, Henry W. Menard Papers (Selections), James Stewart Papers, Kelco Aerial Photograph Collection, Mikhail V. Propp Negatives, Milo Woodbridge Williams Photographs, Robert S. Arthur Slides and Survival Charts, Roger Revelle Papers, SIO Archive Film Collection, SIO Oral Histories, SIO Photographic Laboratory Collection (Selections), SIO Photographs Collection, Sam Hinton Papers, Scripps Institution of Oceanography Lantern Slide Collection and Walter Munk Papers (Selections).

The materials span from around 1850 to 2010, and some collections may have restricted access.

**The National Oceanographic Library of the University of Southampton** (<https://library.soton.ac.uk/nol/collections>)

The National Oceanographic Library of the University of Southampton's collections, which date back to the mid-19<sup>th</sup> century, include books, reports, loose papers, expedition documents, journals, conference proceedings, maps, atlases, and charts covering topics such as oceanography, deep-sea research, and earth sciences, including geology and geophysics. The library houses resources on subjects like estuarine, coastal, and shelf sea circulation; wind wave dynamics; sediment transport processes; global sea level science; geodetic oceanography; marine technology; and operational oceanography. It also holds a unique collection within its archives and special collections and offers a digital archive that is available for viewing here: <https://viewer.soton.ac.uk/collections/nol>

**Archives Portal Europe** (<https://www.archivesportaleurope.net/>):

Launched in 2009, Archives Portal Europe consolidates descriptive records from over 30 countries, available in 24 languages (and five different alphabets), and spans a wide range of institutions, including national archives, community archives, parish archives, university archives, as well as corporate and private archives. The portal currently contains information on approximately 7,000 archival institutions, with over a thousand actively contributing content. It holds more than 280 million archival descriptive units. Archives Portal Europe is continually expanding, making even more materials accessible for research.

For researchers studying the history of oceanography, Archives Portal Europe can be an invaluable resource. A simple keyword search, such as 'Oceanography' yields 166 items from 10 institutions across Europe, covering a broad time period. Researchers can refine their search with advanced filters by keyword, topic, institution, or document type in multiple languages, and access detailed descriptions of digitized documents and digital objects (such as photographs), when available.

**Europeana** (<https://www.europeana.eu/en>):

Europeana is an online portal developed by the European Union, offering access to digitized cultural heritage collections from over 3,000 institutions across Europe. The portal provides a wealth of historical documents, images, videos, books, and artworks. Europeana features both basic keyword and advanced search options. For example, a

simple search using the term 'Oceanography' returns 6,827 results, spanning a wide range of topics and time periods.

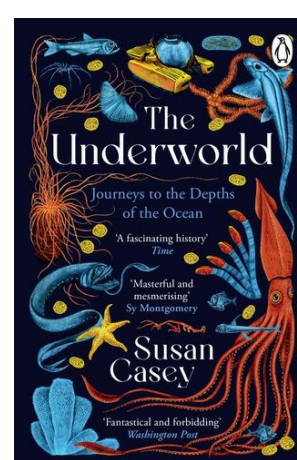
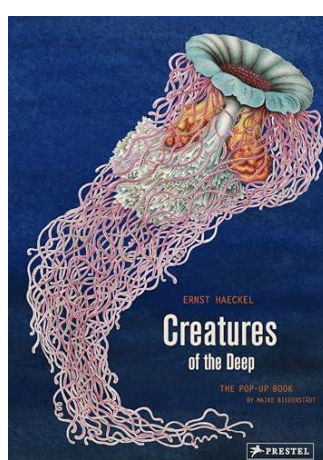
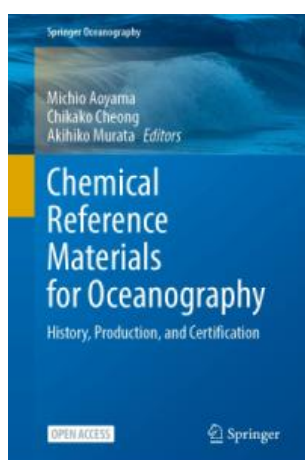
Anna Batzeli (abatzeli3@gmail.com)

