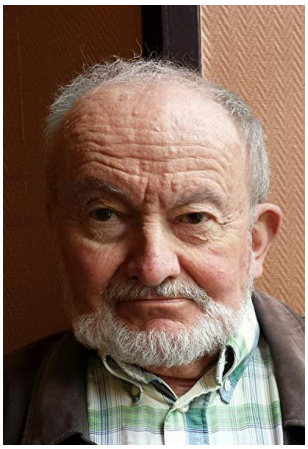
This document has been prepared to commemorate the researchers who have made great efforts in plankton and related studies.



Alain Sournia
(1940-2018)

Alain Sournia passed away on May 28th, 2018 at 77. After his degree in Biological Oceanography from the Faculty of Science of the Paris University (France) in 1962, he obtained a position in 1965 as research assistant at the Overseas Fisheries Laboratory of the French National Museum of Natural History (MNHN, Paris, France). He then completed a PhD thesis on planktonic diatoms from the Mozambique Channel and Mauritius (Fig. 1), which he defended in 1968. He was a laureate of the "Foundation for the Vocation" in 1969. In the late 70's-early 80's, Alain Sournia worked at the MNHN antenna on Moorea Island and at Takapoto (French Polynesia). He became Assistant Professor in Zoology at the MNHN (1981) where he worked in the General and Applied Ichthyology Laboratory. In 1983, he joined the Centre National de la Recherche Scientifique (CNRS) as "Directeur de Recherche". He spent several years at the Roscoff Marine Station (1984-1987) and then at the Geology Laboratory of MNHN (1987-1995). The last ten years of his career in Paris were devoted to the research management, acting as "chargé de mission" (policy officer) first at the CNRS "National Institute of Sciences of the Universe" (INSU), from 1994 to 1999, then at the Living Resources Department of the French "National Research Institute for Sustainable Development" (IRD) from 2000 to 2005, notably as a member of the "National Fleet Commission". Alain Sournia was awarded the French Academic Palms in 1982 and the Medal of the French Society of Oceanography in 1983. He was also a member of several other international scientific associations such as the "Committee for Algae" of the "International Association for Plant Taxonomy" (1986-1996).

A world renowned phytoplankton taxonomist and specialist of dinoflagellates and nanophytoplankton (i.e. unicellular microalgae with a cell size comprised between 2 and 20 µm), this passionate scientist contributed to more than 70 scientific articles. He also wrote and/or directed the publication of several important books on phytoplankton including the "Phytoplankton Manual" in 1978, two volumes of "The Atlas of Marine Phytoplankton" published between 1986 and 1990 in collaboration with M.J. Chrétiennot-Dinet and C. Billard and a book on "Noxious Phytoplankton along French coasts" in 1991. During his stay in French Polynesia, Alain Sournia pioneered work on the calcification of reef-building corals and on the productivity of atoll lagoons. One of his main research topics was the study of phytoplankton cycles at daily or annual time scales. In this context, he launched a bimonthly long-term time series at the end of the 500 m long Roscoff pier, which included a number of physico-chemical parameters as well as routine counting of phytoplankton. Although temporarily interrupted between 1993 and 1996, this time series was restarted in 1997 in the framework of the SOMLIT program and complemented by sampling at an offshore station located at 2.5 miles

off Roscoff. Another major topic studied by Alain Sournia was the role of hydrological fronts on marine productivity, notably the Ushant tidal front, which develops at the entrance to the English Channel in summer. In this context, he was particularly interested in "red tides", i.e. phytoplanktonic blooms generally dominated by dinoflagellates that can develop in conjunction with frontal systems and he has been instrumental in the launching of the "National Program on Harmful Algal Blooms" (PNEAT) in the early 1990's. Alain Sournia's far-sighted vision in phytoplankton research is still being felt in France and abroad. After his retirement in 2005, he devoted himself to his other passion: philosophy. He wrote ten books where he developed his concept of "*wild philosophy*", an interest already announced by his first two books written during his professional activity and published at author expenses: the first one was devoted to neurobiology and was honored by the Jean-Rostand Prize, while the second one dealt with the Greek philosopher Heraclitus.

Source: Frédéric PARTENSKY and Daniel VAULOT Sorbonne Université, CNRS, UMR7144, Station Biologique de Roscoff, 29680 Roscoff, France.
Obituary Alain Sournia, phycologist and philosopher (1940-2018): Frédéric PARTENSKY and Daniel VAULOT Sorbonne Université, CNRS, UMR7144, Station Biologique de Roscoff, 29680 Roscoff, France.
Cah. Biol. Mar. (2018) 59 : 403-407 DOI: 10.21411/CBM.A.EA424D0A
This list of his publications is available here: https://www.mendeley.com/community/alain-sourniapublications/
Wild Philosphy: https://philosophiesauvage.com/

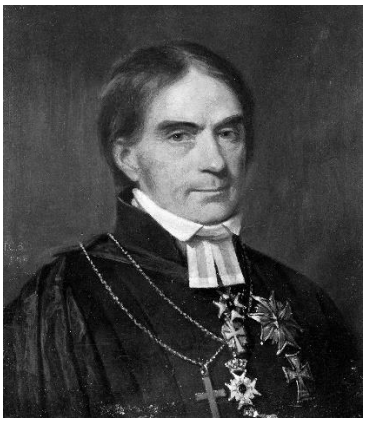
Albert Grunow (1826-1914)

Albert Grunow (3 November 1826, Berlin-17 March 1914, Berndorf, Lower Austria) was a German-Austrian chemist and phycologist. He specialized in the study of diatoms.

From 1851 he worked as a chemist in a metal works factory in Berndorf. In 1857-59 he participated in the Austrian "Novara Expedition", and was tasked with analysis of its algal collections. Also, he served as a collector, preparator and determiner of specimens towards the development of Gottlob Ludwig Rabenhorst's diatom exsiccatae.

In 1901 he donated his collection of extant and fossil diatoms to the Natural History Museum of Vienna. He was a corresponding member of the Geologischen Reichsanstalt.

Source: https://en.wikipedia.org/wiki/Albert_Grunow

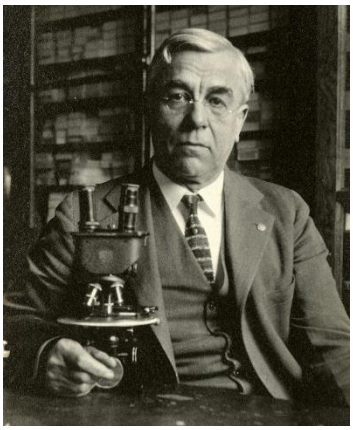


Carl Adolph Agardh
(1785-1859)

Carl Adolph Agardh (23 January 1785 in Båstad, Sweden-28 January 1859 in Karlstad) was a Swedish botanist specializing in algae, who was eventually appointed bishop of Karlstad.

In 1807 he was appointed teacher of mathematics at Lund University, in 1812 appointed professor of botany and natural sciences, and was elected a member of the Royal Swedish Academy of Sciences in 1817, and of the Swedish Academy in 1831. He was ordained a clergyman in 1816, received two parishes as prebend, and was a representative in the clerical chamber of the Swedish Parliament on several occasions from 1817. He was rector magnificus of Lund University 1819-1820 and was appointed bishop of Karlstad in 1835, where he remained until his death. He was the father of Jacob Georg Agardh, also a botanist. He devoted considerable attention to political economy and as "a leading liberal", he "succeeded in improving and raising the standards of education in Sweden". He also wrote on theological and other subjects, but his reputation chiefly rests on his botanical works, especially Systema algarum, Species algarum rite cognitae and Classes plantarum on biological classification, and Icones Algarum (1824, 1820-28, and 1828-35). The greatest part of his Manual of Botany (2 vols., Malmoe, 1829-32) has been translated into German.

Source: https://en.wikipedia.org/wiki/Carl_Adolph_Agardh



Charles Atwood Kofoid
(1865-1947)

Charles Atwood Kofoid, (born Oct. 11, 1865, Granville, U.S., died May 30, 1947, Berkeley, Calif.), American zoologist whose collection and classification of many new species of marine protozoans helped establish marine biology on a systematic basis. Kofoid graduated from Harvard University (1894) and in 1900 began a long affiliation with the University of California at Berkeley. He became a full professor there in 1910, and for most of the time until he retired in 1936 he was head of the department of zoology. He was a central figure in establishing the Marine Biological Station at San Diego (now the Scripps Institution of Oceanography at La Jolla), serving as assistant director from 1907 to 1923. He is best known for his work on the **dinoflagellates and tintinnids**, important groups of **planktonic protozoans**. To collect these organisms, he invented two pieces of equipment that bear his name, the Kofoid horizontal net and the Kofoid self-closing bucket. Kofoid also wrote a volume on the biological stations of Europe.

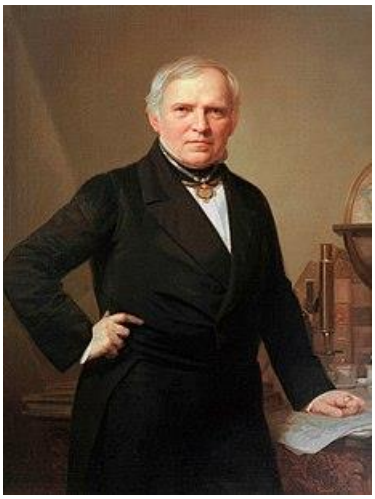
Source: https://www.britannica.com/biography/Charles-Atwood-Kofoid
Source: http://www.nasonline.org/publications/biographical-memoirs/memoir-pdfs/kofoid-charles.pdf

Charles Wyville Thomson (1830-1882)

Sir Charles Wyville Thomson (5 March 1830-10 March 1882) was a Scottish natural historian and marine zoologist. He served as the chief scientist on the Challenger expedition; his work there revolutionised oceanography and led to his knighthood. Thomson was born at Bonsyde, in Linlithgow, West Lothian, on 5 March 1830, the son of Andrew Thomson, a surgeon in the service of the East India Company, and Sarah Ann Drummond Smith. He was baptised Wyville Thomas Charles Thomson, and only changed his name late in life, in 1876. He was educated under Charles Chalmers at Merchiston Castle School, then from 1845 studied medicine at the University of Edinburgh (graduating MD). However, his focus turned from medicine towards natural science, and he joined the Botanical Society of Edinburgh in 1847, and soon after became secretary to the Royal Physical Society of Edinburgh. In 1850 he was attending the botany class of John Hutton Balfour at the university.

