

Lewis and Clark

Keelboat Physicians

"Lewis and Clark: Keelboat Physicians," in Volney Steele, *Bleed, Blister, and Purge: A History of Medicine on the American Frontier* (Missoula, MT: Mountain Press Pub., 2005), 45-62.

A turning point in American history.

—Bernard DeVoto¹²⁸

THOUGH THEY HAD NO DEGREES, Meriwether Lewis and William Clark were the first healers from the so-called civilized part of the United States to come to the western frontier. Their previous army experience and later performance throughout the grand adventure qualified them as physicians at that time in history. The ability of Lewis and Clark to care for their entourage, and the medical services they were able to trade for help from the Indians along the way, made a major contribution to the final success of the venture now known as the Lewis and Clark Expedition, or the Voyage of Discovery.

While President Jefferson's paramount motive in organizing the expedition was to strengthen the nation and acquire wealth, he also valued science and wanted to learn about the fauna, flora, and people of this measureless unknown region. To lead the huge undertaking he envisioned, Jefferson chose his secretary, Captain Meriwether Lewis. In an unprecedented move, Lewis invited his friend Captain William Clark to participate as co-leader in "it's fatigues, it's dangers and it's honors."¹²⁴ The two had served together in the army, and now they formed a partnership that left indelible imprints on the history of the United States.

When the expedition left St. Charles, Missouri, the party probably totaled about fifty men, including a number of engagés and Clark's slave, York. On the way up the Missouri River, one man deserted and Sergeant Charles Floyd died. The engagés and several soldiers—two of whom had been dismissed for misconduct—left after the party's arrival at the Mandan villages, where interpreter Toussaint Charbonneau was hired, along with his Indian wife, Sacagawea, bringing the new total to thirty-two; the couple's infant son, Jean Baptiste, whom the men called "Pompey," made thirty-three.¹²⁵



Portraits of William Clark and Meriwether Lewis by Charles Willson Peale.
—Courtesy Independence National Historical Park

In addition to Lewis and Clark's directive to explore the uncharted West, the president instructed the two captains to give the best medical care possible to the men in their charge, and to the natives along the way. Jefferson held the health and lives of the men of the expedition above all other considerations. It was under Jefferson's tutelage that Lewis strengthened his medical preparation for the momentous journey. Along with his other passions, Jefferson had a strong interest in medicine. He had written about medical subjects, corresponded with leading doctors of the era, and read extensively on the subject. His spacious library contained more than one hundred books on medical subjects, including surgery and anatomy. Jefferson was skeptical of some of the medical practices of his day. In one letter, he said of the ideal medical student, "His mind must be strong indeed, if it can maintain a wise infidelity against the authority of his instructors, and the bewitching delusions of their theories."¹²⁶

Elliott Coues, a nineteenth-century physician and historian, later questioned why Jefferson did not send a professionally trained physician

along with the expedition instead of relying on two army captains.¹²⁷ Others have also lamented this great "failure." There isn't any obvious explanation for the decision, except that Jefferson and many others of the time were skeptical of the value of physicians, and perhaps rightly so. The standard of medical practice was poorly established, and Jefferson probably recognized that there wasn't much difference between a physician and a well-trained layman. At one point, while traveling down the Ohio River, Lewis met Dr. William Ewing Patterson, who seemed eager to go, but he did not show up at the appointed time. According to Stephen Ambrose, "It was undoubtedly just as well; his [Patterson's] reputation was one of constant drunkenness, which may well have been the cause of his being late."¹²⁸ Another medical historian of the Lewis and Clark expedition, Dr. E. G. Chuinard, said the two captains gave their men better personal attention than was rendered by Revolutionary War doctors.¹²⁹

Medical Training of Lewis and Clark

Both Lewis and Clark had gained practical medical experience as army officers. In colonial times, officers were responsible for the health of their men. Commissioned officers learned to use the lancet for phlebotomy and to vaccinate for smallpox, and they were familiar with minor injuries, jaundice, intermittent fever (malaria), diarrhea, venereal diseases, and other conditions that affected soldiers. Some, like Lewis, also had a working knowledge of herbal treatment.

Lewis's first medical instructor was his mother, Lucy Meriwether Lewis Marks. She was an herbalist of some renown, a "yarb" doctor (a term used then for herbalists) who grew her own medicines and was able to identify and use wild plants as well. Lucy taught her son this craft as she prepared and ministered to the illnesses of her family, neighbors, and slaves. "Even as an old lady, 'Grandma Marks' was seen riding about . . . on horseback to attend the sick," Ambrose noted.¹³⁰

Later, in preparation for the expedition, President Jefferson arranged and paid for Meriwether Lewis to spend time in Philadelphia studying botany, zoology, and medicine. In the latter discipline, the young captain was tutored by Dr. Benjamin Rush. Rush had a reputation as a medical reformer, and during the Revolutionary War he served as a military surgeon and later criticized the deplorable care Continental soldiers were given in army hospitals. As a military physician he was ahead of his contemporaries in many ways. He was a proponent of vaccination for



Dr. Benjamin Rush
—Courtesy National
Library of Medicine,
History of Medicine

smallpox, a diet rich in vegetables to prevent scurvy, abstinence from alcohol, and scrupulous cleanliness in the army camps.

