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The Death of Nancy Hanks Lincoln

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Inside the cabin there was sickness. For almost a week the woman had ailed until now she no longer could struggle to a position from which she might glimpse the autumn foliage which was touching Pigeon Creek with color. As Nancy Hanks Lincoln saw the rude log house, unfinished for more than a year, she may have felt that Indiana in 1818 was not quite the promised land to which she had so readily agreed to go. Her bedstead, a crude affair of poles stuck between the logs in a corner of the cabin, sagged when she shifted so that she might see the heavy log-hewn table, the three-legged stools, the iron pot and spider, and the tin and pewter dishes. Sifting into the loft through unchinked logs, the October wind shuffled the leaves upon which her son, Abe, slept. Then the weakness and dizziness came again.

The settlers of Pigeon Creek knew what that meant. Thomas Lincoln had confined Betsy and Thomas Sparrow and only about a week earlier had helped bury Peter Brooner's wife whose home was half a mile away. The mysterious milksickness, known in North Carolina since colonial days, was following the frontier, stalking the pioneer as stealthily as the hunter tracked the deer. It attacked milch cows as well as men and was called by many names. Some knew it as the "trembles," the "staggers," the "tires" or "slows," and the "bloody murrain." Others spoke of it as "swamp sickness," "pukeing fever," or "river sickness." Most frontiersmen, however, simply referred to it as the "milk sick." And they were afraid of it, because, even though they had seen a few milksick patients recover, they had watched many more die.

What caused the disease no man knew. No remedies

prevailed against it. Even the pioneer physician had nothing in his saddlebags that could halt the persistent course of the disease. Neither the lancet nor the leech did anything but exhaust the patient. Heroic doses of lobelia and herb infusions were only professional gestures. Within a period ranging from two to nine days, most milksick victims lay decently on a cooling board. Yet, if no one understood the cause of the disease, many were acquainted with its characteristic symptoms. Nancy Hanks Lincoln must have manifested them all.

No doubt she was wearied from her nursing care of the Sparrows and of Mrs. Brooner, so that she paid little attention to the lassitude which forced her to rest as she went about her home chores. Perhaps she gave little heed to increasing spells of dizziness and attributed her loss of appetite to overexertion and fatigue. But she must have realized, when the nausea and persistent vomiting came on, that the milksickness had struck. When Thomas Lincoln saw her with pain in the region of the stomach and heard her, in her great thirst, ask for water, he, too, must have guessed the truth. In all likelihood, he was prepared for the death of his thirty-five-year-old wife before she had been ill many hours.

No doubt the Lincolns and other settlers in the vicinity of Pigeon Creek wondered and talked about the cause of this puking fever which, quiet as the forest shadows, was making the back-of-beyond a place of death. Perhaps they advanced explanations and theories as other men were to do for more than a hundred years before they finally solved the mystery of an endemic frontier disease which for decades weakened the pioneer, took its toll of life, and baffled the medical profession. It made dreadful ravages among early settlers, often causing them to break up communities and seek healthier locations. Indeed, if John Hanks can be believed, it may have been among the reasons which prompted Thomas Lincoln and his new wife, Sarah, to leave Indiana for the Illinois country. Hanks wrote: "The Reson is this we war perplext By a Disese cald Milk Sick my Self Being the oldest I was Determed to Leve and hunt a Cuntry whare the milk was not. . . ."

It was not going to be easy, however, to find a safe location in the Old Northwest. Thomas Ashe, as early as 1806, appears to have identified the milksickness among the set-

tlers on the Ohio River; and three years later, Thomas Barbee, a Virginia physician traveling through Ohio, discovered the disease in the Mad River district. In 1810 and again in 1815, Daniel Drake, most competent physician in the western country, published the first definite reports on the "sick-stomach."

It has been ascribed to some noxious impregnation of the water; to the use, by the animals whose milk and flesh are eaten, of some deleterious plant, and to marsh exhalation—the last of which is the most plausible.

