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"PUBLIC HEALTH DURING  
THE WAR OF 1812"

Adapted from a Talk given on 6 March 1976  
before the Society of the War of 1812 in  
the Commonwealth of Pennsylvania at its  
Annual Meeting at the Union League,  
Philadelphia, Pennsylvania by Daniel  
Blain, M. D., Professor, Physician and  
Lecturer and a member of the Society.

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## I N T R O D U C T I O N

This talk was given by Dr. Daniel Blain at the Annual Meeting of the Society on 6 March 1976, and he brought with him certain exhibits loaned by the College of Physicians' Museum. In introducing him, Program Chairman Paul K. Brown stated that Dr. Blain was born in Kashing, China to U. S. citizens serving as Presbyterian missionaries, and he received his MD at Vanderbilt University School of Medicine. He interned in Medicine at Peter Bent Brigham Hospital, Boston and in Neuro-Psychiatry at Boston City Hospital. In WW II, he served with the U. S. Public Health Service, and after, with the Veterans Administration with rank of Colonel and held professorships at Georgetown and the University of Pennsylvania. He was Director of Phila. State Hospital at Byberry 1966-71 and served till 1975. He visited most Mental Hospitals in U. S., Canada, Central America, Japan and England on behalf of the American Psychiatric Assn. He holds Honorary Degrees of LLD from LaSalle College in 1967 and D.Sc. from Washington and Lee in 1971.

His active interest in genealogy is evidenced by membership in St. Andrew's Soc.; Sons of the Revolution; Society of Colonial Wars; Military Order of the World Wars; Soc. of the Sons of St. George; as well as our Society of the War of 1812 in Pennsylvania.

So I bid you heed him well - he knows whereof he speaks! We are honored to have Dr. Blain speak to us.

"PUBLIC HEALTH DURING THE WAR OF 1812"

Daniel Blain, M. D., with Michael Barton, Ph.D <sup>1</sup>

Adapted from remarks made at the Annual Meeting of  
the Society of the War of 1812 in March 1977

"This was a little war, but there are those who love it."  
--paraphrasing Daniel Webster in the Dartmouth Case.

The author's interest in this subject came from his discovery that his progenitors in the War of 1812 were two physicians in Williamsburg, Virginia, whose payroll records, cited by genealogists to establish his eligibility to join the Society, indicated that their enlistments were several and lasted for only one or two months, allowing them to return and see their patients. This adaptation of military to civilian needs was sharply contrary to the practices of the last wars when individuals and non-military hospitals were deprived of their customary medical services. Further study showed related ferments during this war: strong preference for local versus federal government, for state militia over national armies, the polarization of the two major political parties for and against the war, the coming into power of the Jeffersonian anti-war party even when there was much popular outcry for a return to arms. This led to great unpreparedness. This last point led to a dramatic demonstration of the compelling voice of the people, a voice which precipitated both the Revolution and the second war when in both instances the country could not have been less prepared. An on both occasions there was

evident, the ability of free people to rise to great peaks of determination and energy when the country was in peril.

Let me say a few words about the war in general. In the Preface to the volume on the War of 1812 in the Chicago History of American Civilization, some interesting points were made. The Editor of the series says, "It was hard at the time and not much easier now, to say precisely why the war was fought, what were the final decisive battles, by whom the war was really won, and what were the final important consequences ... The subtlety of issues helps to explain why this war commanded some of the most interesting and flamboyant talents ever spent on the writing of American history ... It has been made a spectacle of grand conflict by eloquent historians writing multivolume works, Henry Adams, Admiral Alfred T. Mahan, and Theodore Roosevelt have made the war a parable of American policy even before the new profession of American historians had begun its academic debates." The editor continues: "There is growing evidence that this war, though regarded as one with trifling consequences, called by many "Mr. Madison's war," supported by the South and West, but decried by the commercial interests of the East, from Philadelphia northward, did result in the ultimate freedom of the new republic from the European domination it had been unable to shake off. It should be regarded as "The Second War for Independence."<sup>2</sup>

It is suitable at this time to note what the celebrated historians had not said of the health of both civilians and

servicemen, both on land and sea: it was the rule rather than the exception that more died from disease than from battle, and a high percentage of servicemen were unable to fight in the land and sea engagements because they were sick from all manner of diseases. And no notice was taken of the great epidemic of a form of malignant pneumonia which covered the nation in the winters from 1812 through 1815, comparable in many ways to the devastating flu of World War I in 1918.

