COURTESY HOOD MUSEUM OF ART / GIFT OF THE ARTIST, CLASS OF 1920, IN MEMORY OF HIS BROTHER, DONALD M. SAMPLE, CLASS OF 1921

**The hilly section of Norwich's Beaver Meadow Road pictured above figures in the story that is told on these and the following pages. The image is an oil painting by**

the late Paul Sample, a 1920 graduate of Dartmouth College.

# Wild Greens

By Seymour E. Wheelock, M.D., and Roger P. Smith, Ph.D.

**Exactly 40 years ago, seven patients traveled over hill and dale and showed up in the Mary Hitchcock Hospital Emergency Room with severe symptoms of poisoning. They had all eaten some supposedly safe wild greens.**

Sunday, May 1, 1966, was one of those perfect spring days rarely seen that early as far north as the Upper Connecticut River Valley. It had been prematurely warm. The trees were already starting to leaf out, and greenery was virtually leaping from the ground. At night, the sound of peepers around Hanover's Occom Pond was almost deafening.

The Mary Hitchcock Memorial Hospital Emergency Room—which at the time was located at the

*Both authors were members of the DMS faculty when the events they describe here took place. Wheelock, a 1940 graduate of Dartmouth College, returned to Hanover twice—for an internship at Mary Hitchcock Hospital in 1944-45 and as an assistant professor of pediatrics from 1962 to 1966. He is now a professor emeritus of clinical pediatrics at the University of Colorado and director emeritus of ambulatory services at Denver Children's Hospital. He has written several previous features for* Dartmouth Medicine*—most recently, for the Fall 2002 issue, about campus dissension in the 1770s regarding smallpox vaccination. Wheelock's capabilities encompass the visual as well as the literary arts—he also drew the illustrations on the following pages. Smith, who joined the faculty in 1960 and was chair of pharmacology and toxicology from 1975 to 1987, is now the Irene Heinz Given Professor Emeritus. His byline has been a regular fixture in* Dartmouth Medicine *ever since he retired in 2000; his most recent feature, in the Winter 2003 issue, was a wry personal account of undergoing surgery, and he contributes one or more shorter pieces to every issue—see page 4 for another sample of his work.*


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center of a sprawling complex near Occom Pond—was not particularly busy. As of midafternoon, the problems so far that day had included a broken thermometer in the mouth of a toddler (who was more imperiled by the shattered glass than the mercury); an upset stomach caused by spoiled milk; another due to toadstools; an overdose of aspirin; and a bellicose student coming off a weekend binge. The usual stuff.

Suddenly a speeding car squealed to a stop in the emergency entrance. The driver of the car and at least one of the other occupants were well known to the ER staff. The passengers were Dr. William "Dumps" MacCarty, Jr., a radiologist on the Hitchcock staff; his wife, Harriet; Dr. Jackson Wright, a Hitchcock internist; and his wife, Margaret. They were obviously ill. All four showed evidence of protracted vomiting and, alarmingly, Dr. Wright was only semiconscious.

Despite being ill himself, Dr. MacCarty insisted on driving back to the place where all had taken sick to pick up two other possible patients—his son, William "Billy" MacCarty III, a junior at Dartmouth College, and Billy's classmate and roommate, John Schumacher. Before he left the ER, Dr. MacCarty told a confusing story about how all of them might have consumed a poisonous plant during a late lunch at the Lake Mitchell Trout Club in nearby Norwich, Vt.

The three people he left behind were installed in the ER's three examining bays. Staff were sent scurrying to round up gurneys for the anticipated arrivals. Calls went out to muster reinforcements to help care for those already in the ER, as well as for the others presumably on the way. Among those summoned were Dr. Seymour Wheelock, the pediatrician on call that day for the Poison Control Center, and Dr. Robert Gosselin, chair of the Department of Pharmacology and Toxicology and an expert in toxic substances.

