

Voyages

SCIENTIFIC CIRCUMNAVIGATIONS *1679-1859*



An Exhibit of Rare Books from the Linda Hall Library
of Science, Engineering, and Technology



“La Favorite: under sail for Bourbon [Réunion Island] at the approach of the second hurricane”, from Laplace. Voyage autour du monde. Paris: Imprimerie Royale, 1833-39.

On his way to explore the Indian Ocean, Laplace encountered ferocious hurricanes after rounding the tip of Africa. The ship finally was able to sail north to its destination, Réunion Island, which lies southeast of Mauritius in the Indian Ocean.

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CYNTHIA J. ROGERS

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Sailing around the globe was a marvelous feat in the 17th century, and continued to be so in the 18th and 19th centuries. A circumnavigation required masterful navigational skills, physical endurance, and bold resolve. Yet these supreme challenges were repeatedly surmounted by scientific expeditions, sponsored to pursue a broad scope of investigations including geography and elaborate studies of natural history, astronomy and oceanography. Scientists accompanied the commander and crew on board, and space was made for chronometers, telescopes, specimen bottles and boxes, paints and palettes, chemicals, sounding apparatus and a wide assortment of equipment and instruments.

The Linda Hall Library's collection of the published monuments to these great expeditions during the age of sail comprises this exhibit. The works represent scientists and explorers who ventured into the vast oceans from homes in England, France, Russia, Austria, and the United States. The voyagers performed circumnavigations to seek out lands new to them in the Pacific Ocean between the East Indies and the Americas, to define the boundaries of the great southern continent, or to find a passage between the great oceans from the North Pacific Ocean.

Their achievements included the charting and mapping of many lands, such as Australia, New Zealand, Antarctica, Hawaii, and Tahiti. When Dampier set sail, many parts of the earth were still uncharted. By the time the United States completed its first circumnavigation, nearly the

At Opito, near Mercury Bay, the geologist Hochstetter found rich deposits of the bones of the great, extinct *moa* bird. An English visitor in 1839 had found an example on the islands and took the bone back to London, where the great paleontologist Richard Owen identified it. Hochstetter located several such deposits on the islands.



Motu roa, at Mercury Bay, North Island (New Zealand), from Reise der Österreichischen Fregatte Novara. (Vienna, 1861-1875).

entire surface of the globe had been mapped. Improvements were made in navigation including the accurate determination of longitude. The study of ocean currents and marine life advanced oceanography. The great numbers of specimens that were collected of the flora and fauna from locations around the globe formed a rich treasure trove that expanded the field of natural history. Observations of geological formations led to new explanations of the earth's features.

Substantial portions of these accounts describe the indigenous peoples of the world. The earliest descriptions were drawn with a high degree of sensitivity, often reflecting on the effects of military and spiritual conquests by governments and missionaries. A study of pre-technological societies, it was felt, could draw back the curtain on the history of civilization. The voyagers tended to view various peoples as representing different periods of civilization based on their technology. As a result, the documentation in these accounts provides precious evidence of the traditional lifeways of many peoples of the world.

The Lewis and Clark Expedition explored parts of the Oregon Territory, but it was not included in the Louisiana Purchase of 1803. Charles Wilkes, captain of the United States Exploring Expedition, arrived at the mouth of the Columbia River in the spring of 1841, the same year that the first official wagon train headed west for the territory along the Oregon Trail. The expedition gave the United States a strong claim on the territory, where the naturalists Charles Pickering and Titian Peale made notes and the drawings of these wolves.

Lupus Gigas and Occidentalis (Oregon Territory) from **Cassin, John**. United States Exploring Expedition... Mammalogy and Ornithology. (Philadelphia, 1858).



By the turn of the 20th century, scientific expeditions around the globe seemed less relevant. Explorers were instead focusing on specific areas, and investigating the interiors of continents and lands whose shores were already mapped by these early navigators and scientists. Their fascinating experiences and observations are recorded in the works presented in this exhibition.

Dampier, William. *A new voyage round the world:* London: Printed for James Knapton, 1697.

William Dampier, an orphan of Weymouth, England, spent twelve and a half years as a pirate, plundering ships in the West Indies and Central America, and eventually making his way across the Pacific to the Philippines, the East Indies, and Australia. Having set out in 1679, he returned home in 1691 and published his carefully-kept journal in 1697; it proved to be a sensation. Dampier may have been a buccaneer, but he was such an astute observer of people, places, and natural history

that his works are often included with the publications of more explicitly scientific expeditions. His book was dedicated to the President of the Royal Society of London.



The map shows the Isthmus of Darien (Panama). Dampier actually crossed the Isthmus twice. The second trip, from the Pacific to the Atlantic, took him 23 days; Dampier learned that the Miskito Indians could do it in less than two days from more advantageous points. The map provides excellent details of the area which, two centuries later, would be chosen as the site for the Panama Canal.

Dampier, William. *Voyages and descriptions. Vol. II.* London: Knapton, 1699.



