

1800

1805 The Lewis and Clark expedition

Washington, June 19, 1803
Dear Clark
... From the long and uninterrupted friendship and confidence which has subsisted between us I feel no hesitation in making to you the following communication under the fullest impression that it will be held by you inviolably secret until I see you, or you shall hear again from me.

During the last session of Congress a law was passed... intitled "An Act making an appropriation for extending the external commerce of the United States." The object of this Act... was to give the sanction of the government to exploring the interior of the continent of North America, or that part of it bordering on the Missouri & Columbia Rivers. This enterprise has been confided to me by the President, and in consequence since the beginning of March I have been engaged in making the necessary preparations for the tour, these arrangements being now nearly completed, I shall set out for Pittsburgh...

Meriwether Lewis, 1774-1809, and William Clark, 1769-1838. Commissioned by Thomas Jefferson to explore the west, Lewis and Clark set off from St. Louis in 1804 traveling by boat and over land to the Pacific, returning in 1806. They did not find the fabled "Northwest passage," but they compiled exhaustive scientific information about the regions they visited.

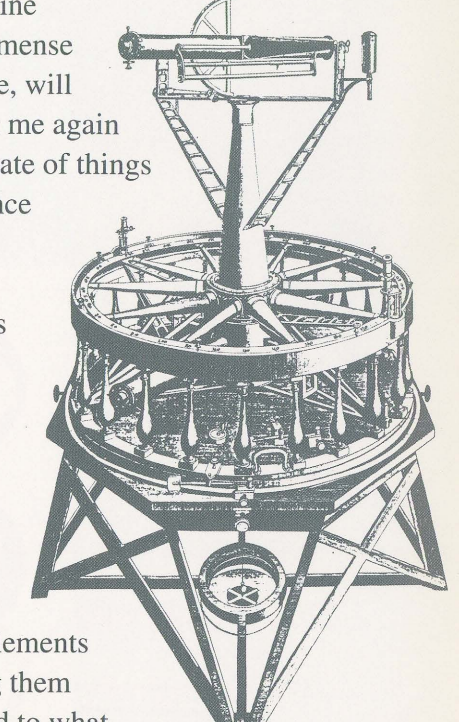
My instruments for celestial observation are an excellent set and my supply of Indian presents is sufficiently ample.



ca. 1761—John Harrison's marine chronometer number four. This was the earliest accurate way of measuring longitude at sea.

Articles wanted by Captain Lewis.

- 1 Hadley's Quadrant
1 Mariner's Compass & 2 pole chain
1 Set of plotting instruments
3 Thermometers
1 Cheap portable Microscope
1 Pocket Compass
1 Brass Scale one foot in length
6 Magnetic needles in small straight silver or brass cases opening on the side with hinges.
1 Instrument for measuring made of tape with feet & inches marked on it...
2 Hydrometers
1 Theodolite
1 Set of planispheres
1 Artificial Horizons
1 Patent log
6 papers of Ink powder
4 Metal Pens brass or silver
1 Set of Small States or pencils
2 Crescents
Sealing was one bundle
1 Miller's edition of Linceus In 2 Vols.
Books
Maps
Charts
Blank Vocabularies
Writing paper
1 Pair large brass money scales with two sets of weights the one of Troy the other of Averd.



1787 Jesse Ramsden, Theodolite. This precision surveying instrument was used in the national survey of Britain.

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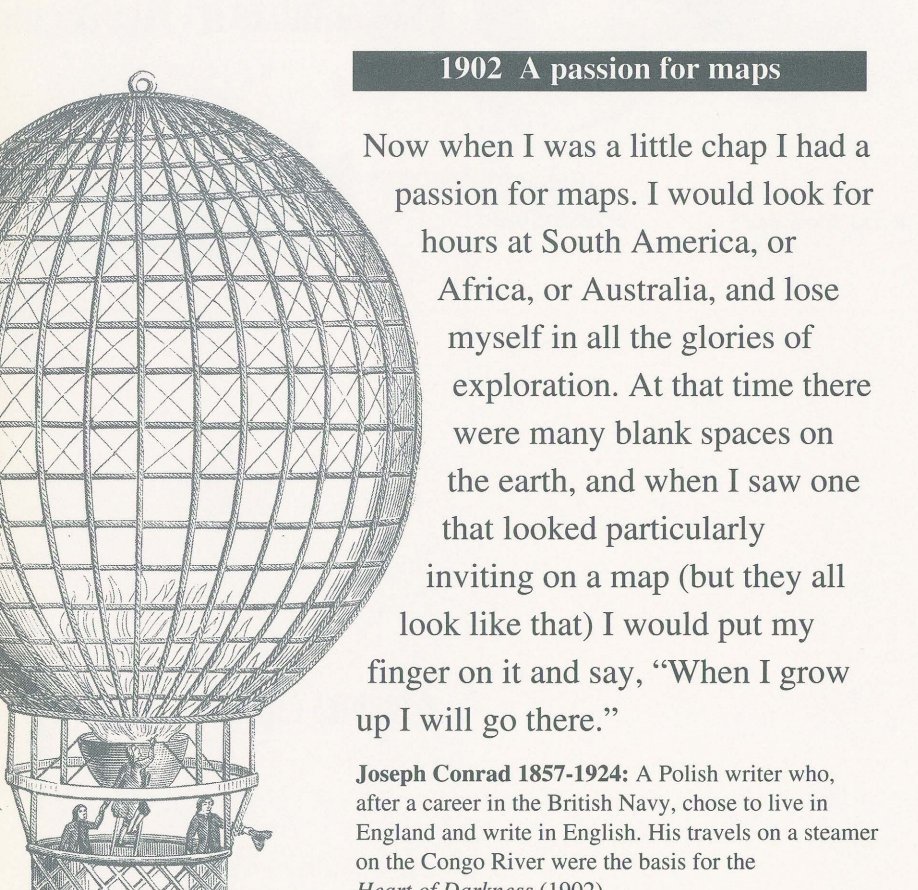
1900