The War of 1812 began twenty-nine years after the end of the Revolution. It provided, as war often does, the crucible in which progress and regression surface to show the true nature of the social fabric which has been in the making. It may be called the War of Confirmation, confirmation of the hopes and fears generated by the events and developments of the preceding colonial period. The health of the civilians and the armed services is one of the fundamental areas of importance and played a great part in the struggles both military and otherwise that influenced the war effort. This paper will deal with the health of the people as a whole. Another paper devoted to the armed services is in preparation.

#### Health and Medical Care

The key to health services, then as now, depended on the availability of physicians and their associates, the state of medical sciences, leadership in professional, political, and social institutions, and other resources which can be brought to bear.

There were an estimated 3,555 physicians in practice during the Revolutionary period, a ratio of one to six hundred, a higher coverage than exists today for the whole country.<sup>3</sup> Probably the same ratio existed during the early 1800's, though I did not find an estimate. The standards today are higher, and only first-class medical schools are legalized at this time. There were no licensing laws in those times. The great majority of physicians came into practice after reading medicine in the offices of leading practitioners, an apprentice type of training.<sup>4</sup> A small number were graduates of medical schools in Europe; and, in North America, of the University of Pennsylvania and the College of Physicians and Surgeons of Columbia University in New York City. These gave the Doctor of Medicine degree, the M. D.

As one of the best educated and most prosperous groups, and generally regarded as leaders, physicians were highly respected and active in many walks of life. They were found at all levels of government and were prominent in the Congress. Five signed the Declaration of Independence, though Benjamin Rush was the only M. D. There were ten to twelve doctors in each of the early Congresses.<sup>5</sup> There were physicians who were judges, governors, lieutenant governors, federal cabinet members, state legislators, ministers, and some also had legal training. Physicians were more visible in public life than is true today, though there has been no Congress without two or more, and the physician-governor is

not uncommon today.<sup>6</sup> Benjamin Rush was the most prominent and exerted his influence in both wars even after his death in April 1813. He was the best known but was also typical of the profession in his interest in all manner of social, political, intellectual, and religious issues. Two of his early writings related to the health of fighting men were reprinted and circulated during the War of 1812. He was the prime mover in the founding of two colleges in Pennsylvania, promoted education for women, was an early advocate of a federal university to furnish manpower for the government. He worked for the preservation of wilderness lands, for more open spaces in cities (every other block), and for the freedom of slaves. He was instrumental in the founding of the first church for Negroes, which is still active in Philadelphia. He published an article on the upper atmosphere on the occasion of the first balloon flight, a first in aeronautical medicine? He was the first professor of chemistry and wrote a textbook, the first in the nation. He was named, posthumously in 1922, the Father of American Psychiatry by the American Psychiatric Association for his first textbook and for thirty years care for mental patients at the Pennsylvania Hospital in Philadelphia, the nation's first hospital. He taught hundreds of medical students and practitioners who came from all over the South to attend his famous lectures. This veteran of the Revolution and the War of 1812 dominated American medicine until the 1880's when William Osler appeared on the American scene. At least

five books have been published on Rush since 1945. In 1970 a paper reviewed his life and called for his type of leadership in these trying times. He was truly a "Man for All Seasons."<sup>7</sup>

Sponsorship of governmental and political leaders was important in those times, as it is now, but for different reasons. Then, it was needed for prestige; now, because government financing for the health of so many is needed. Medical education and research are also largely dependent on government financing.

I was astonished to find that the first four Presidents of the United States appointed physicians to be Secretary of War for a total of 18 consecutive years. The first three presidents were close to the medical profession.

Washington took personal interest of his own people on his plantations, and the stock as well. He commissioned fifteen physicians to the rank of Brigadier-General. In Pennsylvania as a young surveyor he became acquainted with Dr. Hugh Mercer, a graduate of the Mareshall College of Medicine of Aberdeen University, 1745. Mercer was a follower of Bonnie Prince Charlie and as a recent medical graduate cared for the wounded at the disastrous battle of Colloden. He fled to Philadelphia to escape persecution, then left the port because of fear of British sea captains, and took up practice in western Pennsylvania. Washington persuaded Mercer to move to Fredericksburg, Va. as it was a "more salubrious climate." There he asked the young medic to look

after his mother, Martha Washington. Her home, together with Mercer's apothecary shop, are well-known local attractions, along with battlefields of the area. Washington persuaded Mercer to join the Virginia militia and take part in the French and Indian Wars in Pennsylvania. Mercer was appointed a line officer with the rank of Colonel. For a time he was Medical Director of the Middle Division of the Army appointed by the Commander-in-Chief. Then transferred to the line, and with the rank of Brigadier-General, was placed in charge of troops at the battle of Princeton. He was wounded on January 2, 1777, and died two weeks later. Washington said of him, "We have lost the gentle General Mercer."<sup>8</sup>

