

## Benjamin Franklin, William Hewson and the Craven Street bones

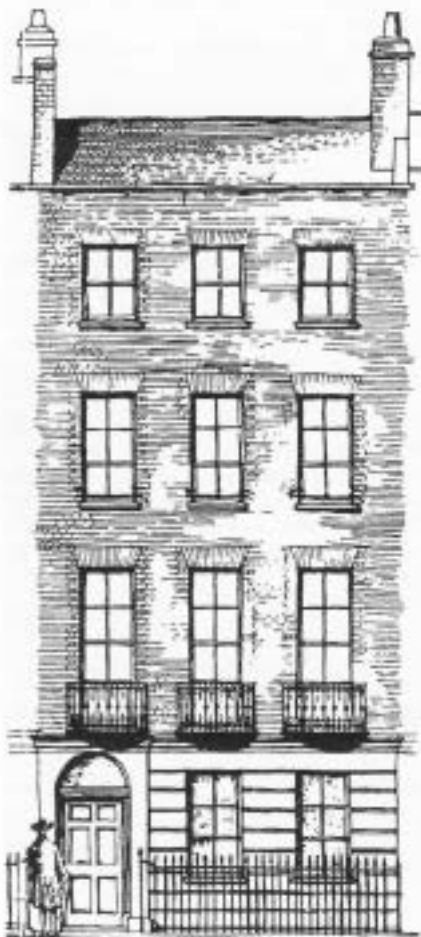
### Simon Hillson, Tony Waldron, Brian Owen-Smith,<sup>1</sup> Louise Martin

*Renovation of the house in London where Benjamin Franklin lived has led to the discovery of the remains of a late eighteenth-century anatomy school. Investigations by bioarchaeologists from the Institute are revealing William Hewson's remarkable contribution to the development of anatomical science.*

**N**ext to Charing Cross Station in London, 36 Craven Street is the only surviving residence of Benjamin Franklin, who lived there for much of the time between 1757 and 1775 when he acted as agent for the American colonies of Pennsylvania, Georgia, New Jersey and Massachusetts. Franklin was not only an author of the Declaration of Independence and the American Constitution, a diplomat and man of business, but also a leading scientist who invented bifocal glasses and the lightning conductor. He was very much part of the scientific community in Britain, was a Fellow of the Royal Society of London and was awarded its Copley Medal in 1753. He continued his experiments in Craven Street, where his study, with its

original panelling, has been preserved almost intact. The delightful little house is now being renovated by The Friends of Benjamin Franklin House (Fig. 1). In December 1997, builders digging a foundation in the basement came across many fragmentary human bones and reported them to the police. The Westminster Coroner, Dr Paul Knapman, commissioned a report from Dr Louise Scheuer (Royal Free Hospital) and Dr Iain West (Guy's and St Thomas's Hospitals). They concluded that the remains represented at least four adults and six children. Many of the bones had been cut up with a saw and one skull had been drilled in several places. The story was published in *The Times* of 11 February 1998 and generated a good deal of public interest around the world.

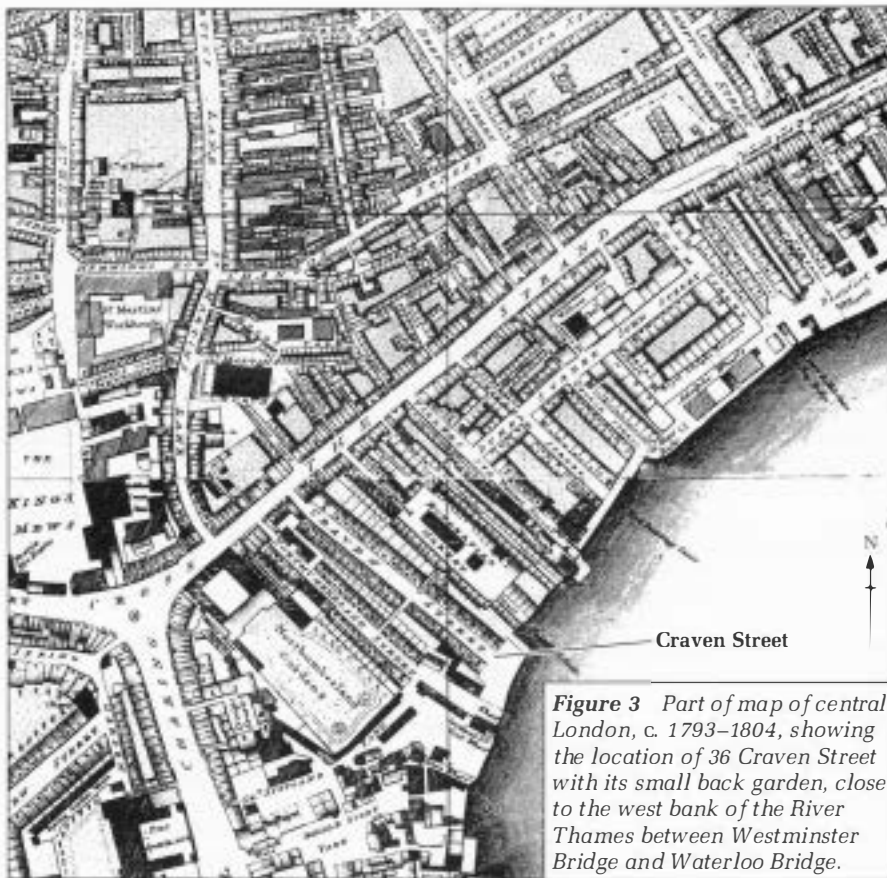
**Figure 1** 36 Craven Street, London, where Benjamin Franklin once lived. Left: drawing of the house reproduced by permission of The Friends of Benjamin Franklin House; right: the house as it is today.



