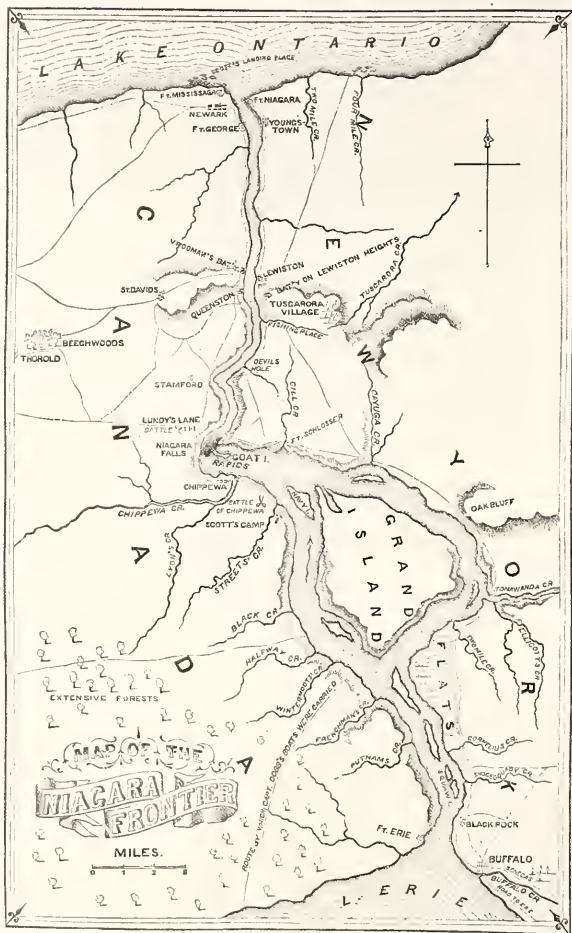




The Niagara Frontier. Fort Erie and the Snake Hill site are located near the bottom of the map across from Buffalo. From Benson J. Lossing, The Pictorial Field Book of the War of 1812 (1868, p.382).

Excavation of the 1814 Battle of Snake Hill Site: A Medical History Perspective

When the American military buries its war dead, it does so with all the ceremony, honor, and circumstance that is their due. Revered clergy accompany the flag-draped caskets of veterans to military cemeteries on home soil, hallowed by the remains of fellow fallen soldiers. This is no less true for men who died as a result of battle nearly 180 years ago than it is for those who fight in our own day. Indeed, the return of a dead soldier is an ancient imperative. In Plutarch's *Apothegms*, the Spartan mother directs her son to "Come back either with your shield or upon it." One does not question whether the son returns, only his relation to his shield. Time-honored tradition held that no man would be left on a field, particularly an enemy field. If the urgent press of combat prevented troops from providing a proper burial for their comrades, however, a less formal activity would take place resulting in an immediate and less ceremonious interment than would otherwise be desired. Hope would persist for a fitting reburial.



Dentition was of particular interest for the researchers, and in many of the burials, teeth and jaws survived in exceptionally fine condition.

So it was with the remains of twenty-eight American soldiers who died in Canada in the War of 1812. The remains of the men came to the attention of the American military—for the second time—when they were exposed by construction workers in 1987 along the shores of Lake Erie in the Town of Fort Erie, Ontario, immediately across the Peace Bridge from

by Adrienne Noë

The opinions or assertions contained in this essay are the private views of the author and do not necessarily reflect those of the Department of the Army or the Department of Defense.



The Port of Buffalo in 1813.
 From Benson J. Lossing, *The Pictorial Field Book of the War of 1812* (1868, p. 380).

Buffalo, New York. The men had died as a result of injury or sickness and were buried at a site named for the battle that occurred there. The excavation of the site—which included twenty-eight primary inhumations in two principal groups as well as an ox burial and several medical waste pits—occupied several dozen scholars for many months. Although the excavation is complete, work with the unearthed materials and data collected from them will go on for many years.

What follows is a short account of my experiences with the excavation and activities that followed the discovery of the remains, the research that supported several subsequent reports, a short summary of relevant military events, and an overview of anthropo-

logical, archaeological, and historical findings.

The Discovery

In the spring of 1987, construction workers discovered some human bones while excavating a Fort Erie lakefront site. Appropriate town, province, and national officials, including the Heritage Branch of the Ministry of Culture and Communications and the Cemeteries Branch of the Ministry of Consumer and Commercial Relations, were asked to investigate; ultimately they recommended a cessation of all digging until the physical extent and nature of the cemetery could be identified.