Washington picked a returned prisoner-of-war, Army Surgeon James McHenry, to be his personal secretary, but soon loaned him to General LaFayette to be his personal aide for the duration. McHenry had two terms as Congressman from Maryland and was one of two physicians to sign the new Constitution. He was serving in the Maryland State Senate when appointed Secretary of War in Washington's second term. His great contribution to the Medical Service of the Army was a letter to Congress in 1798 which said, in part, "The Secretary does not discover in the Acts (for reorganization of the Army) the necessary provisions for the appointment of hospital physicians, nor of a Hospital Establishment (now the Medical Department)." His reference to a "train of diseases which must cut off a large portion of our troops" and his obvious knowledge of the subject were persuasive, re-

sulting in the Act of March 2, 1799 which provided a medical organization superior to anything the Army had had in the past. Because of a disagreement with President Adams, who had carried him over from Washington's administration, he resigned just before the end of his term, returned to his family estate, and his gardens, and among other activities, founded The American Bible Society. In the meantime, a grateful State of Maryland had named the fort defending the Port of Baltimore, Fort McHenry, thereby linking the name of Dr. McHenry to the Star Bangled Banner in perpetuity.<sup>9</sup>

John Adams showed his great interest in medicine in many ways. Bess Furman, the Author, tells why: "As a twenty-year old school teacher, Adams roomed and boarded in a house of Dr. Nahum Willard of Worcester, Mass. There was the usual shelf of standard books used by physicians of the day. John Adams read all, and for a time intended to go into medicine, but was detoured into law. He was a close friend of Benjamin Franklin and Thomas Jefferson, and close to Benjamin Rush who brought about the reconciliation between Adams and Jefferson after a feud of many years. It is therefore not surprising that he was a strong supporter of all health services."<sup>10</sup> He was known as the Father of the United States Public Health Service. He fought hard for effective quarantine laws, and utilization of small pox vaccination. He retained Dr. McHenry as Secretary of War.

Thomas Jefferson carried on the tradition of medical support, Furness called him, "Hercules of Medicine," a term conveyed on him by John Adams. She said, "No new aspect of any subject of general interest, starting with agriculture, architecture and astronomy failed to kindle the spark in Thomas Jefferson. He picked up the cause of vaccination which Adams handed to him, perhaps tired from his efforts for adequate quarantine legislation." Blanton, writing of "Medicine in Virginia in the 19th Century," called Jefferson the "outstanding scientist in Virginia of the 19th Century."<sup>11</sup> Jefferson appointed Henry A. S. Dearborn, M. D. his Secretary of War.<sup>12</sup> He was a veteran of the Revolution, widely known for his handling of the wounded at Saratoga. He was a close friend of Benjamin Rush, his former teacher and was in Congress when appointed. At the end of his administration, Jefferson appointed Dearborn Collector of the Port of Boston which later gave him authority over the Boston Marine Hospital. When war broke out, Dearborn was recalled to the Army, made a Brigadier-General and given command of the Northern Division where the war became active almost immediately. He was therefore a participant in the ill-fated invasion of Canada. His outstanding contribution to the war, in my opinion, was a little noticed but most effective appointment. I refer to his selection of James Mann, M. D. to be Medical Officer under him, of the Northern Division. Mann was a dedicated and meticulous observer of all manner of medical conditions and made voluminous

notes. All these and more he published in his "Medical Sketches of the Campaigns of 1812, 13, 14. His is the most complete, and detailed and valued written contribution to our knowledge of the health of the soldiers, discussions on diagnosis, and classification of diseases with their connotations of the day.<sup>13</sup> His comments on the great epidemics of those winters and general contributions on weather, sanitation, spread of infection and other topics are the chief source of information from the war, now one hundred and sixty years later.

James Madison, no amateur doctor like his three predecessors, nevertheless appointed Dr. William Eustace of Boston to be his Secretary of War. Eustace, leader in the Massachusetts Medical Society, later to be Governor of the Commonwealth, was the arch critic of James Waterhouse, M.D., Harvard faculty member, credited with bringing smallpox vaccine to the United States and appointed by President Jefferson to be Chief Physician to Boston Marine Hospital. Madison changed control of Marine Hospitals from the President to the Controller of Customs in each port, just to get rid of this vexing problem. He later fired Waterhouse from the position for using hospital materials for his personal use. But Waterhouse was dropped from the Harvard faculty for ethical charges on the vaccination control controversy. When the war went badly in the first year, the Secretaries of War and Navy became scapegoats of the unpreparedness evident on all sides. The last act of Eustace relating to

medical progress was the order of vaccination for smallpox for every officer and enlisted man in the Army, on May 26, 1812, two weeks before war was declared with Britain.<sup>14</sup>