## Books

Aoyama, Michio, Chikako Cheong & Akihiko Murata (Eds), 2025. Chemical Reference Materials for Oceanography - History, Production, and Certification. Springer Oceanography Series, pp.334 [open access]

Casey, Susan, 2024. The Underworld. Journeys to the Depths of the Ocean. Penguin, pp.384

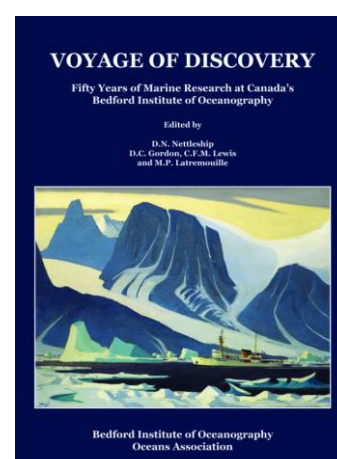
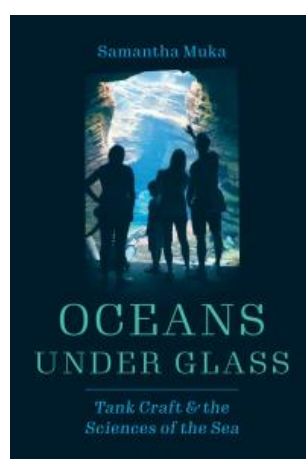
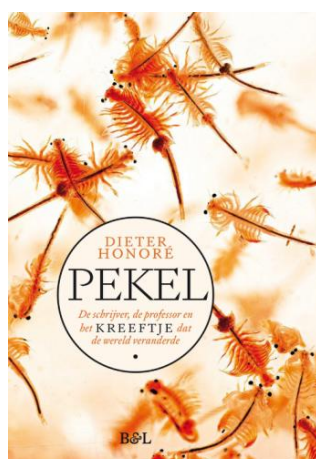
Haeckel, Ernst & Maike Biederstaedt, 2016. Creatures of the Deep. The Pop-up Book. Exhibitions International, pp.16



Honoré, D., 2024. Pekel: De schrijver, de professor en het kreeftje dat de wereld veranderde. Borgerhoff & Lamberigts, Gent, pp. 207 [about Patrick Sorgeloos, Artemia; in Dutch]

Muka, Samantha, 2023. Oceans under Glass. Tank Craft and the Sciences of the Sea. Univ. Chicago Press, pp.240

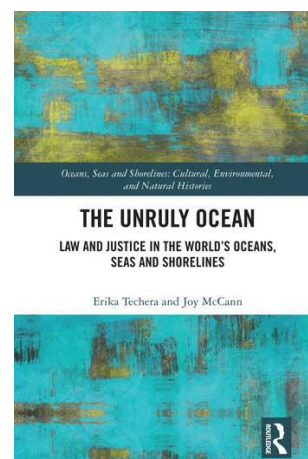
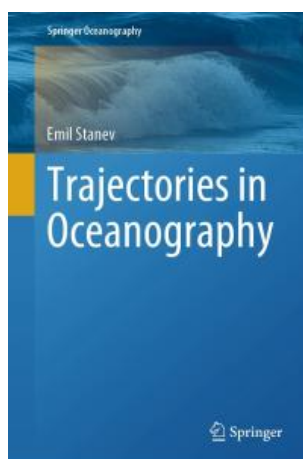
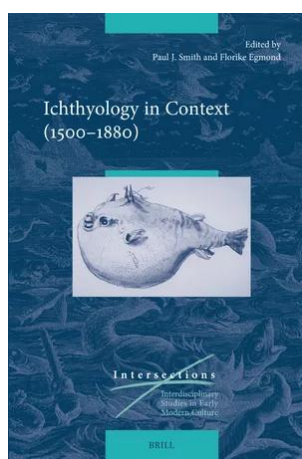
Nettleship, D.N., D.C. Gordon, C.F.M. Lewis and M.P. Latremouille [Eds.], 2014. Voyage of discovery. Fifty years of marine research at Canada's Bedford Institute of Oceanography. The BIO-Oceans Assoc., Dartmouth NS, Canada, pp.444



Smith, Paul and Egmond, Florike (eds), 2023. *Ichthyology in context (1500–1800)*. Brill, Leiden, pp.726