**Figure 2** The pioneer anatomist and physiologist William Hewson (1739–74); engraving by R. Stewart, 1780.

### William Hewson's anatomy school

What had been going on in Benjamin Franklin's basement? This part of the present building was evidently a small back garden during Franklin's time, so the bones may not actually have been buried under the house. Secondly, the remains are more likely to be the work of Franklin's lodger, the pioneer anatomist and physiologist, William Hewson (Fig. 2), who lived at 36 Craven Street from 1772 to 1774 (Fig. 3). Indeed, Franklin was not even living there by then, having moved up the street to the house at no. 7. Hewson was a student of the great obstetrician and educator, Dr William Hunter, and, like Franklin, was a Copley medallist and Fellow of the Royal Society. He is best remembered for his work on the clotting factor in blood (now known as fibrinogen) and for his demonstration of the lymphatic system in birds, fish and turtles, using mercury as a marker. It was for his work on the lymphatic system that he was awarded the Copley Medal in 1770. Some of Hewson's specimens are preserved in the Hunterian Museum at the Royal College of Surgeons in London and also in the Hunterian Museum at the University of Glasgow. Hewson became a partner in Hunter's famous anatomy school, first at Litchfield Street in Soho and then in Windmill Street, but they quarrelled and, in 1772, Hewson started his own anatomy school in Craven Street, with the help of Benjamin Franklin. The exact site of the school is not recorded, but it was a highly successful venture that attracted many of Hunter's students. However, anatomical work was not without its risks, and in 1774 Hewson cut himself while dissecting a decomposed corpse, and died from septicaemia. The house and collection of specimens were left to his assistant, Magnus Falconar, who continued Hewson's lec-



**Figure 3** Part of map of central London, c. 1793–1804, showing the location of 36 Craven Street with its small back garden, close to the west bank of the River Thames between Westminster Bridge and Waterloo Bridge.

tures and brought to publication the third part of his *Experimental inquiries*, but himself died of tuberculosis in 1777. Some of the specimens were bought by William Hunter and his brother John, and these are the ones that have been preserved in museums. Franklin returned to Philadelphia in 1775, and Hewson's wife and two sons went later to live nearby in the city.

**Excavation at 36 Craven Street**

Further exploration of the basement in May 1998 by Brian Owen-Smith revealed more human and animal remains, together with traces of mercury, and The Friends of Benjamin Franklin House invited the Institute of Archaeology to carry out a limited excavation, study the remains, and report on them. The excavation was completed during a hot two weeks in May to fit the builders' tight schedule. It produced stratigraphic evidence of the way in which the material was buried, together with hundreds of fragments of pottery, glassware and metalwork, as well as hundreds of teeth and bones. Not only were more human remains found, marked with a wide variety of cuts, but also the bones of dogs, birds, fish and marine turtle (Fig. 4). Most of the remains are fragmentary, with the exception of some articulated human feet and groups of vertebrae.

