Medical History

Doctors of 1776—II*

J D SPILLANE

British Medical Journal, 1976, 2, 28-30

Dr James Thacher

James Thacher, a farmer's son, was a native of Barnstable, Cape Cod, Massachusetts, and in 1775, when he was but 21, he had just completed his apprenticeship there to Dr Abner Hersey. His *Military Journal* (fig 1) began in January 1775 as follows: "At the precise period when my studies and education are completed, under the patronage of Dr Abner Hersey of Barnstable, and I am contemplating the commencement of a new career in life, I find our country about to be involved in all the horrors of a civil war."

He records the events leading up to the battles of Lexington and Concord in April 1775, where some ten or so local doctors attended the wounded. One, Dr Eliphalet Downer, of Brookline, killed a British regular in hand-to-hand fighting.²⁴ At these battles there were 93 casualties among the American force of some 3500 to 4000 and 267 among the 1700 British. Thacher was enraged by the "Yankee Doodle" tune played by the British "by way of contempt and derision" as they marched out of Boston. It was soon appreciated that medical services would have to be organised and Thacher obtained the post of surgeon's mate at the military hospital in Cambridge. He served there throughout the year's siege of Boston until its evacuation by the British in April 1776, when he was appointed a regimental surgeon. Food, clothing, blankets, and medicines were all scarce, while dysentery and smallpox remained lurking dangers. Thacher himself, and his regiment, were inoculated against smallpox—that is by direct inoculation of smallpox matter, not by vaccination. At the battle of Bunker Hill, outside Boston, in June 1775, when the British attacked the American redoubts, casualties were high on both sides—453 Americans and 1040 British. It was here that Dr Joseph Warren was killed, "A loss," said Thacher, "infinitely to be lamented and which occasions universal grief and sorrow."

In July 1775, Thacher wrote: "General George Washington has established his headquarters in a convenient house about half a mile from Harvard College and in the vicinity of our hospital... the operations of the war have interrupted the progress of education at the college; the students have returned to their homes, and the college buildings are occupied by our soldiery." Thacher was "much gratified this day with a view of General Washington. His excellency was on horseback, in company with several military gentlemen. It was not difficult to

FIG 1—Title page of Thacher's *Military Journal*.

distinguish him from all others; his personal appearance is truly noble and majestic; being tall and well-proportioned. His dress is a blue coat with buff-coloured facings, a rich epaulette on each shoulder, buff under dress and a small elegant sword; a black cockade in his hat."

Thacher served in the army throughout the war (1775-83), taking part in the retreat from Ticonderoga, then fighting in New York, Princeton, and the Delaware. He describes the long journeys, in all kinds of weather, on foot and on horseback; the wounds, illnesses, and privations of the men, especially at Valley Forge; and there are accounts of Indian ambushes, executions of marauders and deserters, and impressions of officers and men. He refers to the illness of "nostalgia," as did his successors in the American Civil War, when it was an official diagnosis. He met Washington, the 21-year-old Marquis de Lafayette, and Baron Steuben, "disciplinarian with a scrutinising eye." He witnessed the execution by hanging of Major Andre, "a tall genteel and graceful" young British officer who was caught

*Conclusion of the Harveian Lecture of 1976 delivered to the Harveian Society of London in March 1976

Dartmouth Medical School, Hanover,¹New Hampshire, USA

J D SPILLANE, MD, FRCP, Sandoz Foundation visiting professor of neurology (present address: Prescelly, Newport, Dyfed, Wales)

spying with the American traitor, General Benedict Arnold. He attended the latter when he was wounded. At Albany, then a town of "three hundred houses," his hospital had 500 patients, "British troops with our own men." He said "I have been present at some of the capital operations, and remarked that the British perform with dexterity and skill, but the Germans, with a few exceptions, do no good to their profession." Thacher witnessed the surrender of Lord Cornwallis at Yorktown in 1781 and described the event in some detail. General Washington and Cornwallis were standing together, the "haughty Cornwallis" with bared head. Washington said "My Lord, you had better be covered from the cold," Cornwallis replied "It matters not, Sir, what becomes of this head now."

Thacher's last entry in his diary was made on 1 January 1783. "This day I close my military career, and quit for ever the toils and vicissitudes incident to the storms of war. . . . While I congratulate my country on the momentous event by which we are about to be elevated to the rank of an Independent Nation, most cordially do I proffer my sympathy for the many lives of inestimable value which have been sacrificed during this ever memorable contest."