Progress in medicine and general health advanced, but slowly, between the surrender of British at Yorktown until the signing of the Constitution, election of Washington as first President, and convening of the First Congress. The turn of the Century saw the culmination of several major health efforts. These efforts were mainly directed toward the general population, while medicine in the armed services was reduced to almost nothing. It remained for war to expose the progress that had been made and areas of neglect which crept in unrecognized by the authorities. The Second War for Independence not only freed the nation from dependence on Europe but spurred action in many health fields which moved ahead progressively from that time onward. However looking ahead, there was one military and national lesson that was not learned; The same rushing into war in a state of unpreparedness recurred in the wars of 1848, 1861, 1898.

The Congress brought forward the first formal action in the field of public health in the Marine Hospital Act of 1798, nine years after its initiation in the First Congress. "Disease from Without" was fought in efforts to prevent diseases from incoming ships from some foreign countries. Among these were venereal disease, small pox, tropical disorders, typhoid, typhus and malaria and the most vicious,

though irregular in occurrence, yellow fever. Such efforts were focused on quarantine of ships, passengers and cargoes. Improvement in the health of seamen crews through sanitation, diet and general hygiene, and treatment of the general public through drugs, development of new equipment, and supplies through medical chests, moved ahead with accelerated efforts from many directions.

I will touch on these matters in some detail.

The Act for the Relief of Sick and Disabled Seamen

Signed on July 16, 1798 by President Adams, who had labored long for its passage, the Act provided that "the Masters of all U. S. ships should pay on entering port twenty cents per month for all crew members from the beginning of the voyage, the money to be transferred to the Secretary of the Treasury to be used for the medical care of seamen, including the building and operation of hospitals, or purchasing such care." On March 2, 1799, the Act was amended to include every officer and sailor of the Navy. (This was rescinded in 1811, the Navy to collect its own funds and provide its own facilities. Because of the impending war, implementation was delayed.)<sup>15</sup>

The Marine Hospital Service, as it was called, was further amended later to include several thousand Mississippi River craft and later again, foreign crewmen on a reciprocal basis. Other related services brought in were Light House Keepers, Coast and Geodetic Survey Ships, Quarantine Vessels and others. Significantly Marine Hospitals,

of which there were only three during the War of 1812, were used to their limit for war needs, especially in Boston for soldiers and sailors, prisoners of war, sick and wounded from land and sea.

This federal legislation took a long time to develop. States fought for their rights, and control of their affairs. But seamen had no local recourse for their illnesses. Away for long periods, they were the responsibility of no one. At sea, sickness took a fearful toll. On shore, they were literally stranded. As commerce by sea assumed a greater share of the national economy, health of seamen asserted its importance.

The idea of the tax came from England where wages were taxed to provide a hospital at Greenwich. In the early 1700's, Pennsylvania deducted sixpence per month from the payment of sailors, and is credited by some as having the first prepaid-care-program in America. In later times, similar actions were taken in Virginia, North Carolina, Delaware and Massachusetts. A Marine Society was organized in Boston in 1742 which John Adams had joined in the '70s. It was quite active in pressing for legislation.

On July 20, 1789, the First Congress ordered a committee to prepare a bill for sick and disabled seamen. This was delayed by several states including Massachusetts, for alleged political reasons. Four years later a law was passed for relief of seamen and for protection from impressment by foreign nations.

In the meantime, in 1790, a law was passed ordering all ships over a certain tonnage, and having more than ten men in the crew, to have on board a properly stocked medical chest.

In 1797, inquiry concerning the results of the "relief" provided in '93, revealed the fact that in all ports disabled native Americans and foreigners were a serious burden to public hospitals. Finally a successful Act was initiated by representatives of the great ports of the country and officially became law in 1798. This was the forerunner of the U.S. Public Health Service and the National Institutes of Health which together, with the Education and Welfare programs, make up the Department of Health, Education and Welfare, the largest except the Department of Defense.