With the support of the property owners, the town of Fort Erie contracted with Toronto-based Archaeological Services, Inc. (ASI) to conduct the study. ASI President Ronald Williamson and his associates quickly evaluated the situation by researching local history and examining early findings, and they determined that the site was likely to be an American cemetery from the War of 1812. With that knowledge, and with the Town of Fort Erie and the governments and military of Canada and the United States, Dr. Williamson led an interdisciplinary team of workers and researchers in an international effort to determine at least the nationality of the Snake Hill soldiers, if not their specific identities.¹ Project participants met their main goal: repatriation with full military honors.² In support of this goal, teams of researchers, conservators and archaeologists produced several volumes of preliminary findings about their work.³

The full participating group of thirty-six formal members, plus volunteers, were organized into four main sections—archaeology, physical anthropology, history, and artifact conservation and identification. Representing seventeen different institutions, the members undertook projects that required the coordination of information from many disciplines in order to provide physical anthropological analysis, information about military clothing and personal gear, medical and mortuary practices, and several historical contexts within which to make all of the data useful.⁴

Many of the team members worked at the site itself, exhuming the remains bone by individual bone. They worked in propane-heated military tents on the shores of Lake Erie in November and December of 1987, sometimes under great pressures of time or impending storms. Others worked at remote sites, including local historical sites, several museums, the Center of Military History, and the National Archives. The work offered a unique opportunity not only to try to determine who was buried at Snake Hill but also to examine a set of military events and their aftermath.

The Battle of Snake Hill

In order to place in context the burials exhumed by the team, a brief history of the site and the events that happened there will be useful. At the close of the French and Indian Wars, the British had located the initial fort at the confluence of the Niagara River and Lake Erie. Although the site was prone to flooding and problems from winter ice buildup, the location was an important one, for with the signing of the Treaty of Paris in 1783, the Niagara River became an international boundary. British forces remained at the fort into the next century, using it as a site for lumbering and agriculture. Nearby, a number of private structures were used variously as kitchens and living quarters; one saw use as a hospital. After severe storms destroyed much of the fort in 1803, new construction began, but portions of the older structure remained

occupied for several years more while work proceeded on new ditching and stone bastions. Later construction added a ravelin to the east side, log and dirt magazine on the southern end, and cedar pickets around the rear. There were three artillery emplacements by 1813.

Influenced by American operations along the frontier in 1813, the British voluntarily abandoned the fort, burning the barracks and destroying the magazines shortly before American occupation on May 29. In December, British forces reoccupied the fort, which by then included American-built batteries to the front and rear. The southernmost of the batteries may have been in the area of Snake Hill—a mound approximately eight hundred meters to the west of the fort itself and well within weapon range. In early July of 1814, American forces, both regular and militia, had captured Fort Erie and were using it to establish a base of supply. They buried their few dead on site and sent their wounded to a hospital in nearby Buffalo.

Immediately after the July occupation, American and British forces engaged in a pair of particularly serious battles not far from the fort: Chippawa on July 5 and Lundy's Lane just two weeks later. Those battles forced the weakened Americans back to Fort Erie by month's end, where they began to prepare for attack by strengthening the ditches, breastworks, abatis, and other physical defenses that fortified about fifteen square acres around the fort structure

and linked the fort to a system of parapets and traverses. An 800-yard parapet and ditch paralleled the lakeshore to the left of the fort. Its terminus was Snake Hill.

By the first of August, major British forces had camped within six miles of the fort, and a series of daily skirmishes began in the area.

Fortification activities and the erection of hospital tents in secluded sites continued. Snake Hill itself became the site of a major battle on August 3 with the arrival of siege guns. Lined by American men and guns, the fort received the first of the weeks-long British bombardment on August 13; the heavy barrages continued for more than a day. Snake Hill had become the center of much of the fighting because its shoreside location and elevation had made it an important vantage from which to repulse British troops moving around the fort along the water's edge. Early on the fifteenth, reinvigorated British attacks began on the site. Although the defense of the site was difficult, the Americans ultimately triumphed; hundreds of British were wounded or killed. American casualties mounted as well, although ten times as many British fell, particularly when a small powder magazine at the fort exploded from an unknown cause.