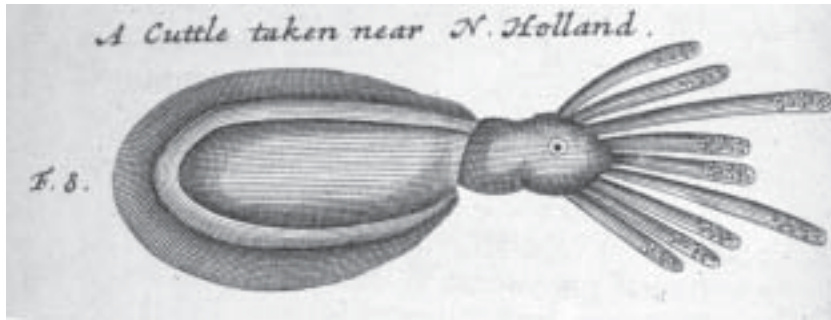
Dampier's *New Voyage* of 1697 met such an enthusiastic reception that his printer issued a second volume in 1699, containing supplemental information, but also a new treatise, Dampier's "Discourse on the Trade Winds."

The map records one of Dampier's pet peeves. The Pacific Ocean had been named by Magellan, because it was so peaceful, compared to the Straits (of Magellan) that he had just traversed. Dampier (and most other sailors) did not think the term was appropriate for most of that vast and turbulent ocean, so on the map he restricts the name "Pacific" to the seas that lie off South America, and adopts the name of "the Great South Sea" to identify the rest.

Map of the Trade Winds

Dampier, William. *A voyage to New Holland, in the year 1699...* London: Knapton, 1703.

Dampier spent nine weeks on the west coast of Australia during his first voyage, and is considered to be the first Englishman to go there. He wrote of that visit: "New Holland is a very large tract of land. It is not yet determined whether it is an island or a main continent; but I am certain that it joyns neither to Asia, Africa, nor America."



Fish of Australia

The success of that voyage and his interesting descriptions encouraged the English admiralty to sponsor him for a return to Australia in 1699. He was placed in command of his own ship, the *Roe-Buck*, and he sailed to Shark's Bay on the west coast of the continent, further south than in his previous voyage. Several types of fish observed in that area were described.

Funnell, William. *A voyage round the world. Containing an account of Captain Dampier's expedition...in the years 1703 and 1704.* London: W. Botham for J. Knapton, 1707.

Dampier and his shipmate William Funnell parted ways, each taking his own ship, during the voyage. Funnell wrote his own account of the voyage and of his own route.

This iguana was seen between Honduras and Panama. It "is a sort of creature ... about three foot long ... a very ugly creature to look at." Dampier also visited the Galapagos and no doubt observed iguanas there. Compare this fanciful illustration with the lifelike portrait of one seen on Darwin's voyage to those islands (p. 19).



Iguana

Dampier, William. *Voyage de Guillaume Dampier aux terres australes, à la Nouvelle Hollande, &c. fait en 1699...* Amsterdam: Chez Paul Marret, 1705.

Dampier stopped at Juan Fernando's Island off the coast of Chile seeking an Indian man who had been left alone there for several years. He had survived surprisingly well. "All this may seem strange to those that are not acquainted with the sagacity of the Indians; but it is no more than these Moskito men are accustomed to in their own country, where they make their own fishing and striking instruments, without either

forge or anvil..." A distinctly more difficult challenge faced the Scotsman Alexander Selkirk, who was abandoned there later, following a mutiny. Dampier picked him up in 1709, and his story inspired Defoe's *Robinson Crusoe*, published in 1719.



This French translation of Dampier's Voyage portrays a group of Miskito Indians. He often relied upon the Indians during his travels in Middle America.

Natives of the Isthmus of America

Dampier, William. *A continuation of A voyage to New Holland, e-c. in the year 1699...* London: By W. Botham for J. Knapton, 1709.

When Dampier began his first journey around the world, he only intended to go as far as "the Bay of Campeachy in the Gulph of Mexico to cut Log-wood." While exploring that area east of Vera Cruz, he observed a "Hippopotamus". There he found "great savannahs full of Bullocks, Horses, and other animals, amongst which, the Mountain Cow ...is most remarkable. This beast is as big as a Bullock...shaped like a Cow in body...always found in the woods near some large river; and feeds on [grass near rivers] but never in pastures of good grass as all other Bullocks do...[and] slips into the water: where sinking down to the bottom, tho' very deep, she walks as on dry ground".



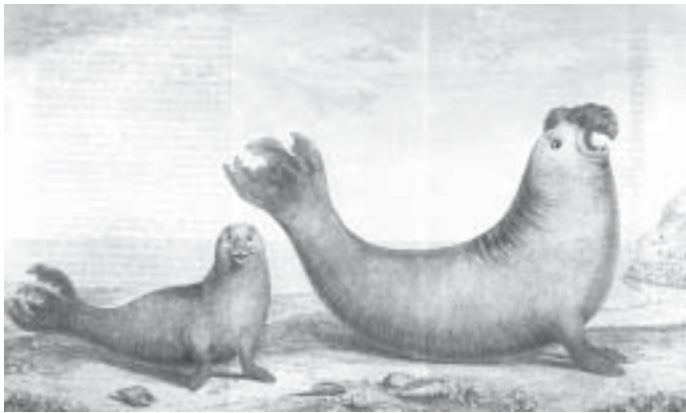
Dampier also refers to the animal as River Horse, River Cow, Sea Horse and Hippopotamus. He describes manatees by name elsewhere; possibly this was a tapir. Dampier describes it in his account of his first voyage, but the plate was added at the end of this account of his second voyage.