In 1850 he was appointed lecturer of botany, and in 1851 professor of botany, at the University of Aberdeen. In 1853 he became a professor of natural history in Queen's College, Cork, Ireland, succeeding Professor Hincks. A year later he was nominated to the chair of mineralogy and geology at the Queen's University of Belfast. In 1855 he was elected a Fellow of the Royal Society of Edinburgh, his proposer being his former tutor, John Hutton Balfour. He served as the Society's Vice President from 1877 to 1882. He was elected a Fellow of the Royal Society of London in 1869. In 1860 was transferred to the chair of natural history at the same institution. In 1868 he assumed the duties of professor of botany at the Royal College of Science, Dublin, and finally in 1870 he received the natural history chair at the University of Edinburgh. In 1871-72 he served as President of the Botanical Society of Edinburgh. Wyville Thomson is remembered for his studies of the biological conditions of the deep seas. Being interested in crinoids, and prompted by the results of the dredgings of Michael Sars in the deep sea off the Norwegian coasts, he persuaded the Royal Navy to grant him use of HMS Lightning and HMS Porcupine for deep sea dredging expeditions in the summers of 1868 and 1869. They showed that animal life existed down to depths of 650 fathoms (1200 m), that all marine invertebrate groups are present at this depth, and that deep-sea temperatures are not as constant as had been supposed, but vary considerably, and indicate oceanic circulation. These results were described in The Depths of the Sea, which he published in 1873. The remarkable hydrographic and zoological results which Wyville Thomson had demonstrated, in addition to the growing demands of ocean telegraphy, soon led to the Royal Navy to grant use of HMS Challenger for a global expedition. Wyville Thomson was selected as chief scientist, and the ship sailed on 23 December 1872.

Source: https://en.wikipedia.org/wiki/Charles_Wyville_Thomson
Source: https://en.wikisource.org/wiki/Thomson,_Charles_Wyville_(DNB00)



Christian Gottfried Ehrenberg (1795-1876)

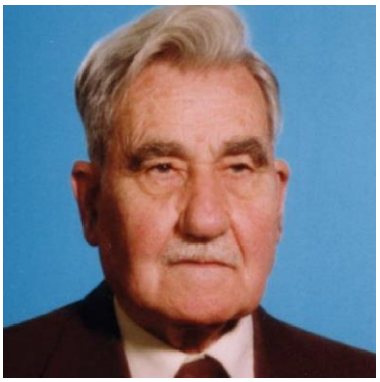
Christian Gottfried Ehrenberg (19 April 1795-27 June 1876), German naturalist, zoologist, comparative anatomist, geologist, and microscopist, was one of the most famous and productive scientists of his time. Ehrenberg was an evangelist. The son of a judge, Christian Gottfried Ehrenberg was born in Delitzsch, near Leipzig. He first studied theology at the University of Leipzig, then medicine and natural sciences in Berlin and became a friend of the famous explorer Alexander von Humboldt. In 1818, he completed his doctoral dissertation on fungi, Sylvae mycologicae Berolinenses. In 1820-1825, on a scientific expedition to the Middle East with his friend Wilhelm Hemprich, he collected thousands of specimens of plants and animals. He investigated parts of Egypt, the Libyan Desert, the Nile valley and the northern coasts of the Red Sea, where he made a special study of the corals. Subsequently, parts of Syria, Arabia and Abyssinia were examined. Some results of these travels and of the important collections that had been made were reported on by Humboldt in 1826. While in Sudan he designed the mansion of the local governor of Dongola, Abidin Bey.

After his return, Ehrenberg published several papers on insects and corals and two volumes Symbolae physicae (1828-1834), in which many particulars of the mammals, birds, insects, etc., were made public. Other observations were communicated to scientific societies. Ehrenberg was appointed professor of medicine at Berlin University in 1827. In 1829 he accompanied Humboldt through eastern Russia to the Chinese frontier. After his return he began to concentrate his studies on microscopic organisms, which until then had not been systematically studied. For nearly 30 years Ehrenberg examined samples of water, soil, sediment, blowing dust and rock and described thousands of new species, among them well-known flagellates such as Euglena, ciliates such as Paramecium aurelia and Paramecium caudatum, and many fossils, in nearly 400 scientific publications. He was particularly interested in a unicellular group of protists called diatoms, but he also studied, and named, many species of radiolaria, foraminifera and dinoflagellates. These researches had an important bearing on some of the infusorial earths used for polishing and other economic purposes; they added, moreover, largely to our knowledge of the microorganisms of certain geological formations, especially of the chalk, and of the marine and freshwater accumulations. Until Ehrenberg took up the study it was not known that considerable masses of rock were composed of minute forms of animals or plants. He also demonstrated that the phosphorescence of the sea was due to organisms.

He was a member of the Royal Swedish Academy of Sciences from 1836 and a foreign member of the Royal Society of London from 1837. In 1839, he won the Wollaston Medal, the highest award granted by the Geological Society of London. Ehrenberg was elected a Foreign Honorary Member of the American Academy of Arts and Sciences in 1849. He continued until late in life to investigate the microscopic organisms of the deep sea and of various geological formations. He died in Berlin on 27 June 1876. After his death in 1876, his collections of microscopic organisms were deposited in the Berlin's Natural History Museum (this museum was a part of

the University of Berlin until it left the university in 2009). The "Ehrenberg Collection" includes 40,000 microscope preparations, 5,000 raw samples, 3,000 pencil and ink drawings, and nearly 1,000 letters of correspondence. His collection of scorpions, and other arachnids from the Middle East, is also held in the Berlin Museum. He was also the first winner of the Leeuwenhoek Medal in 1877. In his hometown, Delitzsch, the highest A-Level school, the "Ehrenberg-Gymnasium" is named after him. The best student of the school year receives the Ehrenberg Prize and a scholarship. Ehrenberg Island in the Svalbard archipelago is named after Ehrenberg.

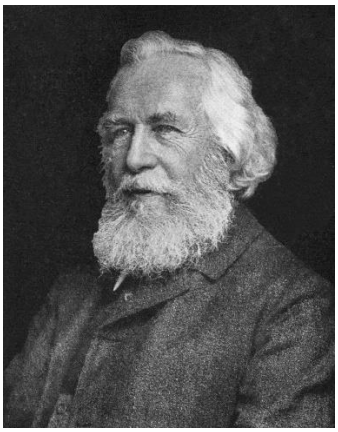
Source: https://en.wikipedia.org/wiki/Christian_Gottfried_Ehrenberg



Enrique Balech (1912-2007)

Professor Enrique Balech was an Argentinian microbiologist. His most important contributions to his field were on thecate dinoflagellate taxonomy. Prof. Balech studied dinoflagellates throughout the world. He spent two summers in France, where he studied sand dwelling dinoflagellates. After his stint in France, Prof. Balech worked at Scripps Institution, where he studied plankton of the Pacific Ocean. During that stage he described two new genera of dinoflagellates, Fragilidium and Scrippsiella. He was also a visiting professor for a year at Texas A&M University. During this time he increased the number of known dinoflagellate species of the Gulf of Mexico from 76 to 262 and reported on their distribution. He developed great knowledge and understanding of dinoflagellate morphology by examining samples from very diverse origins, from cold waters like Antarctica, temperate waters like the SW Atlantic, California current or France to tropical waters like the Caribbean Sea and the Gulf of Mexico.

Source: Gulfbase (https://www.gulfbase.org/people/enrique-balech-1912-2007)
Source: https://eo.wikipedia.org/wiki/Enrique_Balech



Ernst Haeckel
(1834-1919)

Ernst Heinrich Philipp August Haeckel (February 16, 1834-1919) was a philosopher, professor, physician, naturalist, biologist and artist. Ernst Heinrich Philipp August Haeckel was born on 16th February 1834 in Potsdam, Germany. He spent his childhood in the German town of Merseburg where his father worked as a government official. After receiving a degree in medicine in 1857, Haeckel practiced medicine for a short time. He then travelled to Italy where he painted and considered becoming a professional artist. Heavily influenced by Charles Darwin's 1959 work "On the Origin of Species by Means of Natural Selection" Haeckel returned to academic studies, obtaining a doctorate in zoology from the University of Jena in 1862 and then teaching zoology there. He became an associate professor of zoology in 1862 and Haeckel remained at Jena until he retired from teaching in 1909. Haeckel's contributions to zoological science were a mixture of sound research and assumptions often with insufficient evidence. He was a renowned figure whose popularity with the public was substantially higher than it was with many of his scientific peers.

Although best known for the famous statement "ontogeny recapitulates phylogeny", he also invented many words commonly used by biologists today, such as phylum, phylogeny, and ecology. On the other hand, Haeckel also stated that "politics is applied biology", a quote used by Nazi propagandists. The Nazi party, rather unfortunately, used not only Haeckel's quotes, but also Haeckel's justifications for racism, nationalism and social Darwinism. Haeckel also proposed the idea that all multicellular animals derived from a theoretical two-layered (ectoderm and endoderm) animal, the Gastraea, a theory that provoked much discussion. He engaged in much valuable research on marine invertebrates, such as the radiolarians, jellyfish, calcareous sponges, and medusae, and wrote a series of monographs on these groups based largely on specimens brought back by the Challenger Expedition of 1872 to 1876. He was the first to divide the animal kingdom into unicellular and multicellular animals. An ardent Darwinist, Haeckel made several zoological expeditions and founded the Phyletic Museum at Jena and the Ernst Haeckel Haus, which contains his books, records, and other effects. An effective popularizer of science, Haeckel produced numerous tree diagrams, showing evolutionary relationships between different species. Modern scientists and science historians have varied on the value of these diagrams but many praised his work and creativity. Haeckel also produced artwork, much of it quite beautiful, starting with his atlas of radiolarians, published in 1862. It has been argued that what he saw was influenced by Jugendstil, the Art Nouveau form popular in Germany at the time. Whether or not artistic style influenced Haeckel's illustrations, his illustrations certainly influenced later art forms, including light fixtures, jewelry, furniture, and even a gateway to the Paris Word Fair in 1900. In 1906 the Monist League was formed at Jena with Haeckel as its president. The League held a strong commitment to social Darwinism in which man was seen as part of nature and in no way qualitatively distinct from any other organic form. Later in his career, Haeckel produced "Art Forms in Nature", a work that he published in a series of 10 installments. Designed to interest the general public in naturalism, Haeckel's own illustrations of animals, plants and microscopic

organisms were introduced. In 1913, he published a set of photographs titled Nature as an Artist, aimed at countering allegations that his illustrations could be misleading. Today, however, many scientists and science historians share the conviction that his images were often highly contrived, beautiful as they may be. Haeckel was the first person known to use the term “First World War”. Shortly after the start of the war Haeckel wrote:

“There is no doubt that the course and character of the feared “European War” will become the first world war in the full sense of the word.”

The “European War” became known as “The Great War”, and it was not until 1931, with the beginning realization that another global war might be possible, that there is any other recorded use of the term “First World War”.

He was one of the first to consider psychology as a branch of physiology. His chief interests lay in evolution and life development processes in general, including development of nonrandom form, which culminated in the beautifully illustrated “Art Forms in Nature”. Although Haeckel’s ideas are important to the history of evolutionary theory; he was a competent invertebrate anatomist most famous for his work, many speculative concepts that he championed are now considered incorrect but still he has been admired greatly for his contributions.

