On the Legacy of John Hunter, Neuroanatomy and Neurosurgery: there and back again

Hunterian Society Essay Prize 2026

Euan Strachan

It should be remembered nothing in Nature stands alone; but that every art and science has a relation to some other art or science, and that it requires a knowledge of these others, as far as this connexion takes place, to enable us to become perfect in that which engages our particular attention

John Hunter, in Observations on Digestion (1837)

John Hunter
(1728 – 1793)
Sculptor: Sir Alfred Gilbert

SOCIETY OF BRITISH NEUROLOGICAL SURGEONS
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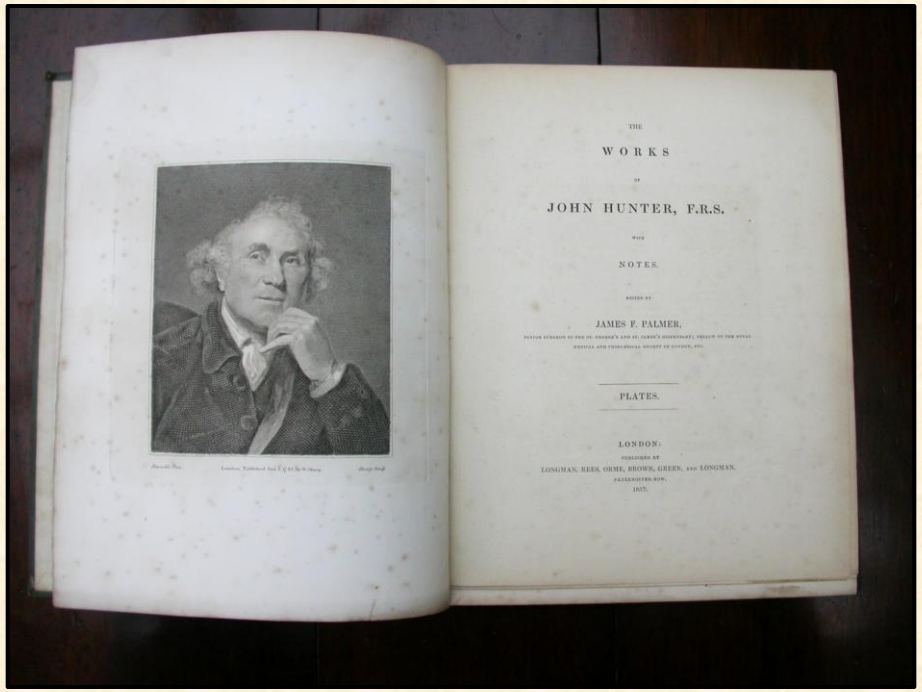
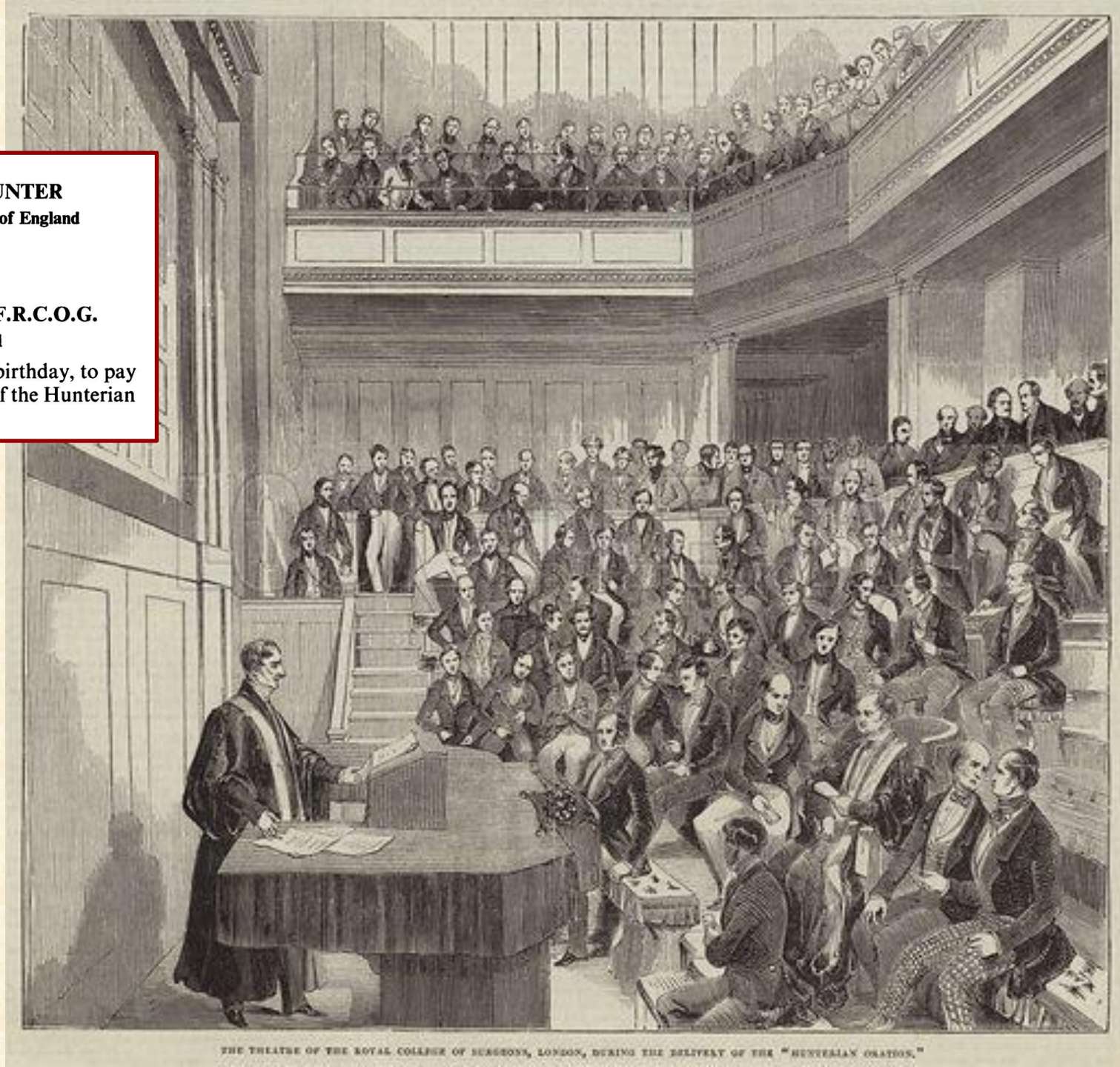
THE LASTING DYNAMISM OF JOHN HUNTER