Hippopotamus (Mountain Cow)

**ANSON'S VOYAGE
1740-1744**

Anson, George. *A voyage round the world in the years 1740...1744.* London: Knapton, 1748.

Captain George Anson was a career naval officer, having joined the service in 1712. After England declared war on Spain in 1739, he was sent around the world in the *Centurion* with a strictly military objective. His fleet of six ships was to attack Spanish settlements in the Americas, and, if possible, to capture a gold-laden Spanish galleon. Anson was spectacularly successful in this quest, bringing back 400,000 pounds in Spanish booty. On another measure, the voyage was



Sea Lions

disastrous, since over one thousand of Anson's sailors died of scurvy. This staggering loss of life was a powerful incentive to find a cure for scurvy, and within just a few decades it was discovered that regular consumption of citrus fruits would prevent the disease.

While Anson's ships carried no naturalist, his published *Voyage* includes this marvelous plate of sea lions seen off the west coast of South America. The crew at times subsisted on sea lions and seals.

**BOUGAINVILLE'S VOYAGE
1766-1769**

Bougainville, Louis-Antoine de, comte. *Voyage autour du monde.* Paris: Chez Saillant & Nyon, 1772.

Bougainville's specific mission was to sail to the Malouines (Falkland Islands), which had been claimed by the Spanish, and deliver payment for rights to establish French colonies there. His broader goal was a voyage "made with the spirit of discovery".



Strait of Magellan

Along the Strait of Magellan, Bougainville encountered the Patagonian Indians: "We hardly set foot on shore, but we saw six Americans come to us on horseback, in full gallop... What makes them seem gigantic are their prodigious broad shoulders... their nerves are braced, and their muscles are strong ... their language seemed very delicate."

From the Malouines, Bougainville sailed west to South America and entered the Strait of Magellan. There he made some of the most important achievements of the voyage by mapping the strait in detail, and describing specific harbors that could be used safely by future navigators. Systematic observations of longitude were recorded during the voyage and one of the expedition's notable achievements was to improve the determination of longitude in navigation.

This image of a Tahitian vessel is one of several engravings in the volume illustrating boats of various islands that caught the attention of the crew. Bougainville mapped part of Tahiti, and also the Solomon Islands east of New Guinea, which he named the Isles of Louisiade. The largest is named Bougainville.



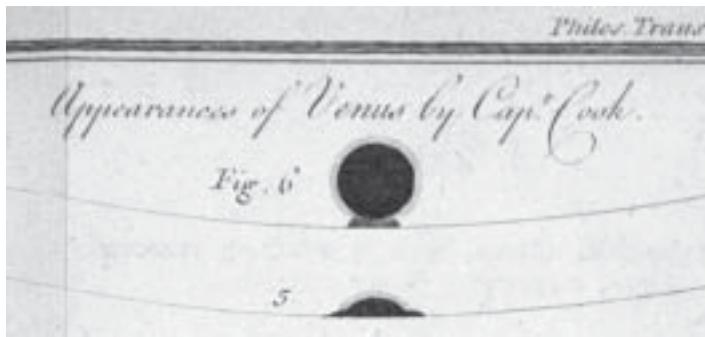
Boat of the Island of Tahiti with Sail

Banks, Joseph. *Supplément au Voyage de M. de Bougainville.* Neuchatel: Imprimerie de la Société Typographique, 1773.

Bougainville was already preparing the second edition of the account of his voyage when Captain Cook returned to England from his first voyage in the *Endeavor*. Joseph Banks, the naturalist who went with Cook, sent an abridged extract of his journal to the Academy of Sciences in Paris, and Bougainville added it as a supplement to his own work, praising the accomplishments of Cook's expedition. Popular attention focused instead on the descriptions by Bougainville, Cook, Banks, and others of the perceived open sensuality of the Tahitian people. The savant Denis Diderot even wrote his own *Supplément au Voyage de Bougainville* in 1796, which was a diatribe against artificial social restrictions. Inspired by the Tahitians, Diderot invited France to aspire to even greater heights of sensuality than the French already had reached.

Cook, James and Charles Green. “*Observations made...at King George’s Island [Tahiti] in the South Sea,*” in: *Philosophical Transactions of the Royal Society*. Vol. 61, 1771.

Captain Cook’s first voyage had an astronomical purpose. The astronomer Edmond Halley had explained in 1716 that if the transit of Venus were to be observed from a number of different vantage points on the earth, then the distance to Venus, and hence the distance to the sun, could be accurately calculated. As part of an international effort, the Royal Society and the British Admiralty sent James Cook and the *Endeavour* to Tahiti for the express purpose of observing Venus as it passed across the sun in 1769. In addition, Cook was to explore the Pacific Ocean and search for the great southern continent that was supposed to lie about the South Pole.