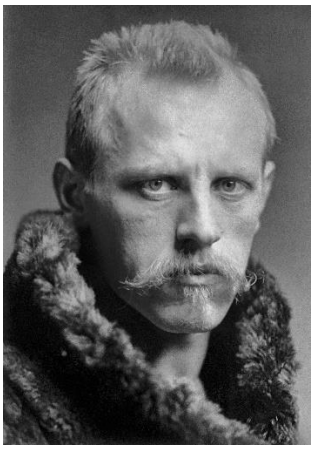
Haeckel died on August 9th, 1919, in Germany, leaving behind his great inventions for others to serve as a source of inspiration.

Source: https://en.wikipedia.org/wiki/Ernst_Haeckel
Source: https://www.famousscientists.org/ernst-haeckel/

Eugen Honoratus Jørgensen (1862-1938)

Eugen Honoratus Jørgensen, Norwegian botanist. 1894-1932 assistant professor and then associate professor at Bergen Cathedral Cathedral. 1898-1932 also a fellow at the Bergen Museum. He did a lot of study trips in Norway, visited Svalbard in 1896 and the West Indies in 1910. In addition to a number of plant geographical works and in-depth studies of plankton, the bogs were his most important field of work. His works include Die Ceratien (1911), Die Euphrasia-Arten Norwegens (1919), Norway's liver moss (1934).

Source: https://snl.no/Eugen_Honoratus_Jörgensen



Fridtjof Nansen
(1861-1930)

Fridtjof Nansen (October 10, 1861-May 13, 1930) was born at Store Frøen, near Oslo. His father, a prosperous lawyer, was a religious man with a clear conception of personal duty and moral principle; his mother was a strongminded, athletic woman who introduced her children to outdoor life and encouraged them to develop physical skills. And Nansen's athletic prowess was to prove of the utmost importance to his career. He became expert in skating, tumbling, and swimming, but it was his expertise in skiing that was to play such a large role in his life. Not massively built, Nansen was tall, supple, strong, hard. He possessed the physical endurance to ski fifty miles in a day and the psychological self-reliance to embark on long trips, with a minimum of gear and only his dog for company.

In school Nansen excelled in the sciences and in drawing and, upon entering the University of Oslo in 1881, decided to major in zoology. In the next fifteen years he united his athletic ability, his scientific interests, his yearning for adventure, and even his talent for drawing in a series of brilliant achievements that brought him international fame.

In 1882 he shipped on the sealer Viking to the east coast of Greenland. On this trip of four and a half months, the scientist in him made observations on seals and bears which, years later, he updated and turned into a book; but at the same time the adventurer became entranced by this world of sea and ice.

Obtaining the post of zoological curator at the Bergen Museum later that year, Nansen spent the next six years in intensive scientific study, punctuating his work with visits to some of the great laboratories on the Continent and once by an extraordinary trek across Norway from Bergen to Oslo and back on skis. In 1888 he successfully defended his dissertation on the central nervous system of certain lower vertebrates for the doctorate at the University of Oslo.

For a long time Nansen had been evolving a plan to cross Greenland, whose interior had never been explored. He decided to cross from the uninhabited east to the inhabited west; in other words, once his party was put ashore, there could be no retreat. In 1926, explaining his philosophy to the students at St. Andrews in his rectorial address, Nansen said that a line of retreat from a proposed action was a snare, that one should burn his boats behind him so that there is no choice but to go forward. The party of six survived temperatures of -45° C, climbed to 9,000 feet above sea level, mastered dangerous ice, exhaustion, and privation to emerge on the west coast early in October of 1888 after a trip of about two months, bringing with them important information about the interior.

In the next four years, Nansen served as curator of the Zootomical Institute at the University of Oslo, published several articles, two books, The First Crossing of Greenland (1890) and Eskimo Life (1891), and planned a scientific and exploratory foray into the Arctic. Basing his plan on the revolutionary theory that a current carried the polar ice from east to west, Nansen put his ship, the Fram [Forward], an immensely strong and cunningly designed ship, into the

ice pack off Siberia on September 22, 1893, from which it emerged thirty-five months later on August 13, 1896, into open water near Spitzbergen. Nansen was not aboard.

Realizing that the ship would not pass over the North Pole, Nansen and one companion, with thirty days' rations for twenty-eight dogs, three sledges, two kayaks, and a hundred days' rations for themselves, had set out in March of 1895 on a 400-mile dash to the Pole. In twenty-three days they traveled 140 miles over oceans of tumbled ice, getting closer to the Pole than anyone had previously been. Turning back, they made their way southwest to Franz Josef Land, wintered there in 1895-1896, started south again in May, reached Vardo, Norway, the same day the Fram reached open water and were reunited with the crew on August 21 at Tromsø.

The voyage was a high adventure but it was also a scientific expedition, the Fram serving as an oceanographic-meteorological-biological laboratory. Holding a research professorship at the University of Oslo after 1897, Nansen published six volumes of scientific observations made between 1893 and 1896. Continuing thereafter to break new ground in oceanic research, he was appointed professor of oceanography in 1908.

Nansen interrupted his research in 1905 to urge the independence of Norway from Sweden and, after the dissolution of the Union, served as his country's minister to Great Britain until May of 1908. In the next few years he led several oceanographic expeditions into polar regions, but once the world was plunged into war in 1914 and exploration was halted, he became increasingly interested in international political affairs.

For almost a year in 1917-1918, as the head of a Norwegian delegation in Washington, D. C., Nansen negotiated an agreement for a relaxation of the Allied blockade to permit shipments of essential food. In 1919, he became president of the Norwegian Union for the League of Nations and at the Peace Conference in Paris was an influential lobbyist for the adoption of the League Covenant and for recognition of the rights of small nations. From 1920 until his death he was a delegate to the League from Norway.

In the spring of 1920, the League of Nations asked Nansen to undertake the task of repatriating the prisoners of war, many of them held in Russia. Moving with his customary boldness and ingenuity, and despite restricted funds, Nansen repatriated 450,000 prisoners in the next year and a half.

In June, 1921, the Council of the League, spurred by the International Red Cross and other organizations, instituted its High Commission for Refugees and asked Nansen to administer it. For the stateless refugees under his care Nansen invented the «Nansen Passport», a document of identification which was eventually recognized by fifty-two governments. In the nine-year life of this Office, Nansen ministered to hundreds of thousands of refugees-Russian,Turkish, Armenian, Assyrian, Assyro-Chaldean-utilizing the methods that were to become classic: custodial care, repatriation, rehabilitation, resettlement, emigration, integration.

The Red Cross in 1921 asked Nansen to take on yet a third humanitarian task, that of directing relief for millions of Russians dying in the famine of 1921-1922. Help for Russia, then suspect in the eyes of most of the Western nations, was hard to muster, but Nansen pursued his task

with awesome energy. In the end he gathered and distributed enough supplies to save a staggering number of people, the figures quoted ranging from 7,000,000 to 22,000,000.

In 1922 at the request of the Greek government and with the approval of the League of Nations, Nansen tried to solve the problem of the Greek refugees who poured into their native land from their homes in Asia Minor after the Greek army had been defeated by the Turks. Nansen arranged an exchange of about 1,250,000 Greeks living on Turkish soil for about 500,000 Turks living in Greece, with appropriate indemnification and provisions for giving them the opportunity for a new start in life.

Nansen's fifth great humanitarian effort, at the invitation of the League in 1925, was to save the remnants of the Armenian people from extinction. He drew up a political, industrial, and financial plan for creating a national home for the Armenians in Erivan that foreshadowed what the United Nations Technical Assistance Board and the International Bank of Development and Reconstruction have done in the post-World War II period. The League failed to implement the plan, but the Nansen International Office for Refugees later settled some 10,000 in Erivan and 40,000 in Syria and Lebanon.

Nansen died on May 13, 1930, and was buried on May 17, Norway's Constitution Day.

Source: https://www.nobelprize.org/prizes/peace/1922/nansen/biographical/
Source: https://en.wikipedia.org/wiki/Fridtjof_Nansen

Friedrich Hustedt (1886-1 April 1968) was a German teacher and botanist, best known for his diatom systematics research.

Friedrich Hustedt (1886-1968)

Friedrich Hustedt was born and grew up in Bremen, Germany. He taught school for 32 years, in 1924 becoming the head teacher of the school at Hauffstraße in Bremen. Hustedt initially pursued his interest in diatoms as a hobby, but his standing in the scientific community grew rapidly; thus, in 1939 he left school to study diatoms full-time. He described over 2000 diatom taxa and eventually amassed the largest private diatom collection in the world which is currently housed at the Alfred Wegener Institute for Polar and Marine Research in Bremerhaven, Germany. The phycological genera Hustedtia and Hustedtiella commemorate his name.

Source: https://en.wikipedia.org/wiki/Friedrich_Hustedt

Greta A. Fryxell
(1926-2017)

Dr. Greta A. Fryxell's strong research interests are in the single-celled marine phytoplankton, which is the only flora of the open ocean and the base of much of the marine food chain. She first worked with field collections from Antarctic waters, where the circumpolar current now transports the flora that has to be a relatively young community in geological time. She worked into lower latitudes in the complex circulation of the Gulf Stream in the North Atlantic, and more recently has been working on a very complex community in the central equatorial Pacific and the ecological importance of small pennate diatoms. In the last 25 years, Dr. Fryxell has become increasingly aware of the changing coastal flora, especially in the Gulf of Mexico and on the west coast of the U.S. There is a changing balance now of species and more harmful algal blooms. That balance is of great interest, and vital to coastlines and air/sea interaction. Now retired and living in California.

Source: https://www.tandfonline.com/doi/full/10.1080/0269249X.2017.1419988
Source: https://www.gulfbase.org/people/dr-greta-fryxell

Grethe Rytter Hasle
(1920-2013)

Grethe Rytter Hasle was born Jan 3, 1920 in Horten, Norway and was 93 years old when she passed away in November 2013. Her first publication appeared in 1950 dealing with phototaxis and vertical migration of marine dinoflagellates. In 1968 she defended her dissertation entitled "**An analysis of the phytoplankton of the Pacific Southern Ocean**: *abundance, composition and distribution during the 'Brategg' Expedition*, 1947-1948" and was awarded a Dr. Philos degree. She was nominated as a full Professor in Marine Botany at the University of Oslo in 1977. Her research focused on diatom taxonomy including both pennate genera such as e.g. *Nitzschia* and *Fragillariopsis* and the centric genera *Thalassisira* and *Cymatosira*. Hasle combined light and electron microscopy and became an international authority on diatom ultrastructure and morphology. Her work on Pseudo-nitzschia is a god example of the practical importance of basic science. When people became poisoned by shellfish containing domoic acid on Prince Edwards Island (Canada) in 1987-88, it was later shown to be caused by *Pseudo-nitzschia* multiseries, a species that Hasle had described from Oslofjorden (Norway). Hasle was a great inspiration for her students and fellow scientists, she has an impressive publication record and pursued her work after retirement and well into her eighties.