Hunterian Oration delivered at the Royal College of Surgeons of England
on
14th February 1963
by

Sir Stanford Cade, K.B.E., C.B., F.R.C.S., F.R.C.P., F.R.C.O.G.
Honorary Consulting Surgeon, Westminster Hospital

WE MEET THIS day, the 235th anniversary of John Hunter's birthday, to pay tribute to his memory for the 92nd time since the inception of the Hunterian Oration 150 years ago.



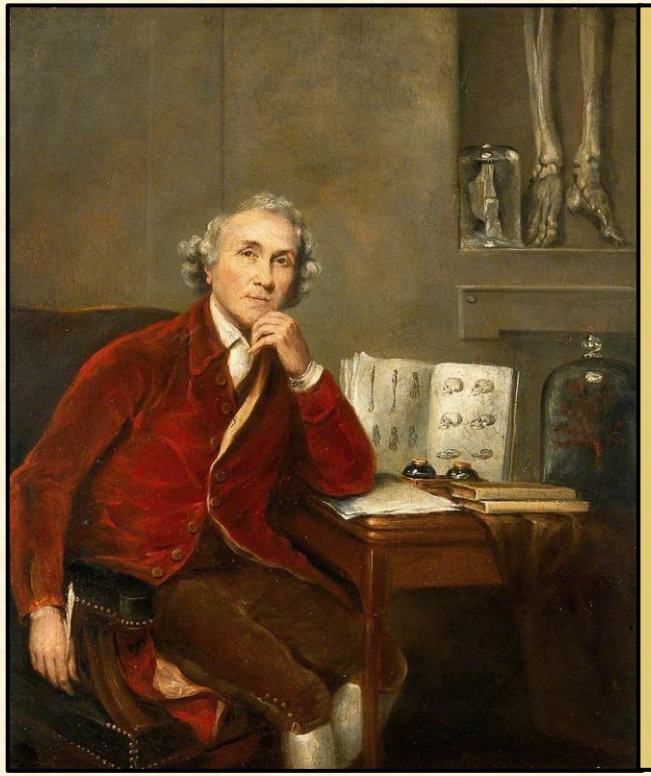


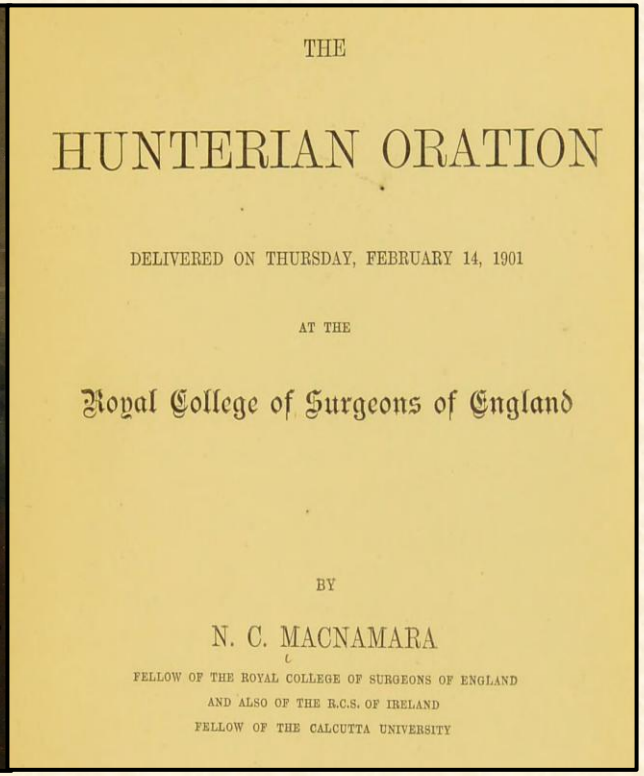
THE THEATRE OF THE ROYAL COLLEGE OF SURGEONS, LONDON, DURING THE DELIVERY OF THE "HUNTERIAN ORATION."

Nottidge Charles MacNamara
(1832 – 1918)
Painting by Dorofield Hardy
Chelsea & Westminster Hospital

Virgin Ground?

"it would seem that....Hunter was engaged in the study of the craniology of man and anthropoid apes".