Transit of Venus

On June 3, Cook reported that the weather at Tahiti was excellent for viewing the transit of Venus. The report in the *Philosophical Transactions* includes an engraved illustration of his and astronomer Charles Green’s observations. It depicts “an atmosphere or dusky cloud round the body of the planet,” reported generally among the observers worldwide, which caused a disappointing lack of the precision that had been hoped for by all.

Hawkesworth, John, ed. *An account of the voyages... in the Southern Hemisphere by...Captain Cook*. London: Printed for W. Strahan and T. Cadell, 1773.



A view of the island of Huaheine, near Tahiti

Joseph Banks, the naturalist of Cook’s expedition, noted in his journal that upon first coming ashore on Tahiti, the islanders led the visitors into the forest, “through groves of trees, which were loaded with cocoa-nuts and breadfruit, and afforded the most grateful shade. Under these trees were the habitations of the people... and the whole scene realized the poetical fables of Arcadia.” Banks was especially enamored by the women of Tahiti. The transit of Venus found Banks in the company of “three handsome young women... he showed them the planet on the sun, and endeavored to make them understand that he and his companions had come from their own country purposely to see it. Soon after, Mr. Banks returned with them [to their island nearby], where he spent the rest of the day examining its produce.”

Cook, James. *A voyage towards the South Pole, and round the world, performed in His Majesty's ships the Resolution and Adventure.* Fourth ed. London: W. Strahan and T. Cadell, 1784.

Cook begins the account of his second voyage by describing the need to finally determine what might lie below Tierra del Fuego and Australia: "Whether the unexplored part of the Southern Hemisphere be only an immense mass of water, or contain another continent...was his Majesty's principal motive in directing this voyage to be undertaken..."



The success that Cook had in circumnavigating Antarctica is stunning, but he was never certain that he saw the continent. "I had now made the circuit of the Southern Ocean... That there may be a continent, or large tract of land, near the pole, I will not deny; ... I am of the opinion that there is; and it is probable that we have seen a part of it." He suggested that such land could "afford no better retreat for birds, or any other animals, than the ice itself, with which it must be wholly covered." That excellent suggestion may have been influenced by the severe appearance of an island in the Antarctic regions that he surveyed, and named the Isle of Georgia.

Possession Bay in the Island of South Georgia



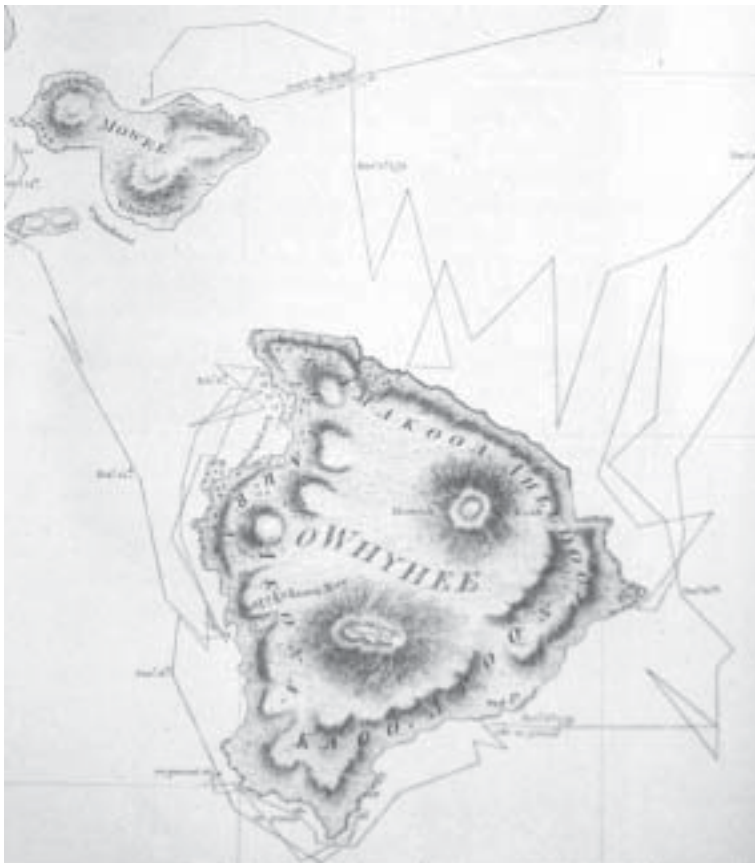
Cook perceived the people of Easter Island to have affinities to peoples he had encountered in the western part of the Pacific, and thought perhaps they had common ancestry. "It is extraordinary that the same nation should have spread themselves over all the isles in this vast ocean, from New Zealand to this island, which is almost one-fourth part of the circumference of the globe. Many of them have now no other knowledge of each other, than what is preserved by antiquated tradition; and they have, by length of time, become, as it were, different nations, each having adopted some peculiar custom, or habit..."

This striking portrait displays ear piercings in which flexible rings were sometimes worn. Cook notes that the islanders' "chief ear ornaments are the white down of feathers, and rings..."