Rush was a doctor of superior ethics and courage. During the 1793 yellow fever epidemic in Philadelphia, Rush and many of his fellow physicians stuck to their posts while, sad to say, some doctors left with their families for healthier places. Though Rush was as knowledgeable as any other physician of his time, he is, rather regrettably, best remembered for his strong belief in purging and bleeding. Of course, Rush wasn't the only proponent of these egregious methods, but he was the period's most vocal advocate, and his theories dominated the medical profession for many years.¹³¹

Dr. Rush had no medical peer in his day and was probably the best choice Jefferson could make to advise the expedition on how to protect against illness and what drugs and instruments to take into the wilds. Though Rush's recommendations showed an incomplete appreciation of the dangers and arduous circumstances of the wilderness, they also reflected the best understanding of the day, and some of them were of value. The good doctor suggested that if the explorers were fatigued or otherwise indisposed, they should rest and take fluids. If this and "a gentle sweat obtained by warm drinks" didn't cause improvement, an "opening of the bowels by means of one, two, or more purging pills" was indicated.¹³² Following Rush's advice, the expedition carried fifty dozen of the doctor's bilious pills, a strong purgative containing calomel and

jalap, which, according to Rush, would "gently open the bowels"—the understatement of the century.¹³³ This combination of drugs produced an explosive intestinal passage and became known by all who used them as "thunderclappers."

Rush's potent pills found their way into the armamentarium of medical kits after the yellow fever epidemic in Philadelphia, when the strong purge resulted in the passage of copious amounts of bile-colored material. This release of bodily waste supposedly diminished the jaundice of yellow fever sufferers. In reality, however, it was not beneficial; indeed, it was harmful. Nevertheless, for a long time doctors used these potent pills as a panacea. Once, when Clark himself was ill, he took five "thunderclappers" at once, but he didn't report any side effects from this excessive dose.

In addition to recommending purgatives, Dr. Rush preached that bleeding was beneficial for most ailments, even hemorrhage. In defense of bloodletting, he said, "Hemorrhages seldom occur, where bleeding has been sufficiently copious."¹³⁴ This implies that he and his contemporaries bled people who were already hemorrhaging. In some cases, the bleeding stopped when the blood volume and pressure became low; in other words, when the treatment resulted in shock. In spite of Rush's promotion of the value of bleeding, Lewis and Clark used the procedure sparingly.

While in Philadelphia, Lewis may also have gained much knowledge from Dr. Benjamin Smith Barton, an associate of Benjamin Rush and a professor at the medical school. Barton was known as the father of American "materia medica." Lewis bought his *Elements of Botany*, at a cost of six dollars, and carried it with him all the way to the Pacific and back.¹³⁵

Clark's education had been much less formal than Lewis's, but he knew a great deal about the West and was an exceptional leader, a scientist, and a humanist. Of his early military experience he wrote, "I hate the recollection of the Sufferings of our Wounded. . . . No set of men in the like disabled situation ever experienced much more want of conveniences &c."¹³⁶ During his military service, the notes he kept on his medical cases revealed him to be a careful observer and a pragmatic physician. His understanding of human nature and "hands-on" approach to health care made him a popular healer, especially with the Indians.

In St. Louis, while at Camp Dubois, Lewis and Clark were probably also given medical advice by Dr. Antoine Francois Saugrain, a colorful, four-foot six-inch Parisian doctor who was a friend of Benjamin Franklin.

Not only a physician, Saugrain was also a commercial manufacturer, an entrepreneur, and an inventor of barometers, thermometers, and matches. Saugrain made thermometers using mercury salvaged from the backs of mirrors. Although there is no record of a purchase of a thermometer, the Corps used one on the journey until it was broken.¹³⁷ These were not clinical thermometers, which had not yet been invented.

