



Dr Eddie Mee

Neurosurgeon

Auckland City Hospital, Ascot Integrated Hospital,
MercyAscot Hospitals, Auckland

Saturday, August 13, 2016

(Plenary)

11:00 - 11:25 Art Autopsy and Anatomy - A History of the Brain from Galen to Rhoton

Art Autopsy and Anatomy

A HISTORY OF BRAIN EXPLORATION
FROM GALEN TO RHOTON

EDWARD MEE 2016

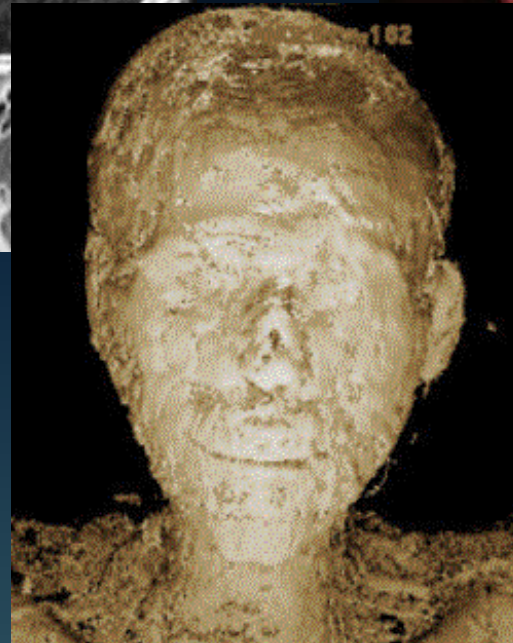
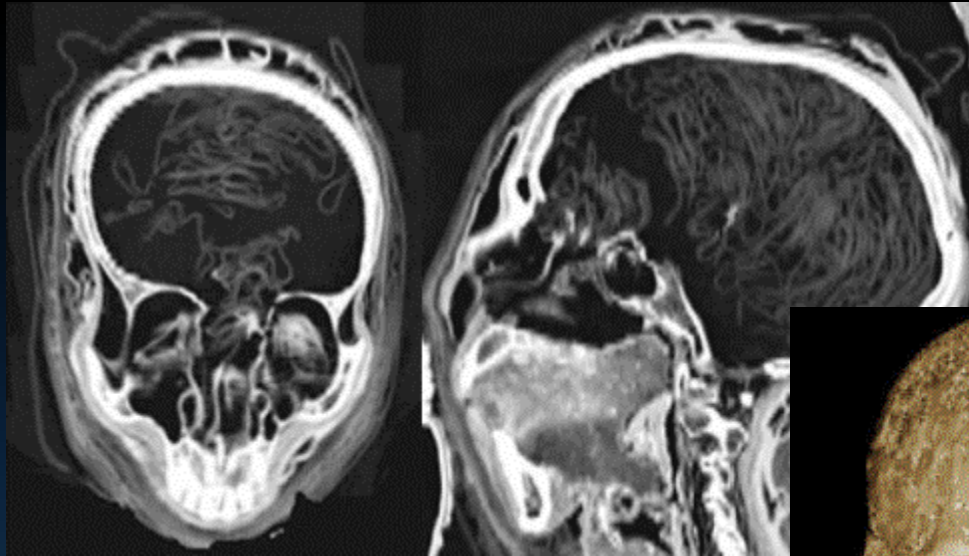
THE MINDS BEHIND THE BRAIN

The Egyptians

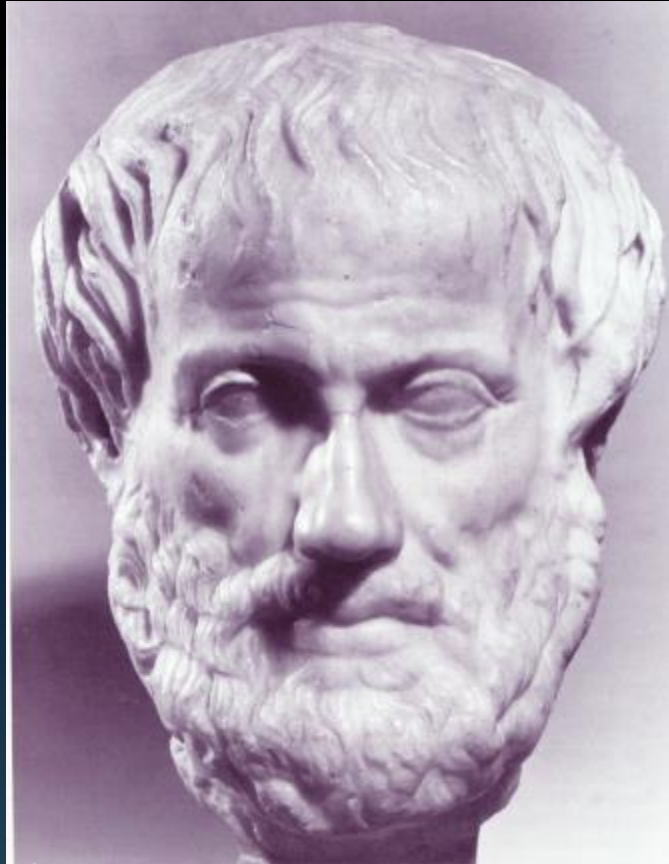
- Little regard for the Brain
- Extracted brain via nose before embalming