#### Quarantine

The American Heritage Dictionary defines "quarantine" as a period of time during which a person, vehicle or goods, suspicious of carrying a contagious disease is detained (at point of entry if at sea) under enforced isolation to prevent disease from entering the country or spreading internally." Such "protection from without," to use a phrase coined by Williams, has a long history. In Europe, it was directed chiefly against leprosy, plague and syphilis. Laws are reported from Venice in 1348, with a station established in 1403, Genoa in 1467, Marseille in 1626. The name comes from the Republic of Ragusa on the Adriatic. Here suspects were detained for thirty days in open air and

sunlight. This was called "trentina." It was later extended to forty days, hence "quarantina," Anglicized "Quarantine." Ships waiting clearance flew a yellow flag, later a single letter "Q".<sup>16</sup>

Practices in the American Colonies paralleled those in Europe. Massachusetts Bay Colony enacted laws against Barbados in 1647. Pennsylvania acted in 1700. In 1771, Massachusetts passed a law against "infections." Smallpox and yellow fever caused the greatest concern. These appeared in New York in twenty of the first 100 years, up to 1822. In 1793, occurred the most disastrous epidemic of yellow fever in Philadelphia, causing the movement of the President and the Congress away from the Capital. Because there was no authority for Congress to officiate elsewhere, the Federal Government was rendered impotent for a time. In the meantime, Charleston, S. C. had enacted laws authorizing the appointment of health officer and defined his duties. In 1754, New York had imposed a tax on crews and passengers to pay for quarantine buildings.

The weaknesses of state laws lay in the absence of authority to order forts and armed vessels to help enforce regulations. Also local authorities did not have the money to put up residence and storage facilities. Neither could they overcome the resistance of owners who wanted to get their vessels cleared and sent out loaded in a hurry. The owners were often backed by relatives of persons detained and merchants who wanted to get their shipments into active trading.

Efforts to get a federal law through Congress were fought on the basis of states rights, fear of the growing power of the Federal Government, the disadvantage of distance and delay caused by poor long distance communications, and lack of understanding of local pressures and needs by far away officials. A compromise was effected in 1796 by an Act authorizing the President to "direct Revenue Officers and those in command of forts and Revenue cutters to aid in the execution of state health laws in such a manner as may appear to him to be necessary." Federal action was limited to requests made by the states. President Adams made valiant efforts in his addresses to the Congress to bring about the necessary changes. In 1797 the law of '96 was repealed and a new law placed the supervision of maritime quarantine under the Secretary of the Treasury and directed that health laws of the states shall be duly observed by officers of Revenue cutters and forts, and provided warehouses for storage of materials awaiting clearance. Thus the states remained supreme, but the people were not protected. It was not until 1883 that a national law was passed, placing all authority over quarantine matters in the hands of the Federal Government.

#### The "Inveterate" Scurvy

A major scourge of seafaring life was the loss and sickness of crew from diseases on ship, chiefly from scurvy. Ship captains were in the habit of carrying almost double crews to replace loss of life on long voyages.

Scurvy is the condition of bleeding under the skin and internally, usually loss of teeth, impairment from weakness, often complete, leading to death if no remedy was available. The word scurvy means "mean, worthless, contemptible" suggesting the cause was lack of hygiene and blamed on the individual. It is now known to be due to lack of Vitamin C. As early as 1636, John Woodall, a surgeon in the British Navy wrote of its cure by fresh vegetables and juices of oranges, lemons and limes. One hundred and eleven years later James Lind, also of the British Navy, demonstrated experimentally prevention and cure of scurvy by these means. But it was another forty years, 1795, before the British saw fit to make mandatory these preventive and curative materials in the diet for all ships at all times. Rodis, in his "History of Nautical Medicine," estimated that five thousand lives were lost annually from scurvy, some 800,000 in the last two centuries since the remedy was at hand.<sup>17</sup>

Yet this disease persisted throughout the War of 1812. Almost unbelievably, the Boston Marine Hospital, reporting for the war years the types of illnesses that were brought to the hospital in addition to battle casualties, listed, "and the inveterate scurvy."<sup>18</sup>

This is what happened. Paul Hamilton, Secretary of the Navy under Madison in 1811, was strongly influenced by the advice of a young ship surgeon, William P. C. Barton, M.D., who had just repeated the experiments of Lind and was full of ideas on improving the health of men at sea. (Barton

was showing his energy and ability which later got him the appointment of first Surgeon-General of the U. S. Navy.) Hamilton had approved plans for a system of Navy hospitals, independent of the Marine Hospitals and based on collection of its own funds, together with full medical services, improved sanitation, fresh air below, careful screening of enlistments, adequate diets, including arrangements for the importation of adequate fruit juices for the whole Navy. But when threats of war developed in early 1812, everything stopped; and with the poor showing in the early months of the fighting, Hamilton was removed from office, all his negotiations were cancelled and apparently not picked up by his successor. Scurvy plagued the men of both Army, Navy, privateers and commercial shipping throughout the whole war.

Other preventive methods advocated by Lind and his successors such as personal cleanliness, issuance of uniform ships clothing-then uniforms, treatment of venereal disease at government expense, and better food were eventually adopted. Both merchant and navy ship crews profited by these advances. Conditions had vastly improved soon after the war, especially for short voyages.