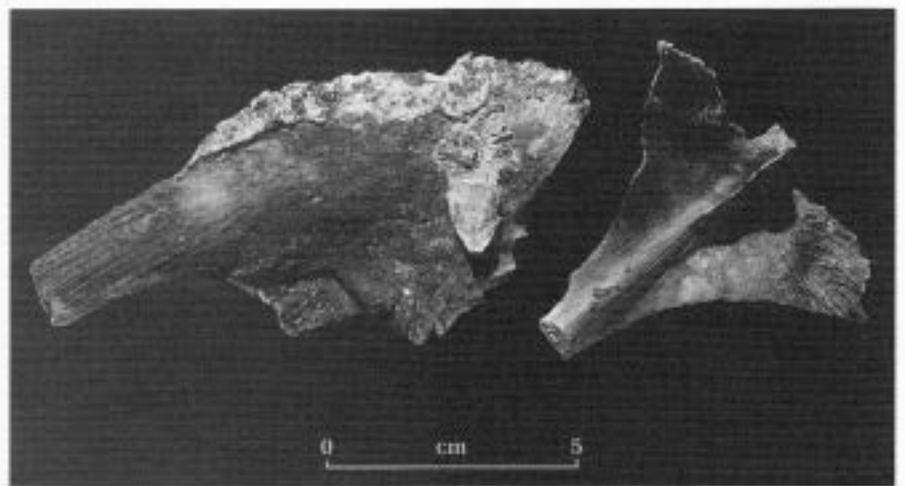
The remains were buried on the flat bottom of a rectangular pit that had been dug against the rear wall of the house. Its other sides were defined by the foundations of the garden wall and a retaining wall that

was part of the infill of the reclaimed land on which Craven Street was built by the River Thames. It was apparently a carefully constructed burial pit in which layers of mixed human and animal remains, pottery, glassware and other material were interspersed with spreads of slaked lime and earth. This deposit built up to a depth of about 30 cm and was covered by a further 40cm of earth and rubble. For a relatively small excavation (just over 1m<sup>2</sup>), the site has produced many finds, and post-excavation work on them is now under way at the Institute of Archaeology.

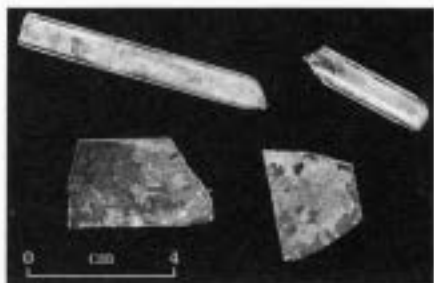
**Do the remains derive from Hewson's anatomy school?**

One of the most important aims of the project is to confirm that the dense deposit of bones is the result of the activities of the Craven Street anatomy school, rather than of some later and more sinister event. Even at this early stage in the post-excavation work, Hewson's association with the bones is clearly indicated by several pieces of evidence. For example, mercury was found in close association with the turtle bones. It was the first time that any of us had seen free-flowing mercury on an archaeological site and the little globules were quite difficult to catch. This unusual find ties in well with a celebrated specimen (attributed to Hewson) in the Hunterian Museum in Glasgow which demonstrates the lymphatic system of a turtle by injected mercury. Another tracer that seems to have been used is the inorganic pigment vermilion. Again, it was quite startling to find this bright red colour outlining, for example, the vertebrae of a dog skeleton.

Hewson's methods, unusual for his time, of preparing specimens for microscopy, can be identified by the finds of fine sheets of window glass and the remains of small heat-sealed glass tubes. They match a collection of Hewson's microscope preparations, bought by John Hunter in 1778 at an auction of the Craven Street School collections after Falconar's death, which are now on display in the Hunterian Museum in London. The preparations include specimens laid on metal strips and preserved in alcohol inside glass tubes of a characteristic oval section that exactly matches the excavated tubes (Fig. 5). In the Museum there are also dry specimens glued to roughly rectangular glass slides, approximately the same shape and size as modern microscope slides, but clearly broken out from larger glass sheets. The thickness of the glass is a good match to the glass sheets from the Craven Street excavation (Fig. 5); furthermore, although the microscope specimens are stained a variety of colours,



**Figure 4** Parts of the plastron (the bony plates that enclose the belly) of a marine turtle (probably green turtle, *Chelonia mydas*) found during the excavation at 36 Craven Street.



**Figure 5** Glass tubes and sheets from the Craven Street site; they closely resemble examples of Hewson's microscope preparations now in the Hunterian Museum in London.

they are predominantly bright red. There is clearly potential for detailed further research on the glass and pigments. In the same display case at the Museum are examples of the more usual microscope preparations of the late eighteenth century, with specimens held in little wells cut into an ivory slide, very different from Hewson's glass sheets and tubes.

These comparisons between the museum specimens and the evidence from the excavation lead us to believe that the remains do indeed derive from Hewson's work at 36 Craven Street. Still more evidence for the anatomical and surgical nature of the assemblage comes from the saw cuts on the bones. Human skulls have been sectioned along the midline (sagittally) and transversely, to remove the top of the brain case. These are the classic cuts used in preparing

specimens for anatomy classes. Some of the skulls have also been drilled in several places using specialized surgical instruments, such as the trephine. This device cuts out a disc of bone with a centre hole left by a point that holds the instrument steady while the cut is started. Not only have finished holes been found in the Craven Street skulls, but so have part-finished cuts and the discs of bone that were removed (Fig. 6). We interpret the multiple holes as an exercise in practising surgical techniques on bodies in the dissecting room. Some of the cuts on long bones may also represent practice amputations, where speed was of the essence and two swift cuts were made with a saw to leave a narrow bridge of bone that was then snapped.