3D CT of Paankenamun



Aristotle



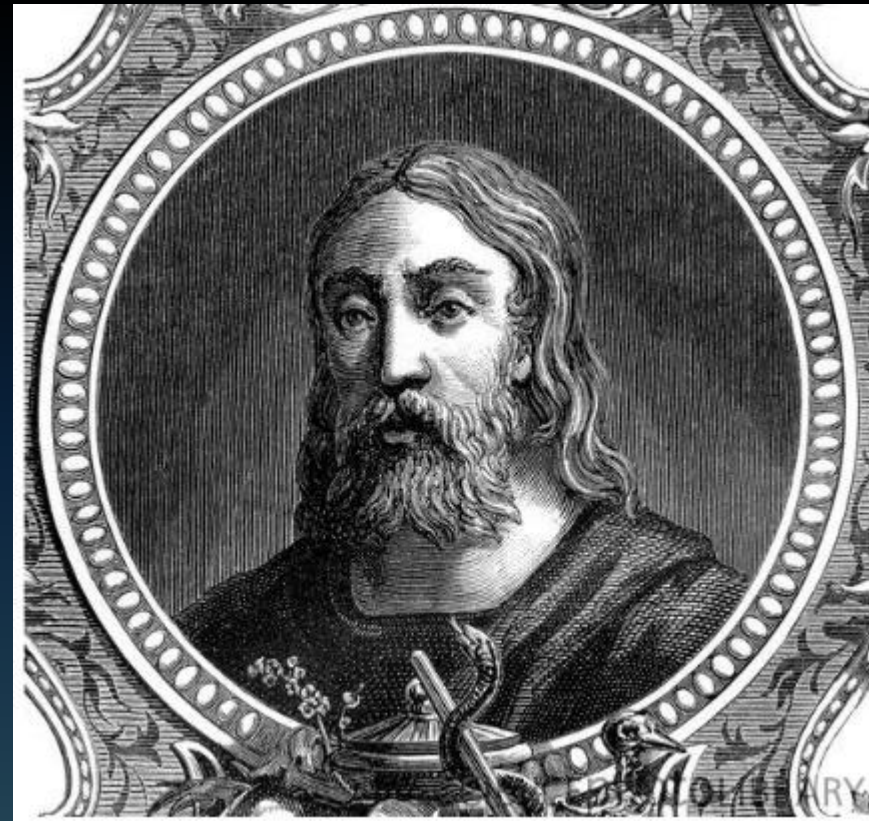
Aristotle Reversed thinking and suggested that the seat of the soul was in the heart.

Reverted to Egyptian view.

- Brain was a cooling device for the heart
- Brain is devoid of sensation and therefore could not be the home of feelings

Galen 130-200

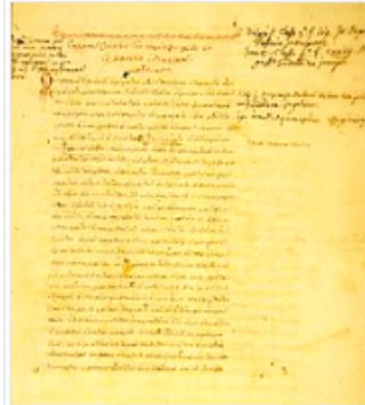
- Surgeon to the Gladiators in Pergamon
- Human dissections banned
- Fluid model of brain
- Described 7 cranial nerves
- Ventricular theory of brain function
- Book of Galen-collected works
- Library lost in a fire



Islam 750-1200

The first major translator of Galen into Arabic was the Syrian Christian Hunayn ibn Ishaq

Hunayn translated (c. 830–870) 129 works of "Jalinos" into Arabic



Galen. De pulsibus. (Manuscript; Venice, ca. 1550). This Greek manuscript of Galen's treatise on the pulse is interleaved with a Latin translation.