After the war he practised in Plymouth, Massachusetts, and gained a wide reputation. He was awarded an MD degree by Harvard and Dartmouth Colleges. Besides his medical books he wrote on the town history of Plymouth, the Salem witchcraft hysteria, and on bee-keeping and orchard cultivation. He lived to be 91. His portrait shows a small, sharp, Yankee face with thin lips, straight har, and a fancy white ruff; he was said to be slight and agile. No other American patriot of his day seems to peer at you across the years in such a winning way (fig 2).

FIG 2—Dr James Thacher.

Dr John Jones (1729-91)

John Jones (fig 3)^{25 26} was born on Long Island, the son of Dr Evan Jones. All four of his grandparents were Quakers born in Wales. He began to study medicine in Philadelphia and then travelled to Europe, studying in London, Edinburgh, Paris, Leyden, and Rheims. At the latter university he obtained the degree of MD. Returning to New York he practised as a surgeon and soon acquired a reputation, especially at lithotomy, which operation he was the first to perform there. When the medical school at King's College, New York (now Columbia University) was formed in 1767, two years after Philadelphia's, he was appointed their first professor of surgery. He lectured in surgery and advocated basic training in anatomy and its separation from "physic." "The science and art of surgery, tho' more clear and

FIG 3—Dr John Jones.

certain in its objects, than that of physic, is equally various, extensive and difficult of attainment."²⁵ On a second visit to London Pott gave him a copy of his lectures.

Jones is very famous indeed in American medical history because he is the author of the first American medical book. It was published in 1775, at the outbreak of the War of Independence, and was widely used by American army doctors. Its full title was *Plain Concise Practical Remarks on the Treatment of Wounds and Fractures; to which is Added An Appendix on Camp and Military Hospitals; principally designed, for the Use of young Military Surgeons, in North America* (fig 4). The preface begins with reference to "the present calamitous situation in this country," and in 92 pages he presents a vade mecum on injuries to limbs, trunk, and head largely based on the lectures of Pott, Pringle, Ranby, and others. Included in its binding was his translation of van Swieten's *Diseases Incident to Armies*. Billings²⁷ said the book "contains but one original observation, viz; a case of trephining followed by hernia cerebri" but "with three reprints and about twenty pamphlets" it was all they had at the start of the Revolutionary War.

In April 1776, when Washington arrived to take command of the army, Jones said in a letter to a friend in Philadelphia, "We are to all intents and purposes a Garrison town and the few inhabitants who are left, down to the very dogs—of Doctors I mean—dare not stir out after Tattoo beating, without the countersign; & Mum tu toodlee would shoot, even his mother's breeding sow. . . ."²⁶ He escaped from New York when it was occupied by the British and he served as a surgeon in the army until 1781. He spent the rest of his days in Philadelphia and was on the staff of the Pennsylvania hospital. He was a friend of Benjamin Franklin and left an account of the latter's fatal illness, "the stone." Presumably he did not operate because of his patient's age—84. Jones, an asthmatic, became ill after a professional visit to President Washington and died a few days later.

Dr Joseph Warren (1741-75)

Joseph Warren^{28 29} was 34 when he was killed at Bunker Hill, serving in the line, although he had been promoted to the rank of major-general a few days previously. He had refused the post of surgeon-general and it seems certain that had he accepted the Americans would have been spared all the distress and confusion surrounding the Morgan-Shippen affair. As it turned out they quickly won a legendary hero.

"Quit drug and pill his post to fill
And take command at Bunker Hill."²⁹

FIG 4—Title page of Jones's *Practical Remarks on the Treatment of Wounds and Fractures*.

"Such was his zeal and ardour," wrote Thacher, "that he rushed into the battle foremost in danger with his musket, and encouraged the soldiers by his example, till near the close of the battle, when he received a fatal shot, and immediately expired."

Warren, son of a farmer near Boston, had been to Harvard college and was practising medicine in the city of Boston. A natural leader, he was prominent in public affairs, a patriot, and a close friend of the silversmith and dentist Paul Revere. They and others used to meet at the Green Dragon Tavern in Boston, where they debated "no taxation without representation" and the ways in which the British could be resisted. Revere was among the "Mohawks" at the Boston tea-party of 1773 and legend likes to put Warren there too. In "The Rallying Song of the Tea Party" are the words:

"Our Warren's there and Bold Revere
With hands to do, and words to cheer
For Liberty and Laws."