THE

HUNTERIAN ORATION

DELIVERED ON THURSDAY, FEBRUARY 14, 1901

AT THE

Royal College of Surgeons of England

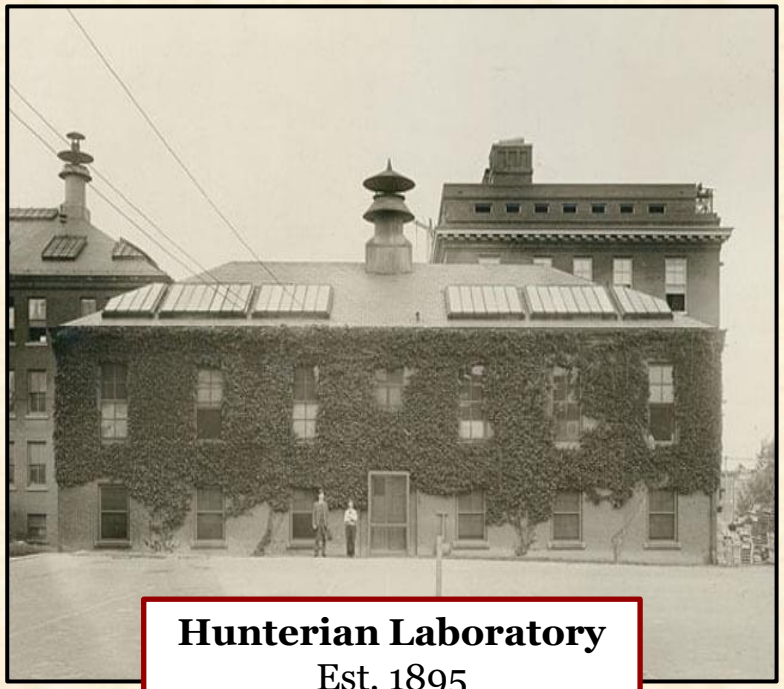
BY

N. C. MACNAMARA

FELLOW OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND
AND ALSO OF THE R.C.S. OF IRELAND
FELLOW OF THE CALCUTTA UNIVERSITY

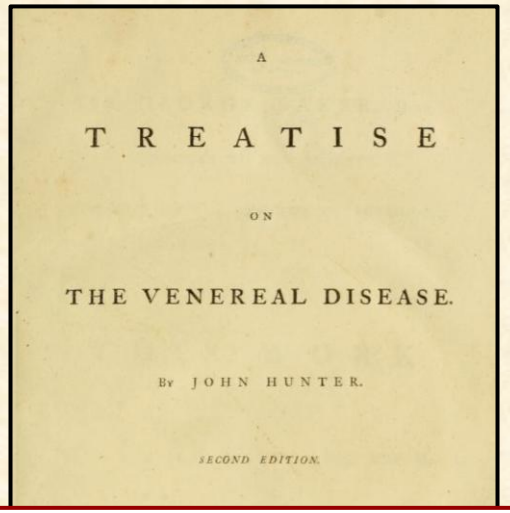
The Legacy of John Hunter: Neuroanatomy and Neurosurgery

Hunter and the Origins of Neurosurgery?



Hunterian Laboratory
Est. 1895
Johns Hopkins Hospital
Baltimore

Hunter's Contributions to Neuroanatomy?


A

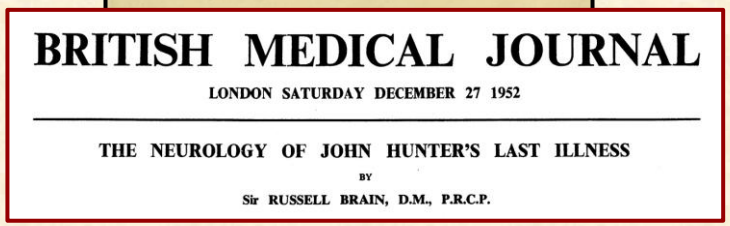
TREATISE

ON

THE VENEREAL DISEASE.

By JOHN HUNTER.

SECOND EDITION.


BRITISH MEDICAL JOURNAL

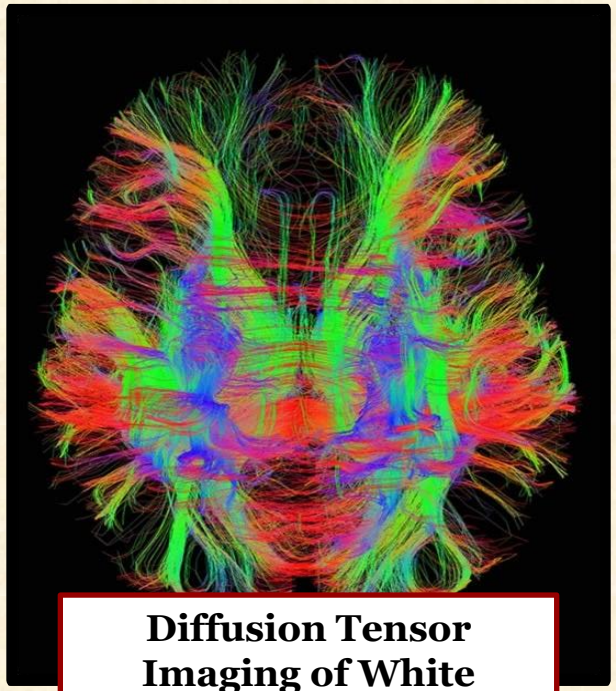
LONDON SATURDAY DECEMBER 27 1952

THE NEUROLOGY OF JOHN HUNTER'S LAST ILLNESS

BY

Sir RUSSELL BRAIN, D.M., F.R.C.P.