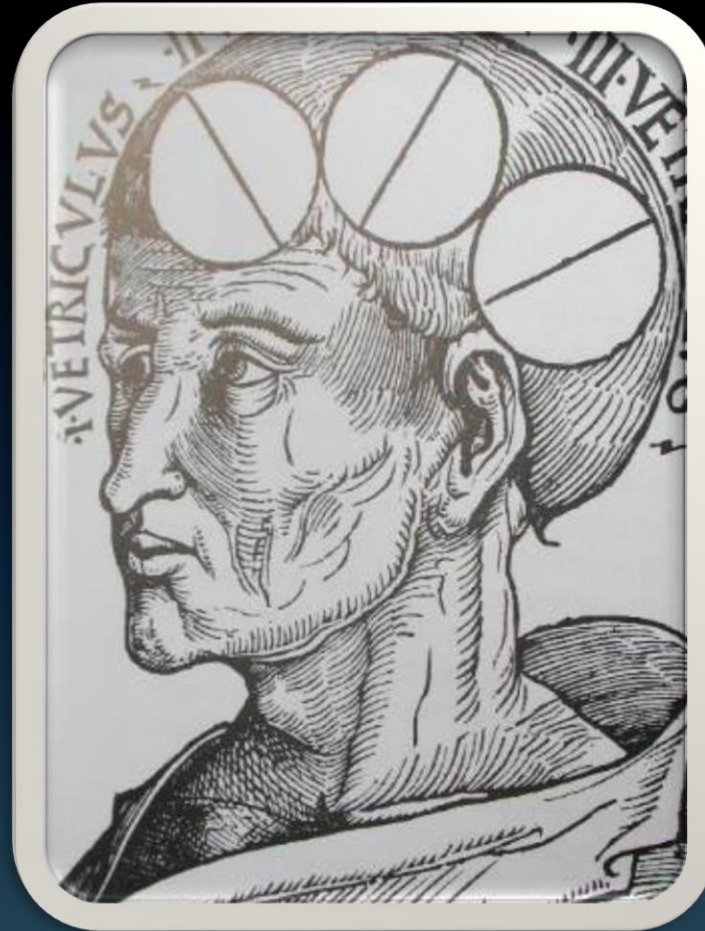


Medieval Cell Theory 1497

I Common sense

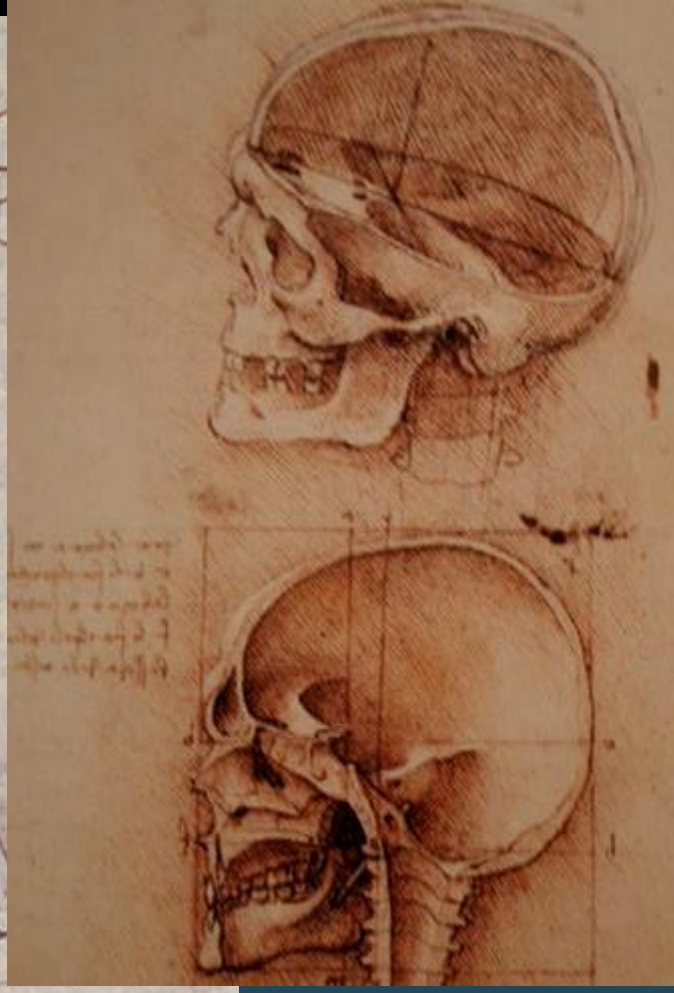
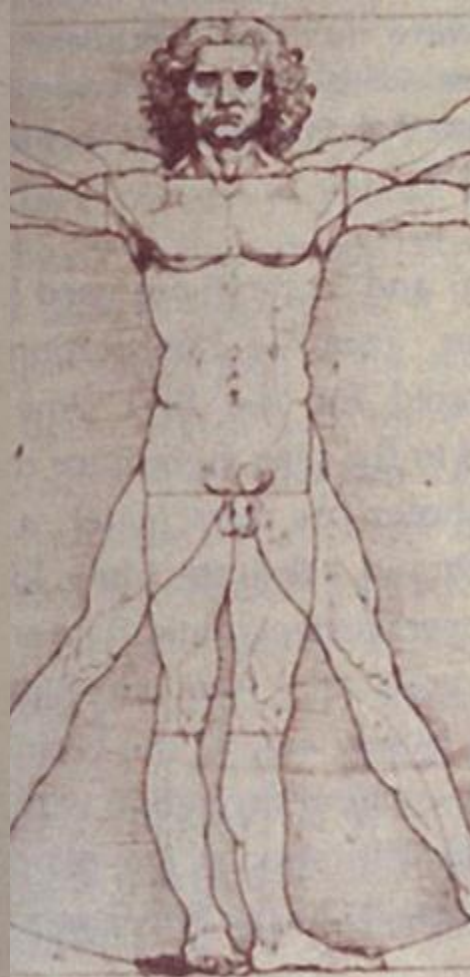
II Reasoning