Man of Easter Island

Cook, James. *A voyage to the Pacific Ocean: ... for making discoveries in the Northern Hemisphere...in His Majesty's ships the Resolution and Discovery, in the years 1776-1780.* Second edition. London: H. Hughs, 1785.

The instructions given to Captain Cook by the British Admiralty for his third voyage stated primarily “that an attempt should be made to find out a Northern passage by sea from the Pacific to the Atlantic Ocean.” After charting several of the Hawaiian islands, Cook sailed to the northwest coast of America and explored Nootka, Prince William, and Norton Sounds. The expedition headed further north through the Bering Strait to Icy Cape on the shore of North America, and across the strait to North Cape on the shore of Russia, but could not pass beyond 70 degrees north latitude. Cook decided to spend the winter in the Hawaiian Islands and “return to the North, in farther search of a passage, the ensuing summer.” Cook never returned. The voyage account is completed by Captain King, who described the conflict with the people of Hawaii that resulted in the death of James Cook.

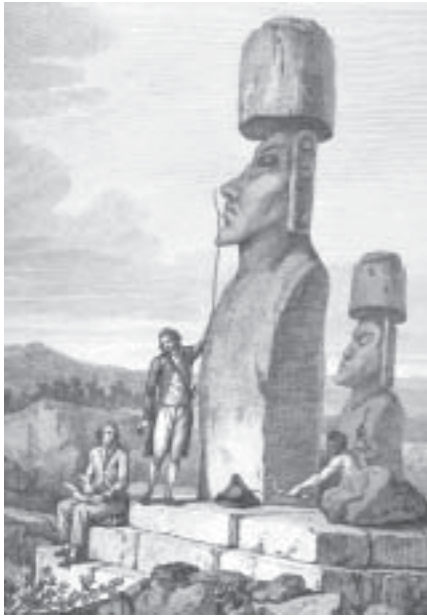


As Cook headed for the Bering Strait, the crew was surprised to see many birds, and turtles were glimpsed in the water. They were about to come upon the Hawaiian Islands. Cook described how “an island made its appearance” and then two more. “At this time, we were in some doubt whether or no the land before us was inhabited; but this doubt was soon cleared up, by seeing some canoes come off the shore, toward the ships... They had from three to six men each; and we were agreeably surprised to find, that they spoke the language of Otaheite [Tahiti]...” Cook described the people, landscape, flora and fauna of five of the islands. It was upon their return from the Bering Strait that they found “another island to windward, which the natives call *Owhyhee* [Hawaii]. The name of that, off which we had been for some days, we were also told, is *Mowee* [Maui].”

Chart of Sandwich Islands, showing Owhyhee

La Pérouse, Jean-François de Galaup, comte de. *Voyage de La Pérouse autour du monde.* Paris: Imp. de la République, 1797.

Instructed to establish a fur trade between the northwest coast of America and Asia, La Pérouse made a remarkable survey of the Asian coast. He sailed through the Korean Strait into the Sea of Japan, then north where he explored the Russian coast behind the Kurils. Sailing through that island chain into the Pacific Ocean, he finally arrived at Petropavlovsk. Barthélemy de Lesseps disembarked there with La Pérouse's journal. Then the ships were lost in the South Pacific Ocean. They took nearly a hundred lives with them, along with the captain's log and thousands of meticulously prepared specimens of natural history. Fortunately, Lesseps successfully hand-delivered the journal and artwork to France, having protected them during his long journey overland from Russia. The journal was faithfully edited by Louis-M.-Antoine Milet-Mureau, and the artwork was made into copperplates. This work, with its beautiful engravings, serves as a lasting monument to the crew.



The first European known to explore Easter Island is the Dutch captain Jacob Roggeveen, who sighted and named it on Easter Sunday in 1722. Captain Cook visited the island in 1774, and the ill-fated expedition of La Pérouse made a stop there in 1785 on its way to the North Pacific Ocean.

The Monuments of Easter Island

Lesseps, Jean-Baptiste-Barthélemy. *Journal historique du voyage de M. de Lesseps.* Paris: Imprimerie Royale, 1790.

Lesseps was the Russian interpreter on the voyage of La Pérouse. After he disembarked on the Kamtschatka peninsula at the harbor of Petropavlovsk, entrusted with La Pérouse's journal, the ships sailed south across the Pacific Ocean to the Fiji Islands and then to Australia. They were last seen heading out from Botany Bay in March, 1788. Lesseps did not learn of the disappearance of his comrades until he arrived in Paris in October, 1788.

Sleighs travelling through Kamtschatka



Lesseps's arduous overland journey from Petropavlovsk to Paris took one year. The relatively short journey from the tip of the Kamtschatka peninsula to the mainland, and on to Okhotsk in eastern Russia, presented an extremely harsh terrain that was covered with snow, hot springs, and volcanoes. That journey required Lesseps to forge a freezing river on a raft, and to cross long distances through heavy snowstorms in a caravan of thirty-five sleighs.