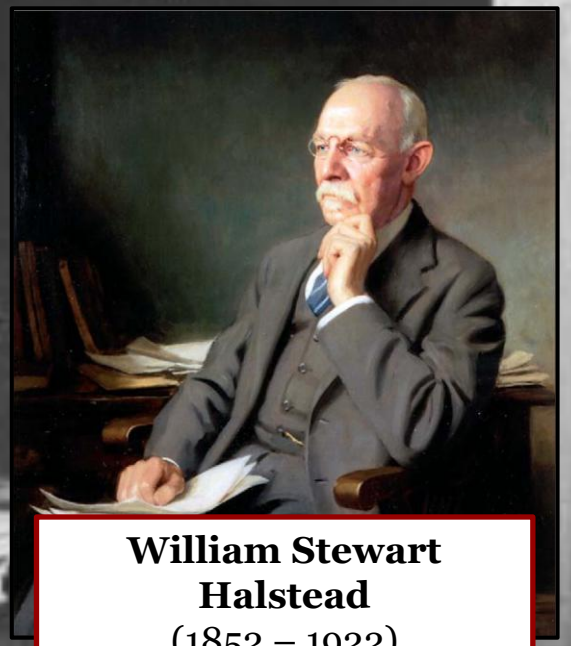
The Pursuit of Neuroanatomical Ground Truth



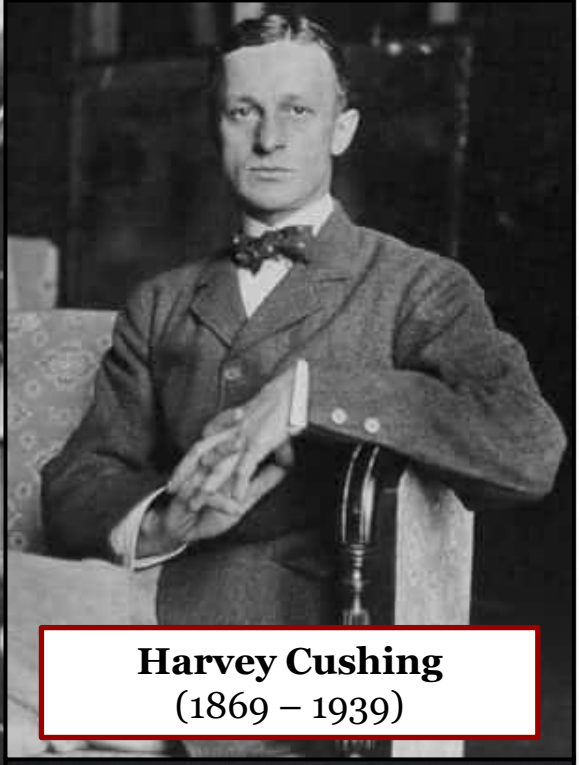
Diffusion Tensor Imaging of White Matter

The Hunterian Laboratory

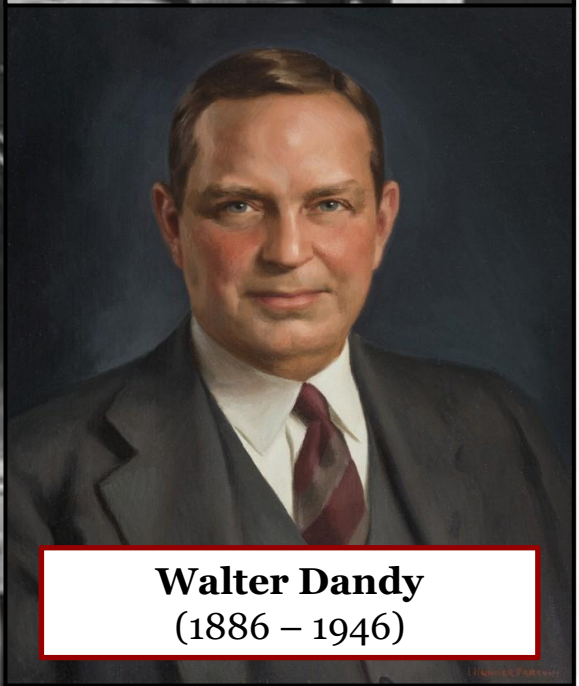
- Founded in 1895
- 1904: Harvey Cushing appointed as Director
- Promotion of the ‘clinician-scientist’; founding of the neurosurgical specialism



William Stewart Halstead
(1852 – 1922)



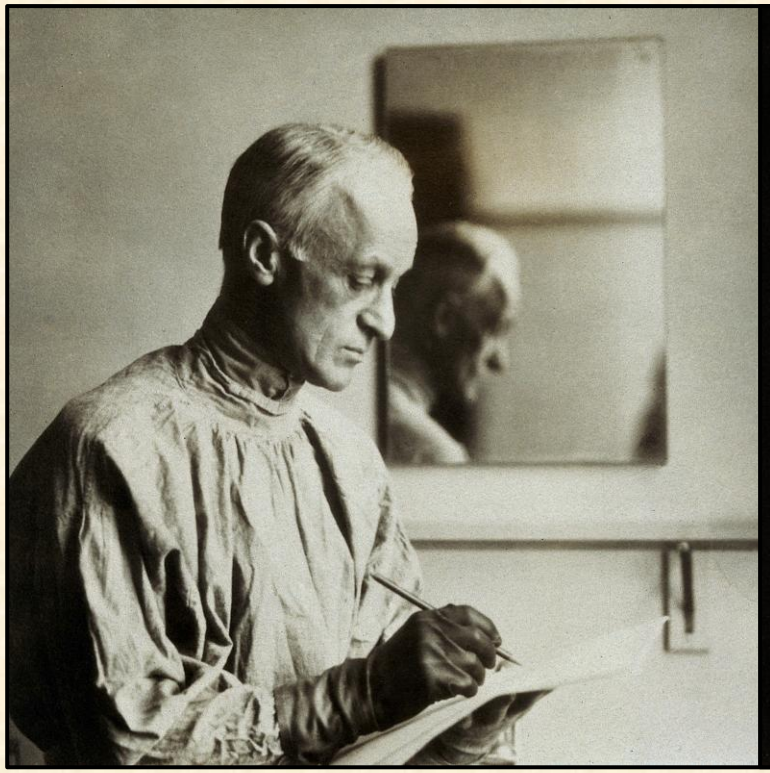
Harvey Cushing
(1869 – 1939)

