On Being a Surgeon, or the Good Old Days of Surgery

Constance E. Putnam, PhD

The early US physician and medical educator, Nathan Smith, MD, was also—perhaps above all—a surgeon of considerable distinction. This brief look at the surgical side of his career presents some of the evidence for Smith’s having been singled out so often as a seminal figure in early American medicine. For a number of years, the New England Surgical Society has presented to one of its members a Distinguished Service Award named to honor Nathan Smith. This article also provides insights into Smith’s actual surgical practice. Here, readers can see how much surgery has changed while being reminded once again of what some important characteristics of outstanding surgeons are. Arch Surg. 2003;138:435-439

When President John F. Kennedy was host to an impressive array of Nobel Prize winners in the White House dining room, he surveyed the crowd and said, “I think this is the most extraordinary collection of talent that has ever been gathered together at the White House, with the possible exception of when Thomas Jefferson dined alone” [oral communication, April 29, 1962].

One might well be reminded of that when facing a room filled with a distinguished group of surgeons and be tempted to say, “I think this is the most extraordinary collection of surgical talent that has ever been gathered together in one room, except perhaps when Nathan Smith sat by himself.”

AN “EMINENTLY QUALIFIED” SURGEON

Nathan Smith (1762-1829) does indeed seem to have had prodigious talent as a surgeon. The sheer range of surgical operations that Smith undertook should leave even a general surgeon today in some awe. Smith’s ledgers and day books from 1800 (shortly after his single-handed founding of Dartmouth Medical School), for example, show something of the scope. The Table lists the operations performed in that year (along with the charges for each).

Individual charges for this surgical work ranged from 25¢ for dressing a ruptured artery to $30 for a leg amputation. All together, these surgical endeavors brought Smith $330, just less than 20% of his income (or at least of his charges!) for the year.1 Some things have changed.

We have evidence that Smith performed surgical procedures antecedent to those included in almost every modern surgical subspecialty (neurosurgery is on the list only if one counts the frequent trepannings). But, there are also other reasons it is fitting for the New England Surgical Society to look to Nathan Smith as one in whose name, annually, one of its own should be honored. In 1978, Donaldson2 made clear the appropriateness of his title, “The First All-New England Surgeon,” on an article about Smith published in the American Journal of Surgery. Earle,3(p414) writing in Surgery some 15 years earlier, stressed that Smith “visited and operated on patients over the length and breadth of New England.”

Smith was probably as well known in his day for his medical work as for his surgical accomplishments. He also founded or helped to found no fewer than 4 medical schools (at Dartmouth College, Yale University, the University of Vermont, and Bowdoin College. The Fourth of these, known in its day as the Medical School of Maine, survived more than a century; the other 3 remain in business today). This ac-
On the other hand, what it takes to be a good surgeon has perhaps not changed so much. When Smith died in 1829, his younger colleague from Yale University, Jonathan Knight, MD, 4(p28) gave a description of his mentor’s attributes as a surgeon in a heartfelt and moving eulogium:

For the duties of a practical surgeon, Dr Smith was eminently qualified, and upon the manner in which he performed these duties, his reputation must, in a great measure, ultimately rest. To these, he brought a mind enterprising, but not rash; anxious, yet calm, in deliberation; bold, yet cautious, in operation. His first object was, to save his patients, if possible, from the necessity of an operation; and when this could be no longer avoided, to enter upon its performance, without reluctance or hesitation. In his operations, he was calm, collected and cautious.

He manifested no desire to gain the reputation of a rapid operator, a reputation, so ardent, and it is to be feared, so unfortunately sought for, by many surgeons of the present day. He who commences an important operation, with his eye upon the minute hand of a watch, starts in a race against time, in which the life of his patient is the stake, and often the forfeit. The true rule for the surgeon is, sat, cito si sat bene [it is done fast enough, if it is done well].