Source: https://www.nhm.uio.no/english/research/collections/botanical/grethe-hasle-diatom-collection/
Source: https://www.tandfonline.com/doi/full/10.1080/0269249X.2018.1451392

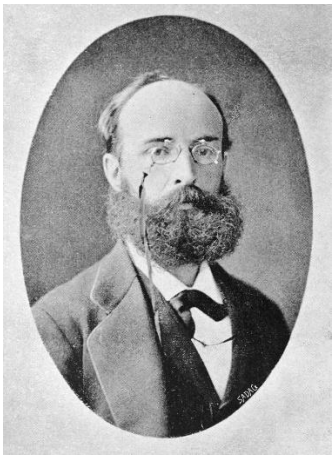
Haaken Hasberg Gran
(1870-1955)

Haaken Hasberg Gran passed away peacefully on 2nd June 1955, having retained his remarkable vitality until a few weeks before his death. When he celebrated his 85th birthday on 17th April with a reception at his home, it was evident that his health was declining and his numerous friends who were there felt that is was a time of farewell. Gran was born in Tonsberg in 1870, the son of a naval officer. Even as a boy he showed interest in natural science and he started his scientific studies while a student at the University of Oslo. As was fitting for a pupil of Professor N. Wi11e, a prominent algologist, in his first publications he dealt with the benthic algae. His interest was soon diverted, however, towards the floating vegetation of the sea, and marine phytoplankton became the main field for his scientific studies throughout his life. It was a combination of fortunate circumstances which enabled Gran to carry out important work in several fields of marine biology and so to secure himself a lasting position as one of the outstanding pioneers in marine plankton research. A keen eye for morphological detail and a thorough training in systematics made him a first-class taxonomist, and his illustrations always bring out the "habitus" of the species, so difficult to reproduce. During his early years as a planktologist he described a large number of important phytoplankton species and in the diatom section of Nordisches Plankton he presented a diatom flora which served for a long time as the guide for students of northern waters. Through his life-time collaboration with his close friend Johan Hjort and with Fridtj of Nansen he had the opportunity to acquire first-hand knowledge of the sea and also to obtain material from the most varied regions. This happy period in Norwegian marine research further stimulated Gran' s interest in the ecology of marine plants, which was already evident in his first studies, and it led to a clear conception of the interaction between organism and environment, which formed the background of all his studies of phytoplankton populations. The thesis for his doctorate, "**Das Plankton des Norwegischen Nordmeeres**", presented in 1902, was based on material he had collected on the "**Michael Sars**" cruises organized by Hjort. In this paper, Gran stressed the ecological approach to an understanding of the regional and seasonal changes in the population. He replaced Cleve's explanation, that seasonal changes are due to the influx of water masses from distant regions, by a botanical conception, that changes in the composition of the phytoplankton are due mainly to local changes in the environment. Gran's general view of the metabolism in the sea was based upon the ideas which G. O. Sars had put forward as early as 1879 and which had been expressed later by Brandt, Hensen, Lohmann, and Nathansohnin more elaborate form. In 1905, after having been appointed to the Chair of Botany at the University of Oslo, Gran taught plant physiology and for a short period he studied under Professor W. Pfeffer, the prominent plant physiologist. This gave him a physiological background which brought him into fresh fields of research, but the backbone of his plankton work was always the survey, in which studies of the population were collated with hydrographical observations. In his numerous publications we find studies on plankton populations from the most varied areas, from Japan and the west coast of North America, and from both arctic and antarctic regions; but his main field was the North Atlantic,

with the Norwegian Sea and the coastal waters of Norway as the centre of his interest. In his report on phytoplankton in Murray and Hjort's **The Depths of the Ocean.** Gran not only discussed the results of the "Michael Sars" expedition in the North Atlantic, in which he participated, but also gave a general account of conditions of plant life in the open ocean. This work in particular demonstrates Gran's ability to combine knowledge of the most varied fields with a sound imagination, so important for progress in natural science. Gran's reports on the international survey of the North Sea and the southern part of the Norwegian Sea, organized by the International Council for the Exploration of the Sea (1912), on his investigations of the spring phytoplankton development in the coastal waters off Lofoten and More (1929-31), and on the survey of the Bay of Fundy and Gulf of Maine (1935) are highly important contributions to our knowledge of conditions of plant production in northern waters. Gran knew well that experimental studies are necessary to solve the problems raised by survey work. As early as 1907 he published his first attempts at determining the rate of reproduction in phytoplankton and, in subsequent studies, he tried to obtain information on the actual production of organic matter in the sea and on the excretion of organic matter by phytoplankton. His method for measuring production, worked out in collaboration with Professor T. Gaarder, is still in use, although it is being replaced by SteemannNielsen's 14C method. While on a visit to Professor M. W. Bejerinckin Delft, Gran made the first study of bacteria which decompose agaragar and also worked on nitrate-reducing bacteria in the sea. He took part in the activities of the International Council from the first and was chairman of the Plankton Committee for many years. Having worked on zooplankton as well - he was the first to describe the various stages of Calanus finmarchicHS - he was eminently qualified for this position.

Gran's stimulating personality and his positive attitude towards new ideas made it easy for him to make contact with the younger generation. Although he was a veteran in the Council, he was "young with the young ones" and maintained a tradition of non-specialization, preferring a thorough training in all the fields of oceanography with which problems of the fertility of the sea are concerned. His clarity of mind and unconventional approach, which were Gran's characteristics in discussion, also made his publications so stimulating that his reputation became worldwide. Through his activities in the International Council and his visits to the United States and Canada he attracted pupils and collaborators from many countries. They will all treasure Gran's memory, not only as a prominent scientist, but also as a kind and charming friend. In human relationships, Gran was a worthy representative of scientia amabilis.

Source: https://academic.oup.com/icesjms/article/21/2/121/782843
Source: https://en.wikipedia.org/wiki/Haaken_Hasberg_Gran

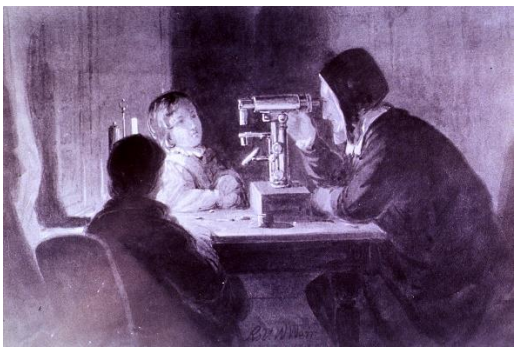


Hermann Fol
(1845-1892)

Hermann Fol (23 July 1845, Saint-Mandé-13 March 1892) was a Swiss zoologist and the father of modern cytology.

After studying medicine and zoology with Ernst Haeckel (1834-1919) at the University of Jena where he was a pupil of François Jules Pictet de la Rive (1809-1872) and Edouard Claparède (1873-1940), he accompanied Haeckel on a prolonged scientific journey (1866 and 1867) around the coasts of West Africa and of the Canary Islands. On his return to Europe he undertook medical studies in Heidelberg and completed them by obtaining his diploma in 1869 in Zurich and Berlin. In 1871 he studied planktonic fauna in Villefranche-sur-Mer on the recommendation of Carl Vogt(1817-1895). In 1878, he obtained a post of professor at the University of Geneva where in the following year, he observed the penetration of a spermatozoon into an egg becoming thus a pioneer of the microscopic studies of fertilisation and cellular division. In 1886, he resigned from his post in Geneva to devote himself entirely to his research in Villefranche-sur-Mer where, in 1880, he had established a small marine laboratory with Jules Henri Barrois (1852-1943). Then, financially aided by the French government to carry out a study of distribution of sponges on the Tunisian and Greek coasts, he departed Le Havre on his new yacht, l' Aster on March 13, 1892, accompanied by several team members. After a stopover in Bénodet, the yacht disappeared at sea, and Fol was never seen again.

Source: https://www.encyclopedia.com/science/encyclopedias-almanacs-transcripts-and-maps/hermann-fol
Source: http://scienceworld.wolfram.com/biography/Fol.html
Source: http://www.els.net/WileyCDA/ElsArticle/refId-a0002794.html
Source: https://en.wikipedia.org/wiki/Hermann_Fol



Jacob Whitman Bailey
(1811-1857)

Jacob Whitman Bailey (1811-1857) was an American naturalist, known as the pioneer in microscopic research in America. He was born in Auburn, Mass., and in 1832 graduated at West Point, where, after 1834, he was successively assistant professor, acting professor, and professor of chemistry, mineralogy, and geology. At West Point he studied with John Torrey. He devised various improvements in the construction of the microscope and made an extensive collection of microscopic objects and of algæ, which he left to the Boston Society of Natural History. In 1857 he was president of the American Association for the Advancement of Science, as well as a member of the National Institute for the Promotion of Science, a precursor to the Smithsonian Institution. He was elected an Associate Fellow of the American Academy of Arts and Sciences (AAAS) in 1845. Bailey and his son William were survivors of the

steamboat Henry Clay disaster on July 28, 1852, though his wife and daughter, both named Maria, were among the casualties. Bailey died on February 26, 1857, at the beginning of his term of office as President of the AAAS. On August 19, 1857, Augustus Addison Gould delivered a speech to the AAAS in commemoration of Bailey's life. The speech was subsequently published in the American Journal of Science and Arts, volume xxv (second series), (New Haven, May 1858). He wrote many articles on scientific subjects for the American Journal of Science and for scientific societies, a report on the infusorial fossils of California, and a valuable volume of Microscopical Sketches, containing 3000 original figures. The genus Baileya, a North American genus of sun-loving wildflowers native to the deserts of northern Mexico and the Southwestern United States was named by botanists William Henry Harvey and Asa Gray in honor of their colleague Jacob Whitman Bailey. It was Jacob Whitman Bailey that Lieut. Matthew Fontaine Maury wrote a letter to inquiring as to the material from the sea floor brought up with Lt. John Mercer Brook's deep-sea soundings and core samples. From that it was determined that the sea floor where the trans-Atlantic Cable was laid because the samples showed Lieut. M F Maury that his "Telegraphic Plateau" was perfect for the underwater cable. The samples Maury sent proved the "Telegraphic Plateau" samples were non-abrasive for such a cable to be laid.

Source: https://en.wikipedia.org/wiki/Jacob_Whitman_Bailey

John Ralfs
(1807-1880)

John Ralfs (13 September 1807-14 July 1890) was an English botanist. Born in Millbrook, near Southampton, he was the second son of Samuel Ralfs, a yeoman of an old family in Hampshire. He has been commemorated in the names of many plant groups and taxa at many levels.

Ralfs's father died at Mudeford near Christchurch before John was a year old, and the children (two sons and two daughters) were brought up at Southampton by their mother. After being educated privately he was articled to his uncle, a surgeon of Brentford, with whom he lived for two years and a half. For two years he was a pupil at Winchester Hospital, and in 1832 he passed his final examination, being specially recommended by the examiners for his knowledge of botany. For some time he practised in partnership with another surgeon at Shoreditch, and he is also said to have practised at Towcester. At Torquay, where he moved on account of lung disease (probably tubercular in origin), he married, in 1835, Laura Cecilia, daughter of Henry Newman. In November 1837, for the sake of the mild climate, he settled at Penzance, and, having abandoned his profession, dwelt there for the rest of his life.