**DISCOVERY OF LA PÉROUSE
1827-1828**

Dillon, Peter. *Voyage aux îles de la mer du Sud..., et relation de la découverte du sort de La Pérouse...* Paris: Pillet Aîné, 1830.

While visiting the islands in the Santa Cruz group between New Caledonia and the Louisiade Archipelago, the whaling captain Peter Dillon had noticed some European objects in circulation there. Dillon interviewed elderly inhabitants who remembered the wrecks of La

Pérouse. Dillon took the relics to Paris, where the elderly Barthélemy Lesseps sadly identified them as coming from La Pérouse's ships, the *Astrolabe* and the *Boussole*.



This plate from Dillon's account of his voyage depicts a family in Mannicolo, one of the islands in the New Hebrides south of Vanikoro.

People of Mannicolo

**THE VOYAGE OF FREYCINET
1817-1820**

Freycinet, Louis de. *Voyage autour du monde...sur les corvettes de S.M. l'Uranie et la Physicienne.* Paris: Pillet Aîné, 1825.

Freycinet's mission was to make observations of the earth's magnetism from different locations. The measurements would help determine to what degree the earth is spherical, and they allowed Freycinet to conclude that the flattening of the Southern Hemisphere does not differ appreciably from that of the Northern Hemisphere.



The butterfly specimen was found at Guam, one of three critical locations from which observations were required for this mission. The other two locations were the island of Mauritius which lies east of Africa, and Maui in the Hawaiian Islands.

Danaïde Eunice (Guam)

Duperrey, Louis-Isadore. *Voyage autour du monde... sur la corvette...La Coquille pendant les années 1822-1825.* Paris: Arthus Bertrand, 1825-39.

Duperrey served as ensign aboard the *Uranie* during the voyage of Freycinet. Five years later he commanded his own expedition aboard *La Coquille*, and continued to make contributions to geodesy. The

naturalist on board, René Primavère Lesson, considered the emerald bird of paradise the most magnificent bird of New Guinea. “On one of the first days of our arrival in New Guinea, this promised-land of naturalists,” he wrote, “we glimpsed the emerald birds of paradise flying in the deep darkness of the old forests, creating perhaps the grandest and most magical spectacle ever to strike the eye of a European. The birds’ wings beat the air with graceful undulations: the feathers of their flanks form an elegant and aerial plume which, without hyperbole, resemble a brilliant meteor, streaming through the air like a star.”

Lesson captured many New Guinea birds, such as these colorful specimens, but he never procured one of the jewel green birds of paradise during his assignment aboard the *Coquille*.



Dumont d'Urville, Jules-Sébastien-César. *Voyage de la corvette l'Astrolabe...pendant les années 1826-1829.* Paris: J. Tastu, 1830-1834.

The Louisiade Archipelago east of New Guinea held great interest for Dumont d'Urville, and the detailed mapping of that region and of New Zealand was his main mission. The time required for this charting mission caused him to delay crossing the Pacific until his later Antarctic voyage.



Natai, a chief of the Bay of Wangari, New Zealand

While exploring New Zealand, Dumont d'Urville observed the entrenched and complicated military tradition of the various tribes. He perceived a parallel between the crushing military requirements of young men in New Zealand and in Europe.

When he learned that Dumont d'Urville was seeking an artist to accompany his voyage, Louis-Auguste De Sainson was already serving the Admiralty as a special clerk. He offered his services, and the captain was pleased to accept; Sainson had developed an excellent reputation as an artist. This spectacular portrait captured a moment that Dumont d'Urville recorded in his journal: "M. de Sainson's clever brush faithfully reproduced the features, the *mako* (tattoo design) and the facial expression of this New Zealand warrior."

When he arrived in New Guinea, Dumont d'Urville mused that the material culture of the Papuans whom he met displayed similarities to the ancient Egyptians in some of the large sculptures carved for the tombs and sacred houses, and in the amulets worn as necklaces and earrings.

Spiritual power is one aspect of this structure that is conveyed by the artist in this dramatic image. Dumont d'Urville was not able to learn about the symbolism of the sculptures or the nature of the ceremonies performed within the sacred house.

Façade and details of the sacred house at Dorei, New Guinea



**VOYAGE OF LAPLACE
1830-1832**

Laplace, Cyrille Pierre Théodore. *Voyage autour du monde par les mers de l'Inde et de Chine.* Paris: Imprimerie Royale, 1833-39.

In the introduction to his report of the voyage, Laplace pays homage to the French scientific missions before him, including those of Freycinet, Duperrey and Dumont D'Urville. His circumnavigation was primarily to pave the way for commerce, but the voyage made achievements in navigation, natural history, and geodesy. He was instructed to more thoroughly explore the Indian Ocean and the route from there through the Strait of Malacca, between Sumatra and Malaysia, into the China Sea. The ship encountered ferocious hurricanes after rounding the tip of Africa. It finally was able to sail north to its destination, Réunion Island, which lies southeast of Mauritius in the Indian Ocean.



After exploring the Strait of Malacca, the ship sailed north into the South China Sea. On the way to Canton [Kuang-chou], Laplace anchored at Da Nang on the east coast of Vietnam, where the naturalists acquired this civet.