Both did he make any display, in the course of his operations, to gain the applause of bystanders. Hence there was no formidable array of instruments; no ostentatious preparation, so well calculated to excite the wonder of the ignorant, and to strike a dread into the mind of the patient. Every thing necessary was prepared, while all useless parade was avoided. When engaged in an operation, his whole mind was bent upon its proper performance. Every step was carefully examined, every occurrence narrowly watched; and if anything unusual appeared, he would ask the advice of those present, in whom he had confidence. In such cases, his promptness and decision, joined to what Ches[es]elden calls “a mind that was never ruffled nor disconcerted,” were of singular utility. By the aid of these, he could look, with a steady eye, upon the varying features of the case, as they rose to his view, and adapt his measures, at once, to every emergency. By this cautious mode of proceeding, calculated to gain, not the applause of those who were present on a single occasion, but the enduring reputation of a judicious, skilful [sic] Surgeon, he performed with great success, the most important operations.

Thus, we see another way in which “Nathan Smith” is a worthy name for, among other things, a surgical society award.

### APPRENTICESHIP

That Smith would make his reputation not only as a physician but as a surgeon—“bold, yet cautious, in operation”—is not at all surprising when we learn what inspired him to become a physician in the first place. For that we must turn to a letter written by Josiah Goodhue, telling (45 years after the fact) of his initial encounter—in 1784—with Smith. 3 Goodhue was a physician; the occasion of the meeting was his arrival in Chester, VT, where Smith lived, to perform an amputation.

An amputation would, of course, have been an even more serious business then than now. Only when it seemed that death was certain if the amputation was not performed would anyone submit to it, and the operation was bound to be a public affair. The whole town would typically turn out—some, no doubt, drawn by...
genuine sympathy, others by morbid curiosity. From the surgeon’s point of view, a crowd was not necessarily a bad thing; a volunteer was likely to be needed at the least to hold the patient.

Gleaming operating rooms, highly trained surgical teams, sophisticated and experienced anesthesiologists—these amenities that we take for granted are luxuries Goodhue could not have imagined. What he would have known is that, in those preanesthesia days, an operation of more than a few minutes would be unthinkable. A skilled surgeon would endeavor to take no more than 40 or 50 seconds—shriek-filled seconds that would seem interminable.

It was Smith who stepped forward on that particular fateful day. All descriptions of what he actually did are secondhand or thirdhand at best—and dependent on each other. Henry I. Bowditch, in 1851, gave an account he said he got from Joseph Perry, who in turn claimed to have it directly from Goodhue. In 1879, Oliver P. Hubbard retold the story, citing Bowditch, citing Perry, citing Goodhue (New England physicians all, and all fans of Smith). According to Hubbard

"Goodhue was struck with the apparently intense interest that he [Smith] took in the proceedings, and with his unflinching steadiness of nerve. Smith even tied the arteries...and did so without a tremor." In a famous 1928 address at Dartmouth College, the great Harvey Cushing similarly noted the youth’s steadiness, saying that Smith “stepped forward and accepted the trying task without flinching.” Smith’s granddaughter-in-law wrote that “Nathan Smith stepped boldly forward and with unflinching nerve gave his aid, even so far as to tie the arteries without a tremor.”

Be that as it may, meeting Goodhue under these circumstances convinced Smith that he wanted to be a surgeon. Spottily educated and certainly almost penniless, this Vermont farmer and quondam schoolteacher on that day started down the long road that led to his becoming one of the young nation’s most brilliant physicians and surgeons.

We do not know many particulars of Smith’s apprenticeship under Goodhue, but the older man had a reputation as “the most celebrated surgeon” in northern New England, and his large practice was a good place to begin. But Goodhue himself attested (in that same long letter written after Smith’s death) to another critical factor in the success of Smith’s education, something for which the mentor took no credit:

While Smith lived with me the country was new, the roads were bad. ... [M]y pupils ... sometimes objected on account of the road, or inclemency of the weather, but it was not so with him; it was enough to say he might go, and he was gone. Neither the darkness of the night, the mud to his horse’s knees, or the violence of the storm were any impediments to him. ... If it should be asked what laid the foundation of Doctor Smith’s eminence, the answer is industry. If it should be asked what brought him to the pinnacle of the profession the answer is the most unremitting industry.