III
Memory/movement

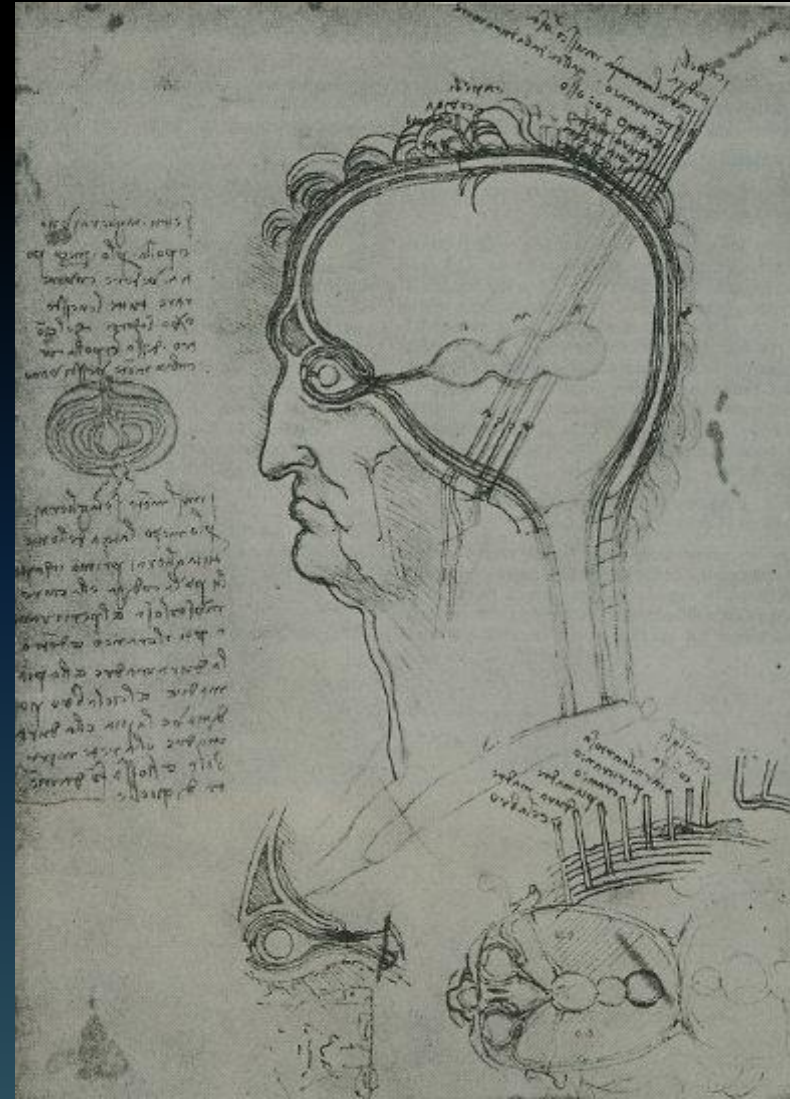
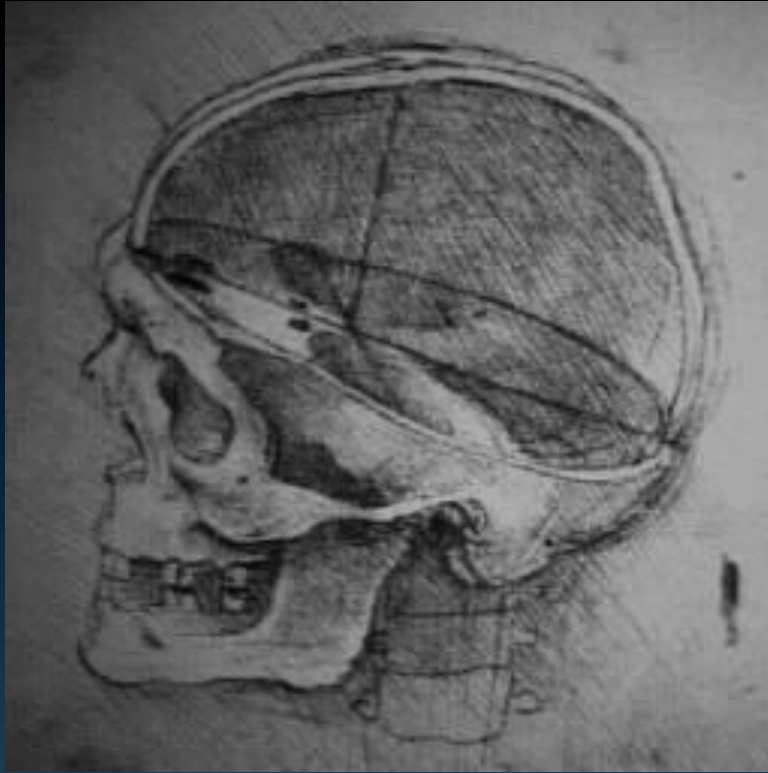