Drake, intrigued by the unique nature of this disease which was causing so much consternation among emigrants and settlers, began to study milksickness with a determination to discover its cause, pathology, and treatment. For the next twenty years, articles appeared in the distinguished medical journals of the western country. Editors of periodicals such as the *Transylvania Journal of Medicine and Science*, the *Western Journal of Medicine and Surgery*, and the *Nashville Journal of Medicine and Surgery* were only too glad to open their columns to information which might assist the pioneer doctor in treating the scores of frontiersmen who were succumbing to the murrain.

Travelers, hunters, and settlers, penetrating the forest wilderness, all too frequently came upon evidences of milk fever in backwoods communities, on river boats, and in newly turned graves. William Faux talked with a farmer near old Vincennes who spoke bitterly of the "trembles"; Major Stephen H. Long found it along the Missouri River; and Edmund Flagg spoke of it as prevailing in certain isolated districts of Illinois where, he said, whole villages were depopulated so that it created a perfect panic among the settlers. Physicians in Kentucky and Tennessee described the disease in *The Western Lancet*, and the legislature of Kentucky appointed a committee in 1827 to investigate the milksickness problem. In Indiana, the state medical society attempted the same work. John Mason Peck, author of one of the most enthusiastic guides to the West, despaired when he wrote of the milk fever and admitted sadly that "physicians and others who have tried to determine its cause have had no success."

During succeeding decades both the volume of literature and the confusion increased. Reuben G. Thwaites, for example, wrote in 1906 that milksickness was "no longer so

diagnosed by medical authorities"; although even while he was penning those words, new outbreaks of the disease were occurring in Illinois and New Mexico, and physicians and laboratory researchers were still talking of milksickness. Sir William Osler's *Principles and Practice of Medicine*, the most widely consulted text of the day, still retained the old name, milksickness. To illustrate further the degree of misinformation concerning milksickness which even today creeps into literature, one has only to read the passages describing the disease in Bruce Lancaster's novel of the Lincoln country, *For Us, the Living*. And within the past six months, Mr. Lancaster, in the pages of *The Abraham Lincoln Quarterly*, has asked the same questions which the Lincolns of Pigeon Creek and scores of other settlers put to one another in their bewilderment. "Has this strange visitation ever been explained?" wrote Lancaster. "Has it ever cropped out in other parts of the country?"

The answer to both queries is in the affirmative. The cause of milksickness was almost found by a score of pioneer observers and scientists. Drake, it will be remembered, mentioned that some "deleterious plant" might be the active agent; Faux related that poisonous herbs caused "trembles" among cattle; Long spoke of the effect of "noxious plants"; and Flagg said that Illinois settlers ascribed the disease "to the milk or to the flesh of cows feeding upon certain unknown poisonous plants." The medical literature of the thirties, forties, and fifties, in general, mentioned the possibility of poisonous milk caused by cows eating injurious vegetation. A variety of other theories also were advanced. Poisonous dew and volatile minerals that evaporated from the earth at night, condensing on the herbage, there to await ingestion by grazing herds; miasmata, the early conception of a germ theory; micro-organisms; various poisonous minerals, such as compounds of arsenic, copper, lead, and cobalt, as well as poisonous springs—all these were advanced as explanations of the origin of the malady. In 1879, for example, the National Board of Health suggested the idea that a spirillum in the blood, akin to that observed in relapsing fever, was the activating agent. Two members of the bacteriological laboratory of the University of Chicago, in 1909, cautiously suggested that a bacillus, which they named *B. lactimorbi*, possibly was the cause. About the same time, it was stated

positively that milksickness was due to aluminum phosphate.