Goodhue also recounted another episode that transpired during the apprenticeship, which he believed helped show the measure of the man. This may have been the origin of Smith’s intense interest in anatomy and surgery. After a particularly taxing horseback ride to visit patients, Smith faced the need to destroy his overworked horse. “[H]e felt rather bad for a few minutes,” Goodhue wrote, “but soon concluded to turn his loss to good account, and converted the dead horse into a subject for dissection; to which he immediately proceeded with perhaps as high a degree of interest as ever he felt in dissecting a human subject.”

This unquestionably falls into the “it’s probably a good thing patients don’t always know what goes into surgical training” category. A couple of other tales told about Smith over the years further illustrate the point. One writer claimed that Smith was “reared an unsophisticated country boy, with a limited education... whose irrepressible genius first found employment in stealthily breaking the legs of his father’s lambs and sheep, and then humanely offering to patiently mend them.”

SURGICAL PRACTICE

Perhaps the story that best illustrates Smith’s character is one that comes from the earliest days of his own practice, begun in Cornish, NH, in 1787. The fact that Smith was raised on a farm, and that he understood and liked country people, would not have been enough to ensure employment. He needed to show his new neighbors what he was made of. In this, he received a fortunate boost, if a tale preserved in the annals of Cornish is not apocryphal. It goes as follows:

While the newly fledged doctor was patiently waiting for business, a company of young men concluded to have a little fun at his expense. Their plan of procedure was suggested by the sight of a goose with a broken leg. Taking the tavern keeper into their confidence, they caught the limping bird, and as soon as all arrangements were complete, a messenger was dispatched in haste to tell Dr Smith that a patient who had unfortunately broken his leg desired his services at the tavern immediately. The doctor was promptly on hand, but began to suspect a trick as he came in sight of the house. Preceded by “mine host,” and followed by a crowd, all ready to burst with delight at the anticipated surprise and chagrin of the doctor, he entered the great hall where, sure enough, lay the poor goose, extended in all honor upon a bed.

The doctor, without the least hesitation or show of surprise, advanced to the bed, and having, with scrupulous care, examined the broken limb, prepared his splints, reduced the fracture, and bound it up in the most scientific manner. He then, with extreme gravity, directed the tavern keeper to pay strict attention to the patient, on no account to suffer him to be moved from the bed for at least a week, but to feed him plentifully with Indian meal and water.

There was not much laughter when the doctor went away, though thus far all had gone well enough; but the next day the joke really became serious, when a good round bill for professional services came to the landlord, which he found himself obliged to pay.

The affair soon got abroad, and the shrewd and level-headed young doctor suddenly found himself famous. People said, “There’s a man who knows how to take care of himself.”

A particularly good example of the way Smith’s care focused on ensuring the comfort and welfare of his pa-
patients—geese or otherwise—emerges from student notes taken during the years Smith taught at Yale University. In a lecture on amputations, he cautioned that no matter how damaged a hand, rather than amputate it entirely, if “you can save one finger it will be best to save it. . . . A part of a hand would be of great use.”11(p74) This is surely sound advice indeed.

Smith's practicality and common sense are further—although rather differently—illustrated in another anecdote told by Goodhue5:

While he lived in Cornish a woman showed [sic] him a sore upon her forehead which had for many months been under treatment for malignant cancer. On examination with a probe he discovered a hard substance, made an incision and took out a sliver of wood, which he wrapped in a clean piece of paper, & wrote upon it Cancer root with an order to present it to the redoubtable Cancer Doctor. The formidable ulcer was cured in a few days with a simple pledget, very much to the credit of Dr S.