Leonardo da Vinci

April 15, 1452 – May 2, 1519



The Note books



Vesalius 1514-1560



De Humani Corporis fabrica

pub 1543 663 folio pages

Master anatomist

Critical of Galen's anatomical
work

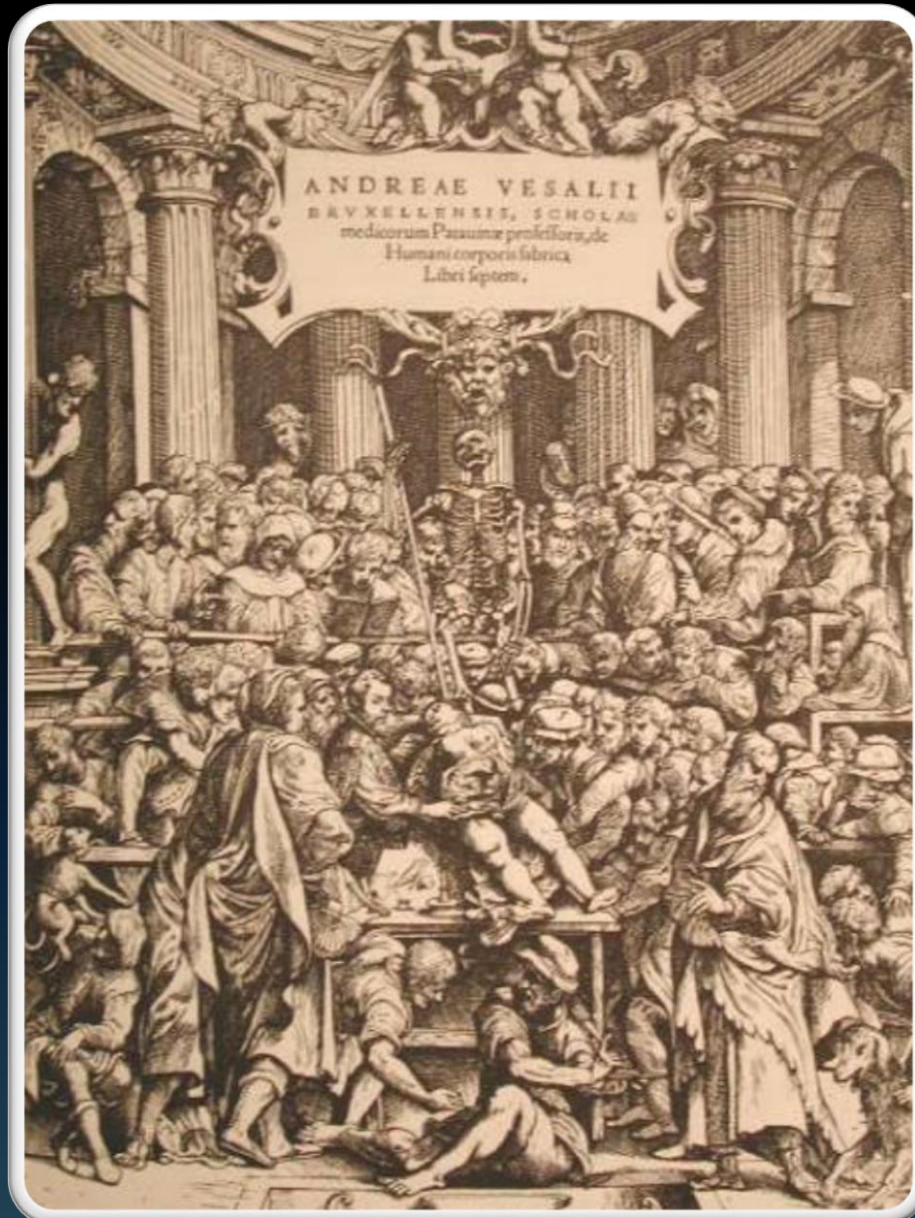
Debunks rete mirabile

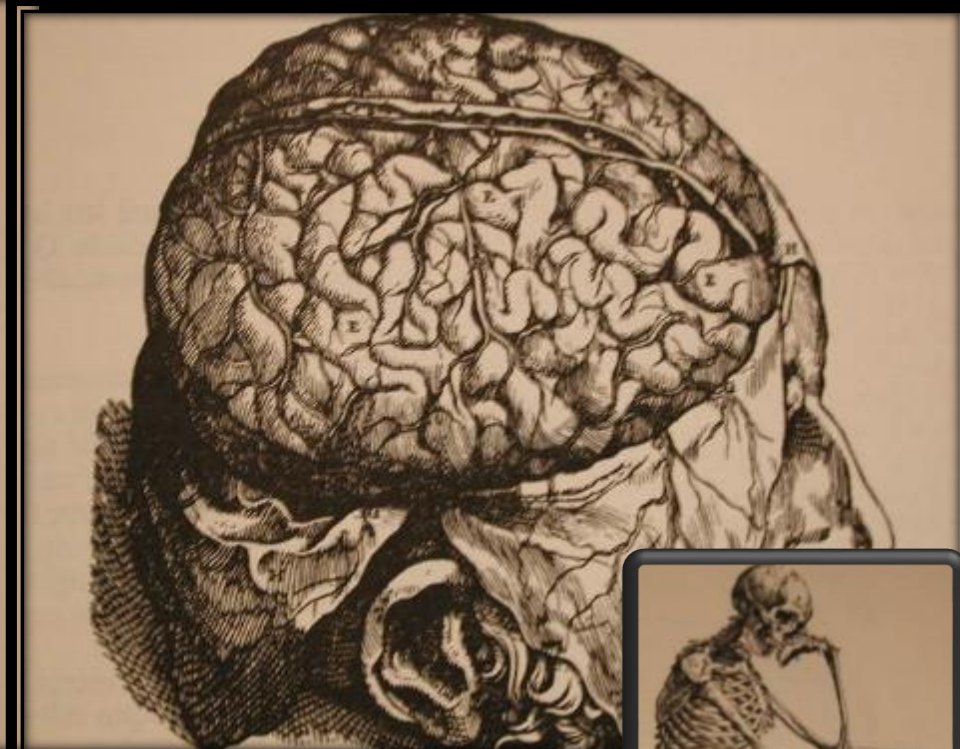
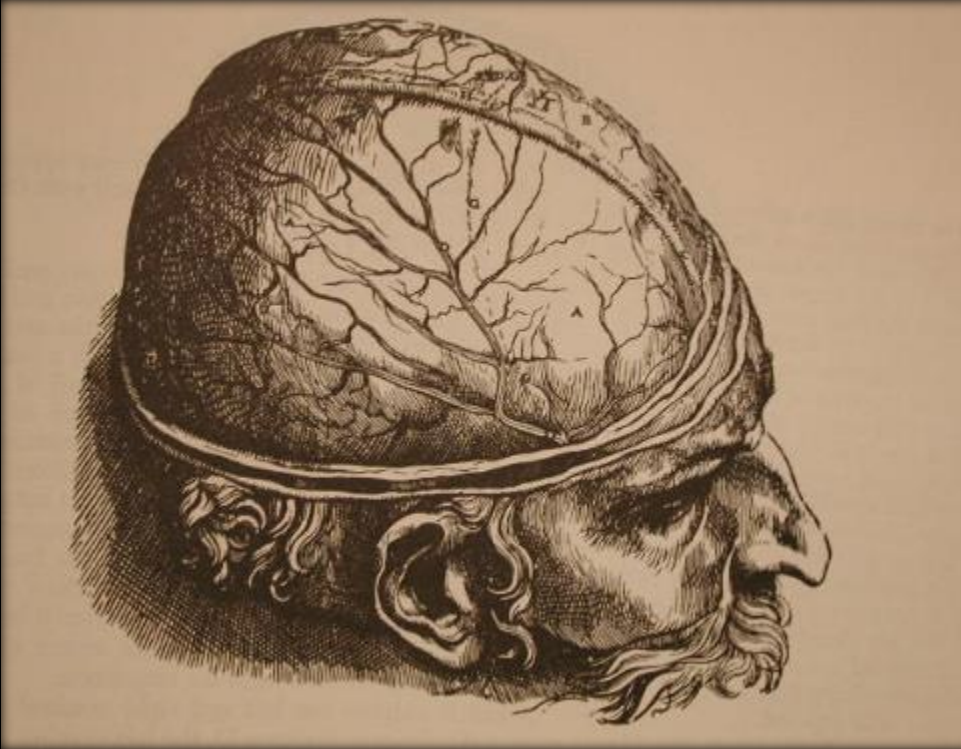
Reversed ventricular fluid theory