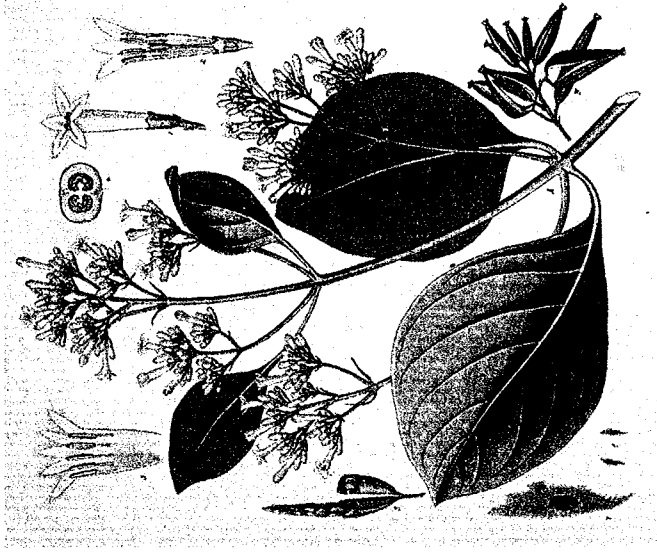
Drugs and Treatments

In Lewis and Clark's time, medical methods of the trained physician, the army medic, the home-remedy practitioner, the Indian healer, and others all melted together into a potpourri of health care practice. By the time the expedition started up the Missouri River, the two captains were prepared to treat many common medical conditions of the frontier such as "tumors" (inflammation with swelling), "biles" (boils), "pox" (syphilis), "charlick" (colic), and "biliousness."¹³⁸ Among the equipment the expedition carried were lancets, "pocket" surgical instruments, dental instruments, clyster (enema) and penis syringes, tourniquets, and "lint" for dressing wounds.

The Corps of Discovery's medical supplies included a number of useful drugs in common usage. The bark of the cinchona, also called quinine bark or Peruvian bark, from which quinine is derived, was of great value as an antifebrile agent. Quinine was known to be effective against "ague," or malaria.¹³⁹ Although there was no evidence of malaria infection during most of the long trip across the continent, the mosquito-infested Ohio and lower Missouri Rivers were a potential source, and some cases of malaria may have been prevented by the use of "barks" in the treatment of nonspecific fevers.¹⁴⁰

Lewis was concerned about malaria along the Ohio River, where disease was endemic. In September 1803 he wrote, "The fever and ague and bilious fevers here commence their banefull oppression and continue through the whole course of the river with increasing violence as you approach it's mouth."¹⁴¹ The expedition's medicine chest was ready for "ague" with plenty of Peruvian bark. Though the men never contracted malaria, the bark wasn't wasted. It was used against fever the way we use aspirin, and also as an ingredient of a poultice.

Glauber salts and saltpeter had limited use as wet packs to injured parts, and sometimes in dilute solution as an eyewash. The expedition also carried preparations for digestive problems and salves for treating wounds. Laudanum (tincture of opium) was valuable in the relief of severe



Cinchona (*Cinchona succutubra*), whose wood is known medicinally as Peruvian bark or quinine bark — From *A Modern Herbal* by Maud Grieve, 1931

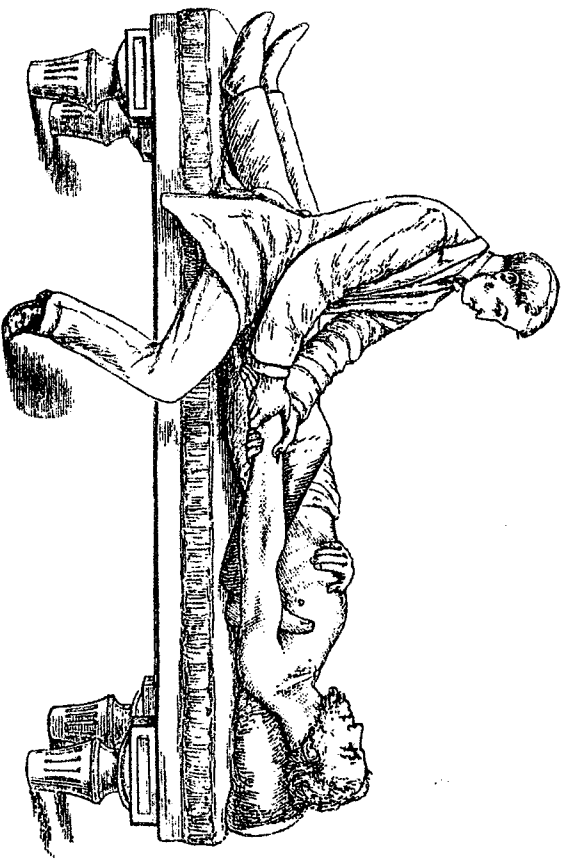
pain. The captains brought nutmeg, cloves, and cinnamon to flavor oral medicines, and, of course, liquor, on its own or to enhance remedial concoctions. In addition to the drugs they brought, they employed various wild plants they found at hand in composing remedies.

Liquor was used not only as a medicine but also as a stimulant for flagging spirits and an antidote against the cold and wet. The last of the expedition's several kegs of "spirits" was finished off to celebrate both Independence Day 1805 and the successful end to the grueling portage around the Great Falls of the Missouri River. Alcohol may have been utilized as an anesthetic as well, since it was widely used in that era for this purpose.