1893 A country as a map

"That's another thing we've learned from your Nation," said Mein Herr, "map-making. But we've carried it much further than you. What do you consider the largest map that would be really useful?"
"About six inches to the mile."
"Only six inches?" exclaimed Mein Herr. "We very soon got to six yards to the mile. Then we tried a hundred yards to the mile. And then came the grandest idea of all! We actually made a map of the country, on the scale of a mile to the mile!"

"Have you used it much?" I enquired.
"It has never been spread out, yet," said Mein Herr: "the farmers objected: they said it would cover the whole country and shut out the sunlight! So now we use the country itself, as its own map, and I assure you it does nearly as well."

Lewis Carroll, (Charles Lutwidge Dodgson), 1832-1898: English writer and mathematician. His two most famous books were Alice's Adventures in Wonderland (1865) and Through the Looking Glass (1872).



1902 A passion for maps

Now when I was a little chap I had a passion for maps. I would look for hours at South America, or Africa, or Australia, and lose myself in all the glories of exploration. At that time there were many blank spaces on the earth, and when I saw one that looked particularly inviting on a map (but they all look like that) I would put my finger on it and say, "When I grow up I will go there."

Joseph Conrad 1857-1924: A Polish writer who, after a career in the British Navy, chose to live in England and write in English. His travels on a steamer on the Congo River were the basis for the Heart of Darkness (1902).

1914 Shackleton's trip to Antarctica

November 18 [1913]. It is anticlastic that we have reached the wilderness area around the Pole, for the Barrier is a dead, smooth, white plain, weird beyond description, and having no land in sight, we feel such tiny specks in the immensely around us... It seems as though we were in some other world, and yet the things that concern us most for the moment are trivial, such as split tips and big appetites... All the time we are moving south to our wished-for goal, and each day we feel that another gain has been made. We did 15 miles 500 yards today.

January 6 [1914]. This must be our last outward march with the sledge and camp equipment. Tomorrow we must leave camp with some food, and push as far south as possible, and then plant the flag... Blowing hard tonight, I would fail to explain my feelings if I tried to write them down, now that the end has come. There is only one thing that lightens the disappointment, and that is the feeling that we have done all we could. It is the forces of nature that have prevented us from going right through. I cannot write more.

January 7. A blinding, shrieking blizzard all day, with the temperature ranging from 60° to 70° of frost. It has been impossible to leave the tent, which is now snowed up on the lee side. We have been lying in our bogs all day, only warm at food time, with fine snow making through the walls of the worn tent and covering our bags. We are greatly cramped. Adams is suffering from camp every now and then. We are eating our valuable food without marching.

January 8. Again all day in our bogs, suffering considerably physically from cold hands and feet, and from hunger, but more mentally, for we cannot get out south, and we simply lie here shivering. Every now and then one of our party's feet goes, and the unfortunate beggar has to take his frozen foot out of the sleeping-bag and have his frozen foot mired into life again by placing it inside the shirt, against the skin of his almost equally unfortunate neighbor.



January 9. Our last day outdoors. We have shot our bolt, and the tale is latitude 88° 23' South, longitude 162° East. The wind eased down at 1 a.m., and at 2 a.m. were up and had breakfast. At 4 a.m. started south, with the Queen's Union Jack, a brass cylinder containing stamps and documents to place at the furthest south point, camera, glasses and compass. At 9 a.m. we were in 88° 23' South, half running and half walking over a surface much hardened by the recent blizzard. It was strange for us to go along without the nightmare of a sledge dragging behind us. We hoisted her Majesty's flag and the other Union Jack afterwards, and took possession of the plateau in the name of her Majesty. While the Union Jack blew out stiffly in the icy gale that cut us to the bone, we looked south with our powerful glasses, but could see nothing but the dead white snow plain. There was no break in the plateau as it extended towards the Pole, and we feel sure that the goal we have failed to reach lies on this plain. We stayed only a few minutes, and then, taking the Queen's flag and eating our scanty meal as we went, we hurried back and reached our camp about 3 p.m. We were so dead tired that we only did two hours' march in the afternoon and camped at 5.30 p.m. The temperature was minus 19° Fahr. Fortunately for us, our tracks were not obliterated by the blizzard; indeed, they stood up, making a trail easily followed. Homeward bound at last. Whatever regrets may be, we have done our best.