Masterful promotion of his work

Publishes in Basel



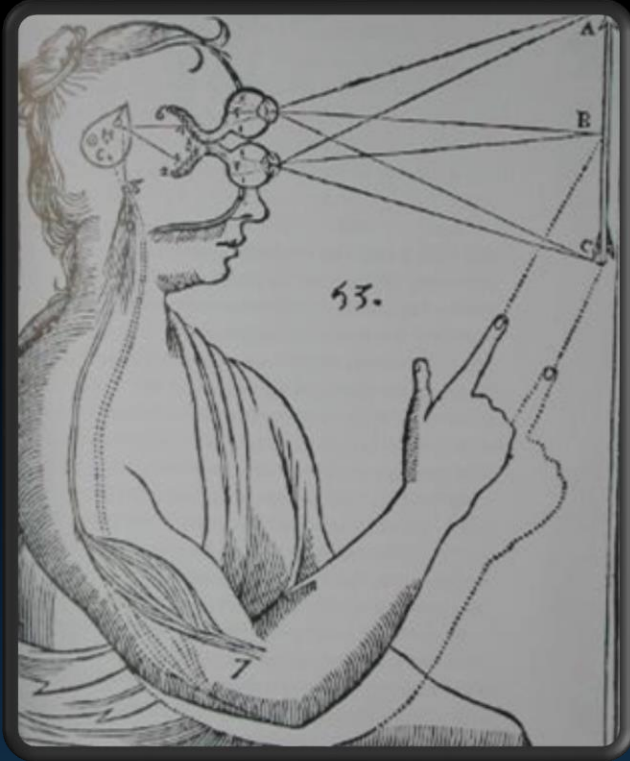




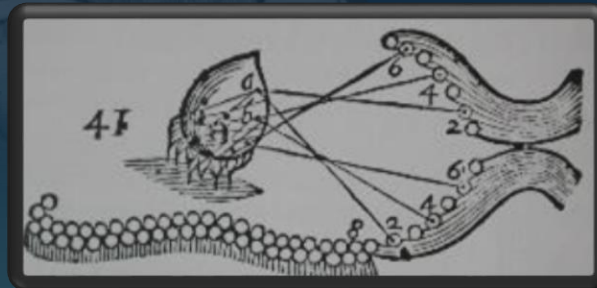
Art School 1550



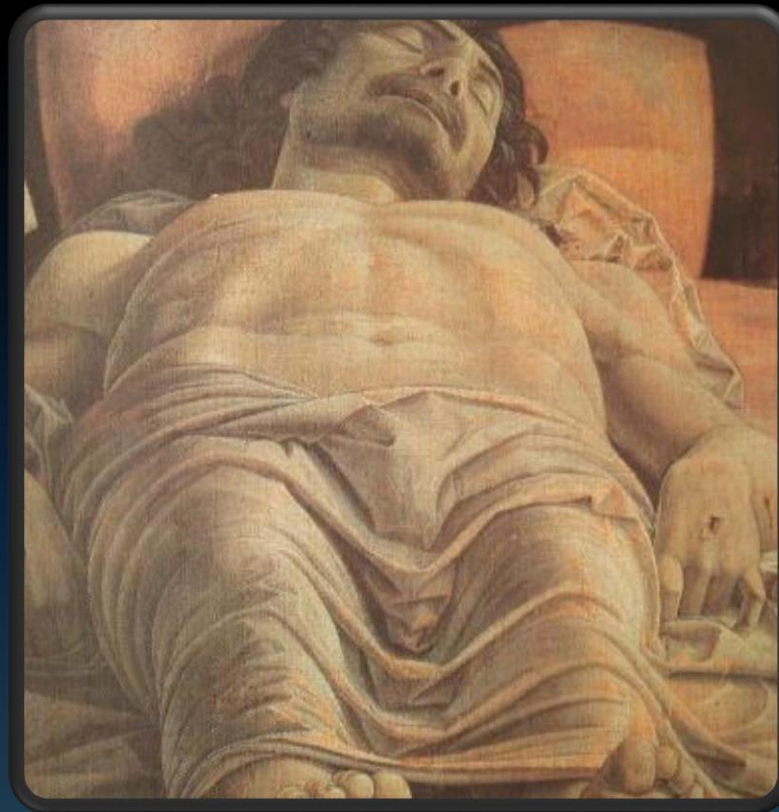
Descartes 1620



- The mind and the brain were considered separate-Dualism
- Pineal gland was the seat of the soul and where mind and matter interact
- Hydraulic system of vital liquids.