Billy MacCarty and John Schumacher managed to convince Dr. MacCarty on the way back from Norwich to Hanover that they were not really sick and that they needed to study for their final exams. Accordingly, he delivered them to their dorm instead of to the hospital and then joined the others in the ER.

The clinical status of the four patients was unusual to say the least. It was certainly not consistent with anything common. In addition to unrelenting vomiting, they all were suffering from stunning hypotension—abnormally low blood pressure. Some of them were dangerously near shock level. In such a situation, the body's normal physiological response is to increase the heart rate by activating arterial nerve endings called baroreceptors in a branch of the aorta and in the carotid sinuses, arterial structures in the neck that help regulate the heart rate and blood pressure. The resulting tachycardia—a very fast heartbeat—often helps to increase blood pressure.

Instead, all four of these patients had a paradoxical bradycardia, or unusually slow heartbeat, which undoubtedly compounded their hypotension. Doctors placed intravenous lines in all four and gave them fluids, plus infusions of ephedrine, in an attempt to raise their blood pressures.

Among the causes of bradycardia is increased conduction in the vagus nerve leading to the heart's sinoatrial node, where the impulses that stimulate the heartbeat originate. In such a case, administration of atropine, a derivative of belladonna (a poisonous plant also known as deadly nightshade), will block the nerve's action and almost immediately raise the heart rate. In the proper dose, atropine poses little risk. So the decision was made—perhaps by the late Dr. Donald Andrésen, a cardiologist—to try it. All four patients showed dramatic improvement; their heart rates increased and their blood pressures were at least partially restored.

Dr. Wheelock had no sooner arrived at the ER than he took a frantic phone call from the Lake Mitchell Trout Club's live-in cook and housekeeper, Gertrude Kimball. He had a hard time understanding what she was saying, but the substance of her story was familiar. She and her husband, Erlund, had joined the others for lunch, as they often did. Erlund, a large and hearty man, had taken ill, too. While trying to get to their living quarters, he had suddenly lost his vision, begun to vomit, and fallen on the stairs. The ER staff decided to send an ambulance for him; Wheelock and Gosselin were urged to accompany the ambulance driver.

The Lake Mitchell Trout Club was only nine miles from the Hospital in Hanover. The road was paved for the two miles into the village of Norwich; then came five and a half largely unpaved miles on Beaver Meadow Road plus another two miles on Mitchell Brook Road and Mitchell Lake Road, both completely unpaved. The route, then and now, has scarcely a straightaway anywhere, and the descent into Beaver Meadow village is still hair-raisingly precipitous. On the way out, Gosselin and Wheelock both sat in the front with the driver.

When they arrived, recalls Gosselin, "I was one of several people manipulating a stretcher on a narrow stairway to the second floor of the clubhouse, loading a victim on it and then into the ambulance." The ride back was wild. "As the senior

physician, Seymour rode in the front with the driver," continues Gosselin, "and I found myself in the back sitting beside the patient—or, more accurately, trying to sit beside the patient while being hurtled back and forth in the speeding vehicle. The patient was at least strapped down; I was not."

For his part, Wheelock recalls that "the ambulance sped along with its interior lights on, and I, who have a history of debilitating carsickness, was rendered nearly incapacitated by violent vertigo." With vomiting both fore and aft, the trip is still a vivid memory for Gosselin and Wheelock.

Before they left the camp, Wheelock had been presented with a "bouquet" of the suspect plant. As soon as the ambulance arrived back in Hanover, calls were frantically placed to members of the biology department to locate a botanist. One of those who responded was James Poole, now deceased, a professor of botany emeritus and curator of the College's Jesup Herbarium; it was he who identified the plant. Poole later published a short report on the incident in the *New Hampshire Audubon Quarterly*, the only contemporary written account of the affair aside from a few sketchy newspaper articles.