Let me insert here some anecdotal material to relieve the tedium of these remarks. The voyage of Captain Anson in 1740 was afflicted by a loss of two thirds of his crew in the first few months of his cruise to the Pacific. This can be compared to the voyage of Captain James Cook known for his discoveries in Alaska, the Pacific Islands and

Australia. About 1775, Cook started out on a three-year voyage and only had two or three cases of illness. He was a strict disciplinarian, insisted on personal cleanliness, was ever careful of his water supply, kept his supply of fresh vegetables always available, and weighted his diet heavily with sour-kraut, a favorite food of the Dutch. He had no use of citrous juices-"didn't believe in them!" It is also of interest that the long voyage of the U.S.S. ESSEX in both Atlantic and Pacific during the 1812 War, and highly successful in destroying the whaling industry of the British, did not mention illness of the crew in its detailed daily logs.

No references to the preventive methods for diseases of seafarers would be complete without mention of the efforts of Sir Gilbert Blane, Fleet Surgeon to Admiral Rodney and Admiral Howe of the Royal Navy during the Revolution. He contributed a major influence to such progress and published his experiences in his treatise "Observations on Diseases Incident to Seamen" long used by both British and American authorities. "His book should rank with Osler's 'Practice of Medicine' on the shelves of great books," says the American historian, Rodis, in his listing of the advances in naval hygiene shared by both nations.<sup>17</sup>

#### Control of Smallpox

##### Prevention by Vaccination with Cow-pox

Let me introduce this story by quoting from Bayne-Jones, "The Evolution of Preventive Medicine in the Army," Section

on Development outside the Army Between 1783 and 1812: "The period under consideration may be closed by one of the greatest achievements in Preventive and Public Health ... This event was small-pox vaccination."<sup>19</sup>

This is a success story. Inoculation (a mild case of smallpox achieved by insertion of material from an active pox under the skin) was used in the early 1700's in Europe. Considered worse than yellow fever because it was continually present, the important discovery that immunity was achieved by having the disease had been made in ancient times. Usage of inoculation by prominent persons helped to obtain public recognition. So it was reported that Lady Mary Wortly Montague had used the method in 1718, having heard about it in Constantinople where her husband had been British Ambassador. Though it was widely used, this practice did not stop the disease. Among those who survived, General Washington was among thousands whose faces were deeply pitted. It is generally agreed that during this period, smallpox was the greatest cause of infant mortality, and responsible for one tenth of all deaths. Both Martha Washington and Abigail Adams were known to have sought immunity through inoculation during the Revolution.<sup>20</sup>

The great breakthrough occurred when Dr. Edward Jenner, in 1798 in England, published this long title "An Inquiry into the Causes and Effects of the Variolae Vaccinae, A Disease discovered in some of the Western Countries of England, Particularly in Gloucestershire, and Known by the Name of the

Cow-pox." He shortened the title, "An Inquiry, etc.". The essence of the report was that anyone vaccinated with cow-pox would not catch smallpox.

How this discovery came about and was proved valid is worth a moments digression. Jenner states that as a young man he heard a milk-maid say that anyone who had had cow-pox would not catch smallpox. He spent years experimenting until he proved it. Quoting from Jenner himself, "There is a disease to which the horse, in his state of domestication, is frequently subject. The farriers have termed it "the grease." It is an inflammation and swelling in the heel from which issues matter possessing properties of a very peculiar kind which seem capable of generating a disease in the human body (after it has undergone the modification that I shall presently speak of) which bears so strongly a resemblance to smallpox that I think it is highly probable it may be the source of the disease. Briefly, a milk-man after placing salve on a horse's heel, and careless of washing, passed the infection to the udders of a cow, which in turn is passed to a milk-maid and is passed on to others. Thus the disease spreads from the horse to the cow and to the human subject. This illustrates the scientific principle of "attenuation," not discovered until a century later. The potency of the virus is weakened in passing through a lower animal ... but what makes the cow-pox virus so extremely singular is that the person who has been thus affected is for evermore secure from the infec-

tion of smallpox, yielding neither to the exposure of variola effuvia, nor to the insertion of the matter under the skin."<sup>21</sup>

Report of the discovery was noted by Dr. James Waterhouse of Boston and published in his article in *Columbia Centennial* (Boston) of March 12, 1799. He arranged for some of the vaccine (the name comes from the Latin, *vaccus*-cow) to be sent over to him. He used this successfully and distributed supplies to other physicians. Waterhouse is honored for bringing the vaccine to America by a statue standing to this day in Boston. Because of this, he received the appointment as Chief Medical Officer of Boston Marine Hospital. However in promotion of the use of this vaccine, he became highly controversial. Accused of cornering the market and demanding kick-backs from physicians to whom he had sent supplies, he was finally fired from the hospital position by President Madison (for nepotism and personal use of hospital supplies) and also from the Harvard faculty. Earlier he had appealed to President Adams for support but was referred to incoming Thomas Jefferson who had just won the election. In doing this, Adams lost the opportunity of being the champion of the new vaccine.