Rembrandt 1620





Thomas Willis 17C

Virtuosi group in Oxford
Private practice flourished

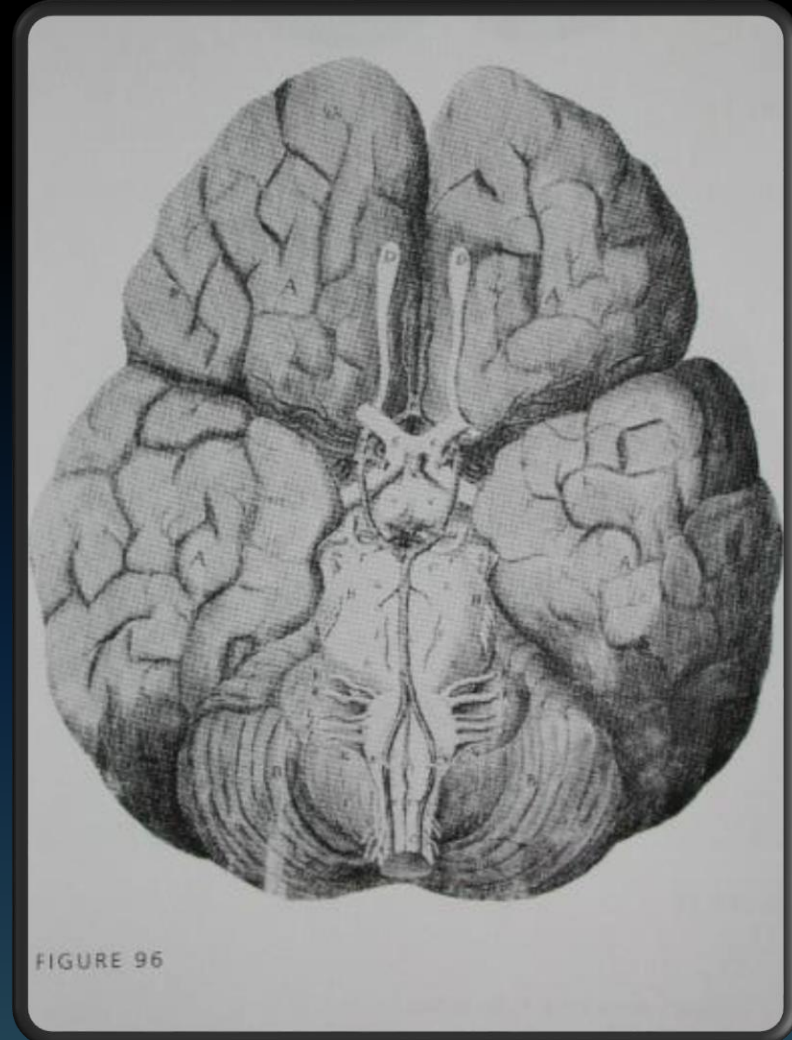
1650 epidemics and autopsies performed

1671 Described the Circle of Willis
Gyrus was the centre for movement