Through the misconduct of a near relative, who betrayed his trust, Ralfs lost most of his fortune; but under the will of his friend, the Rev. Henry Penneck, who died in 1862, he enjoyed a small annuity. J. D. Hooker and T. H. Huxley, with the Philosophical Club of the Royal Society, set up a charitable collection to provide Ralfs with an annuity - the appeal was so successful

that in addition to providing Ralfs with an income, a fund for the “relief of necessitas Scientific Men" was also established. Charles Darwin was one of the notable scientists who subscribed.

In spite of ill-health and failing eyesight, he actively pursued botanical researches until he was seventy-five years old. He was long a member of the committee of the Penzance library, catalogued its books and prepared its printed catalogue, as well as being responsible for the purchase of much of its natural history stock. He died at 15 St Clare Street, Penzance, on 14 July 1890, and was buried in the cemetery, where a monument was erected to his memory by the members of the Penzance Natural History and Antiquarian Society, of which body he was a vice-president after its resuscitation in 1880, and president for 1883-4.

The works of Ralfs were: British Phænogamous Plants and Ferns, 1839, and The British Desmidieæ, 1848. This volume is ‘unsurpassed for the beauty and accuracy of its coloured plates,’ and is very rare and costly. His first paper, on Desmids and Diatoms, was contributed, at the suggestion of the Rev. Miles Joseph Berkeley, to the Edinburgh Botanical Society, and for many years his articles appeared in its Transactions and in the Annals of Natural History. Hundreds of his letters are among Berkeley's correspondence in the botanical department of the British Museum. In the Penzance library are deposited his manuscript collections, viz., Flora of West Cornwall, 1878-86, 8 vols.; Flora of the Scilly Isles, 1876, 1 vol., and Fungi of West Cornwall, 1880-6, 2 vols.

Ralfs was elected an Honorary Fellow of the Royal Microscopical Society in 1889, and was offered, but declined, associateship of the Linnean Society.

Source: https://en.wikipedia.org/wiki/John_Ralfs
Source: https://west-penwith.org.uk/ralfs.htm

József Pantocsek (1846-1916)

József Pantocsek (Trnava, October 15, 1846 - Tavarnok, September 4, 1916) physician, botanist, algologist, paleobotanic. His research covered both recurrent and fossil diatoms (diatomaceous earths) and gained international fame with his scientific achievements. It was the first microscopic photograph taken in Hungary. Abbreviation for botanical work: "*Pant*."

In 1869 he enrolled at the University of Göttingen and from 1870 he studied medicine at the University of Vienna. Here he obtained his doctorate in 1875. Afterwards, he was located in the Emperor's city as a circular warden, and later in 1876 he was a doctor in the district and then a doctor. In 1896 he was appointed as the Chief Medical Officer of the Municipal Hospital of Bratislava, where he led the medical work in the institution until his retirement in 1914. From 1913 to 1916 he was a member of the board of the Hungarian Society of Natural Sciences. His commitment to botany had already unfolded before his university studies in the mid-1860s. In addition to his medical profession, he devoted his free time to the end of his life to botanical research, primarily to

algological research, and his oeuvre in this regard became permanent. He has visited several flora research trips, and has written many new plant species. In this respect, the outstanding semi-annual botanical-zoological fieldwork of 1872 in Montenegro, Montenegro and Dalmatia. From the 1880s, his interest became more and more determined in the study of diatoms and achieved internationally recognized scientific results in this field. He studied the microflora of the seabed in Istria, on the coast of Albania and in the Ligurian Sea around Cannes and Nice. He wrote several new kelp species from the Mediterranean, but he also studied the alga flora of Lake Balaton and Lake Fertő. He gave his ancestral orientation to his algological research when he began to study fossil diatoms of sedimentary rocks in Hungary, and described the diatomous rock occurrences in Hungary. He collected and communicated further fossil diatoms from Austria, Czech Republic, Slovakia, Germany, Serbia, Bulgaria, Greece, Italy, Spain, England, Denmark, Russia, Japan, New Zealand and America.

The first microphotography used in Hungary. With his microscopic diatomaceous photos he also appeared at the 1885 national general exhibition, and in 1890 he won a gold medal at the first Hungarian amateur photography exhibition. By and large, his inheritance, now largely devastated, originally contained five thousand microscope diatom preparations. The remaining 918 preparations were identified and cataloged in the 1970s.

Source: https://akademiai.com/doi/pdf/10.1556/650.2016.HO2550
Source: https://hu.wikipedia.org/wiki/Pantocsek_J%C3%B3zsef

Konstantin Sergeevich Mereschkowski (1855-1921)

Konstantin Sergeevich Mereschkowski; 4 August 1855 (O.S. 23 July)-9 January 1921) was a prominent Russian biologist and botanist, active mainly around Kazan, whose research on lichens led him to propose the theory of symbiogenesis-that larger, more complex cells (of eukaryotes) evolved from the symbiotic relationship between less complex ones. He presented this theory in 1910, in his Russian work, The Theory of Two Plasms as the Basis of Symbiogenesis, a New Study or the Origins of Organisms, although the fundamentals of the idea already had appeared in his earlier 1905 work, The nature and origins of chromatophores in the plant kingdom.

In 1883 he married Olga Petrovna Sultanova, and became a lecturer at the University of St Petersburg. In 1886 they emigrated from Russia for unexplained reasons, possibly connected to the paedophilia for which he was later prosecuted. The family set up home in Crimea, where he found work as a botanist looking at varieties of grape; he also created a substantial collection of diatoms from the Black Sea. In 1898, he left his wife and young son in Crimea and emigrated to America, where he took the name "William Adler". He worked in California as a botanist at Los Angeles and Berkeley University, devising a new system of classification of the diatoms based on the internal structures of the specimens in his Black Sea collection. In 1902, he returned to Russia to become curator of zoology at Kazan University,

Tatarstan; he became a lecturer there in 1904, and started to develop his ideas on the symbiotic origins of complex cells. In 1914 he was prosecuted for raping 26 girls, including one who became one of his students aged six. He was dismissed from the university, and escaped to France. In 1918 he moved to the Conservatoire Botanique in Geneva, where he worked on Delessert's lichen collection.

Mereschkowski argued that the cell organelles, the nucleus and the chloroplast, are the descendants of bacteria that evolved into an intracellular symbiosis with amoebae. His ideas are strikingly reflected in the modern symbiogenesis theory developed and popularised by Lynn Margulis, and now widely accepted. The modern view is that two endosymbiotic events did take place, one by incorporating bacteria that became the mitochondria of all eukaryotes, and another soon afterwards in the line that became the plants to form chloroplasts.

Around the turn of the century, Mereschkowski formed a sizeable lichen herbarium, containing over 2000 specimens collected from Russia, Austria and around the Mediterranean. The collection remains at Kazan University. It had recently been shown that each lichen species consisted of a symbiosis between a fungus and one or more algae. This may have inspired his theory of symbiogenesis. Merezhkovsky rejected Darwinian evolution, believing that natural selection could not explain biological novelty. He argued instead that the acquisition and inheritance of microbes was central. He was criticised and indeed ridiculed by other biologists, such as the Polish lichenologist Alexandr Alexandrovich Elenkin.

Source: https://en.wikipedia.org/wiki/Konstantin_Mereschkowski

Louis Alphonse de Brébisson (1798-1888)

Louis Alphonse de Brébisson (25 September 1798-26 April 1888) was a French botanist and photographer born in Falaise, Calvados. In his youth, he was interested in mineralogy and entomology, but his focus soon turned to botany. He is renowned for "Flore de la Normandie", a work on vegetation native to Normandy that was published over multiple editions. He was the author of several papers on Diatomaceae and Desmidiales, and was possibly the only French scientist researching these algae groups at the time. He also conducted extensive investigations of mosses and orchids. With Christiaan Hendrik Persoon, Benjamin Gaillon, Jean Baptiste Boisduval and Jean-Louis-Auguste Loiseleur-Deslongchamps, he made contributions to the multi-volume "Flore générale de France, ou Iconographie, description et histoire de toutes les plantes phanérogames, cryptogames et agames qui croissent dans ce royaume, disposées suivant les familles naturelles" (1828-29). He was a member of the Société linnéenne de Normandie and a founding member of the Société française de photographie.

Source: https://en.wikipedia.org/wiki/Louis_Alphonse_de_Br%C3%A9bisson

Paul Gourret
(1859-1880)

Paul Gabriel Marie Gourret (15 January 1859 in Roquevaire-1903) was a French zoologist remembered for his biological studies of marine fauna and his work in the fishing industry. Gourret also worked with algae. He studied natural sciences in Marseille, subsequently serving as a lecturer to the faculty of sciences in Lyon. In November 1886, he was named adjunct professor of zoology at the school of medicine in Marseille. From May 1893, he served as deputy director of the zoological station at Marseille. He was a member of the advisory committee on Marine Fisheries in the Ministry of Marine, and in 1902 he became a chevalier of the Legion d'honneur. The genus Gourretia from the family Callianassidae is named in his honor.

Source: https://en.wikipedia.org/wiki/Paul_Gourret

Per Teodor Cleve
(1840-1905)

Per Teodor Cleve (10 February 1840-18 June 1905) was a Swedish chemist, biologist, mineralogist and oceanographer. He is best known for his discovery of the chemical elements holmium and thulium.

Born in Stockholm in 1840, Cleve earned his BSc and PhD from Uppsala University in 1863 and 1868, respectively. After receiving his PhD, he became an assistant professor of chemistry at the university. He later became professor of general and agricultural chemistry. In 1874 he theorised that didymium was in fact two elements; this theory was confirmed in 1885 when Carl Auer von Welsbach discovered neodymium and praseodymium. In 1879 Cleve discovered holmium and thulium. His other contributions to chemistry include the discovery of amino-naphthalenesulfonic acids, also known as Cleve's acids. From 1890 on he focused on biological studies. He developed a method of determining the age and order of late glacial and postglacial deposits from the types of diatom fossils in the deposits, and wrote a seminal text in the field of oceanography. He died in 1905 at age 65.