Warren is also credited with the ballad "Free Amerikay" sung to the tune of the "British Grenadiers."

"That seat of science, Athens,
And earth's proud mistress, Rome,
Where now are all their glories,
We scarce can find a tomb.
Then guard your rights Americans
Nor stoop to lawless sway,
Oppose, oppose, oppose,
For North Amerikay."

After the "Boston Massacre" in 1770 there was an annual anniversary oration at the Old South Meeting House. On one famous occasion Warren had stirred the populace by his

"coolness and intrepidity" in defying the British ban on the oration. He entered the building, which was surrounded by soldiers, through a window and spoke from the pulpit, "a patriot in whom the flush of youth and dignity of manhood were combined . . . an awful stillness preceded his exordium."⁴ It was Warren who sent Paul Revere on his famous ride to Concord to warn the minute-men that the British were planning to raid the rebel stores there. Later, Revere was to record that "About ten-o'clock Dr Warren sent in great haste for me, and begged that I would immediately set off for Lexington, where Messrs Hancock and Adams were, and acquaint them of the movement . . ." ²⁸ And it was another physician, Samuel Prescott (1751-77), son and grandson of doctors, who completed Revere's ride from Lexington to Concord.

There are many patriotic verses commemorating "Warren's Hundred Days."

Dr John Warren (1753-1815)

John Warren (fig 5) was the younger brother of Joseph. He also had been to Harvard, "maintained there by his own efforts." He was apprenticed to his brother for a few years and then set up practice at Salem. He was at Concord and with his brother at Lexington. When the latter was killed, John, aged 22, was

FIG 5—Dr John Warren.

senior surgeon at the military hospital in Cambridge. Search was made for Joseph's body but it was not found until after the British evacuation. "Revere positively identified the teeth which he himself had made."²⁸ John continued to serve in the army under Washington and was at the fighting in New York, Princeton, and Delaware. After the war he practised in Boston and was among those doctors who used to meet in the Green Dragon Tavern. These meetings led to the formation of the Boston Medical Society.

John Warren started to give lectures on anatomy, and in 1782 Harvard College asked him to draw up plans for a medical course. He became their first professor of anatomy and surgery when he was 29. So began the Harvard Medical School. The professor's first course of lectures was introduced by "An Historical and Philosophical Account of Medicine from the Deluge On." Students who completed the course were presented with a certificate engraved by Paul Revere, whose son John graduated in medicine at Edinburgh in 1811. He subsequently

became a professor of medicine at Jefferson and later in New York.

* * *

Two hundred years later we should perhaps spare a thought for Dr James Thacher, "the young country boy untrained in narration,"³⁰ who left us such a vivid picture of his times. The doctors of 1776 do not seem far away when one remembers that the great-great-grandson of Paul Revere, son of Sir William Osler, died on the Ypres salient in 1917, while successive generations of Warrens have served to this day on the staff of the Massachusetts General Hospital in Boston and the Harvard Medical School.