More or less fierce fighting continued for at least another month. There were several significant skirmishes after the arrival of British reinforcements late in August. In one September attack alone, Americans sustained over five hundred casualties, and the



Ruins of Fort Erie as sketched by Benson J. Lossing in 1860. From Benson J. Lossing, The Pictorial Field Book of The War of 1812 (1868, p. 846).

British over 650. Although American forces retained Fort Erie, they did so at great loss of human life and limb.⁵

Medical attention and burial became an increasingly urgent issue over the course of the summer. Under the direction of their surgeon Dr. Amasa Trowbridge, the 21st Infantry established a field hospital at the encampment near a structure used by the British for the same purpose. Another facility set up by the 23rd, in the vicinity of Snake Hill, was considered the "general hospital."⁶ Yet a third hospital, staffed by a New York militia, was set up near the fort in September west of Snake Hill. All hospitals remained busy throughout the siege, and it is likely that they shared some material and equipment to care

for those who could not be transported for treatment across the river to a general hospital at Williamsville or elsewhere. It is likely also that the field hospitals shared graveyards for the enlisted men who would not be transported back for burial.⁷

Analysis of the Snake Hill Cemetery

The exhumation of the Snake Hill cemetery was a carefully orchestrated and executed task. The job began by defining the area for work, and then stripping away the topsoil and subsoil with a large backhoe operated by a highly skilled ASI staff member who removed as little as one-fourth inch of dirt at a time in order to minimize damage to burials. By noting slight

soil color changes, archaeologists identified two major burial areas. Each was separately tented for security and protection from exposure to the elements. Each tent was lit and heated. Once each individual burial was safely covered, excavation and recording activities began. Archaeologists, assisted by many other participants, dug pedestals around each shaft to facilitate the delicate removal work. The sandy lakeside soil was removed from the shaft and from around the skeletal materials, first with a shovel, then a trowel or a pick, and finally a brush for very close work. As each burial was completely exposed, it was carefully drawn, videotaped, and photographed, so that all elements in each grave could be studied in their relative positions. Each bone, button, badge, tool, or other item was examined *in situ*, and then recorded, identified, cushioned, bagged, and boxed for transportation to the fort or to the Royal Ontario Museum for further study. A study of all the materials removed from the burials has revealed a great deal about the lives and health of soldiers and about medical and burial activities at Fort Erie. Generally, evidence from each burial has been divided into two sets of objects: anthropological and archaeological.

The anthropological data yielded specific information about the individual: sex (in each case, the burial was that of a male), age at death (based on appearances of certain bone characteristics, cranial suture closures, and dental eruption), race, estimated stat-

ure (based on lower bone length), and battle injuries or patterns of illness. Although the information was carefully tabulated and reported, and all proved interesting for the historian of medicine and other scholars, only some will be highlighted in this overview.⁸

Twenty-eight men were buried at the Snake Hill cemetery. They ranged in estimated heights from sixty-four inches to seventy-two inches. The partial exhumation of a few of the sets of remains precluded making height estimates for all the men. In age, they ranged from approximately fourteen to sixteen years to thirty-five to forty years. Nearly half of the individuals showed signs of recent traumatic injury (such as an unhealed shot fracture), and a few evinced fractures several months into the healing process. Others showed signs of a systemic infection or arthritis. In general, dental health was good, although many had multiple caries.

Several of the burials are of particular interest. One had numerous unhealed traumatic fractures indicating severe physical trauma in the rib region, possibly from the direct hit of a six-pound cannonball. In another burial, the left leg was entirely missing; no skeletal or other trace of it remained, moving researchers to speculate about its possible disarticulation. Yet another burial included the remains of a badly shattered skull with only fragmented facial bones. Because the skull was in such delicate condition, the related bones were removed from the burial site as



National Museum of Health and Medicine anthropologist Paul Sledzik treats a skeleton in preparation for intact removal. This process, using polyvinyl acetate, helps consolidate bony structures.

a single unit, soil and all. Once in the laboratory, the bones were disarticulated, and a flattened musket shot fell from within the skull. Although American soldiers used buckshot, it is generally thought that the British did not. Perhaps this individual died an accidental death while cleaning his gun or at the point of a countryman's weapon.⁹

Several of the burials bore evidence of amputations, as did the medical waste pits at Snake Hill. One held an amputated left leg sawed through the femur that had apparently received a gunshot fracture to the knee. A second revealed an assortment of buttons and bone fragments, including a mandible, a kneecap, and an amputated right femur. Still another pit held several groups of skeletal materials. One included a tibia; a second held most of a left leg that had been amputated through the femur; and the third contained bones from another individual. Perhaps the most interesting find was the amputation of both left and right arms of an individual 14 to 17 years of age. Each arm had been amputated above the elbow, although no left hand or wrist was present, and the right ulna showed some trauma.