Smith had an unenviable amount of experience with cancer. In an unpublished article on the subject, he gave a veritable clinic on several varieties of cancer that he had operated on (including many mastectomies) by presenting the histories of some 24 cases. He gave pertinent details both for cases in which the patient recovered and for those in which the patient died despite his ministrations. Again, he showed his profound concern for the comfort of his patients, stressing that an unsuccessful operation, while it might do no injury, would still cause the patient pain. Hence, “we should not wish to operate unless there is a probability of success.”11(p337)

Smith apparently never got his paper on scirrhous affections into print.12 He did, however, publish several articles and notes. Without doubt, his single greatest contribution to medicine which he made in the later generation could appreciate fully how original and important was the contribution to medical literature was his 1824 essay on tuberculous fever.13 Ninety years later, the great Johns Hopkins clinician William H. Welch14(p9) wrote that “[o]nly a later generation could appreciate fully how original and great was the contribution to medicine which he made in his essay ‘On Typhus [sic] Fever,’ now a medical classic.”

Also celebrated is Smith's article on osteomyelitis, which first appeared in print in 1827.15 Of paramount importance to Smith in the technique he devised for draining a bone abscess was that an amputation might thereby be avoided. When a question arose over whether to operate, he wrote that instead of rushing to do the drainage, “the decision must be determined by contingent circumstances like everything relating to our art.”16(p116)

A second basis for Smith's reputation as an innovating surgeon comes from the ovariotomy he performed on July 5, 1821—what those who know anything about Smith as a surgeon are most likely to have heard about.17 Smith himself seems to have thought his operation the first of the kind; the fact that it was not in no way diminishes the importance to his patient of what he did.

CONCLUSIONS

This brief account of Smith's surgical career merely skims the surface; there is much more to be said about his work as a surgeon, never mind what remains to be said about his career as a physician and his work in medical education. But, for now, perhaps it suffices to close with evidence that Smith would be delighted, were he somehow to return, to know that medical men (and, today, women) still gather periodically at meetings—to discuss medical matters and enjoy each other's company. As an avid supporter of the New Hampshire Medical Society, he clearly believed that such meetings were important. In a letter to a friend, following a 1793 meeting at Kimball's, in Charlestown, NH, Smith18 wrote that it had all been "conducted with propriety & good order." Nevertheless, it is clear from the rest of Smith's account that the meeting he wrote about was not all work and no play. We see yet another side of the character of the eminent surgeon, Nathan Smith. "Dear Sir," he wrote:

To stimulate you to live while you live & to emulate noble Deeds I will just give you the outlines of a late expedition to Charlestown. On Wednesday last came on the meeting of the members of the Western District of New Hampshire [sic] Medical Society—We met at Kimball's in Charlestown about a dozen respectable physicians attended the meeting which was conducted with propriety & good order. After the meeting was adjourned four other physicians with myself set down at a private meeting of our own, the meeting was opened by a decanter of wine, and as all sublunary things are subject to change so it happened with our wine for one Bottle followed another in quick succession. The effect of the rotation of wine was surprisingly happy & delightful. I never saw so much good Nature & good sense [sic] in so short a time in my life every countenance was constantly in a smiling position & every word was noble & generous in fact all Nature . . . seemed to be on float.

This good nature & happy concur[r]ence of circumstances continued without interruption till the fifth or sixth Bottle (for I do not know which) had been Broached. when all on a sudden I picked a quarrel with the contents of my stomach & I threw the whole of it splash right onto the floor with such violence that I thought in my heart my stomach would have gone with it but recovering myself & swallowing several times to keep my stomach down with assistance I filed off for Lodgings as great or short I do not know I waked from a deep sleep which I thought had been very sound & sweet having come to myself so as to guess oh who what & where I accidentally found D.r Petty beside of me he appear'd to be asleep I looked attentively at him to see if I could discover the marks of wine in his countenance [sic] which I thought I did very plainly for his skin was red[er] than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had seen it before—being anxious to know how the Battle went I jog'd him, & said Petty Petty are you der than ever I had see...
Surgical Anatomy

The superior intercostal artery supplies the first two intercostal spaces from behind. The first thoracic sympathetic ganglion is large and lies behind the vertebral artery. A small twig, the ansa subclavii, passes in front of the subclavian artery to join the lowest cervical ganglion.


©2003 American Medical Association. All rights reserved.