In the meantime, realizing that at least some members of the group were desperately ill, Dr. MacCarty called his son at his dorm and ordered him and Schumacher to report to the ER at once. By this time, the ER was a writhing mass of humanity—with more than twice as many patients as it had been designed to accommodate and far more staff than had ever been in it at any one time. Patients on gurneys had overflowed into neighboring hallways. When Billy MacCarty and John Schumacher arrived, still asymptomatic, they took their place in line behind a patient with an unrelated minor problem. There was some dispute among them over who was entitled to be seen next. The question was settled when Billy MacCarty suddenly and copiously vomited. Before the affair was over, seven patients had been admitted either to MHMH or to the Dartmouth College infirmary, Dick's House, for stays of at least one night.

A more complete and coherent picture of the events leading up to this mini-epidemic slowly began to emerge. "Dumps" and Harriet MacCarty were perhaps an oddly matched but devoted couple. Both were widely known and admired in the community. Outside of radiology, Dr. MacCarty's passions were hunting and fishing. He often indulged those pursuits at the Lake Mitchell Trout Club, an organization that he headed at one time. The clubhouse was a large, old, rambling Victorian home on the edge of a lake whose pleasantly unspoiled waters were well stocked with fat trout. The surrounding woods contained plenty of deer and other game. Meals at the clubhouse often featured fresh trout, venison, and sometimes even frogs' legs as a special treat. The Lake Mitchell Club was and still is a private club, with an eclectic membership—drawn from the Dartmouth faculty and surrounding communities—of around two dozen.

Harriet MacCarty was not enthusiastic about either fishing or hunting, but in an effort to share in her husband's interests she had taken up cooking and acquired a local reputation as an excellent chef. She specialized in the wild game and fish brought home by her husband and son, and her interests extended in other directions as well. Among them were wildflowers, wild herbs, and other natural delicacies. Some, such as trillium, were used to decorate the table. Others, such as fiddlehead ferns, were for gourmet consumption. On one occasion, she made a considerable amount of elderberry wine.

As a child in Maryland, she had frequently eaten a southern dish made with a wild plant called pokeweed, and she was anxious to share it with others. On that fine May day in 1966, she had come across a verdant patch of greens that she believed to be pokeweed. She'd picked a liberal supply and presented it to Gertie Kimball, suggesting it as an addition to the lunch menu. The shoots were to be cooked in the same manner as spinach or dandelion greens, she explained. Gertie Kimball had grown up on a farm and knew by sight the plant Harriet MacCarty had found. She took a dim view of serving it. "The cows won't eat that stuff," observers recall her saying, "and I don't eat anything that the cows won't eat." True to her word, she did not partake of the dish and was the only one at the clubhouse that day who did not get sick.

As Billy MacCarty recalls it, "Jackson Wright and Erlund Kimball were essentially prostrated at the table. Our immediate reaction was that they had had heart attacks." John Schumacher found the dish so bitter that he consumed an amount "less than the tip of my little finger." He was the least severely affected of the seven who ate any. The others had medium-sized portions and showed signs and symptoms of varying severity and duration.

By this time, Professor Poole had reached a definitive conclusion. The plant with which he had been presented was not the pokeweed widely consumed in the South—*Phytolacca americana*. Although that plant has a poisonous root, the very young leafy shoots are often served as greens, or potherbs, and are occasionally even sold in specialty vegetable markets. But southern pokeweed is only rarely, if ever, found naturally as far north as the Upper Valley. Fre-


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quently found in northern New England, however, is a plant of the lily family called Indian poke, or false hellebore—*Veratrum viride*. In addition to the confusion invited by their similar common names, the two plants bear at least a superficial resemblance to each other, particularly as they begin to sprout in the spring. In her anticipation of a nostalgic meal, Harriet MacCarty had been betrayed by both of these coincidences. And unfortunately, Indian poke contains, in both its roots and its leaves, highly toxic alkaloids—substances from plants possessing high biological activity—that cooking does nothing to abate.