All of these theories, although they seemed based upon conclusive experimental evidence, were incorrect. The solution was found only when attention once more turned back to the poisonous-plant theory as advanced by the earliest commentators. Although many plants were suspected—poison ivy, water hemlock, Virginia creeper, coralberry, spurge, mushrooms, marsh marigold—the hunt finally centered upon the white snakeroot which William Barbee, of Marshall, Illinois, and David Dale Owen had identified in 1840 as *Eupatorium ageratoides*, although it now is called *Eupatorium urticaefolium*. Barbee and Owen, however, were not among the first to distrust the white snakeroot. In 1837 an Ohio farmer definitely advanced the view that the plant, when eaten by cattle whose milk was drunk by settlers, induced the disease. William J. Vermilya's thesis was published in the annual report of the Ohio State Board of Agriculture in 1858 and was reprinted in the report for 1873 when Buckeye farmers were cautioned against the root and told that, were the plant well known, a few hours would be sufficient to eradicate it entirely from any farm.

The plant itself was not difficult to recognize. Its heads ranged from three to many flowers. The flowers were perfect, involcre, cylindrical, or bell shaped with a flat receptacle. The corolla was five toothed and the achenia, five angled. A perennial herb, it often was sprinkled with bitter resinous dots, with generally corymboic heads of white, bluish, or purple blossoms which appear near the close of summer.

Even though *Eupatorium urticaefolium* was well described and substantial evidence offered to prove its connection with "trembles" in cattle and milksickness in man long before the turn of the nineteenth century, the Bureau of Plant Industry of the United States Department of Agriculture maintained in 1908 that "it certainly cannot be said that it has been proved that milksickness is due to any constituent of *Eupatorium ageratoides*." But intense investigation now began, and in 1917 it was demonstrated conclusively that the white snakeroot was toxic, although the active agent had not been isolated. Ten years later, as the result of a long chain of biochemical and pharmacological experimentation, the actual culprit was apprehended, not only in the white

snakeroot, but also in jimmyweed or rayless goldenrod (*Aplopappus heterophyllus*) and in a plant having no well-known common name, but called by botanists *Aplopappus fruticosus*. Jimmyweed grows from southern Colorado to western Texas, New Mexico, and Arizona, and extends southward into Mexico; and *Aplopappus fruticosus* is common to Arizona, Texas, and Mexico. The white snakeroot, of course, was common during pioneer days to Tennessee, Kentucky, and the states of the Old Northwest and today grows widely throughout the eastern part of the United States and as far west as Minnesota, Nebraska, Oklahoma, and Texas.

These plants, extending over a rather broad area, contain a poisonous substance known as tremetol which is the cause of milksickness. Nancy Hanks Lincoln in reality died from tremetol poisoning as the result of drinking milk from a cow that had fed upon the white snakeroot. Tremetol is a viscous levorotatory oil with a pleasant aromatic odor. Its chemical composition is $C_{16}H_{22}O_3$. It is classed chemically with the higher alcohols, is insoluble in water, acids, and alkalies and is soluble in the common organic solvents, alcohol, chloroform, and ether. Taken into the body and digested, tremetol will produce all the symptoms which Mrs. Lincoln manifested during the early days of her illness. The pronounced odor of acetone which was on her breath and present in her urine (even though no frontiersmen knew of the acetoneurometer) was a ketosis, a condition of faulty metabolism which, in reality, was a secondary manifestation of chronic tremetol poisoning.

Nancy Lincoln, exhausted by persistent vomiting, probably was put to bed within two or three days after the onset of the disease where she lay restless, her usually active mind dulled. At times neighbors, such as William Wood, came and sat with her. Perhaps they ministered without her knowledge, for semi-consciousness frequently closes in upon the milksick patient. Obstinate constipation, a scant urine of pale color, and continued pains in the abdomen must have been present. She probably complained of pain in the calves of her legs and of stiffness. Her hiccoughs were of the same type as that of other victims of the murrain. Had her husband asked to see her tongue, he would have observed it to be red and unusually large with a slight tremor and parched into fissures of white. Her eyes were rolled upward with the pupils reacting sluggishly and the ocular conjunctiva

reddened. A yellow, gummy discharge was present at each canthus. The abdomen, as the disease progressed, became scaphoid and later tympanites, or distention of the abdominal walls, appeared. No peristalsis was present. The patient now was entering the final stages.