The expedition also carried a variety of purgatives. The thrust of the medical philosophy of the time was to rid the body of toxins, and any treatment that caused an evacuation from the upper or lower intestinal tract was considered good therapy. Tartar emetic, a drug used to induce vomiting, was thought indispensable. Other salts and powders were also brought on the trip to use as laxatives and diuretics. Calomel (mercurous chloride), the cure-all of its day, was a strong purgative, and when incorporated into an ointment it was of great use in treating the skin manifestations

of syphilis, a common venereal disease among the expedition's entourage. Lewis's tutor Benjamin Rush attributed almost magical powers to calomel, and it was a key ingredient in his infamous "thunderclappers."

In addition to the use of purgatives, doctors of the day recommended therapeutic bleeding for many ailments. Both captains knew how to bleed patients, but neither used the procedure as often as prevailing medical opinion dictated. For instance, Dr. Rush recommended bleeding to weaken and relax patients with a dislocated shoulder, but the captains did not bleed Sergeant Nathaniel Pryor when he dislocated his shoulder, which he did three times during the trip.¹⁴² Clark wrote, "Sergeant Pryor in taking down the mast put his Shoulder out of Place," and said that it took four trials before they were able to get the shoulder reduced.¹⁴³ We don't know the method of reduction they used, but the most popular routine at the time was traction on the affected limb, countered against the surgeon's foot in the armpit. It may sound crude, but this technique was used well into the twentieth century. Clark doesn't say if alcohol or narcotics were used as an anesthetic, but they probably were. Relaxation of the muscles of the shoulder and the arm is necessary to treat a dislocation properly.



Reduction of a dislocated shoulder joint by placing the heel in the patient's armpit — From The Science and Art of Surgery: A Treatise on Surgical Injuries, Diseases, and Operations by John Eric Erichsen, 1884

The captains did employ the technique of bloodletting in some cases. They bled Sergeant Floyd during his fatal illness, and also Sacagawea, in an attempt to bring her fever down when she was suffering from a gynecological infection. Of course, this form of treatment did lower the temperature, but not in a beneficial way. Clark also treated pleurisy by bleeding. He recorded on January 31, 1805, "George Drewyer taken with Ploursey last evening. Bled and Gave him Some Sage tea, this morning he is much better."¹⁴⁴

The captains were at times innovative in the techniques of venesection. Once during the portage around the Great Falls of the Missouri, Lewis did not have a lancet, so he bled one man who was "heated and fortigued" using his penknife, which he claimed "answered very well."¹⁴⁵ Apparently these healthy, young, vigorous, and superbly strong men suffered little from the "therapeutic" loss of blood.

Health Problems on the Journey

Skin inflammations, referred to as "tumors" or "biles," became a common ailment that troubled the troop throughout the journey. Poor personal hygiene, malnutrition, exposure to injury, and bacteria (probably a staphylococcus), all could have played a part in this painful and debilitating affliction. "Whitlows" (infection of the finger or toe that often lies under the nail and may extend to the underlying bone) were particularly troubling. Lewis commented that these abscesses, which cause severe throbbing pain, were "a complaint which has been very common among the men." The surgical skills of both Lewis and Clark were required in the treatment of some of these problems. Once, Clark wrote, he opened an abscess in a man's left breast that contained "half a pint [pint?]" of pus.¹⁴⁶

Other common problems, naturally, were fractures, joint dislocations, and lacerations. Foot injuries were particularly frequent, especially on the plains, where prickly pears grew in abundance, and along the rivers, where rocks were often as sharp as knives. There were also several injuries from unruly horses, but none was serious. Frostbite was another concern among the men and the natives as well. While at the Mandan encampment, Clark "sawed off" the gangrenous toes of a Mandan child.¹⁴⁷ Also at Fort Mandan, Clark wrote of his own men's frostbite in his journal, including, "my Servents feet also frosted and his P--s a little."¹⁴⁸

Lewis and Clark themselves became sick on several occasions. The illness for which Clark dosed himself with five of Rush's special pills occurred at the Three Forks of the Missouri River in late July 1805. Lewis

described Clark as "very sick with a high fever on him and much fatigued and exhausted." He also reported that Clark suffered from frequent chills and constant muscle aches. According to Dr. Ronald V. Loge in an article for *We Proceeded On*, "A person . . . with these symptoms during the summer season in Southwestern Montana would usually be suffering from Colorado tick fever." Colorado tick fever, a viral disease transmitted by wood ticks, is endemic in this area of Montana. Further, Loge says, "The 1805 journal account of Clark's illness may be the first clinical description of Colorado tick fever, written by two good clinical observers."¹⁴⁹

On one occasion, Lewis became ill when he was away from camp. Having no thunderclappers or other medicines to "clean out his system," he improvised with a liquid concoction made from chokecherry twigs. After drinking a large volume of this, his fever and gastrointestinal symptoms abated. The young captain must have recovered dramatically because the next day he walked twenty-seven miles.