In 1860, aged 20, Cleve became assistant professor of mineralogy at the University of Uppsala, and was appointed assistant professor of chemistry in 1868. He also taught at the Royal Institute of Technology between 1870 and 1874, and eventually became professor of general and agricultural chemistry at the University of Uppsala. He was the chair of chemistry at the University of Uppsala starting in 1874. He was also the president of the Nobel Committee for Chemistry. Cleve's first work was Några ammoniakaliska chromföreningar (Some compounds of ammonia and chromium, 1861). He also wrote several more papers on complex compounds, including the compounds of platinum. Additionally, Cleve synthesized several hundred complex platinum compounds. Cleve visited a number of laboratories in England, France, Italy, and Switzerland in the 1860s. While in Paris, he visited the laboratory of Charles-

Adolphe Wurtz and also made a number of friends there. Cleve worked on the synthesis of complex chemical compounds until 1872. He theorized in 1874 that the element didymium consisted of two elements. This theory was proven right with the discovery of praseodymium and neodymium in 1885 by Carl Auer von Welsbach. In 1879, Cleve proved that the newly discovered element scandium was an element predicted by Dmitri Mendeleev to be "eka-boron". He isolated a quantity of scandium in this same year and determined its atomic weight. He discovered the element holmium in 1879 by examining a sample of erbium oxide. While removing impurities from a sample of erbium oxide, Cleve discovered a brown substance and a green substance, and the brown substance was holmium oxide (the green substance was thulium oxide). However, this sample may have been impure. He separated thulium from an erbium oxide sample in 1879. Additionally, Cleve and Abraham Langlet discovered helium in the mineral cleveite in 1895.

Cleve discovered six forms of dichloronaphthalene and discovered aminonaphthalenesulfonic acids, which are sometimes named after him. He prepared a number of nitrosulfonic acids as well. In 1883, Cleve was the first person to describe the plankton species ***Nitzschia seriata***. In 1890, Cleve began to mainly focus on the field of biology, mainly studying freshwater algae, **diatoms**, and **plankton**. Cleve participated in a Swedish expedition to Spitsbergen in 1898. While on this mission, he discovered a number of species of *spumellarians, nassellarians*, and *phaeodarians*.

Cleve, in collaboration with Höglund prepared numerous previously-undiscovered salts of yttrium and erbium. The two also did work on the chemistry of the chemical elements thorium and lanthanum. By 1874, Cleve discovered that thorium was a quadrivalent element and also determined lanthanum to be trivalent. These findings were initially doubted by the scientific community. Cleve was the first observer of isomerism in platinumamine derivatives. Additionally, Cleve created a method of dating glacial and post-glacial deposits in the fossil record. Cleve's PhD dissertation was "**Mineral-analytiska under-sökningar**". He wrote a paper on samarium in 1879 and The Seasonal Distribution of Atlantic Plankton Organisms in 1900. In 1883, he published **Kemiskt Handlexicon**, which translates to Chemical Handbook. Notable students of Cleve include Ellen Fries (the first Swedish woman to earn a PhD) and Svante Arrhenius (a winner of the Nobel Prize). Cleve also studied hydrography and geology.

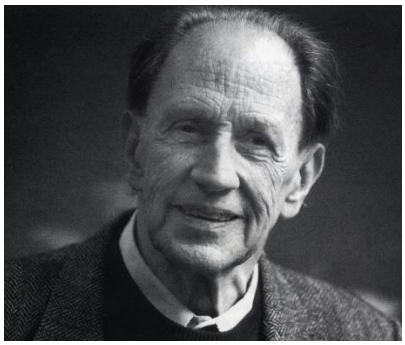
Source: https://en.wikipedia.org/wiki/Per_Teodor_Cleve
Source: https://www.britannica.com/biography/Per-Teodor-Cleve

Ramon Margalef
(1919-2004)

Ramon Margalef López died on Sunday 23 May 2004 in Barcelona, his hometown. He was 85 years old. He was one of the founding fathers of modern ecology and one of the most distinguished Spanish scientists of the twentieth century. His contributions have been extremely fertile in fields as diverse as limnology, oceanography, and theoretical ecology. We owe to him the introduction of information theory to the study of ecological diversity, arguably one of the major inflection points in the history of ecological thinking.

Margalef was born in Barcelona in 1919. His education was interrupted by the Spanish civil war in 1938, when he was recruited by the Republican army. After Franco's victory he was forced to do three more years of military service. He then worked as a messenger in Barcelona's Botanical Institute, and as an insurance clerk until, thanks to the help of several scientific personalities of the time who appreciated his intellectual potential, he got a scholarship and managed to obtain his BSc from the Universitat de Barcelona (1949). After finishing his PhD only two years later, he started to work in the recently created Institute for Fisheries Investigation in Barcelona, an institution he later presided (1965 to 1967). In 1967 he became Spain's first professor of ecology, a position he held at the Universitat de Barcelona until his retirement twenty years later. As is to be expected in a man gifted with a prodigious curiosity, his involvement in active research never vanished, and he continued to visit his tiny office in the Ecology Department of the Universitat de Barcelona until a few weeks before his death.

It is difficult to summarize Margalef's scientific achievements in a few sentences. He authored over 400 scientific papers and books. His first studies, published mostly in Spanish in the 1940s and 1950s, focused on the organization of planktonic communities in continental and oceanic waters. It is not until the late 1950s, with the translation into English of his inaugural lecture as a member of the Barcelona Royal Academy of Arts and Sciences "**Information Theory in Ecology**", that he gained a worldwide audience. Another groundbreaking article, "On certain unifying principles in ecology", published in American Naturalist in 1963, and his book "Perspectives in Ecological Theory" (1968), based on his guest lectures at the University of Chicago, consolidated him as one of the leading thinkers of modern ecology. Overall, his studies have greatly contributed to our current understanding of the spatiotemporal structure of ecosystems, the relationship between diversity, biodiversity, stability and connectivity, the role of external energy in biological productivity, and the interplay between ecological succession and evolution. Many of his views are summarized in the book "**Our Biosphere**" (1997).



Alongside his research activity, his achievements in ecology education have been also extraordinary. In his lectures at the Universitat de Barcelona, or in the numerous invited courses and seminars elsewhere, he always promoted creative thinking and transmitted in a fresh and challenging fashion his views on how nature works, prompting students to "get out and discover nature" for themselves. His views were summarized in two monumental textbooks: "**Ecología**" (1974) and "**Limnología**" (1983). Undoubtedly, he shaped a whole generation of ecologists in Spain and beyond. He was honoured by several institutions around the world; the long list of distinctions awarded include the Prince Albert medal (France, 1972), the Huntsman Prize (Canada, 1980), the Ramon y Cajal Award (Spain, 1984), the Alexander von Humboldt Award (Germany, 1990), the Excellence in Ecology Prize (Germany, 1995), the CSIC Gold Medal (Spain, 2002) and all Catalonia's main public honours.

Ramon Margalef exemplified one of this rare cases in which an outstanding intellect coexists with equally exceptional personal qualities. The scope of his knowledge, his humane nature, his modesty, his honesty and his sense of humour gave him a human category well beyond his scientific qualities. Much is to be learned from his approach to science and to life in general, in which an insatiable, childlike curiosity sprang from the intimate pleasure he found in observing the world around him. Some of his views have proven to be wrong, but they have been always original and inspiring and, quite often, truly revolutionary. In a scientific world dominated by a reductionistic program he always was one of the few minds capable of seeing forests where most saw only the trees. He was also very much interested in the public appreciation of science and always advocated for the engagement of scientific rigour in environmental police. In that respect he defined himself as an "active pessimist". In his own words: "If God has put us on Earth, we have the right to make use of it but we might as well do so with a modicum of intelligence".

Some of his most important work includes the application of information theory to ecological studies and the creation of mathematical models for the study of populations. Among his books, the most influential are: **Natural Communities** (1962), **Perspectives In Ecological Theory** (1968), **Ecology** (1974), **The Biosphere** (1980), **Limnology** (1983) and **Theory of Ecological Systems** (1991). He received many scientific awards, including the inaugural medal of the A.G. Huntsman Award for Excellence in the Marine Sciences, the Naumann-Thienemann Medal from the International Society of Limnology (SIL), the Ramón y Cajal Award of the Spanish Government, and the Gold Medal of the Generalitat of Catalonia (Catalan Government).

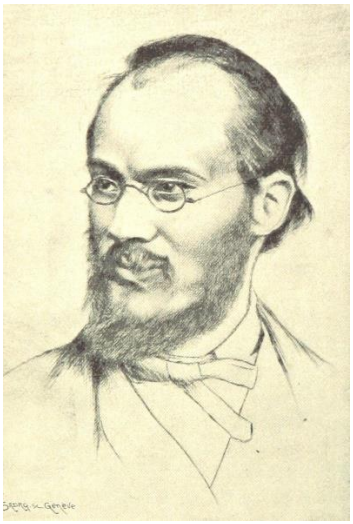
Source: https://web.archive.org/web/20061213050210/
Source: http://www.gencat.net/premiramonmargalef/eng/biografia.htm
Source: https://en.wikipedia.org/wiki/Ramon_Margalef

Raymond Hovasse
(1895-1989)

After a very colorful career, **Professor Raymond Hovasse**, the former President of both the "Groupement des protistologues de langue francaise" (1962-1969) and the "Societe zoologique de France (1954)", died at 94 in hispeaceful retreatat Thonon-les-Bainswhere hehad lived for a number of years after a long and distinguished university career. Professor Hovasse hadbeen inturn assistantinhistology at the Sorbonne (1920),laboratory head at the University of Marseille (1922), visiting professor at the Faculty of Sciences, Istanbul (1926-1931), assistant director of the field station at Sere(1931-1934), professor at the UniversityofStrasbourg (1934-1938) and finallyprofessor at the Universityof Clermont-Ferrand (1938-1965). This varied career led him to workin many different areas of zoology, including cell biology, protistology, planktology, marine biology, entomology, ecology and ethology. He set up the field station of Balta-Liman on the Bosphorus and developed that of Besse-en-Chandesse, Puy-de-Dome, after hewas putin place byhispredecessor, P.P.Grasse, in the chair of zoology at the University of Clermont. Raymond Hovasse worked with the eminent specialists Caullery and Bataillon, who were his teachers, and later collaborated with the equally distinguished Chatton and Pringsheim. He published work on the typhus bacillus, symbiotic bacteria, protist cytology, migration of fishes, cave fauna (Yarim Bourgas) and the teratology of batracians. Asa protistologist, we accredit him with the description of numerous species. By applying the method of thin sectioning to unicellular species, particularly flagellates, he detailed or revealed many new characteristics in various flagellate groups such as volvocales, chloromonadines, peridinians, ebriidates, silicoflagellates, chrysomonadines and ellobiosidines. He was one of the first to recognize the peridinian nature of certain xanthelles, to draw attention to the important distinction between the spores of radiolarians and those of the parasite peridinians, to demonstrate the importance of the composition of the culture medium on the development of the mitochondrial network of euglenids, and to describe the extrusomes of the discobolocyst type. In Clermont, he set up what was to become a school of protistology. Themain problem that interested him all his life was that of the mechanisms of evolution and the possible involvement of nucleo-cytoplasmicexchanges. He always feltthat cytoplasmic processes could have effects on the nuclear genome. His ideas on evolution and selection, the parallelism between certain somations and mutations are expressed in various reports, notes and books in which he defends the notion that the medium, by modifying the various cytoplasmic reactions, can induce modifications in the genetic expression and even cause mutations. The research activity of Professor Hovasse went handin handwith thatof a scrupulous teacher, always up-to-date, and always able to interest and even excite his audience. Hewas Dean oftheUniversityduring thedifficult period of the German occupation and helped numerous colleaguesfrom the University of Strasbourgwho were transferred to Clermont at that time. He was a regularly elected member of the Universities Consultative Committee, was Honorary President of the Societe de Biologie de Clermont, and received in his lifetime numerous civil and military decorations. Raymond Hovasse remains an example for his pupils and for future generations of researchers.