References

- ¹ Chidsey, D B, *July 4, 1776*, p 53. New York, Crown Publishers, 1958.
- ² Toner, J M, *Medical Men of the Revolution*. Philadelphia, Collins, 1876.
- ³ Hawke, D, *A Transaction of Free Men*, p 5. New York, C Scribners, 1964.
- ⁴ Thacher, J, *American Medical Biography*, Boston, Richardson and Lord, 1828.
- ⁵ Beck, J B, *An Historical Sketch of the State of Medicine in the Period of the American Revolution*, 1850. Republished with foreward by C F Fishback. Albuquerque, New Mexico, Horn and Wallace, 1966.
- ⁶ Mumford, J G, *A Narrative of Medicine in America*, p 136. Philadelphia, Lippincott, 1903.
- ⁷ Garrison, F H, *An Introduction to the History of Medicine*, 4th edn. Philadelphia, Saunders, 1929.
- ⁸ Packard, F R, *History of Medicine in the United States*. New York, Hoeber, 1931.
- ⁹ Goodman, N G, *Benjamin Rush; Physician and Citizen*. Philadelphia, University of Pennsylvania Press, 1934.
- ¹⁰ Flexner, J, *Doctors on Horseback*. New York, Garden City Publications, 1939.
- ¹¹ *Autobiography of Benjamin Rush*, ed G W Corner. Princeton, Harvard University Press, 1948.
- ¹² Riedman, S R, and Green, C C, *Benjamin Rush; Physician, Patriot, Founding Father*. New York, Abelard-Schuman, 1964.
- ¹³ Binger, C, *Revolutionary Doctor—Benjamin Rush; 1746-1813*. New York, Norton, 1966.
- ¹⁴ Hawke, D F, *Benjamin Rush; Revolutionary Gadfly*. Indianapolis, Bobbs-Merrill, 1971.
- ¹⁵ Bell, W J, *The Colonial Physician*, pp 31, 44, 69. New York, Neale Watson Academic, 1975.
- ¹⁶ Shryock, R L, *Bulletin of the History of Medicine*, 1970, **45**, 507.
- ¹⁷ Rothstein, W G, *American Physicians in the Nineteenth Century; from Sects to Science*, pp 42, 54. Baltimore, Johns Hopkins Press, 1972.
- ¹⁸ Brieger, G H, *Medical America in the Nineteenth Century; Readings from the Literature*, p 90. Baltimore, Johns Hopkins Press, 1972.
- ¹⁹ Norwood, W F, *International Record of Medicine*, 1958, **171**, 391.
- ²⁰ Shryock, R H, *Development of Modern Medicine*, p 3. New York, A A Knopf, 1947.
- ²¹ Carlson, E T, and Simpson, M M, *American Journal of Psychiatry*, 1964, **121**, 209.
- ²² Hammond, W A, *A Treatise on Insanity and its Medical Relations*. New York, D Appleton and Company, 1883.
- ²³ Tuke, D H, quoted by DeJong, D E, *Annals of Medical History*, 1940, **2**, 195.
- ²⁴ Cash, P, *Medical Men at the Siege of Boston, April 1775-April 1776*, p 17. Philadelphia, American Philosophical Society, 1973.
- ²⁵ Hume, E E, *Bulletin of the History of Medicine*, 1943, **13**, 10.
- ²⁶ Charles, S T, *Bulletin of the History of Medicine*, 1965, **39**, 435.
- ²⁷ Billings, J S, *A Century of American Medicine; 1776-1876*, p 293. Brinklow, Maryland, Old Hickory Bookshop, 1962.
- ²⁸ Forbes, E, *Paul Revere and the World he lived in*, pp 244, 302. Boston, Houghton-Mifflin, 1942.
- ²⁹ Truax, R, *The Doctors Warren of Boston, First Family of Surgery*. Boston, Houghton-Mifflin, 1968.
- ³⁰ Viets, H R, *Virginia Medical Monthly*, 1949, **76**, 384.

Today's Treatment

Diseases of the cardiovascular system

Drugs affecting the cardiovascular system: pharmacological basis of treatment

JOHN C GILBERT

British Medical Journal, 1976, **2**, 31-33

The functioning of the heart and blood vessels can be influenced by many drugs, and a wide variety of mechanisms is implicated in the drugs' actions. This account will be heavily restricted, but will cover many drugs used clinically.

Cardiac glycosides

The cardiac glycosides slow the heart in atrial fibrillation and also increase the force of contraction of the heart by increasing the rate at which tension is developed. This increases the cardiac output and increases blood flow to other organs, including the kidneys—where water excretion is enhanced. Observations in animals and man indicate that digitalis acts directly on contractility. If the heart is of normal size the net

cardiac output need not be increased. If the heart is failing, however, its efficiency is depressed and by its positive inotropic effect digitalis restores this and increases the output.

The increased contractility and cardiac output induce a response in baroreceptor activity, and this results in increased vagal activity and slowing of the heart. This contributes to the beneficial effect of digitalis in atrial fibrillation. Other events are also implicated, however, particularly a direct action on the atrioventricular node so that the effective or functional refractory period is prolonged; this reduces the frequency of ventricular contraction. But these effects of digitalis may also underlie some of its toxic manifestations, which include extrasystoles, usually arising in the ventricles; atrial and ventricular tachycardias; and heart block.

Speculation concerning the mechanism of the positive inotropic action of digitalis has centred mainly on the role of adenosine triphosphatase (ATPase), which is activated by sodium and potassium ions together (Na,K-ATPase) in the presence of magnesium ions. This enzyme is present in the membrane of the heart cell, and its function is to mediate the pumping of sodium ions out of the cell and potassium ions into the cell against concentration gradients, the energy for these processes

Heriot-Watt University, Edinburgh

JOHN C GILBERT, PHD, professor of pharmacology