Genette de l'Inde [Indian Civet]

**VOYAGE OF VAILLANT
1836-1837**

Vaillant, August Nicolas. *Voyage autour du monde: exécutée pendant les années 1836 et 1837 sur la corvette la Bonite...* Paris: Arthus Bertrand, 1840-66.



Vaillant's mission had commercial objectives, but equally important scientific goals required two accomplished naturalists on board. Fortuné Eydoux and Louis-François-August Souleyet made an attempt at immortality by naming two of the fish shown on this plate after themselves.

The third fish shown was found in the Hawaiian Islands, where Vaillant and his crew witnessed several hurricanes. In spite of difficulties in anchoring there, about a hundred ships a year visited the islands at this time. Vaillant's account includes a chart of all ships that anchored there from 1830 to 1835, including vessels from England, America, France, Chile, New Zealand, Mexico, and Belgium. There were three times as many whaling ships as ships carrying merchandise.

Rockfish Eydoux, Rockfish Souleyet, and Parrot-Fish

Kotzebue, Otto von. *Entdeckungs-Reise in de Süd See und nach der Berings-Strasse zur Erforschung einer nordöstlichen Durchfahrt.* Weimar: Hoffmann, 1821.

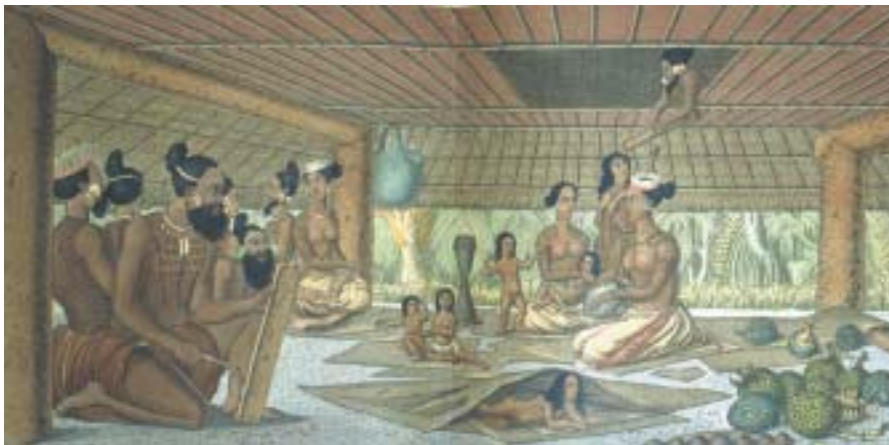
To avoid the icy waters above North America, explorers sought a passage through the continent from the Pacific to the Atlantic. Otto Kotzebue of Russia placed his hopes on an unexplored inlet that appeared on Cook's map only as a break in the coastline above Bering Strait. Kotzebue was disappointed to find that it ended in a sound (to which he gave his name), but compared it to Hudson's Bay in its potential as a trade center.



While he was exploring the surrounding terrain, a group of nearly fifty Eskimos approached, “all armed with lances and bows.” He turned “to meet the Americans, who, on seeing us approach, sat down, like Turks, in a large circle on the ground, by which they meant to manifest their friendly intentions.” He describes the dress of the Eskimos, noting that “they have holes on each side of the mouth, in which they wear morse-bones [walrus], ornamented with blue glass beads...of the same kind as those worn in Asia.”

Portrait of the Inhabitants of Kotzebue Sound

Sailing west from Hawaii, Kotzebue came upon the Marshall Islands. “When we were distant but two miles ... we were surprised by seven canoes, each rowed by five or six men ... They rub their long black hair with cocoa oil, tie it together above the forehead, and adorn it with flowers and wreaths made of shells.”



The chief of the island of Otdia kindly invited Kotzebue and the scientists to his home, where they were served a beverage made from pandanus juice. Kotzebue was delighted that their host's name, Rarick, nearly matched that of their ship, the *Rurick*.

View of the interior of a house in the Marshall Islands

Darwin, Charles. *The Zoology of the Voyage of H.M.S. Beagle. Part III: Birds*, by John Gould. London: Smith, Elder & Co., 1841.

The *Beagle* sailed with a two-fold mission. Captain Fitzroy was to survey the southern coasts of South America and Tierra del Fuego; and to make precise readings of longitude using a dazzling array of twenty-two marine chronometers on board. Yet it would be the young naturalist on board, Charles Darwin, who would make the voyage famous. Perhaps no place visited by Darwin is more renowned than the Galapagos Islands. “The natural history of this archipelago is very remarkable,” Darwin wrote; “it seems to be a little world within itself...”



Among the new species of birds were thirteen finches. “These birds are the most singular of any in the archipelago... It is very remarkable that a nearly perfect gradation of structure in this group can be traced in the form of a beak, from one exceeding in dimensions that of the largest gros-beak, to another differing but little from that of a warbler.”

Geospiza magnirostris (Galapagos Archipelago)

Darwin, Charles. *The Zoology of the Voyage of H.M.S. Beagle, ... edited...by Charles Darwin. Part V: Reptiles*, by Thomas Bell. London: Smith, Elder & Co., 1843.

