# A Brief History of the Collecting of Anatomical Specimens by the Army Medical Museum

Private C.C.W. of Company I, 6th Wisconsin Volunteers wounded at Spottsylvania, Virginia May 12th, 1864. Died June 4th, 1864. (AFIP 1002951)

The National Museum of Health and Medicine was founded as the Army Medical Museum (AMM) by Congressional order during the Civil War to document the effects of war wounds and disease on the human body.[1] In 1862, U.S. Army Surgeon General William Hammond (1828-1900) directed army surgeons to "collect and to forward to the Office of the Surgeon General all specimens of morbid anatomy, surgical or medical, which may be regarded as valuable; together with projectiles and foreign bodies removed; and such other matter as may prove of interest in the study of military medicine and surgery. These objects should be accompanied by short explanatory notes. Each specimen in the collection will have appended the name of the medical officer by whom it was prepared."[2]

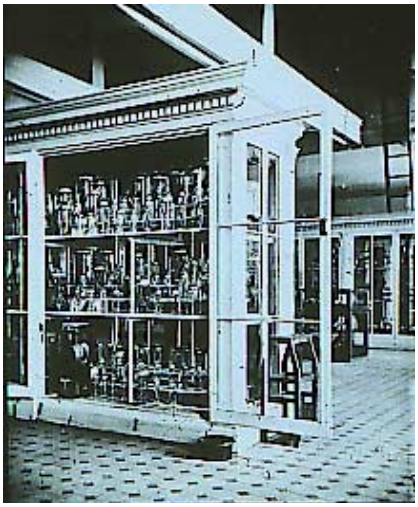
As the core of the museum, these specimens formed the basis for the "Medical and Surgical History of the War of the Rebellion, or MSHWR."[3] The "MSHWR" is a seminal study in American medicine. Similar to other large-scale 19th century scientific works presenting the collection and tabulation of data from the natural world, the "MSHWR" viewed the war as a "natural experiment" that afforded large amounts of medical information to be amassed. In this light, the "MSHWR" can be viewed as the first large-scale epidemiological study undertaken in the United States. In the words of John Hill Brinton (1832-1907), the museum's first curator, the goal was "not for the collection of curiosities, but for the accumulation of objects and data of lasting scientific significance, which might in the future, serve to instruct generations of students, and thus in time be productive of real use."[4]

The “specimens of morbid anatomy” soon to be collected derived from routine medical procedures performed on the sick, from surgical operations conducted on the wounded, and from autopsies. Amputated limbs, pieces of excised bone, and fluid-preserved organs showing the effects of disease were sent to Washington, D.C. from field and general hospitals. In addition, surgeons would collect specimens from battlefields and occasionally from the graves of the soldiers. Brinton recalled how in one case “the comrades of the dead soldier solemnly decided that I should have that bone for the good of the country, and in a body they marched out and dug up the body. I gravely extracted the bone and carried it off carefully….”[5]

Surgeon John H. Brinton (front row, center), with a group of Union Army officers in the field. (Henry 1967, p. 18)

Pathological diagnosis in the 19th century relied on the examination of the gross specimen rather than the analysis of biopsy samples. (Micropathological diagnosis, using the microscope to examine tissue sections, was just beginning.) The practice of doctors collecting specimens was well established. Doctors would, over the course of their careers, collect specimens exhibiting the effects of trauma and disease. These collections were often called “pathology cabinets.” Several privately owned cabinets were acquired by the AMM, including collections of the National Medical College of Washington, D.C. and of Dr. William Gibson of Philadelphia.[6] Brinton hoped that a “grand national cabinet” could be established so that “the results of the surgery of this war would be preserved for all time, and the education of future generations of military surgeons would be greatly assisted.”[7]

Excised humerus with excision saw (NCP 3916)



Main exhibit hall of the Army Medical Museum, Ford’s Theater Building, 1866-1887 (Woodward 1870).

From the outset, specimens were also collected from non-military sources. Military surgeons forwarded specimens from civilian cases they attended, as the example of Mary Robinson demonstrates. Wounded at Fort Pillow, Tenn. on April 12, 1864 and treated by Surgeon H. Wardner on April 21st in Mound City, Ill., Robinson’s amputated right femur along with the details of her case were forwarded to Washington, D.C. An account of this injury and its treatment was duly published in the “MSHWR”.

After the Civil War, Army surgeons continued to send examples of "morbid anatomy" illustrating traumatic injuries or diseased organs. In 1868, Col. L.A. Edwards, chief medical officer of the Bureau of Refugees, Freedmen, and Abandoned Lands, assisted the museum by instructing "all Acting Assistant-Surgeons in the employment of the bureau, and especially those who are in charge of Freedmen's Hospitals, [to] avail of every opportunity of contributing to the Anatomical and Pathological collections of the Army Medical Museum."[8] Accordingly, the collections of the museum were enhanced with specimens from U.S. soldiers and civilians as well as Native American combatants and allies.

Around this time, the AAM also asked surgeons at western forts to obtain skulls of Native Americans.[9] George Otis, curator from 1864 to 1881, pursued research "to aid in the progress of anthropological science by obtaining measurements of a large number of skulls of aboriginal races of North America."[10] In addition, the museum actively acquired the crania of other racial or ethnic groups including crania from Central and South America, Asia, Africa, Oceania, and Europe.