Upon the mere mention of the name *Veratrum*, several of the physicians present in the ER that day had an immediate epiphany. Attempts to find medical uses for veratrum alkaloids had been under way for some years. There had been a number of trials to exploit their potency as useful antihypertensive drugs, and there was particular interest in their possible use as a treatment for the hypertension often seen in pregnant women suffering from eclampsia. At least two trademarked preparations were on the market—Veriloid, a mixture of alkaloids from *Veratrum viride*, and Veralba, composed of approximately equal parts of protoveratrine A and B. The latter was said to be one of the more purified preparations of veratrum alkaloids available for clinical use. But both of these drugs were eventually abandoned because they induced vomiting at a dose that satisfactorily lowered blood pressure. It probably did not help that they were poorly characterized mixtures of alkaloids instead of single-ingredient preparations. Such crude products would not be allowed on the market today. Even back then, the medical literature already contained a handful of reports of overdoses of these medicinal preparations and a few accounts of poisonings from the plant.

By a lucky coincidence, DMS's Department of Pharmacology and Toxicology had among its faculty then the one man in all the world arguably best qualified to explain the effects of veratrum alkaloids. Dr. Herbert Borison, now deceased, had only recently completed seminal studies on the drug's mechanism of action and had found that it was indeed a most unusual, if not unique, medication. Borison's interest in veratrum related to its emetic effect—that is, its stimulation of vomiting. He was an acknowledged international authority on vomiting. Many agents, such as strong alcohol solutions, reflexly induce vomiting by irritating the gastrointestinal tract. Others, such as apomorphine, activate the so-called chemoreceptor trigger zone (CTZ) in the medulla oblongata, the part of the brain that controls involuntary vital functions; this action stimulates a neural pathway that converges on the vomiting center deep in the medulla, which coordinates the various muscle groups involved in purging.

Veratrum is unique in that it appears to increase neural traffic through a structure in the vagus nerve called the nodose ganglion. This accounts for its emetic effect and presumably for the bradycardia as well. In addition, it is a vasodepressor, reducing the blood pressure with an action mediated through nerves from the carotid sinus to the central nervous system. Accordingly, veratrum's hypotensive effect is especially strong.

None of this brilliant pharmacology, however, was drawn upon during the treatment of the seven stricken individuals in the Hitchcock ER. The care the patients were given, although it was based on sound pharmacological principles, was strictly empirical. In retrospect, however, it turns out to have been exactly what had been previously recommended in published reports, although that was at the time unknown to the physicians.

Billy MacCarty was anxious to be released from the hospital because of his impending final examinations. A member of Dartmouth's Nordic ski team, he had a resting pulse rate in the low 50s and an enviably low blood pressure to match. But these vital signs, which were normal for him, were taken as evidence by his attending physician that he needed more atropine at periodic intervals. Not only was the resulting dry mouth uncomfortable, but he worried that another side effect—visual impairment—would not help with studying for finals. Already knowledgeable about physiology (he went on to become the third generation of his family to go into medicine), he would listen for the footsteps of the nurse coming down the hall. Then he'd leap out of bed and exercise vigorously enough to get his pulse up to a point where, he hoped, the doctors would decide to stop the atropine and discharge him.

As soon as it was clear that all seven patients were out of danger, the teasing began. It was both merciless and prolonged. Dr. Jarrett Folley, who at the time was president of the Hitchcock Clinic, arranged for the cafeteria trays delivered to the hospital rooms of his two colleagues to include generous side dishes of "greens." A frequent quip was: "Let's do lunch at Lake Mitchell. I hear they have a great salad bar." And when "Dumps" MacCarty was finally released and able to go into his office, he found on his desk a Maxwell House coffee can containing a luxuriant growth of Indian poke. The attached card read: "The Revenge of the Native Americans." ■

## A prologue and epilogue to a perilous tale

Many of the subjects of the adjacent story are no longer living, including both senior MacCartys, the Wrights, and the Kimballs. Before sharing a few other backstory tidbits, perhaps a word is in order about how Dr. MacCarty came to acquire the nickname "Dumps." As a youngster, he was a great fan of the boxer Jack Dempsey. At camp one summer, MacCarty beat up the camp bully so his friends started calling him "Little Dempsey." That got shortened to "Demps," which was eventually corrupted to "Dumps." In good humor, MacCarty answered to all variations.