Ernest Henry Shackleton 1874-1922: This British explorer went to Antarctica with Scott in 1901 and reached the south magnetic pole in 1909. On his third expedition in 1914 his ship, the Endurance, was caught in pack ice and crushed, stranding the men. They crossed the open ocean in a small boat, and were eventually rescued by a Chilean ship in 1916.

Shackleton, E.H. The Heart of the Antarctic, Philadelphia: J.B. Lippincott Co., 1906, v. 1, pp. 283, 341, 343.

1950

1969 First man on the moon

I set to work on the navigation experiments, the purpose of which in essence was to find some way to adjust man's natural inclination to navigate from reference points on earth to some system of exact navigation in space... In the early 1960's, when the Apollo program was not yet in existence, Dr. Richard Batten, a professor of astronautics at MIT, and one of my thesis advisers, presented some theories on travel in space. These were recalled years later and reapplied to the Apollo program. A plan was developed whereby we could make measurements between a star and a landmark on earth—or the horizon of the earth—and as you measured this one angle over and over again and fed the information to the computer along with many other star sightings, a nearly exact knowledge of the spacecraft's course could be maintained. The readings were done by taking sextant sightings. This system gained much credence in the Apollo program, and I was pleased to be part of it.

As the programs expanded and the confidence in earth-bound tracking grew, the subject of on-board navigation sightings fed into the computer became the topic for a Black Friday meeting... Previously a computer program automatically instructed the astronauts on how to leave a lunar orbit for a return to earth in the absence of earthbound tracking data. Should communication with the earth be permanently halted, the computer on board the spacecraft would take over and compute the maneuver in case of such an emergency. The program itself was complicated and tended to crowd the computer's bank of information... One Black Friday this computer program was thrown out. It was called "Return to Earth." If the eventuality ever arose, man could do the job based on information on his maneuver pads.

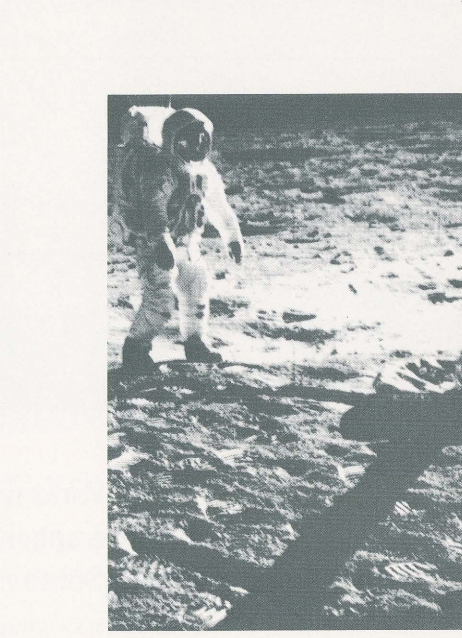
The voyage to the moon was conducted within nearly half a second of the flight plan. Of all the various midcourse corrections it was possible to make en route to and from the moon, we had used only two. The training and preparation was such that even the unfamiliar surface of the moon was very nearly as we had been led to expect. I realized I wasn't in the simulator and it was a good bit more real, but virtually nothing was unexpected, the extensive studies and preparations were that good.

Edwin A. "Buzz" Aldrin, Jr., and Neil Armstrong, astronauts aboard Apollo 11 were the first Americans to walk on the Moon, on July 24, 1969.

1971 Moon-noon

The whole panorama spun below us every two hours as we orbited the moon. We were looking down at some strange territory when it was what we call moon-noon. With the sun directly overhead, it was 250 degrees F. I don't think we could survive that, even in the Lunar Module. But we didn't have to, because we were scheduled to land in the early morning and leave before noon. Although we planned to spend three days on the surface of the moon, this was easy because these were "earth" days. One moon day is equal to twenty-eight earth days. So we could land in early light, spend three days, and get off about 9 a.m. in moon time.

James B. Irwin, an astronaut aboard Apollo 15 landed on the Moon on August 7, 1971. He spent 19 hours out of the lunar module exploring the terrain.



Irwin, J.B. To Rule the Night—The Discovery Voyage of Astronaut Jim Irwin. Nashville: Broadman Press, 1973, p. 54.

1987

1991 Maps invite action

Maps invite action. Exploration, conquest, administration, and organization: action seems always inflicted upon the bare outlines of a map, and the action can take many forms: a military campaign or a vacation, a dispute over property boundaries or a claim staked by a mining enterprise, dreams of a slave republic or the movement of the scalpel toward a hidden lesion of the brain.

1992 The art and science of maps... every map is the sum not only of the cartographer's skills, but of the many explorers who win the territory in the first place. Thus the map is both aesthetic and informational, as individual as any work of art but also communal and consensual, the product of cultural values (especially the value of exploration itself) and accumulated wisdoms. And perhaps in that moment the germ of an idea unconsciously took root, the idea of the map as an object that straddles the worlds of art and science, one of the few bridges linking the two cultures.

Hall, Steven S. Mapping the New Millennium—The Discovery of New Geographies. New York: Random House, 1992, p. 383.

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