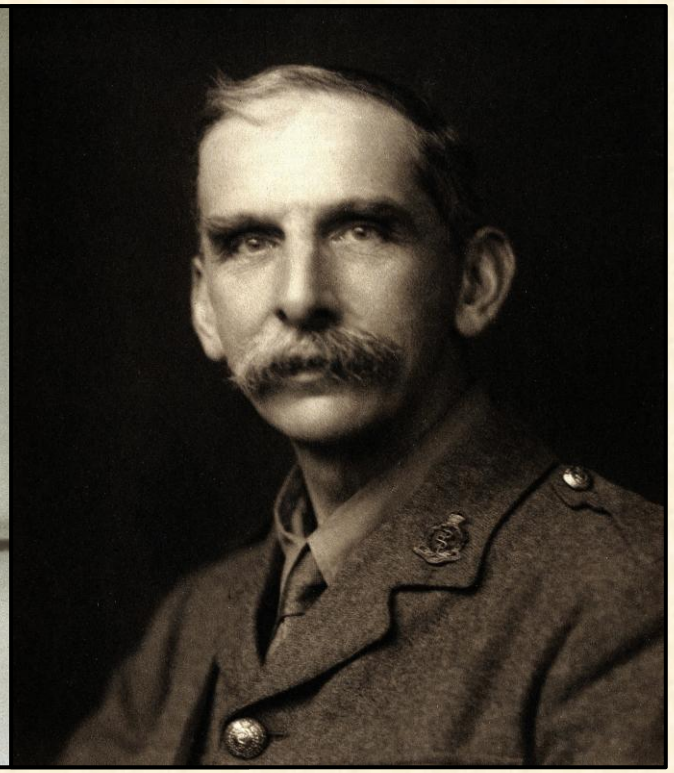


Walter Dandy
(1886 – 1946)

“Cushing, whose surgical and scientific interests had begun centering on disorders of the nervous system — and who became the first to declare neurosurgery a separate specialty — refocused the Hunterian’s mission on neurosurgical research and techniques.

Hopkinsmedicine.org





Cushing…was an extremely slow, methodical surgeon who obsessively chased every bleeding point. In 1900 Cushing accompanied Horsley to a private house, where Horsley both anaesthetised and operated on a patient's trigeminal ganglion, all within the hour. The astonished Cushing claimed to have seen nothing but blood and swabs and wrote that "there was nothing of modern neurosurgery that he could learn from Horsley."

Powell, M (2006): 'Sir Victor Horsley—an inspiration'

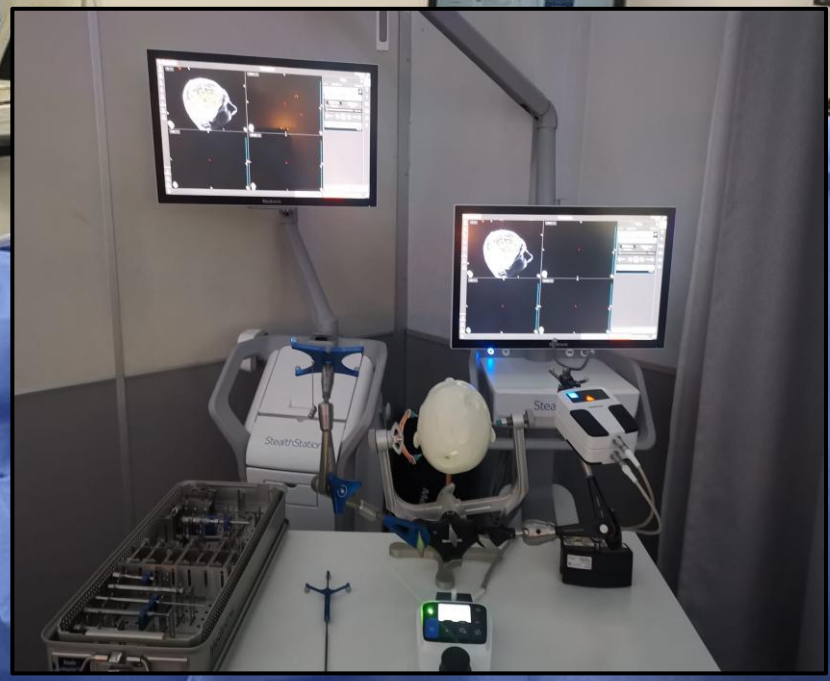
A Common Philosophy?