Amputated bone ends are extremely important in understanding typical acts of medical intervention. By examining the initial cut marks on the amputated bone ends, one can see where muscle was cut through to bone or where a surgeon may have made a "false start" in his work. By examining the cut in cross section,



The three individuals who shared this common grave bore numerous injuries. The left-most (and first) burial had healed fractures of the left clavicle and scapula and three ribs. In the central burial, both ends of the right femur were damaged; the left leg was missing entirely. The fact that there was no trace of the leg led some to speculate about complete surgical disarticulation. The right femur of the last burial had been traumatically shattered; portions of it remained unfound.

one can determine the patterns of striation and estimate the number of strokes necessary to sever a bone. One may even speculate about surgical tool use. How much wear could a bone take? How much wear could a saw take? Or the patient? Or, indeed, the surgeon? It leads, too, to speculations about the regular and extraordinary maintenance of tools and the roles of the surgeons' mates as they exercised their responsibility for caring for and sharpening the surgeon's instruments. In planned research, amputated bone ends from the Snake Hill site and the tools used to make them will be compared to the bone ends and tools from the Civil War and later conflicts.¹⁰



This individual sustained several unhealed fractures of the arm and pelvis, and fifteen pieces of unfired buckshot appeared in the area of the right pocket. Button locations, marked by nailheads in this photograph, have led researchers to believe he was buried fully clothed, possibly as a result of severe sudden injury.

Archaeological findings were equally as revealing about life and death around the Snake Hill cemetery. The team ably examined 438 buttons, identifying 221 as American and associating most of them with a specific military unit. Just as critical as the manufactured origins of the buttons, however, was an examination of their relative placement and orientation within each grave shaft, as very little fabric or even fiber survived at the site. Even though many of the copper and brass buttons were corroded or had major encrustations, their location and distribution allowed the team to identify the type and configuration of garment worn by the individual at burial. For instance, the style of button for a coattee was quite different from that for a vest or over-

alls or trousers. Likewise, button materials differed from garment to garment. Outer buttons might have been metal, of a certain form, and designed with a unique regimental affiliation pattern; undergarment buttons might have been bone and unadorned.

Generally, the position of buttons, coupled with that of the bones, made it possible to determine the physical position of the individual at burial—for instance, whether the ankles or knees or wrists had been bound (a typical practice that made for ease in managing and conveying the corpse to the grave, as well as a tradition-bound funeral preparation). Binding may also be an indication that the individual had been hospitalized, for the act took some time and required



One of the nineteen buttons found with this casketed burial, the pewter "US" shanked button was located near the waist and may be from a set of front-closure overalls.

materials not readily expendable during a battle or hasty burial.

The deterioration of soft tissue sometimes made it difficult to reconstruct the original button position, however, particularly when hands were folded at the waist or below. The absence of folding of a specific garment, such as trousers or overalls, might indicate that the man had received an abdominal wound that would not be apparent as skeletal trauma, as no soft tissue remained for examination. No buttons at all might mean hospitalization in a loose garment or that the man had been stripped for the care of his wounds, with death soon following. In some cases, the clothing seems to have been laid upon rather than enclosing the body, interred perhaps as a ges-

ture of formality. Some weapons and associated burial items such as flints, musket tools, and the occasional spoon were also found with the burials. No medical tools were among them.

Two of the burials clearly included coffins, again suggesting hospital cemeteries rather than hasty battlefield gravesites. Some, too, had straight metal pins near the skeleton, perhaps indicating that a bandage or burial shroud had been pinned in place.¹¹ In addition, all but three of the sets of remains were oriented in positions that placed the head toward the west—a practice consistent with centuries of Christian burial practice.¹² There is very little documentation about specific burial practices at Snake Hill, yet two American accounts

survive. One writer mentioned that men who had been captured as deserters were commanded to dig graves with only enough distance between them to allow for a man to kneel in the space. A second observed that the burials occupied two days.¹³