Throughout the trip, diarrhea cursed everyone. On June 14, 1804, Clark noted, "The party is much afflicted with Boils and Several have the Decisentary which I contribute to the water."¹⁵⁰ In this observation Clark was probably right. There are many bacteria that may have caused the dysentery the men suffered, as well as a large selection of parasites carried by food and water that we now know can make humans sick.¹⁵¹ The men were encouraged to dip their cups deep into the muddy Missouri to avoid the foul surface water, a procedure with little more than aesthetic effect, reflecting the era's lack of understanding of water contamination.

When we look at the kinds of food the explorers ate—much of which their bodies were not used to—the intestinal complaints are not surprising. There was a great variety of meat, sometimes poorly preserved, including elk, deer, horse, beaver, and dog. When labor was intense, each man might eat as much as ten pounds of meat a day, and beaver was the favorite variety.¹⁵² If the hunting was poor, they were forced to eat wolf, hawk, and, at Fort Clatsop, whale blubber. Once, Lewis ate the small intestine of a buffalo, uncleaned and cooked in the coals of a fire. He didn't find it too displeasing at the time, but there isn't any record of the aftermath. Furthermore, some of the food obtained from the Indians, such as dried meat and fish, was probably contaminated with bacteria.

To provide sustenance during lean times, the Corps transported a large quantity of "portable soup," a dehydrated source of calories and vitamin C. The soup was stored in lead canisters, which Lewis planned on using to make bullets when they were empty. Because foodstuffs are impregnated

with lead on prolonged exposure, it was fortunate that the explorers used the mixture only sporadically, or they might have developed lead poisoning. During the return trip, when the food supply was exhausted, the barely palatable soup, grudgingly lugged thousands of miles, supplied enough energy to allow the men to survive. It also probably helped to prevent clinical scurvy.¹⁵³ In addition, the expedition undoubtedly ate a variety of roots and bulbs they learned about from the Indians: camas (*Camassia quamash*), wapato (*Sagittaria latifolia*), and others, probably including Indian potato, carrails, and the bitterroot (*Lewisia rediviva*). Usually the plants were dried and pounded into flour to make into a bread.¹⁵⁴

There was a lot of luck involved in the travelers' survival. For example, grizzly bear encounters were frequent, especially after they entered what is now Montana, but not one man was injured by a bear. One day near the Great Falls, Lewis was chased into the Missouri River by a grizzly bear, charged by three bull buffaloes, and he awoke the next morning with a rattlesnake coiled ten feet away.¹⁵⁵ All along the Missouri River and especially above the Great Falls to Oregon, the Corps saw numerous rattlesnakes, but only one snakebite was recorded. Joseph Field was bitten on the ankle on July 4, 1804. Although he suffered local swelling and pain, Field responded to a poultice of bark and gunpowder.¹⁵⁶ Most likely only partial envenomation occurred, and he was spared the more severe and generalized toxic symptoms that can lead to death in some cases.

The expedition experienced a few near misses, but fortune seemed to be on their side in almost every case. Furthermore, none of the expedition members contracted any of the killer diseases of the era such as smallpox, yellow fever, malaria, cholera, or typhoid. The expedition's only death was that of Sergeant Charles Floyd on August 20, 1804. That the group suffered only one fatality is miraculous considering the difficulties and dangers of the long trek.

Floyd's death occurred early in the trip. He became sick on the way up the Missouri to the Mandan villages, where the Corps would spend their first winter. Early in Floyd's illness, Lewis bled the man, the usual procedure. In his journal on July 31, Floyd wrote, "I am very sick and have ben for Somtime but have Recovered my helth again."¹⁵⁷ The recovery was an illusion, however. By August 19 his situation had become serious. The next day, Clark said that Floyd was "as bad as he can be . . . no pulse." He died and was buried near the present site of Sioux City, Iowa. From what we know about Floyd's illness, his death was almost certainly due

to appendicitis with rupture and subsequent peritonitis. The relief he felt on July 31 was not inconsistent with this conclusion: after rupture, a short period of improvement is not unusual. In that era, this ailment was referred to as "colic" or "locked bowels." It was common and almost always fatal. Even if the sergeant had been in a metropolis rather than the wilderness, he undoubtedly would have died, as appendectomy was an unknown surgical procedure at the time.

"Their favorite physician":

The Corps among the Indians

The Corps arrived at the Mandan villages, on the Missouri River in what is now North Dakota, in October 1804. There the men constructed a small circular fort of timber covered with sod and twigs. It was a remarkably dry and warm enclosure in which the expedition passed a comfortable winter. A latrine was built about a hundred yards from the sleeping huts and the main building.¹⁵⁸ Little was known about sanitation then; the outhouse was more for comfort than for hygiene. Nevertheless, building a good latrine and placing it away from the living quarters was a wise move.