To assist with research of the AMM, the U.S. National Museum/Smithsonian Institution in 1869 exchanged its collection of Native American crania for cultural and ethnological materials collected by the Army Medical Museum. By the following year, most of the 900 crania collected under Otis' directive had been measured and photographed using the most scientific techniques and instruments then available. On the basis of this work, Otis concluded that Native Americans "must be assigned a lower position in the human scale than has been believed heretofore."[11] This conclusion was later retracted following a study of a larger number of crania. Ales Hrdlicka, head of the Anthropology division of the U.S. National Museum/Smithsonian Institution, weighed in on the study in 1918, noting that "the majority of the measurements were made by an unscientific employee with instruments less perfect than those now in anthropometric use,… and the catalogue on that account cannot be used with any degree of confidence."[12] In the late 19th century, changes in museum staff, along with the establishment of the Army Medical School (1893) and the outbreak of the Spanish American war (1898), lead to the virtual abandonment of anthropological research by the AAM.[13] As a result, by 1904 the more than 3,000 Native American skeletal remains housed at the AMM were transferred to the U.S. National Museum/Smithsonian Institution. The AMM retained only a few crania and other skeletal elements of pathological significance.

AMM staff member David Flynn measuring cranial capacity by means of water. This picture also shows an attendant removing putty from skull (CP 3004).

Soldiers, officers, civilians, Native Americans, freed blacks, immigrants, children, and even presidents and presidential assassins were the sources of specimens for the Army Medical Museum. The focus of the museum's collecting was specimens of anatomical or pathological interest. Indeed, the number of specimens of Civil War soldiers was substantially greater than the number of Native American specimens in the collection. Other medical museums of the period, such as the Warren Anatomical Museum at the Harvard Medical School and the Mutter Museum of the College of Physicians of Philadelphia, had similar collecting practices.

The skeleton of Charles Guiteau, the assassin of President Garfield (AFIP 385111).

Today, the National Museum of Health and Medicine consults regularly with Native American tribes and Native Hawaiian organizations to determine cultural affiliation for human remains as mandated by the Native American Graves Protection and Repatriation Act (NAGPRA). Since 1992, the museum has repatriated 23 skeletal specimens to culturally affiliated tribes and has published Notices of Inventory Completion for 12 other human remains. Determining cultural affiliation for the rest of the Native American human remains still in the collection is more difficult. These specimens date from pre-Columbian contexts or have poor provenience information. Despite these difficulties, the museum continues to consult with more than 250 Native American tribes on the cultural affiliation of these remains.

The craniological studies that stimulated the collecting of Native American specimens during the 19th century were a small focus of research for the AMM. In contrast, medical and pathological research comprised a large portion of the work of AMM staff. U.S. Army Surgeon General George Sternberg, who isolated the pneumonia bacillus, founded the nation's first post-graduate medical school at the museum. Curator Joseph Woodward made important discoveries in the areas of photomicrography and pioneered the use of aniline dyes for staining microscope slides. Curator Walter Reed contributed to the eradication of yellow fever. In the early 20th century, Curators James Carroll and Frederick Russell conducted experiments in typhoid fever that resulted in the development of an anti-typhoid vaccine in the United States. In fact, the first anti-typhoid vaccine was tested on volunteers from the museum staff.

Major F. F. Russell conducting typhoid fever experiments (AMM1586).

Today, the museum is an element of the Armed Forces Institute of Pathology (AFIP), a Department of Defense tri-service agency. The museum holds tens of thousands of biological specimens, including organs, tissue sections, and microscope slides. Two other AFIP divisions collect biological specimens. The National Pathology Repository collects and maintains specimens taken at autopsy or during surgical procedures, usually in the form of tissue blocks and microscope slides. Materials from this repository were used recently to identify the genetic code of the 1918 influenza epidemic that killed 40 million people worldwide.[14] The Armed Forces Repository of Specimen Samples for the Identification of Remains (AFRSSIR) maintains DNA reference samples on all active duty and reserve military. Federal directives prohibit the use of these samples for anything other than the identification of the remains of servicemen and servicewomen. Combined, these divisions house more than 2.8 million specimens.

Smoker's lung with carcinoma (AFIP 40498).

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[1] Henry, Robert S., "The Armed Forces Institute of Pathology: Its First Century, 1862-1962" (Washington: Government Printing Office, 1967).

[2] Hammond, William A, Circular Number 2 (Washington City: Surgeon General's Office, May 21, 1862).

[3] "Medical and Surgical History of the War of the Rebellion" (Washington: Government Printing Office, 1879-1885 (Six volumes)).

[4] Brinton, John H., "Personal Memoirs." (New York: Neale Publishing Company, 1914).

[5] Brinton, 191.

[6] Lamb, Daniel Smith, "A History of the United States Army Medical Museum 1862 to 1917." Unpublished manuscript on file at the Otis Historical Archives, National Museum of Health and Medicine, Armed Forces Institute of Pathology.

[7] Brinton, 181.

[8] Henry, 60.

[9] Lamb, Daniel Smith, "The Army Medical Museum in American Anthropology." Proceedings of the Nineteenth International Congress of Americanists, Washington, DC, December, 1915 (Washington: Unknown publisher, 1917).

[10] Otis, George A., Circular Number 2 (Washington City: Surgeon General's Office, April 4, 1867).

[11] Otis, George A., Untitled paper presented at the National Academy of Sciences, Washington, DC, 13-17 April 1870 quoted in Daniel Smith Lamb "A History of the United States Army Medical Museum 1862 to 1917," 56-57.

[12] Hrdlicka, Ales, "Physical Anthropology: Its Scope and Aims: Its History and Present Status in the United States," "American Journal of Physical Anthropology 1" (1918): 3-23, 133-182, 377-402.

[13] Lamb, "The Army Medical Museum in American Anthropology," 631.

[14] Taubenberger, Jeffrey, Ann H. Reid, Amy E. Krafft, Karen E. Bijwaard, and Thomas G. Fanning, "Initial Genetic Characterization of the 1918 'Spanish' Influenza Virus." *Science* 275 (1997): 1793-1796.