Battlefield Medicine in the War of 1812

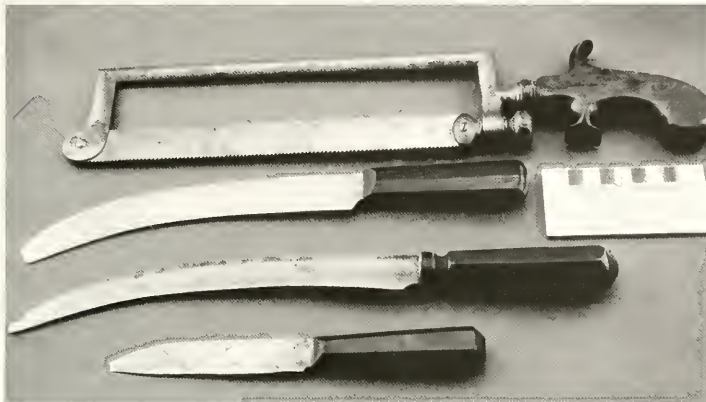
Medical activities typical of those at Fort Erie are fairly well documented in historical literature. The surgeon James Mann wrote in his 1816 *Medical Sketches of the Campaigns of 1812*, 13, 14 that he had seen no significant improvements in the military medical system since the first war with England, and that few surgeons and physicians recorded their medical experiences from the earlier war.¹⁴ Although the forms of disease, illness, and injury were similar to those of the Revolutionary War, surgeons were nevertheless unfamiliar with hospital systems and their functions, and maladies peculiar to traveling and stationary armies remained foreign.

The health of American troops on the Niagara frontier varied during the year preceding the Battle of Snake Hill. The early months of 1814 saw some diseases attain epidemic status. Pneumonia, rheumatism, intermittent fever and lake fever (the latter two referring to malaria), cholera, syphilis, small pox, dysentery and non-specific diarrhea were all relatively common. By early summer, the general health was improving.¹⁵ Soon after the start of the siege of Fort Erie, however, the "rainy season" brought on a series of

illnesses including quickly debilitating and dehydrating dysentery and diarrhea. Typhus, in particular, was severe among the militia, and because the general approach was to wait until the third day of fever to send the patient to a hospital, medical treatments were often of no avail.¹⁶

At Snake Hill disease accounted for at least as many deaths as trauma. For example, many of the prevalent diseases that were rapidly dehydrating left no skeletal trace. Drug overdoses might also have been responsible for some deaths. Calomel, acetite of lead, and tartrate of ammonia were fairly freely administered; as was bloodletting.¹⁷ Each, in overdose, may have been fatal. In general, the list of medical activities was short.

The surgeon's tasks were principally confined to trephining, probing, draining and suturing. His instrument kit probably contained crane bill forceps, levers, tenacula, lancets, catheters, probes, bougies, knives, scalpels, saws, forceps, and gorgets.¹⁸ Surgeries were limited by the practical knowledge of the day; the chest and abdomen rarely were opened. At Fort Erie, as elsewhere, amputation was the "prototypical act of nineteenth century surgery."¹⁹ As a wound management tool, it made a ragged, complicated trauma into a relatively cleaner and less complicated one. Its variants were generally well described in the contemporary literature. Both Mann and the Canadian surgeon John Douglas thoroughly discussed the technique and whether it should be performed on the battlefield or



Surgeons' tools from the era and the area are comparatively rare. These are from an amputating kit used at Fort Erie by Assistant Surgeon Archimedes Smith in 1814 and are in the collections of the National Museum of Health and Medicine, Armed Forces Institute of Pathology, artifact number M 151 00345.

later in the hospital setting. Although associated mortality rates for amputation ranged from ten to ninety percent, surgeons relied upon it often.²⁰

Mann himself was of the opinion that otherwise healthy individuals could survive amputation. He preferred the relatively small risk of the surgery to the greater risk of transportation to a general hospital. Amputation may account for a number of site deaths, and Mann's descriptions precisely account for the appearance of the details and striations, and even the small tab of bone at the break site of materials from the burials and the waste pits. In his 1816 work, he described training a young surgeon in his first such procedure. The surgeon happened to be Amasa Trowbridge, who served with the 21st Infantry at Fort Erie and was deeply involved with the care of the wounded there.²¹

In an undated manuscript, Trowbridge recounted his experiences at Fort Erie:

On the 26th [of July 1814] the American Army commenced a retreat to Fort Erie and then began to fortify itself. The enemy followed and three days after opened a constant and heavy fire upon the fort with cannon and mortars, which was continued with constant picket skirmishing until the 15th of August, when a general assault was made upon the Fort and encampment by the enemy. They were repulsed with great slaughter. The repulse was decisive by the explosion of a magazine under the bastion of the Fort, killing 300 and wounding 149 with 5 officers and prisoners. There was

scarcely a wound known by the surgeon that was not exemplified among them. A special order from the General assigned to Dr. Trowbridge the wounded of the enemy.