In February 1805, while at the Mandan villages, Lewis was present at the delivery of the teenage Sacagawea's baby boy. When her labor appeared prolonged, she was given a "dose" of crushed rattles from a snake—a folk medicine supposed to enhance labor. Although this charm was administered just before the child was born, Lewis didn't believe the material had any effect.¹⁵⁹

The captains treated some of the Mandans' ailments at the expedition's winter camp, and later they doctored Chinooks, Klickitans, Nez Percés, and other natives along their route. Among the Indians' complaints were fevers, "Rhumism," eye infections, and other ailments. Clark even splinted broken limbs using "broad sticks" and lint bandages. One morning, Clark saw four men, eight women, and a child for various complaints ranging from sore joints to hysteria. The hysterical woman was given thirty drops of laudanum, and liniment was dispensed for the painful joints.

Treatments as simple as an eyewash composed of white vitriol (zinc sulphate), lead acetate, sugar, salt, and rainwater was a popular item with many natives suffering from "soar" eyes. Most of the tribes along the Columbia suffered from eye disorders, ranging from simple conjunctivitis

to blindness. Probably a myriad of diseases such as gonorrhea, syphilis, trachoma, and other infections were to blame for some of the more severe cases. Less serious problems were likely associated with gnats, mosquitoes, wind, blowing sand and grit, and sun glare. The captains' eyewashes, the only treatment available at the time, were apparently successful in many instances.¹⁶⁰

The deplorable living conditions of many of the tribes along the route, particularly on the Columbia River, were lamented by both Lewis and Clark in their chronicles. The Samaritan contribution the captains made in the West was not exceeded by those who came later. Although Lewis was the expedition's physician-in-chief, it was Clark who developed a reputation as a healer among the natives. Of the Walla Wallas in May 1805, Lewis wrote in his journal, "My friend Capt. C. is their favorite physician."¹⁶¹ In a demonstration of ethical responsibility, he added, "We take care to give them no article which can possibly injure them."¹⁶²

Eventually the captains realized that the humanitarian aid they provided could benefit themselves as well. It was on the return trip up the Columbia River, in need of food and supplies but with their trade baubles long since bartered, they recognized that their medical expertise was a commodity and could be traded. While the expedition camped with the Nez Percés, waiting for the snows to melt before crossing the Bitterroot Mountains, historian Stephen Ambrose tells us, "Lewis did most of the smoking and talking with the chiefs, while Clark practiced medicine."¹⁶³ Every morning during their stay with the Nez Percés, Clark's patients were lined up and waiting. Clark's medical know-how paid for over sixty desperately needed horses.¹⁶⁴

The captains also learned some medical lore from the natives. Both of them were impressed with the Indians' use of "sweat baths" in the treatment of certain ailments, especially rheumatism. On the way back, on the Columbia River, one of the soldiers suffered a severe, almost totally debilitating back disorder that was relieved with this therapy.¹⁶⁵

The Indians also taught the explorers how to make pemmican, a staple food of the natives. This lightweight, nutritious, high-caloric preparation of dried meat and berries was a boon to the expedition. In addition, the natives showed them how to find edible plants and how to prepare skins for clothing. Another very practical skill the men learned from the Indians was how to castrate a horse properly. Stud horses were unruly and often dangerous, but some of the horses the soldiers castrated became infertile; a few of them bled, and at least one died. A Nez Percé

Indian demonstrated how to avoid these complications. Lewis wrote, "He cut them without tying the string to the stone . . . he takes care to scrape the string clean from all adhering veigns before he cuts it."¹⁶⁶ Later, Lewis declared the Indian method of castration far superior to his, and some veterinarians still use this crude but safe procedure.

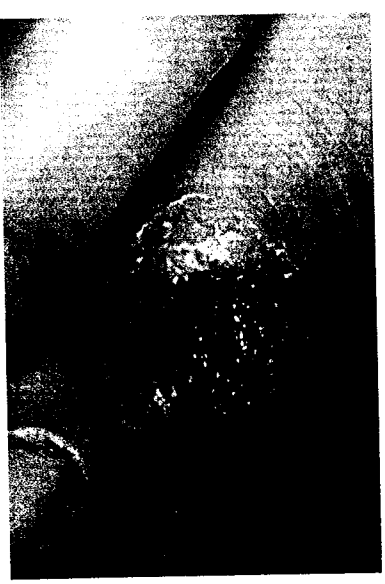
In regard to the Indians, President Jefferson, in his final instructions to Lewis prior to the expedition, included the specific instruction to "carry with you some matter of the kine-pox; inform those of them [the Indians] with whom you may be of its efficacy as a preservative from the small pox: & instruct & encourage them in the use of it."¹⁶⁷ Unfortunately, this presidential order was not accomplished. On his trip down the Ohio River, Lewis found that his supply of vaccine had "lost its virtue." He wrote to Jefferson for more, but a fresh supply never reached the captains.¹⁶⁸