Neurosurgical Sub-Specialism:

- Neuro-Oncology
- Neurovascular
- Epilepsy & Functional
- Spinal surgery
- Skull Base Surgery
- Paediatrics
- CSF & Hydrocephalus

1926-2026 SBNS 100
CELEBRATING 100 YEARS OF BRITISH NEUROSURGERY

...this philosophy may be regarded as "dedication and hard work", in truth, it centres on a time-honoured pursuit of knowledge and the adoption of an epistemological position that Hunter would have admired



Hunter's Contributions to Neuroanatomy

Cade, 1963

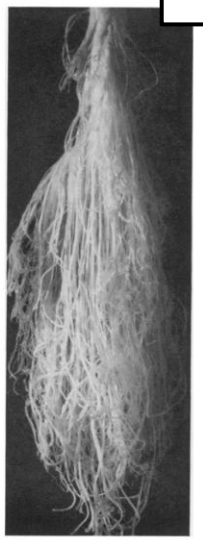
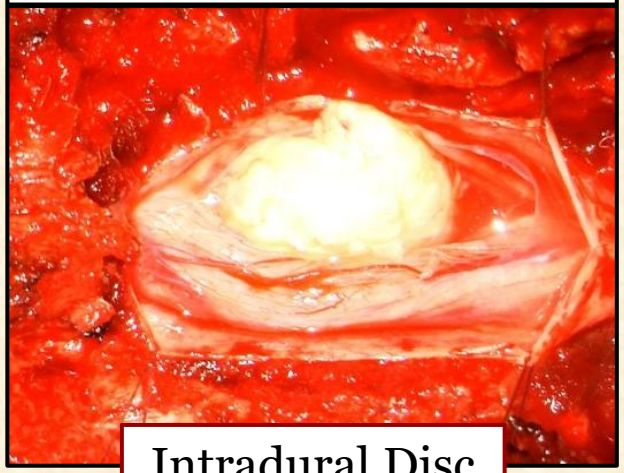


Fig. 2. Dissection of the cauda equina: original Hunterian specimen in the Hunterian Museum, Royal College of Surgeons of England.



Intradural Disc

The nerves have but one mode of action, namely, that of conveying impressions [sensory nerves]; but this in two different directions: one from their extremities in the body towards the brain, conveying impressions made on them to the brain, in order to excite actions suitable to these impressions; the other, from the brain to the extremities, conveying the mandates of the will [motor nerves]

Hunter, 1837

The Law of Specific Nerve Energies

Johannes Peter Müller
(1801 – 1858)

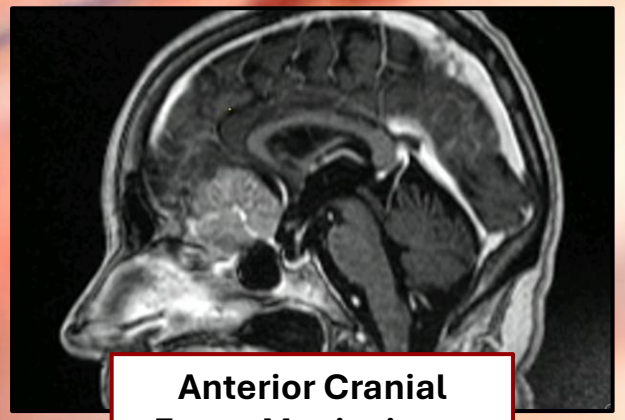
..a mechanical impression on the retina produces an impression of light; a blow on the ear a sensation of sound

Hunter, 1837

Hunter's Contributions to Neuroanatomy

Internal Carotid Artery

Optic Nerves



Anterior Cranial Fossa Meningioma

Dellon, 2025

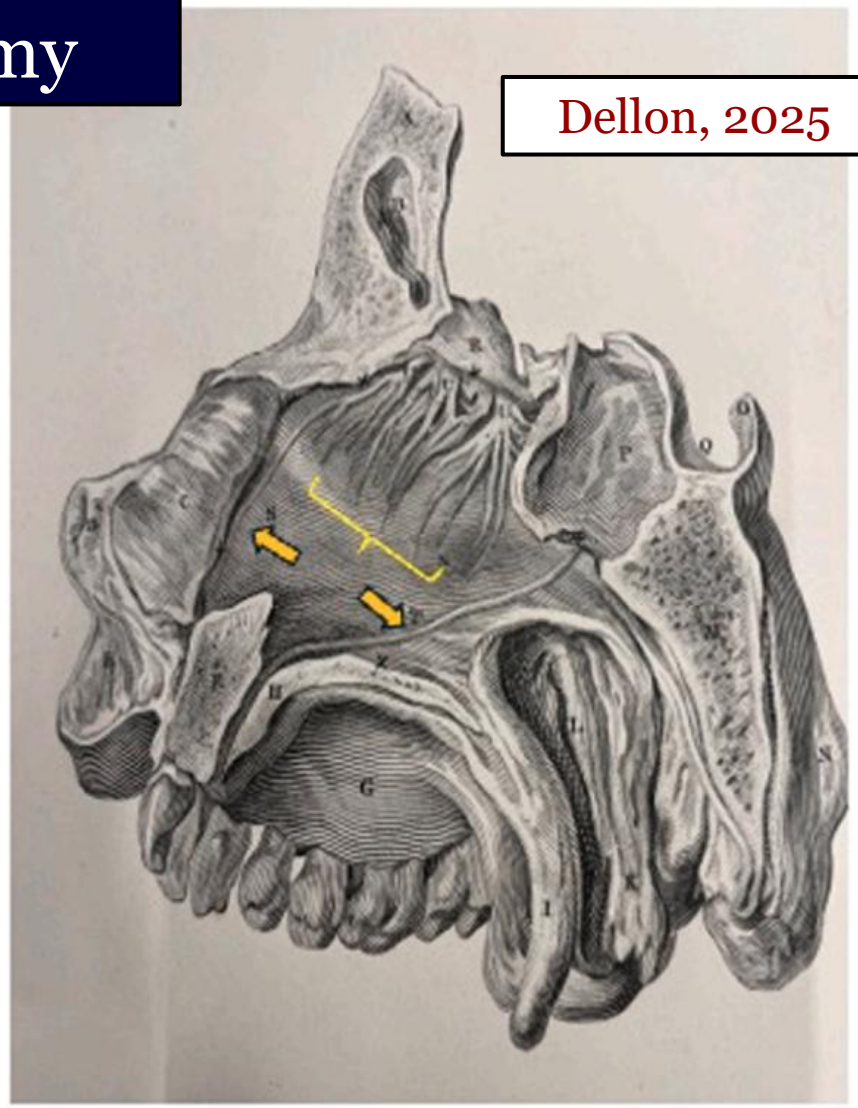


Figure 1 John Hunter's original illustration of the olfactory nerve filaments protruding through the cribriform plate (yellow bracket). Trigeminal nerve branches to nasal mucosa (orange arrows). (figure in public domain from Complete Works of John Hunter, Atlas, 1843, Plate 41).