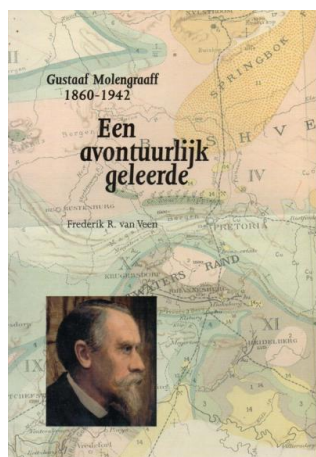
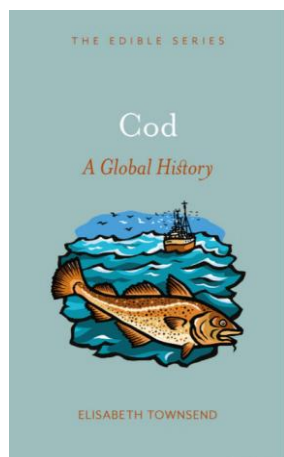
Stanev, Emil, 2024. *Trajectories in Oceanography*. Springer Oceanography Series, pp.278 [about the development of oceanography of European regional and coastal seas over the last 50 years].

Techera, Erika, 2024. *The Unruly Ocean - Law and Justice in the World's Oceans, Seas and Shorelines*. Routledge, pp.340



Townsend, Elisabeth, 2022. *Cod: A Global History*. Reaktion Books, London, pp.160

Van Veen, F.R., 2004. *Gustaaf Molengraaff 1860-1942 een avontuurlijk geleerde*. Ios Press / Du Press, Amsterdam, pp.160 [in Dutch]



## Journals

Ocean and Society. Cogitatio Press is currently getting ready to launch a new, peer-reviewed open access journal, focused on the societal interactions with marine and coastal environments. ([www.cogitatiopress.com](http://www.cogitatiopress.com))

Fockedey, N., 2024. Van je sokken geblazen door de Blaschka-collectie. Testerep Magazine, 30/05/2024 [about Blaschka glass models; in Dutch]

[https://www.vliz.be/testerep/nl/2024-05-blaschka-collectie?pk\\_campaign=testerepmail&pk\\_keyword=testerep-editie5](https://www.vliz.be/testerep/nl/2024-05-blaschka-collectie?pk_campaign=testerepmail&pk_keyword=testerep-editie5)



Gordon, Donald, 2021. The early days of oceanography at Dalhousie University 1959-1986. In: Department of Fisheries and Oceans, Bedford Institute of Oceanography, Dartmouth, NS

[https://www.bio-oa.ca/docs/IODal-History-Final\\_21Dec2021.pdf](https://www.bio-oa.ca/docs/IODal-History-Final_21Dec2021.pdf)

Moreira Moura, Gustavo Goulart & Antonio Carlos Sant'Ana Diegues, 2024. The Faces of the Capitalist Modernization of Fishing in the Far South of Brazil from a Perspective of Socioenvironmental Oceanography (1940s to 1990s). *Latin American Perspectives*, 51(3): 26-48

Seys, J., 2023. Auguste Piccard: topgeleerde, pionier en stripheld.

Testerep Magazine, 25/03/2024 [in Dutch]

[https://www.vliz.be/testerep/nl/2024-03-auguste-piccard-topgeleerde-pionier-en-stripheld?pk\\_campaign=testerepmail&pk\\_keyword=testerep-editie3](https://www.vliz.be/testerep/nl/2024-03-auguste-piccard-topgeleerde-pionier-en-stripheld?pk_campaign=testerepmail&pk_keyword=testerep-editie3)

## Links

Stichting Maritiem Historische Databank / Maritime Historic Database

<https://www.marhisdata.nl/>

With – as example - the MS/RV Tyro

<https://www.marhisdata.nl/schip?id=6766>

## (past) Auctions

Marsilli, L.F., 1786. *Natuurkundige beschrijving der zeën*, [ii], xxvi, 216pp., 40 Pls

Dutch translation of the earliest treatise on oceanography, written by Luigi Fernando Marsigli (1658-1730) [Catawiki, bidding closed]

<https://www.catawiki.com/en/l/94093262> ⇒ ⇒