"Amorous contact": Venereal Disease

During the Corps's stay at Fort Mandan, the relatively lenient sexual mores of the Indians combined with the lustful appetites of the young soldiers guaranteed the spread of venereal disease. The Mandans on the Missouri River, and later the Shoshones, Nez Percés, and Chinooks along the Columbia, were a constant reservoir of infection, and at least eight men in the Corps of Discovery were infected with gonorrhea or syphilis during the trip. As E. G. Chuinard put it, the men of the expedition paid for "indulgences with Indian maidens with blue beads and venereal disease."¹⁶⁹ The Shoshones had only limited previous contact with whites, and Lewis was "anxious to learn whether these people had the venereal." Finding its definite presence in the tribe brought him to a conclusion that is only partly correct: "Gonorrhah and Louis venereae (syphilis) are native disorders of America."¹⁷⁰

On January 14, 1805, at Fort Mandan, Lewis recorded "several" men "with the Venereal cought from the Mandan Women."¹⁷¹ Clark wrote, "Generally helthy except Venerials Complaints which is very common amongst the natives and the men Catch it from them."¹⁷² At this time in history, some medical men believed that syphilis and gonorrhea were simply manifestations of the same condition. Lewis and Clark correctly viewed them as two different afflictions, though it would be many years before the causes of gonorrhea and syphilis were discovered.

Extragenital syphilitic chancre. Syphilis has plagued mankind for thousands of years. The chancre usually develops on the external genitalia and is the first evidence of an infection. Until the discovery of penicillin, doctors relied on mercury compounds such as calomel for treatment.
—Courtesy: Centers for Disease Control and Prevention



Syphilis (sometimes called Lues or French Disease) and gonorrhea were both endemic and epidemic in the native population. These conditions were certainly familiar to army officers, and their development among the men of the Corps was no surprise. The leaders' medicine chest was prepared with penis syringes, mercury salve, and calomel (mercurous chloride). To treat gonorrhoeal urethritis, penile syringes were used to inject a solution called saccharum (lead acetate) into the urethra. Gonococcal bacteria, transmitted through sexual intercourse, cause inflammation and a purulent discharge from the urethra. It is not nearly as serious as syphilis, and repeated treatments were usually effective.

Since the Renaissance, the accepted treatment for syphilis, and the one used by Lewis and Clark, was mercury. This heavy metal was administered in two ways. Mercurial ointments were rubbed directly into the skin, and calomel was given orally. When the patient's gums became sore from the toxic side effect of calomel, and the exterior symptoms, such as the skin rash or sores, disappeared, the drug was discontinued. We know now that the disappearance of symptoms doesn't mean that the disease is cured, though sometimes it must have been.

On January 27, 1806, Lewis wrote, "Goodrich has recovered from the Louis veneri [syphilis] which he contracted from an amorous contact with a chinook damsel. I cured him as I did Gibson last winter by use of murcury."¹⁷³ Six months later, however, both of these men exhibited the rash of the secondary stage of syphilis. Following the rash, there is a latent interval that can last many years before the terrible onset of tertiary syphilis, with its complications such as neurosyphilis, aortic aneurysm,

Charcot joints, and other terminal conditions. Both men died young, and it is possible that their shortened lives were attributable to uncured syphilis.

Some scientists now think that Meriwether Lewis himself acquired syphilis, and that his psychotic and bizarre behavior, culminating in his suicide in 1809, are consistent with symptoms of paresis due to tertiary syphilis. If so, he is only one of a long list of famous people who died as a result of this infection's progression to the central nervous system. A third of people with untreated syphilis progress to the tertiary stage. The debate over the cause of Lewis's death, whether it was suicide or murder, will probably never be settled. If it was suicide, syphilis may or may not have been a factor. Depression or alcoholism or both, and perhaps other unknown factors, are more likely causes. But Lewis may have been exposed to syphilis in August 1805, on his thirty-first birthday. Following a Shoshone tribal celebration, several of the men caught syphilis, and, although not recorded by either leader, it was reported that after this visit Lewis suffered for longer than a month from some mysterious illness. He made no notes in his journal for three months.¹⁷⁴

Near Catastrophes

The Corps experienced a few—surprisingly few—incidents where members' lives were in peril. Lewis and a companion were nearly killed when they slipped off a cliff, but they managed to pull themselves back up. Others came close to drowning when boats capsized—many of the voyagers could not swim.