P. de Puytorac, Clermont-Ferrand, France.

Source: Europ.J.Protistol. 25, 391-395 (1990) June29, 199. © 1990 by Gustav Fischer Verlag, Stuttgart. 0932-4739/90/0025-03913.50/0.
Source: https://www.sciencedirect.com/science/article/pii/S093247391180132X?via%3Dihub



René-Édouard Claparède (1832-1871)

René-Édouard Claparède (24 April 1832 in Chancy-31 May 1871 in Siena) was a Swiss anatomist. The Claparède family was Protestant and originally from Languedoc. They moved to Geneva after Louis XIV:s Edict of Fontainebleau in 1685.

He received his education in Geneva and Berlin, where he attended lectures given by Johannes Peter Müller. Later on, he served as an assistant to François Jules Pictet de la Rive at the Geneva Academy, where in 1862 he became a professor of comparative anatomy. He was a regular contributor to the Archives des sciences physiques et naturelles. Statue of René-Édouard Claparède, at place Claparède in Geneva.

His main research dealt with the structure of infusoria, the anatomy of annelids, the histology of earthworms, the embryology of arthropods and the evolution of spiders. Species with the epithet of claparedii commemorate his name, an example being the sea anemone Edwardsia claparedii. Claparède stressed the importance of studying and illustrating living or recently killed organisms and he did not deposit any museum specimens. He died aged 39 from tuberculosis.

Source: https://en.wikipedia.org/wiki/Ren%C3%A9-%C3%89douard_Clapar%C3%A8de
Source: https://fr.wikipedia.org/wiki/Ren%C3%A9-%C3%89douard_Clapar%C3%A8de
Source: https://www.nature.com/articles/004224c0

Antonie van Leeuwenhoek (1632-1723)

Antonie van Leeuwenhoek, (born October 24, 1632, Delft, Netherlands-died August 26, 1723, Delft), Dutch microscopist who was the first to observe bacteria and protozoa. His researches on lower animals refuted the doctrine of spontaneous generation, and his observations helped lay the foundations for the sciences of bacteriology and protozoology.

At a young age, Leeuwenhoek lost his biological father. His mother later married painter Jacob Jansz Molijn. When his stepfather died in 1648, Leeuwenhoek was sent to Amsterdam to become an apprentice to a linen draper. Returning to Delft when he was 20, he established himself as a draper and haberdasher. He was married in 1654 to a draper's daughter. By the time of her death, in 1666, the couple had five children, only one of whom survived childhood. Leeuwenhoek remarried in 1671; his second wife died in 1694.

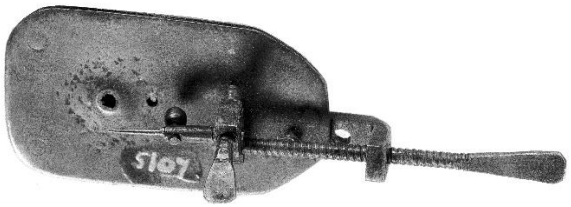
In 1660 Leeuwenhoek obtained a position as chamberlain to the sheriffs of Delft. His income was thus secure, and it was thereafter that he began to devote much of his time to his hobby of grinding lenses and using them to study tiny objects.

Leeuwenhoek made microscopes consisting of a single high-quality lens of very short focal length; at the time, such simple microscopes were preferable to the compound microscope, which increased the problem of chromatic aberration. Although Leeuwenhoek's studies lacked the organization of formal scientific research, his powers of careful observation enabled him to make discoveries of fundamental importance. In 1674 he likely observed protozoa for the first time and several years later bacteria. Those "very little animalcules" he was able to isolate from different sources, such as rainwater, pond and well water, and the human mouth and intestine. He also calculated their sizes.

In 1677 he described for the first time the spermatozoa from insects, dogs, and man, though Stephen Hamm probably was a codiscoverer. Leeuwenhoek studied the structure of the optic lens, striations in muscles, the mouthparts of insects, and the fine structure of plants and discovered parthenogenesis in aphids. In 1680 he noticed that yeasts consist of minute globular particles. He extended Marcello Malpighi's demonstration in 1660 of the blood capillaries by giving the first accurate description of red blood cells. In his observations on rotifers in 1702, Leeuwenhoek remarked that

in all falling rain, carried from gutters into water-butts, animalcules are to be found; and that in all kinds of water, standing in the open air, animalcules can turn up. For these animalcules can be carried over by the wind, along with the bits of dust floating in the air.

A friend of Leeuwenhoek put him in touch with the Royal Society of England, to which he communicated by means of informal letters from 1673 until 1723 most of his discoveries and to which he was elected a fellow in 1680. His discoveries were for the most part made public in the society's Philosophical Transactions. The first representation of bacteria is to be found in a drawing by Leeuwenhoek in that publication in 1683.
His researches on the life histories of various low forms of animal life were in opposition to the doctrine that they could be produced spontaneously or bred from corruption. Thus, he showed that the weevils of granaries (in his time commonly supposed to be bred from wheat as well as in it) are really grubs hatched from eggs deposited by winged insects. His letter on the flea, in which he not only described its structure but traced out the whole history of its metamorphosis, is of great interest, not so much for the exactness of his observations as for an illustration of his opposition to the spontaneous generation of many lower organisms, such as "this minute and despised creature." Some theorists asserted that the flea was produced from sand, others from dust or the like, but Leeuwenhoek proved that it bred in the regular way of winged insects.



Leeuwenhoek's microscope in Utrecht University

Leeuwenhoek carefully studied the history of the ant and was the first to show that what had been commonly reputed to be ants' eggs were really their pupae, containing the perfect insect nearly ready for emergence, and that the true eggs were much smaller and gave origin to maggots, or larvae. He argued that the sea mussel and other shellfish were not generated out of sand found at the seashore or mud in the beds of rivers at low water but from spawn, by the regular course of generation. He maintained the same to be true of the freshwater mussel, whose embryos he examined so carefully that he was able to observe how they were consumed by "animalcules," many of which, according to his description, must have included ciliates in conjugation, flagellates, and the Vorticella. Similarly, he investigated the generation of eels, which were at that time supposed to be produced from dew without the ordinary process of generation. The dramatic nature of his discoveries made him famous, and he was visited by many notables—including Peter I (the Great) of Russia, James II of England, and Frederick II (the Great) of Prussia.

Leeuwenhoek's methods of microscopy, which he kept secret, remain something of a mystery. During his lifetime he ground more than 500 lenses, most of which were very small—some no larger than a pinhead—and usually mounted them between two thin brass plates, riveted together. A large sample of those lenses, bequeathed to the Royal Society, were found to have magnifying powers in the range of 50 to, at the most, 300 times. In order to observe phenomena as small as bacteria, Leeuwenhoek must have employed some form of oblique illumination, or other technique, for enhancing the effectiveness of the lens, but this method he would not reveal. Leeuwenhoek continued his work almost to the end of his long life of 90 years.

Leeuwenhoek's contributions to the Philosophical Transactions amounted to 375 and those to the Memoirs of the Paris Academy of Sciences to 27. Two collections of his works appeared during his life, one in Dutch (1685–1718) and the other in Latin (1715–22); a selection was translated by Samuel Hoole, The Select Works of A. van Leeuwenhoek (1798–1807).

Source: https://en.wikipedia.org/wiki/Antonie_van_Leeuwenhoek
Source: https://www.britannica.com/biography/Antonie-van-Leeuwenhoek

Cornelis Drebbel
(1572-1633)

Cornelis Drebbel was a Dutch engineer and inventor. He was the builder of the first navigable submarine in 1620 and an innovator who contributed to the development of measurement and control systems, optics and chemistry.

Cornelis Drebbel was born in Alkmaar, Holland in an Anabaptist family in 1572. After some years at the Latin school in Alkmaar, around 1587, he attended the Academy in Haarlem, also located in North-Holland. Teachers at the Academy were Hendrik Goltzius, engraver, painter, alchemist and humanist, Karel van Mander, painter, writer, humanist and Cornelis Corneliszoon of Haarlem. Drebbel became a skilled engraver on copperplate and also took an interest in alchemy.

In 1595 he married Sophia Jansdochter Goltzius, younger sister of Hendrick, and settled at Alkmaar. They had at least six children, of whom four survived. Drebbel worked initially as a painter, engraver and cartographer. But he was in constant need of money because of the prodigal lifestyle of his wife. In 1598 he obtained a patent for a water-supply system and a sort of perpetual clockwork. In 1600, Drebbel was in Middelburg where he built a fountain at the Noorderpoort. In that spectacle making center he may have picked up knowledge in the art of lens grinding and later would construct a magic lantern and a camera obscura.

Around 1604 the Drebbel family moved to England, probably at the invitation of the new king, James I of England (VI of Scotland). He was accommodated at Eltham Palace. Drebbel worked there at the masques, that were performed by and for the court. He was attached to the court of young Renaissance crown-prince Henry. He astonished the court with his inventions (a perpetuum mobile, automatic and hydraulic organs) and his optical instruments.

His fame circulated through the courts of Europe. In October 1610 Drebbel and his family moved to Prague on invitation of Emperor Rudolf II, who was preoccupied with the arts, alchemy and occult sciences. Here again Drebbel demonstrated his inventions. When in 1611 Rudolf II was stripped of all effective power by his younger brother Archduke Matthias, Drebbel was imprisoned for about a year. After Rudolf's death in 1612, Drebbel was set free and went back to London. Unfortunately his patron prince Henry had also died and Drebbel was in financial trouble.

With his glass-grinding machine he manufactured optical instruments and compound **microscopes** with two convex lenses, for which there was a constant demand. In 1622 Constantijn Huygens stayed as a diplomat for more than one year in England. It is quite possible that he learned the art of glass grinding at this time from Drebbel, and that he passed this knowledge to his second son Christiaan Huygens, who became a prominent Dutch mathematician and scientist. The English natural philosopher Robert Hooke may have learned the art of glass grinding from his acquaintance Johannes Sibertus Kuffler, the son-in-law of Drebbel.

Towards the end of his life, in 1633, Drebbel was involved in a plan to drain the Fens around Cambridge, while living in near-poverty running an ale house in England. He died in London.

In keeping with traditional Mennonite practice, Drebbel's estate was split between his four living children at the time of his death.

The Edison of his era, Drebbel was an empirical researcher and innovator. His constructions and innovations cover measurement and control technology, pneumatics, optics, chemistry, hydraulics and pyrotechnics. Along with Staten General he registered several patents. He also wrote essays about his experiments with air pressure and made beautiful engravings; including The Seven Liberal Arts on a map of the city of Alkmaar. He was involved in making theater props, moving statues and in plans to build a new theater in London. He worked on producing torpedoes, naval mines, detonators with that used glass Batavian tears, and worked on fulminating gold (aurum fulminans) as an explosive.