Jefferson carried on however. Having already inoculated his children and servants with smallpox matter and rendered them immune, he now requested some of the "matter" from Waterhouse for his private physician to vaccinate his children to see if they would register a "take" or show an

immunity by a negative reaction. After two sets of vaccine proved dead, a third was found alive. He persisted and they were shown to be immune. As President, Jefferson worked hard to get public acceptance. He pushed it with Indian Chiefs at a conclave suggesting they adopt the procedure for their tribes, and asked Lewis and Clark to pass the word on to Western immigrants. After he passed on from his second term, Jefferson pushed a law through Congress which was signed by Madison. This provided for regional agents to publicize the process, and obtain supplies for doctors. The law provided for free postage for letters containing the vaccine. It was these activities that led John Adams to give him the title, "Hercules of Medicine." In 1811, the order went out from Secretary of War, Dr. William Eustace to vaccinate every officer and enlisted man in the Army.

In the spring of 1877, the grand climax of Jenner's discovery came with the announcement by the World Health Organization that smallpox had been eliminated from the face of the earth!

#### Aids to Physicians in the Early 19<sup>th</sup> Century

Williams, in his "U. S. Public Health Service, 1798-1950," recalls that "physicians in these days had only their bag of drugs, the lancet, and a few other simple instruments. But they had their natural senses which were developed in many to a remarkable degree, far more often used than in these days with so much mechanical equipment. The diagnos-

tic aids to which we are now accustomed were not available. What would we do now without anesthesia, the stethoscope, a clinical thermometer, hyperdermic syringe, blood pressure measurements, basal metabolism data, cystoscope, electrocardio, and encephalograms, the x-ray? Modern tests have depreciated the value of careful meticulous observation with eye, ear, the sense of touch. Williams, a public health authority but no clinician, was harsh in his comments: "Bloodletting and purging and blistering were favorite procedures in the early 1800's, as was scarifying and the clyster or enema. Empiricism (using what seemed to be useful) characterized the times. It was in fact an age of crudity in medicine and surgery. Surgical operations in those days were for the most part emergency procedures necessitated by injury or infection. Broken bones were set, wounds probed or sutured, crushed or gangrenous limbs amputated, teeth extracted, abscesses lanced. A few surgeons undertook to crush and remove bladder stones, using the new lithrotrite. Infection was the greatest handicap to the surgeon."

An example of the limits of surgery in those days and the heroic efforts of surgeons in the face of a major physical disaster is given here. The occasion was the explosion of a powder store beneath a mass of people. Several hundred were killed or severely wounded: "A most distressing scene ensues in the hospital. Nothing but groans of the wounded and agonies of the dying are to be heard. The

surgeons wading in blood, cutting off arms, legs, and trepanning skulls to rescue their fellow creatures from untimely deaths ... It woke my liveliest sympathy, and I cut and slashed for forty-eight hours without food or sleep ... Just got time to suspend capital operations, while I take a little refreshment to sustain life for the first time since four o'clock yesterday. Return to the bloody scene of distress to continue dressing, amputating and trepanning. Dressed rising of fifty patients from simple contusions to compound fractures, more than half of the last description ..." (From the diary of Dr. Wm. Beaumont)<sup>22</sup>

#### Pharmacopoeia and the Medical Chest

The first American Pharmacopoeia was compiled by Army Medical Officers at Valley Forge in 1778, representing "the simplest and most effective drugs and prescriptions for use in the Army hospitals." It was adapted from the Edinburgh pharmacopoeia of 1756. The second edition was published in Philadelphia in 1781 by William Brown, Physician-General of the MIDDLE Department of the Army stationed at Letitz, Pa. hence known as the Letitz Pharmacopoeia. The next development was by the Massachusetts Medical Society in 1808. This was followed by the New York Pharmacopoeia in 1815.<sup>23</sup>

The medical chests for military, civilian and seagoing organizations and the contents of doctors bags differed little from the same during the Revolutionary period. Requirements of those days have been published by Smithsonian Institution recently. The list includes 26 botanicals, 5

of animal origin, 22 chemicals, 3 tinctures, 4 kinds spirits, 5 miscellaneous preparations, 16 items under the head of surgical dressings, 7 items of equipment, and 9 kinds of medical-surgical supplies. Some of the more exotic from our point of view today were powdered jalap, epecac, rhu-barb, squill (sea onion), orange peel, camomile flower, gum Arabic, Balsam of Peru (prescribed for one of my family for chronic ulcers this summer), yellow beeswax, powdered crabs eyes, white vitriol, elixir of vitriol and Roman vitriol, tincture of myrrh, aloes, conserves of red roses, ointment from calomine stone, and bark. The latter has been since refined into quinine.