In a few days the greatest part were sent to the Gen'l. Hospital, Buffalo. A few of the Americans were killed and 27 wounded. Previous to this time there had been daily skirmishing and cannonading which had scarcely an interval of an hour night or day. The following is an extract from Genl. Ripley's report of that transaction dated August 17' 1814. "I close with stating to you of the highest terms of approbation the skillfulness exhibited by Dr. Trowbridge, Surgeon of the 21' Reg. of Infantry, and his mates Everet and Allen. Their active, humane, and judicious treatment of the wounded both of the enemy and our own together, with their steady and constant attention to the duties of their station must have attracted your observation and, I am confident, will receive your approbation." . . . Two days were occupied in burying the dead.²²

The Snake Hill cemetery makes evident the sort of work Trowbridge describes, yet takes it one step beyond.

As a historian accustomed to entering one more library, turning one more page, and exploring one more manuscript, I found turning one more trowel of dirt a new experience. The midwinter lakeside frustrations of cold and damp were made the less important as the bones themselves took on a primary quality that no document could rival, at least for the initial research phases of the project. Some of the work was fascinating, some tedious, some difficult, and only the most experienced archaeologists even attempted to remove from the sand the bones that had eroded to the consistency of wet crackers.

Yet, those primary materials—bones, buttons, the occasional artifact—formed a core around which significant historical research revolved. Excavation of the Snake Hill cemetery allowed us to form new conclusions about health, medical practice, and military mortuary affairs, but it also demanded rigorous traditional research. The site work was only the first step in a highly orchestrated action of great proportion for medical history. In a way that documentary research could never provide alone, the excavation offered the extreme likelihood that the remains were those of fallen American soldiers with specific unit affiliations, even if the work did not assign them individual positive identifications. Although we failed to return to them their names, we did not fail to return them to their home.





Numerous dignitaries, both civilian and military, American and Canadian, visited the site as work progressed. Dr. Ronald Williamson, president of Archaeological Services, Inc., led this tour, which included site researchers, the United States Army Surgeon General, the Executive Officer of the Armed Forces Institute of Pathology, and the American and Canadian military project attachés.

Notes

1. The archaeology section included Deborah Steiss, Beverly Garner, Andrew Clish, Lawrence Llewellyn, Sgt., U.S.A.F., Stephen Thomas, Julie MacDonald, Martin Cooper, and Anne Wingfield. The physical anthropology section included Jerry Cybulski, Douglas Owsley, Susan Pfeiffer, Shelley Saunders, Robert Mann, Peer Moore-Jansen, Marc Micozzi, Sean Murphy, and Paul Sledzik. The artifact and conservation section included Anne MacLaughlin, Julia Fenn, Charlotte Newton, Steve Poulin, Sandra Loughheed, Rene Chartrand, Patrick Wilder, Donald Brown, and Donald Kloster. The history section was led by LTC Joseph Whitehorne, USA, and included Rene Chartrand, Patrick Wilder, Adrienne Noël, David Owen, Tim Shaughnessy, Dennis Carter-Edwards, and Charles G. Roland. Ronald Williamson was the project director, and Robert MacDonald served as his administrative assistant. Lt. Col. D. W. Prosser and LTC R. Trotter, USA, led respectively, the Canadian and American military missions.

2. Although the detailed arrangements at military funerals differ from occasion to occasion, the honors afforded the soldiers of the Snake Hill cemetery included those typical of a contemporary "full honor (company) funeral"—national and unit colors, a military band, a company consisting of two platoons drawn from the service of which the dead had been a member, and various honor guards, escorts, and armed salutes. At the Snake Hill ceremony, military service members from two nations participated. United States military members currently entitled to this type of service include those who have attained the rank of Lieu-

tenant General, Vice Admiral, Major General, Rear Admiral, or Brigadier General. See Table of Entitlements in B. C. Mossman and M.W. Stark, *The Last Salute: Civil and Military Funerals* (Washington, DC: The Department of the Army, 1971). See also Army Regulation 600-25, "Salutes, Honors, and Visits of Courtesy" and Army Regulation 600-30, "Personnel: Honors to Persons."