The Pursuit of Neuroanatomical Ground Truth

The observation of both these investigators, that no anastomosis occurs between the vessels to the claustrum and those to the lenticular nucleus, is a very important one… and it is interesting in that it confirms the opinion of John Hunter (the first to describe end arteries) that the arteries entering the brain substance do not anastomose with one another.

Joseph Shellshear, 1920

Using ex vivo arterial injection and dissection to assess white matter vascularization

Smirnov, 2023

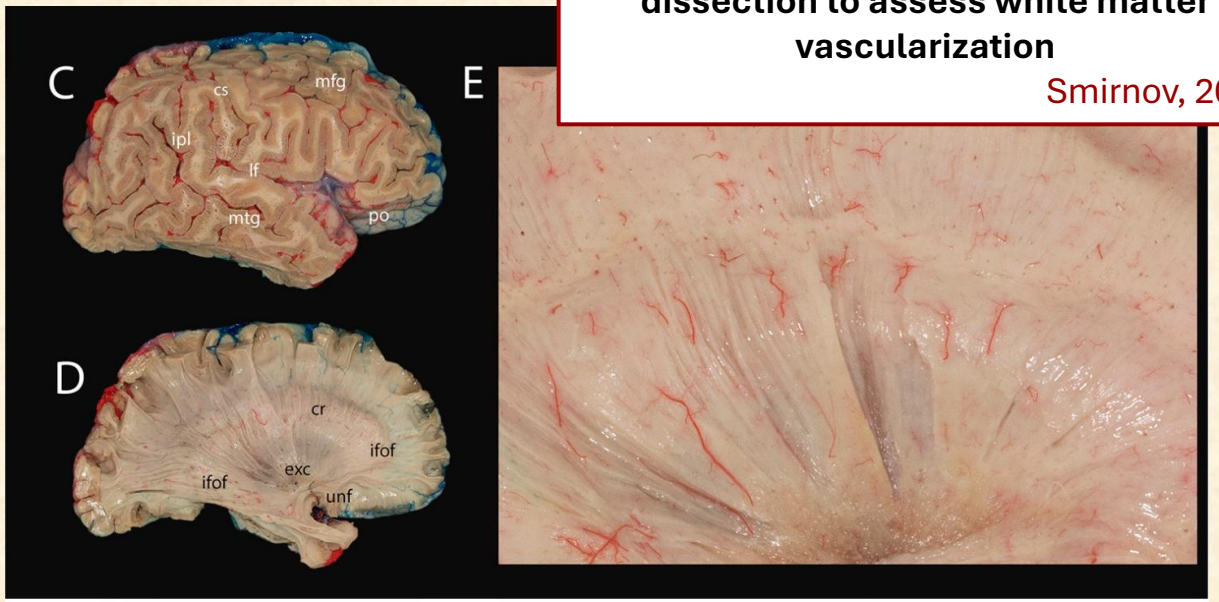
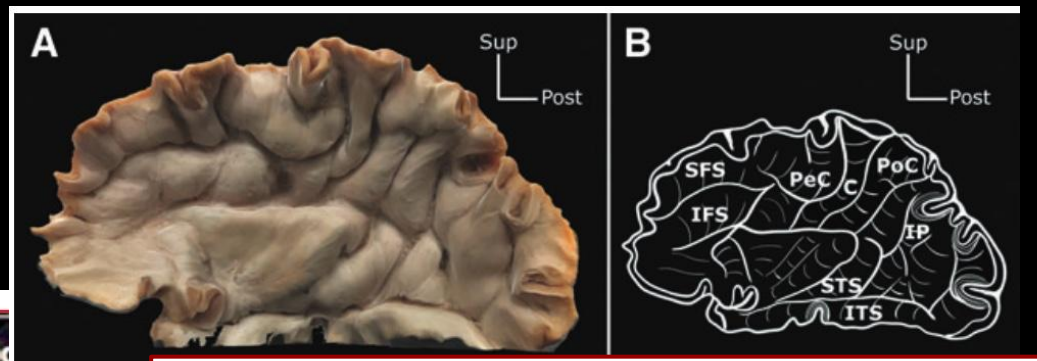


Figure 3. Technique of fiber dissection with preservation of the white matter vasculature.