The order of reptiles “gives the most striking character to the zoology of these islands,” Darwin wrote about the Galapagos. While the marine

iguana was up to four feet long, the land iguana was much smaller. It ate cactus and the leaves of the acacia tree. Darwin was surprised at their prevalence: “I cannot give a more forcible proof of their numbers, than by stating that when we were left at James Island, we could not for some time find a spot free from their burrows on which to pitch our single tent.” They did not bite, and “they slowly crawl along with their tails and bellies dragging on the ground. They often stop, and doze for a minute or two, with closed eyes and hind legs spread out on the parched soil.”



Amblyrynchus demarllii (Galapagos Archipelago)

Girard, Charles. *United States Exploring Expedition. During the years 1838-1842. Under the command of Charles Wilkes...Herpetology.* Philadelphia: Lippincott, 1858.



The Wilkes Expedition was the first scientific voyage sponsored by the government of the United States. It was the first such voyage to embark from the Americas, those great “obstacles” that stubbornly refused European voyagers a single passage to the Orient from the farthest north to the farthest south, nearly to the very poles of the earth. Ironically, this first voyage did not launch from the west coast of North America and sail directly to China. It sailed into the Atlantic, where it progressed exactly as did European voyages, even crossing the Atlantic to Madeira off the coast of Africa to accurately chart dangerous shoals. It then sailed back across the Atlantic, around South America and across the Pacific Ocean to Australia.

Callirhinus Patagoniensis (South America);
Dendrophis Prasinus (Australia)

Novara Expedition. *Reise der Österreichischen Fregatte Novara um die Erde in den Jahren 1857, 1858, 1859 unter den Befehlen des Commodore B. von Wüllerstorff-Urbair.* Vienna: Gerold, 1861-75.

In 1856, the Austrian Archduke Ferdinand Maximilian was considering a scientific mission for Austria and he called upon the elderly German naturalist Alexander von Humboldt for advice. Humboldt supported plans for the Novara Expedition to sail around the world. Vast collections of natural history objects were acquired during the voyage. The gifted geologist Ferdinand Hochstetter found New Zealand so interesting that he acquired permission to remain there as the *Novara* headed for Tahiti. He drew the first true geological maps of the islands, and made extensive observations of their topography, stratigraphy, and mineralogy.



The zoologists serving on the expedition were Georg Frauenfeld and Johann Zelebar. They observed these penguins on St. Paul Island, which lies in the middle of the south Indian Ocean between the southern tip of Africa and the southwest coast of Australia. Another island, named Amsterdam, lies nearby to the north; together they create an isolated sanctuary in the sea.

Eudyptes Chrysocome (St. Paul Island)

Index

- Anson, George 10
- Banks, Joseph 11, 12
Bell, Thomas 21
Bird of paradise 17
Bougainville, Louis-Antoine de, comte 10, 11
- Cassin, John 6
Chronometers 5, 21
Cook, James 11, 12, 13, 14, 15, 20
- Dampier, William 5, 7, 8, 9
Darwin, Charles 8, 21
Diderot, Denis 11
Dillon, Peter 16
Dumont d'Urville, Jules 18, 19
Duperrey, Louis-Isadore 17, 19
- Eskimos 20
Eydoux, Fortune 19
- Finches 21
Fitzroy, Robert 21
Frauenfeld, Georg 22
Freycinet, Louis de 16, 17, 19
Funnell, William 8
- Girard, Charles 22
Gould, John 21
Green, Charles 12
- Halley, Edmond 12
Hawkesworth, John 12
Hippopotamus 9
Hochstetter, Ferdinand 5, 22
Humboldt, Alexander von 22
- Iguana 8, 21
- King, James 14
- La Pérouse, Jean-François de Galaup, comte de 15, 16
Laplace, Cyrille 19
- Lesseps, Jean-Baptiste 15, 16, 17
Lesson, René 17
Lewis and Clark Expedition 6
Longitude 6, 11, 21
Louisiana Purchase 6
- Magellan, Ferdinand 7, 10, 11
Maximilian, Ferdinand 22
Milet-Mureau, Louis 15
Miskito Indians 9
Moa bird 5
- Natai, of New Zealand 18
New Zealand 5, 13, 18, 19, 22
North America 14, 20, 22
Northwest coast, North America 14, 15
Northwest passage 5, 14, 20
Novara Expedition 5, 22
- Oregon Territory 6
Owen, Richard 5
- Pacific Ocean 5, 7, 12, 14, 15, 22
Patagonian Indians 10
Penguins 22
- Rarick, of Otdia 20
Roggeveen, Jacob 15
- Sainson, Louis-August De 18
Scurvy 10
Sea lions 10
Seals 10
Selkirk, Alexander 9
Souleyet, Louis 19
South America 7, 10, 11, 21, 22
South Pole 12, 13
- Tapir 9
Trade Winds 7
Transit of Venus 12
- Vaillant, August Nicolas 19
- Wilkes, Charles 6, 22
Wüllerstorff-Urbair, B. von 22
- Zelear, Johann 22