3. Archaeological Services, Inc., *The Snake Hill Site: A War of 1812 Cemetery*, 2 vols. (Toronto: Archaeological Services Inc., 1988). These volumes serve as the single-most important basis for this essay. I am indebted to David Owen and LTC Joseph Whitehorn, USA, who headed the team of historians, whose essays on British operations, site history of Fort Erie, and United States operations, were particularly useful.

4. Institutions included the Armed Forces Institute of Pathology; the Armed Forces Medical Museum (now the National Museum of Health and Medicine of the Armed Forces Institute of Pathology); Archaeological Services, Inc.; the Canadian Armed Forces; the Canadian Conservation Institute; the Ontario Ministry of Culture and Communications, the Ontario Ministry of Tourism and Recreation; McMaster University; the National Museum of Civilization, National Museums of Canada; the Niagara Parks Commission; Parks Canada; the Royal Ontario Museum; Sackett's Harbor Battlefield Historic Site (New York); the Smithsonian Institution; the Toronto Historical Board; the University of Guelph; the United States Army; and the University of Tennessee.



In flag-draped transport cases at the June 1988 Fort Erie repatriation ceremony, each soldier was accompanied by an honor guard and carried to a waiting hearse by active service members representing military units descended from those present at Snake Hill. Additional military units, dignitaries, and many other individuals, including the original archaeology team, attended the services. The hearses traveled in a guarded entourage to a federal cemetery in Bath, New York, where the soldiers were buried with military honors at graveside.

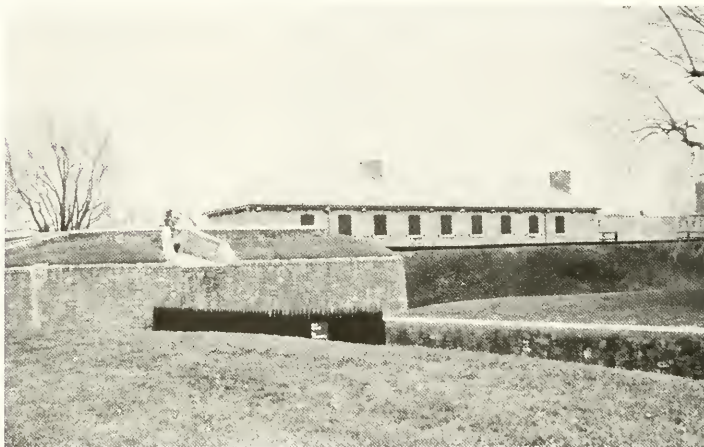
5. A list of all American units and their locality of origin and surgeon (if any known) follows: 1st Infantry, New Jersey; 9th Infantry, Massachusetts, surgeon: Joseph Lovell; 11th Infantry, Vermont and New Hampshire, surgeon: Gordon P. Spencer; 17th Infantry, Kentucky; 19th Infantry, Ohio; 21st Infantry, Massachusetts, surgeon: Amasa Trowbridge; 22nd Infantry, Pennsylvania, surgeon: Edward Scull; 23rd Infantry, New York, surgeon: Silas Fuller; 25th Infantry, Connecticut; 1st Rifles, Pennsylvania, Maryland, Virginia, Kentucky, and Tennessee, surgeon: William Henning; 4th Rifles, New England and New York; Pennsylvania Volunteers, surgeon: Samuel Mealy; New York Volunteers, surgeon: Gardner Wells. Canadian and Indian volunteer regiments also fought at the battles. See Volume I, Appendices 4, p.2; and 6, pp. 1-7 in Archaeological Services, Inc., *The Snake Hill Site*.

6. General hospitals had earlier been established at Burlington, Vermont; and Plattsburgh, Malone, and Greenbush, New

York. The nearest general hospital to the Fort Erie site was that established in July of 1814 at Williamsville, eleven miles from Buffalo. It contains mass British and American graves. One additional hospital had been built at Sandytown in Buffalo, New York, for casualties from Chippawa and Lundy's Lane. It was nearly too busy by mid-August to receive additional casualties and served principally as a way-station for patients destined for Williamsville. See David Owen, "British Operations and Site History of Fort Erie," pp. 8-14, and Joseph Whitehorne, U.S. Operations, pp. 15-47, in Archaeological Services, Inc., *The Snake Hill Site*, Volume 1.