Procurement of these requirements was a continuing problem. Where there was no competition, a supplier could and often did substitute poor materials and many items were often missing. The blockade of the coast was partly responsible.<sup>24</sup>

In 1910, one authority listed the ten most important drugs. They were ether, morphine, digitalis, diphtheria antitoxin, smallpox vaccine, iron, quinine, iodine, alcohol and mercury. During the War of 1812, six of these were available.<sup>25</sup>

In 1950, Williams suggested the list be as follows: anesthetics, antibiotics, antihistomines, antiseptics, digitalis and derivites, sedatives and analgesics, hormonal substances, immunizing agents, oxygen, parenteral fluids, radio-active substances, substitution product such as in-

sulin, thyroid extract, liver extracts, and vitamins.

With regard to the status of medical science as shown in clinical practice in the early 19<sup>th</sup> Century, let me end by quoting Williams in his final comments on aids in a doctor's practice: "Supplementing this list are the wonders of modern medicine and surgery, aided by effective nursing, physical medicine, dietetics and all the other means that are available to the present day physician. The entire structure of medical and surgical treatment of today (1950) rests upon the progress made in bacteriology, chemistry, pathology, physiology, and psychiatry during the past one hundred and fifty years."

#### Madison's Medical Chest

An interesting incident belongs to the era of the War of 1812. A handsome chest of walnut or mahogany (two accounts differ) was presented to the President for his personal use and kept in the White House. During the occupation by the British and burning of government buildings there was some pillaging. Dolley (her spelling) Madison had been commissioned to gather certain state papers and have them hidden, which she did in both Virginia and Maryland, but among other things the medical chest was taken. The aftermath of the chest is interesting as an anecdotal item.

One hundred and twenty-five years later, a letter arrived at the White House, addressed to President Roosevelt, from a Canadian. He had come across a relic of the War of 1812 which he would like to restore to its rightful owner.

A Mr. Archibald C. Kains<sup>26</sup> of Ottawa, Ontario, stated that his grandfather, a paymaster on the ship HMS DEVASTATION, one of the vessels that sailed up the Patuxent River and landed British forces who attacked Washington, had taken the chest from the White House and Kains found it in an attic and wanted to bring it back. President Roosevelt invited him for tea when he arrived with the chest in tow. Since the White House had no provision to care for valuable antiques, it was placed temporarily in the Roosevelt Museum in Hyde Park, N. Y. The chest stayed there until Mrs. John F. Kennedy lived in the White House and persuaded Congress to pass legislation making the White House and grounds a National Monument and providing the resources to care for its antique possessions. The chest was found to contain a single item of its former contents, an ancient piece of bark (cinchona) used at that time to treat intermittent fever, and later valued for its anti-malarial qualities, and refined into quinine. Williams opines that this might have some of the actual bark used to treat President Madison during his sickness the summer of 1813.

Furman gives us some personal notes related to Dolley herself.<sup>26</sup> She had been the wife of a Philadelphia attorney who died in her arms when he returned from his office with an attack of virulent yellow fever in the 1793 epidemic. Her house in Washington is preserved as The Dolley Madison House. It was for half a century occupied by the Cosmos Club, now used by the government as a show case of

her time. She is credited with helping Madison in his difficult bid for re-election by a clever maneuver. Henry Clay was showing alarming strength in his virulent attacks against the incumbent President. She disarmed him, it is said, by taking him under her wing and sponsoring him in Washington society.<sup>26</sup>

The War of 1812 served to bring out the real status of medical science at the time, showing in dramatic fashion both progress and defects. It was a time of transition, the beginnings of many changes under a new form of government, a form developed by the pioneers of a new, strictly American emphasis on freedom, democracy and faith in the ultimate wisdom of the people.

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Frederic A. Delano, uncle of President Roosevelt, recalls: "Kains, born a Canadian, became a naturalized American," was appointed Governor of the Federal Reserve Board of San Francisco when I was on the Reserve Board, He was living in San Francisco at the time. Later he retired and returned to Canada."