He was known for his Perpetuum Mobile, built an incubator for eggs and a portable stove/oven with an optimal use of fuel, able to keep the heat on a constant temperature by means of a regulator/thermostat. He designed a solar energy system for London (perpetual fire), demonstrated air-conditioning, made lightning and thunder ‘on command’, and developed fountains and a fresh water supply for the city of Middelburg. He was involved in the draining of the moors around Cambridge (the Fens), developed a predecessors of the barometer and thermometer, and a harpsichords that played on solar energy.

Develops an automatic precision lens-grinding machine, builds improved telescopes, constructs the first microscope ('lunette de Dreubells'), camera obscura, laterna magica, manufactures Dutch or Batavian tears.

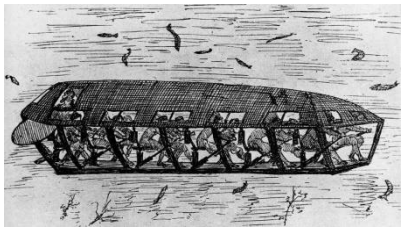


Illustration of a Drebbel

He also built the first navigable submarine in 1620 while working for the English Royal Navy. He manufactured a steerable submarine with a leather-covered wooden frame. Between 1620 and 1624 Drebbel successfully built and tested two more submarines, each one bigger than the last. The final (third) model had 6 oars and could carry 16 passengers. This model was demonstrated to King James I in person and several thousand Londoners. The submarine stayed submerged for three hours and could travel from Westminster to Greenwich and back, cruising at a depth between 12 and 15 feet (4 to 5 metres). Drebbel even took James in this submarine on a test dive beneath the Thames, making James I the first monarch to travel underwater. This submarine was tested many times in the Thames, but it couldn't attract enough enthusiasm from the Admiralty and was never used in combat.

More recently it has been suggested that the contemporary accounts of the craft contained significant elements of exaggeration and it was at most a semi-submersible which was able to travel down the Thames by the force of the current.

Source: https://en.wikipedia.org/wiki/Cornelis_Drebbel
Source: http://www.bbc.co.uk/history/historic_figures/drebbel_cornelis.shtml

Zacharias Janssen
(1585-1632)

Zacharias Janssen (also Zacharias Jansen or Sacharias Jansen) (1585 – pre-1632) was a Dutch spectacle-maker from Middelburg associated with the invention of the first optical telescope. Janssen is sometimes also credited for inventing the first truly compound microscope. However, the origin of the **microscope**, just like the origin of the telescope, is a matter of debate.

Zacharias Janssen was born in The Hague. Local records seem to indicate he was born in 1585 although a date of birth as early as 1580 or as late a 1588 are also given. His parents were Hans Martens (who may have had the occupation of a peddler) and Maeyken Meertens, both probably from Antwerp, Belgium. He grew up with his sister Sara in Middelburg, at the time the second most important city of the Netherlands. He was known as a "street seller" who was constantly in trouble with the local authorities.

He stated he was born in The Hague on the marriage file of his first marriage, with Catharina de Haene, on October 23, 1610. When this file was refound by Cornelis de Waard in 1906, De Waard found the following excerpt: Sacharias Jansen, j.g. uut Den Haag, "Zacharias Jansen, bachelor from The Hague" Before, it was often thought that Janssen was a native of Middelburg. In 1612, Zacharias and Catharina had a son they named Johannes Zachariassen.

In 1615 Zacharias was appointed guardian of two children of Lowys Lowyssen "geseyt Henricxen brilmakers" (called Henry the spectacle maker). It is surmised that Zacharias also took possession of Lowys Lowyssen's spectacle-making tools because the first record of Zacharias Janssen being a spectacle maker appears in 1616. The family had to move to Arnemuiden in 1618 after Zacharias's counterfeiting activities were exposed. There Zacharias was again accused of counterfeiting in 1619 causing him to be on the move again, ending up back in Middleburg in 1621.
A year after the death of Janssen's first wife in 1624, he married Anna Couget from Antwerp, who was the widow of a Willem Jansen (probably a relative of Janssen). He moved to Amsterdam in November 1626 with a profession of a spectacle maker, but was bankrupt by 1628. Janssen has been given a death date as late as 1638 although his sister said he was dead in 1632 testimony and his son Johannes declared his parents had died by the time of his marriage in April 1632.

Over the years there have been claims Zacharias Janssen invented the telescope and/or the microscope in Middelburg between 1590 and 1618. Zacharias worked for some period of his life as spectacle-maker (a very competitive and secretive trade) and at one time lived next door to Middelburg spectacle maker Hans Lippershey, also claimed to have invented the telescope. Janssen's attribution to these discoveries is debatable since there is no concrete evidence as to the actual inventor, and there are a whole series of confusing and conflicting claims from the testimony of his son and fellow countrymen.

The claim that Zacharias Janssen invented the telescope and the microscope dates back to the year 1655. During that time Dutch diplomat Willem Boreel conducted an investigation trying to figure out who invented the telescope. He had a local magistrate in Middelburg follow up on a 45 year old recollection of a spectacle maker named "Hans" who told a young Boreel in 1610 about inventing the telescope. In his investigation the magistrate was contacted by a then unknown claimant, Middelburg spectacle maker Johannes Zachariassen, the son of Zacharias Janssen, who testified under oath that his father invented the telescope and the microscope as early as 1590 and that Hans Lippershey had stolen his father's invention of the telescope. This testimony seemed to convincing to Boreel, who modified his recollections, concluding that Zacharias must have been who he remembered. Boreel's conclusion that Zacharias Janssen invented the telescope a little ahead of spectacle maker Hans Lippershey was adopted by Pierre Borel in his 1656 book on the subject.

In Boreel's investigation Johannes also claimed his father, Zacharias Jansen, invented the compound microscope in 1590. This pushes the date so early it is sometimes assumed, for the claim to be true (Zacharias most likely dates of birth would have made him 2-5 years old at the time) grandfather Hans Martens must have invented it.

Other claims have come forward over the years. Physicist Jean Henri van Swinden's 1822-23 investigation reached the conclusion supporting Janssen and in 1841 a collector named Zacharias Snijder came forward with 4 iron tubes with lenses in them purported to be Janssen original telescopes. In historian Cornelis de Waard's 1906 book on the history of the telescope he recounted his discovery of note written in 1634 by the Dutch philosopher Isaac Beeckman in which Beeckman mentioned that Johannes Zachariassen claimed his father created his first telescope in 1604 (and that it was a copy of an Italian device from 1590). The German astronomer Simon Marius's account to his patron Johan Philip Fuchs von Bimbach about meeting an unnamed Dutchman at the 1608 Autumn Frankfurt Fair who tried to sell him a device that sounded like a broken telescope has led to later speculation this unnamed Dutchman could have been Zacharias Janssen.

The confusion surrounding the claim to invention of the telescope and the microscope arises in part from the (sometimes conflicting) testimony of Zacharias Janssen's son, Johannes Zachariassen. Johannes claims include that his father invented the telescope in 1590, that his father invented the telescope in 1604, that he and his father invented the telescope in 1618, and that Jacob Metius and Cornelis Drebbel bought a telescope from him and his father in 1620 and copied it. Johannes also seems to have lied about his own date of birth, maybe so he could stake his own claim as inventor of the telescope along with his father.

The 1655 investigation by William Boreel (who may have been a childhood friend of Zacharias Zachariassen) added to the confusion over invention. The people he had the local magistrate interview were trying to recount details 50 or 60 years after the fact and Boreel may have confused the names of spectacle makers from his childhood. He may have also been confused about a microscope built by another optician for Drebbel, claiming it was built by Zacharias Janssen.

An investigation begun in 1816 in preparation for a memorial to commemorate Janssen as the inventor of the telescope and microscope turned up further problems with the claim including

the Lippershey and Metius patent applications, Janssen late 1585 date of birth, and no record of him being a spectacle maker before 1615.

Albert Van Helden, Sven Dupré, Rob Van Gent, and Huib Zuidervaart in their book "Origins of the Telescope" came to the conclusion that Janssen may not have become an optician until 1616 and that the claims surrounding him as the inventor of the telescope and the microscope were the fabrications of his own son, Johannes Zachariassen, who claimed it as a matter of fame and for possible financial gain.

Source: https://micro.magnet.fsu.edu/optics/timeline/people/janssen.html
Source: https://en.wikipedia.org/wiki/Zacharias_Janssen

Victor Hensen (1835-1924)

Christian Andreas Victor Hensen (10 February 1835-5 April 1924) was a German zoologist (planktology). He coined the term plankton and laid the foundation for biological oceanography.

Hensen was born in the town of Schleswig. He studied medicine at the universities of Würzburg, Berlin (studying under Müller) and Kiel. In 1859, he received his doctorate in Kiel for a thesis on epilepsy and urinary secretions.

In 1867, he became a member of the Prussian House of Representatives to push towards studies of the ocean. Upon his initiative, the Royal Prussian Commission for the Exploration of the Oceans was founded. From 1871 to 1891, Hensen was professor of physiology at Kiel. During his time, he was head of five marine biological expeditions to the Baltic and North Seas, as well as the Atlantic Ocean. Hensen also worked in embryology and anatomy. He discovered a structure in the ear, the Hensen duct (or Canal of Henson; also Hensen's cells, Hensen's stripe), and a structure essential for the development of birds, the Hensen's node and Hensen's line

In Hensen's day the role of plankton as the basis for all marine life was unknown. "Victor Hensen was the first to recognize the sea as a production site. On a plankton expedition supported by the Humboldt Foundation (then the Prussian Royal Academy of Sciences) in 1889 he realized that the sea is a producer", says the Kiel zoologist Professor Thomas Bosch. The discovery of the importance of plankton was as important in its day for the understanding of marine biology as the sequencing of the human genome is for the understanding of human biology today. Bosch notes that the Cluster of Excellence "The Future Ocean", for example, continues to benefit from Hensen's insights today in its projects on marine resources.

Victor Hensen's work in marine biology was the basis for the later establishment of the chair in planktology in Kiel, which existed until the 1940s. Even if the research department has a broader ambit today, its research continues to be based on Hensen's methods of quantitative planktology. "He attempted to find out where there was more or less plankton and what factors determined this", explains the current occupant of the chair Professor Riebesell.

Hensen was also active as a chemist and invented a method for the extraction of chemically pure glycogen from animal tissue. This substance - a sugar compound - is today a common ingredient in the manufacture of medicines. Until the end of his life Hensen was chairman of the Prussian Marine Commission. Victor Hensen died in Kiel on 5 April 1924.

Source: https://www.britannica.com/biography/Viktor-Hensen
Source: https://en.wikipedia.org/wiki/Victor_Hensen
Source: https://www.encyclopedia.com/science/dictionaries-thesauruses-pictures-and-press-releases/hensen-christian-andreas-victor
Source: https://www.uni-kiel.de/grosse-forscher/index.php?nid=hensen&lang=e