7. Several general points regarding burial at Fort Erie are relevant. A British mass grave was discovered and exhumed at Fort Erie in the 1930's. American officers' remains were sent to Williamsville as a matter of routine. Many British dead went unburied, their remains having floated down the nearby river. *Ibid.*, p. 33.

8. *Ibid.*



Fort Erie. The present rebuilt structure is located on the grounds of Old Fort Erie, now a part of Parks Canada, at the Town of Fort Erie, Ontario. The fort itself is approximately one and one-half miles east of the Snake Hill site. (This and all photographs in the essay are courtesy of the Otis Historical Archives, National Museum of Health and Medicine, Armed Forces Institute of Pathology, Washington, DC. The photographer was Sgt. Lawrence Llewellyn, USAF, Armed Forces Institute of Pathology.)

9. *Ibid.*, p. 153. Another burial included foreign matter fragments, perhaps from the explosion of the powder magazine.

10. Specimens and artifacts to be compared are from collections of the National Museum of Health and Medicine and will include an examination of known tooth patterns in medical saws and trephination devices.

11. T. Dale Stewart, *Essentials of Forensic Anthropology* (Springfield, Illinois: Charles C Thomas, 1979).

12. Bertram S. Puckle, *Funeral Customs, Their Origin and Development* (London: T. Warner Laurie, 1926).

13. *Diary of Jarvis Frary Hanks, 1831-42*, Entry A00-263. Buffalo and Erie County Historical Society, NY.

14. James Mann, *Medical Sketches of the Campaigns of 1812, 13, 14. To Which are Added, Surgical Cases, Observations of Military Hospitals; and Flying Hospitals Attached to a Moving Army, an*

Appendix Comprising a dissertation on Dysentery: which Obtained the Boylston Prize Medal for the Year 1806, and Observations on the Winter Epidemic of 1815-16. Denominated Peripneumonia Notha; as it Appeared at Sharon and Rochester, State of Massachusetts (Dedham, Massachusetts, H. Mann and Company, 1816).

15. Mary C. Gillet. *The Army Medical Department, 1775-1818* (Washington, D.C.: Center of Military History, 1981).

16. Mann.

17. Louis C. Duncan, "The Medical Service in the War of 1812, Part IV: The Campaign of 1813," *Military Surgeon* 72 (February 1933): 144-150. For evidence of bloodletting during the campaign, see particularly p. 150.

18. No known surgical kit used at the site is extant. The list is composed as a combination of tools suggested for general surgical use by Sir Charles Bell and the contents of a surgical kit used at the naval battle of Lake Erie in the collections

of the National Museum of Health and Medicine. Sir Charles Bell, *A System of Operative Surgery, Founded on the Basis of Anatomy*, 2 vols. 1st American Edition. (Hartford, CN: Hale and Hosmer, 1812).

19. The best and most useful statements and assessments of amputation as a military surgical technique or any other medical activity of the era are to be found in the work of Charles G. Roland, M.D., Jason A. Hannah Professor of the History of Medicine at McMaster University. See particularly his "War Amputations in Upper Canada," *Archivaria* 10 (1980): 73-84. See also his introduction to John Douglas, *Medical Topography of Upper Canada* (Canton, MA: Science History Publications, 1985), originally published in London in 1819, and "Medical Aspects of the War in the West in 1812," in K. G. Pryke and L. L. Kulisek, eds., *The Western District: Papers from the Western District Conference* (Windsor, Ontario: Essex County Historical Society, 1983).

20. Roland, "War Amputations in Upper Canada."

21. Mann. Later in his career, Trowbridge wrote again of his Fort Erie experiences, this time in the context of the immediate or delayed amputation argument. Trowbridge, "Gunshot Wounds," *The Boston Medical and Surgical Journal* 17 (July 4, 1838): 341-347.

22. Amasa Trowbridge Papers, Library of Congress Manuscript Division, Washington, DC, AC 1556. Trowbridge is alternatively spelled "Troubridge" in some locations.

Adrianne Noë, Ph. D., is Assistant Director for Collections and Research at the National Museum of Health and Medicine, Armed Forces Institute of Pathology, Washington, DC. She is Secretary-Treasurer for the Medical Museums Association.

About the Photographs.

The photographs that accompany this essay are only a few of the thousands that are the work of forensic photographer Jay Lewellyn, Sgt. USAF, assigned at the time to the Armed Forces Institute of Pathology. He participated in all phases of the excavation.