Several of the principals in the saga are still quite hale, however. Dr. William "Billy" MacCarty III, DC '67 and DMS '69, now practices orthopaedics in South Boston, Va. He has three children and, as his father did before him, enjoys hunting and fishing. His Dartmouth College classmate and roommate, John Schumacher, remained in the Hanover area and owns a chain of copy shops.

Dr. Robert Gosselin, the toxicologist who was called to the ER that day, is now retired and lives in Meriden, N.H. He has evolved in retirement into a full-time artist of some local note. His work has been published many times in Dartmouth Medicine, and he has been commissioned to do portraits of many DMS faculty members. One of his portraits [in fact of Roger Smith] was featured in the "Art of Medicine" section of the Summer 2005 issue.

We—the authors of this saga, Drs. Seymour Wheelock and Roger Smith—have turned to the pen in our own retirements. [See their bios on page 47 for details about their careers.] When we were of an age to be considering our future careers, the *New Yorker* magazine began publishing a series of stories by Berton Roueché under the rubric "Annals of Medicine." Roueché described true epidemiological investigations, sagas that quickly became *de rigueur* reading for anyone who was interested in the health sciences. Both of us at some point read and were struck by one such saga titled "Something a Little Unusual." In it, an amateur horticulturist grafted tomato plants onto rootstock of jimsonweed, a member of the nightshade family (*Datura stramonium*), thus poisoning himself and his family with tomatoes too heavily laced with atropine. We offer this account from the Mary Hitchcock Hospital "annals of medicine" as a tribute to Roueché, who died in 1994.

In addition to the sources who are quoted in the story, we drew on the recollections of Dr. Harry Bird; Dr. Leland "Pete" Hall; Dr. Sam Doyle; Dr. Robert Shoemaker; Augustus "Gus" DeMaggio, a professor emeritus of biology; Jane Graham, R.N.; and several others. None of them told a tale that was entirely consistent with anyone else's, but such is the effect of the passage of 40 years. Nevertheless, we're grateful to them all for the bits and pieces from which this incomplete—and, doubtless, erroneous in some respects—account was reconstructed. It should be noted that all the information contained here came from the quoted sources and none from the carefully protected medical records of the patients involved.

Some nagging holes remain in the story, including the names of all the ER personnel involved in the care of the victims and the identity of a mysterious family from Rochester, N.H., that was also at the lunch with a 17-year-old son. He, too, was affected by the *Veratrum* but was cared for by another physician and was never seen at the Hitchcock ER.

The route from Hanover to the Lake Mitchell Trout Club is not quite as tortuous as it once was, though it is no superhighway. The twistiest portion was immortalized by the well-known painter Paul Sample, a 1920 graduate of Dartmouth College and later Dartmouth's artist-in-residence—as well as a member of the Lake Mitchell Trout Club. From a vantage point partway up a hill that overlooks Beaver Meadow village and its small chapel, Sample painted one of his best-known works. Titled "Beaver Meadow," it is now in the permanent collection of Dartmouth's Hood Museum of Art—and is reproduced on the opening spread of this article, on pages 46 and 47.

Finally, additional insights into the use (and occasional misuse) of botanicals as pharmaceuticals are contained in an online addendum to this saga, at **http://dartmed.dartmouth.edu/spring06/html/wild_greens_botanicals.php**. Readers who don't have access to the web can obtain a copy by contacting Dartmouth Medicine at 1 Medical Center Drive (HB 7070), Lebanon, NH 03756; 603-653-0772; or DartMed@Dartmouth.edu.

Seymour E. Wheelock, M.D.
and Roger P. Smith, Ph.D.


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