One of the most serious episodes was Sacagawea's illness in June 1805, at the confluence of the Marias and Missouri Rivers. Clark said on June 15, 1805, "Our Indian woman Sick & low spirited I gave her the bark & apply it exteranally to her region which revived her much."¹⁷⁵ The next day, Lewis made comprehensive notes about the sixteen-year-old Sacagawea's condition. She was, he wrote, "extremely ill. . . . This gave me some concern, with a young child in her arms, as from the consideration of her being our only dependence for a friendly negotiation with the Snake Indians on whom we depend for horses to assist us in our portage from the Missouri to the Columbia river."¹⁷⁶

Lewis bled her once and gave her opium, "barks," and mineral water.¹⁷⁷ He obtained the water from a highly sulphurous mineral spring located on a bench of land near the mouth of Belt (Portage) Creek.¹⁷⁸ Later, with

obvious relief, he noted, "She feels herself much freer from pain. She complains principally of the lower region of the abdomen, I therefore continued the cataplasms of barks and laudnum which had been previously used by my friend Capt Clark. I believe her disorder originated principally from an obstruction of the mensis in consequence of taking cold."¹⁷⁹ Her symptoms of pelvic pain, fever, and irregular menses are consistent with a diagnosis of pelvic inflammatory disease, an infection of the internal genitalia. The condition may have been the result of her recent pregnancy or gonorrhea or chlamydia, or a combination of the three.

The spring water probably supplied her with much-needed minerals and fluid lost during the prolonged sickness, and she recovered.¹⁸⁰ On June 17 Lewis reported, "The Indian woman much better today. I have still continued the same course of medicine; she is free from pain clear of fever, her pulse regular, and eats as heartily as I am willing to permit her of broiled buffaloe well seasoned with pepper and salt and rich soope of the same meat; I think therefore that there is every rational hope of her recovery."¹⁸¹ Medical historian Dr. E. G. Chuinard writes that Captain Lewis's notes "are impressive because they are made by a non-medical man. His recording of the patient's complaints, his physical examination of her, the medication employed, and his genuine concern about her probably would not be exceeded by any physician of his time."¹⁸²

Toward the end of May on the return journey, little Pompey became very ill with fever and swelling in his neck. Lewis accurately diagnosed his symptoms as related to teething (probably a secondary infection of the tonsils or throat with regional glandular inflammation) and considered his condition dangerous. The child was treated at first, in the standard of the times, with purges, including at least one enema. In addition, very hot poultices of boiled onions were applied to the swelling for several days, offering little relief except that the fever began to abate. On May 27, about five days after the onset of the illness, Lewis wrote, "Charbono's son is much better today."¹⁸³

On the final leg of the trip, during a hunting expedition, Lewis was accidentally shot in the buttock by the partially blind boatman Peter Cruzatte. As Lewis describes the accident, "A ball struck my left thye about an inch below my hip joint, missing the bone it passed through. . . . The stroke was very severe. . . . I took off my clothes and dressed my wounds. . . . introducing tents of patent lint into the ball holes. . . . I slept on board. . . . The pain I experienced excited a high fever."¹⁸⁴

Fortunately, the wound was entirely within the soft tissue, and no bone or vital structures was injured. The lint apparently kept the wound open, to avoid a closed space that could harbor bacteria. As he recuperated, Lewis retained dedication to science. In severe pain and with a fever, he made a meticulous description in his journal of a type of cherry he had discovered along the bank of the river.¹⁸⁵ He measured and described the plant in scientific detail while lying prone in his pirogue, with a very painful posterior. Twenty-five days after the event, Clark wrote, "My worthy friend Cap Lewis has entirely recovered."¹⁸⁶

True Physicians: "Humanity shown at all times"

By the time the Corps of Discovery returned to St. Louis in 1806, both Meriwether Lewis and William Clark were experienced physicians. They had successfully assisted in the delivery of Sacagawea's infant, and they had treated both mother and child for serious infections during the trip. They had also amputated gangrenous toes; sutured lacerations; treated many upper respiratory diseases and fevers; relieved diverse skin disorders and eye irritations; "cured" syphilis and gonorrhea; adequately immobilized minor fractures and reduced shoulder dislocations; and incised and drained abscesses, including whitlows.

Most of all, Lewis and Clark were kind, compassionate, humanitarian, and professional in their dealings with the natives and with their own men. One cannot read the journals without coming to this conclusion. As testimony to the accomplishments of Meriwether Lewis and William Clark, a member of the Corps, Private Joseph Whitehouse, expressed in his account of the great journey "my utmost gratitude . . . for the humanity shown at all times by them [the captains]."¹⁸⁷ The simple fact of their surviving the eight-thousand-mile trek—overcoming hardships, illnesses, physical discomfort, and almost daily brushes with death—is impressive. But more than that, the expedition carried forward a humanitarian medical duty, and Captains Clark and Lewis abundantly fulfilled that obligation. They were physicians in the true sense of the word.