### The Craven Street school and the development of anatomical science

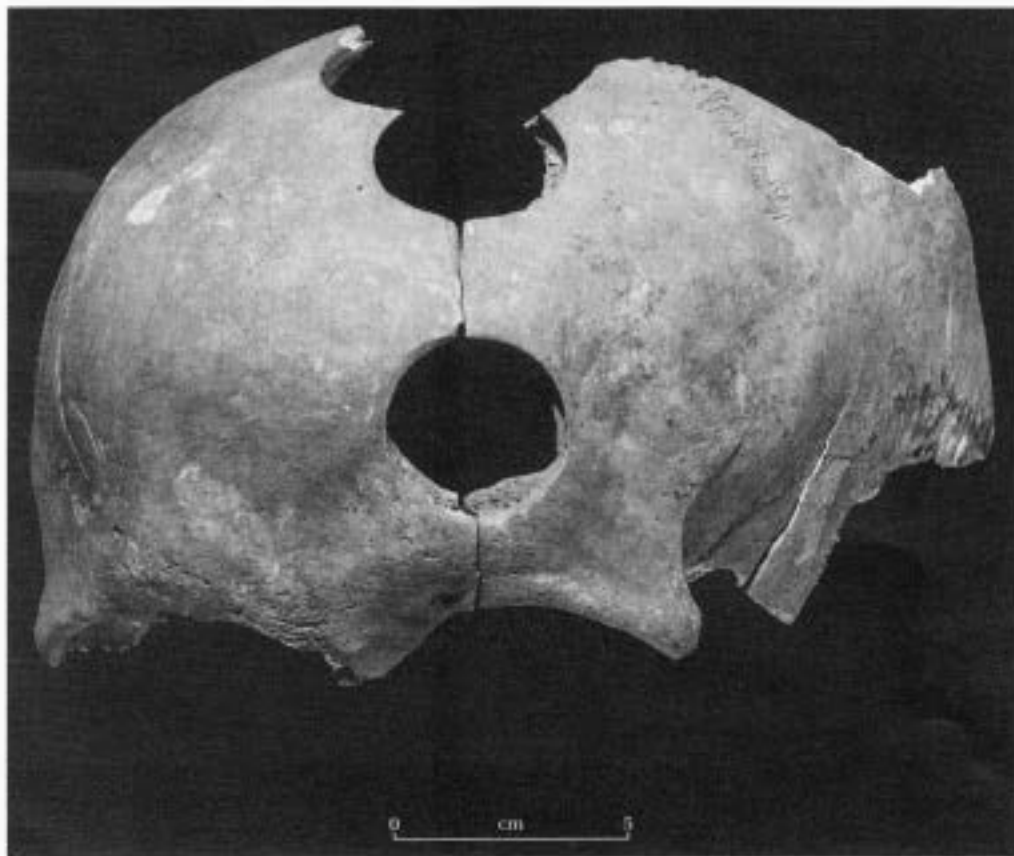
We have no means of discovering the identity of the people whose remains were dissected in the anatomy school, other than to establish their age at death, their sex and other general characteristics such as build, approximate stature and evidence of diseases such as osteoarthritis, tooth decay and periodontal disease. Hewson's school was working in the period before the Anatomy Act of 1832, when the only way to obtain bodies for dissection for research or for the training of student doctors was to buy them from the "resurrection men" who secretly exhumed recent burials. The position of Craven Street close to the River Thames (Fig. 3) would have been ideal for the clandestine delivery of bodies by boat.

Until 1828 it was not against the law for doctors and anatomists to receive bodies in this way, although it gave the medical profession a bad name with the general public, even if the scientific and political establishment turned a blind eye. Demands for the rapid development of medicine and surgery were generated particularly by frequent wars involving Britain, France and America, and Benjamin Franklin's interest may well have been to establish good medical schools in his homeland.

The Craven Street site is unique. The excavation has provided an opportunity to study at first hand the procedures, materials and equipment used in a private anatomy school at an important stage in the early development of anatomical science. It can be linked not only to historical accounts but also to important historical figures who lived and worked there, and left examples of their finished work which survive in museum collections.

### Note

1. Dr Brian Owen-Smith is President of the Hunterian Society and adviser to The Friends of Benjamin Franklin House.



**Figure 6** A fragment of human skull from the Craven Street site showing where discs of cranial bone have been removed with a specialized surgical instrument (either a trephine or a trepan) and, to the right, two of the cranial discs found during the excavation.