If she followed the typical pattern, she lay on her back with her head turned to the side and her legs drawn up with the knees spread apart. A decided odor of acetone was on the breath and in the urine. Her respiration was becoming irregular and of the Cheyne-Stokes character, a succession of respirations becoming progressively shorter and more shallow, then an intermission of varying duration, followed by progressive increase in depth and length. Such respiration always signifies approaching death. The skin became cold and clammy. Had her pulse been taken, it probably would have been irregular and varying from seventy to one hundred and twenty. The temperature of all milksick individuals is subnormal, and Mrs. Lincoln's probably never exceeded ninety-nine degrees. Blood pressure possibly ranged from sixty-seven to ninety-five.

Before prostration and final coma prevented it, Nancy Lincoln called her two children, Sarah and Abraham, to her and told them "to be good to their father, to each other, and to reverence God." Not long after that she must have slipped into complete coma and died quietly on the seventh day of her illness. She passed away in October—perhaps the fifth—and was buried in a box made from rough lumber and joined by wooden pegs. Not until sometime later did a visiting Baptist preacher visit Pigeon Creek and preach a funeral sermon over the graves of Nancy Lincoln, her foster parents, and Mrs. Brooner.

Had autopsy been an established procedure in the backwoods during the early decades of the nineteenth century, a pathologist's post-mortem knife would have exposed the terrific organic changes produced in Mrs. Lincoln by her seven-day sickness. The mucosa of the stomach were highly inflamed, indicating an intense gastritis; both intestines were distended with gas, the reason for her tympanites or "drum belly"; the mesenteric lymph nodes were enlarged and possibly inflamed; and her liver was much enlarged, yellowish-red in appearance, and hard as if stuffed with fat. Although the pancreas and spleen were normal, the kidneys probably were enlarged, perhaps as much as one-third.

Further examination would have revealed fatty changes

in the ventricles and perhaps edema of the heart. Many small areas of atelectasis were present in the lungs which indicated a pulmonary collapse occasioned, not by a disease in the lungs themselves, but by the prolonged weakness so characteristic of milksickness. The kidneys revealed intense diffuse parenchymatous, an inflammation of the parenchyma, and well-defined glomerulitis, or inflammation of the Malpighian bodies of the organ. Microscopic analysis would have discovered that the nuclei of liver cells were greatly diminished in number. No pathological changes would have taken place in the brain. Findings such as these would confirm a diagnosis of milksickness.

Even though the cause of milksickness now has been determined, treatment of the patient is precarious, relapses are common, and mortality is high. Today medical care consists of supportive measures, combating the ketosis, and relieving the constipation. The use of enemas of glucose and sodium bicarbonate is recognized procedure. Rest is absolutely essential, and a milk diet is indicated, provided the milk is not infected. Within certain limitation, Mrs. Lincoln probably could have received about as effective medical aid from her family and neighbors as any modern physician could give. Most frontier housewives kept a supply of saleratus for use in baking. This could well have been used as a substitute for the refined sodium bicarbonate. The woods were adequately supplied with honey trees. A clyster composed of warm water, honey, and saleratus would have furnished a substitute for an enema of glucose and sodium bicarbonate. Enemata apparatus was not unknown to the pioneer who, if he could not afford a cheap French enema pipe, could easily manufacture one—as many did—at home. A hog's bladder and a hollow reed served time and again as crude, but effective, enema apparatus. Whisky usually was available on the frontier, and if whisky and honey had been given Mrs. Lincoln during the early days of her illness she possibly would have reacted promptly and successfully. Administration of whisky causes an ester of tremetol to be formed which is less toxic and, as the result of physiological changes, helps to liberate the poison and to combat the ketosis. The saleratus would have relieved the acidosis, and the enema would have combatted the constipation.

Yet with practically all the agents for treatment at hand, Mrs. Lincoln died, as did so many settlers, a victim of medical ignorance and of one of the great scourges of the western frontier.