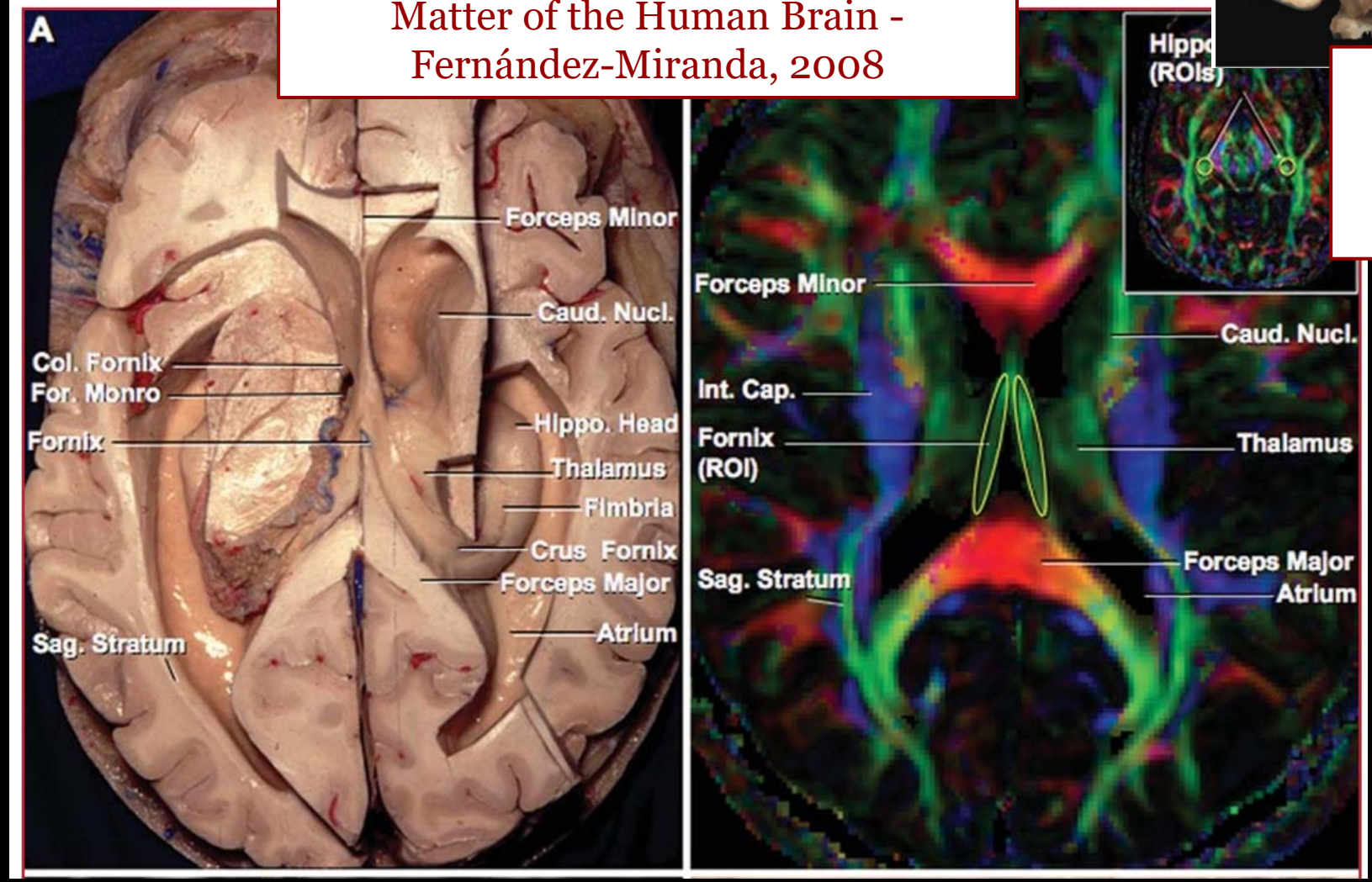
"Considering this and other current endeavours for validating the results of in vivo MRI, post-mortem ground truth has been proposed as an important topic for future research".

Cerebral White Matter Vasculature: *still uncharted?* Smirnov, 2021

Three-Dimensional Microsurgical and Tractographic Anatomy of the White Matter of the Human Brain - Fernández-Miranda, 2008



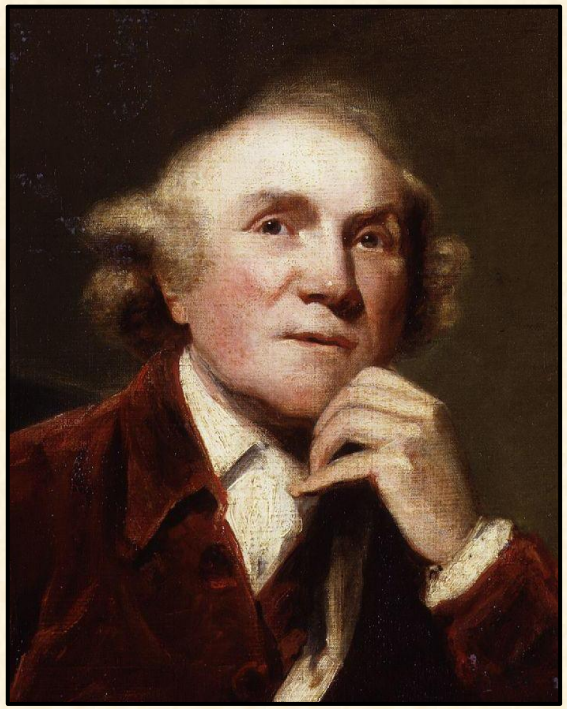
‘Direct inside-out observation of superficial white matter fasciculi in the human brain’ – Dannhoff, 2024



Conclusions: *there and back again*

A hypothesis which becomes dispossessed by new facts dies an honourable death; and if it has already called up for examination those truths by which it was annihilated, it deserves a moment of gratitude.

John Hunter (quoted by Cohen, 1956)



- Neurosurgery owes its gratitude to John Hunter
- As the 'father of scientific surgery', he inspired neurosurgery's founding fathers in establishing our own specialty.
- Hunter made important contributions to our knowledge of both the central and peripheral nervous systems that deserve our greater attention.
- We continue to apply his principles to neuroanatomical dissection in the pursuit of greater knowledge and truth.

There and back again indeed….

Thank You

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Wessex Neurological Centre

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References and Credits

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