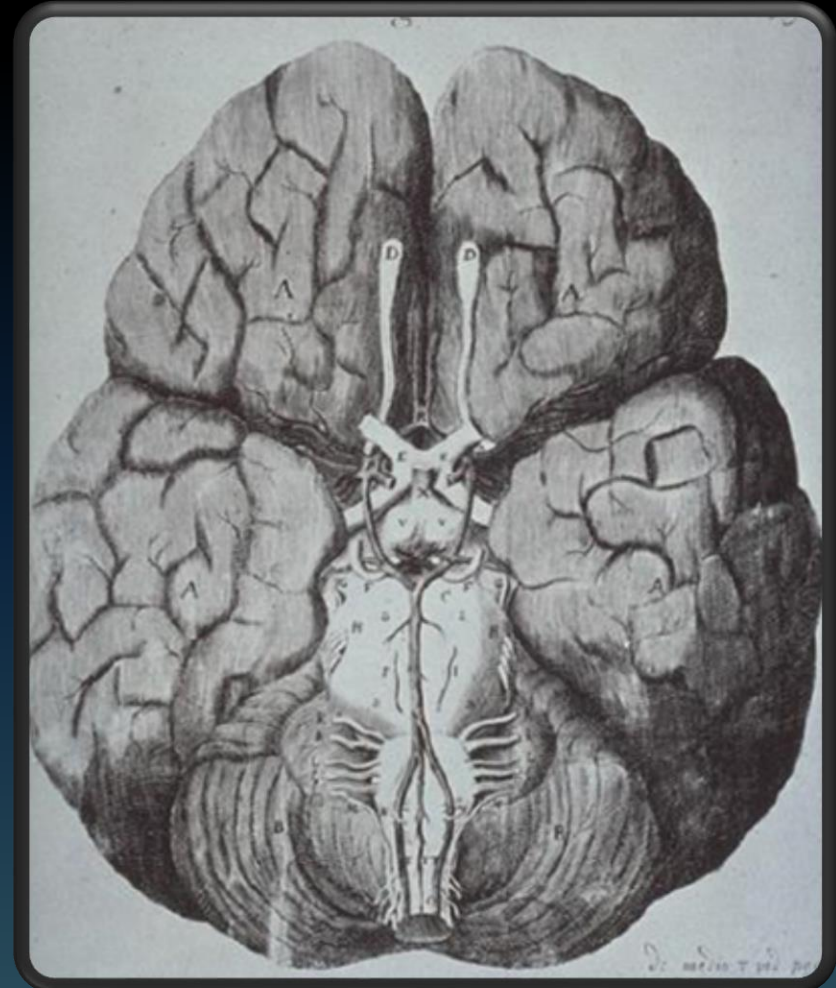
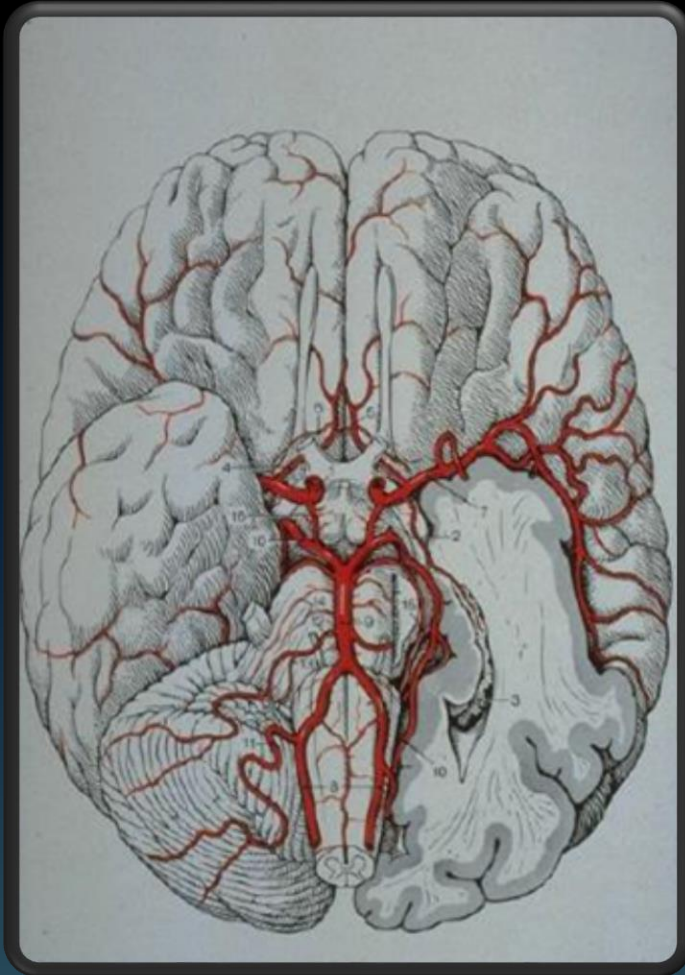
1664 *Cerebrae Anatomie*

Christopher Wren illustrated his text

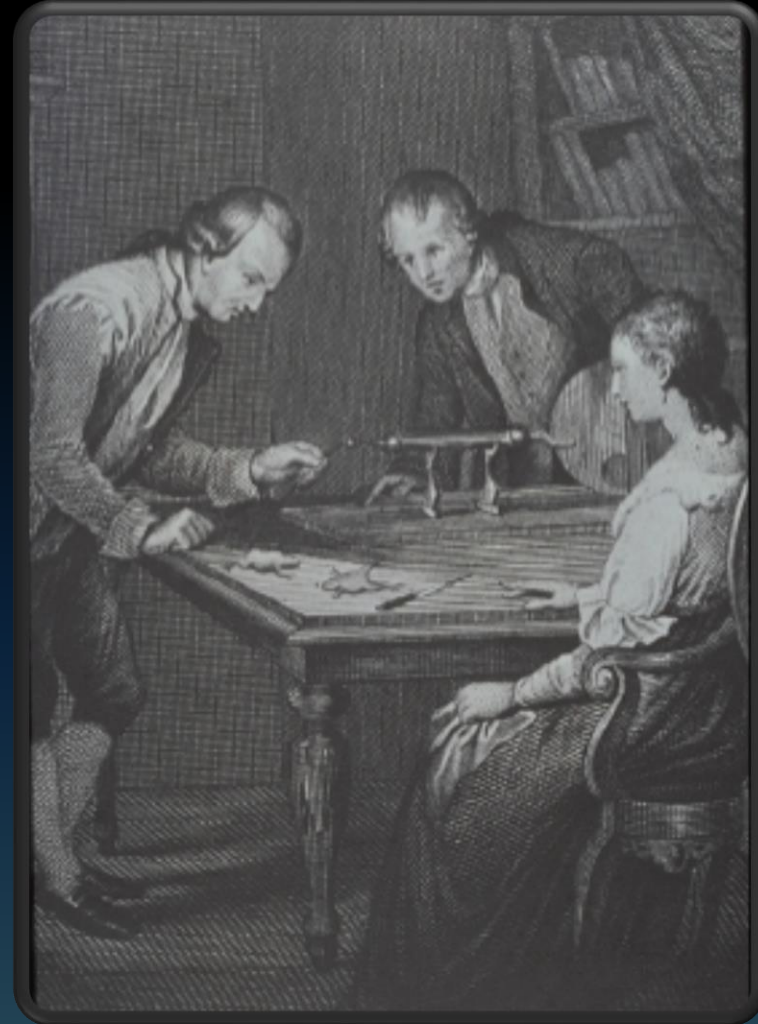
Rejects ventricular doctrine



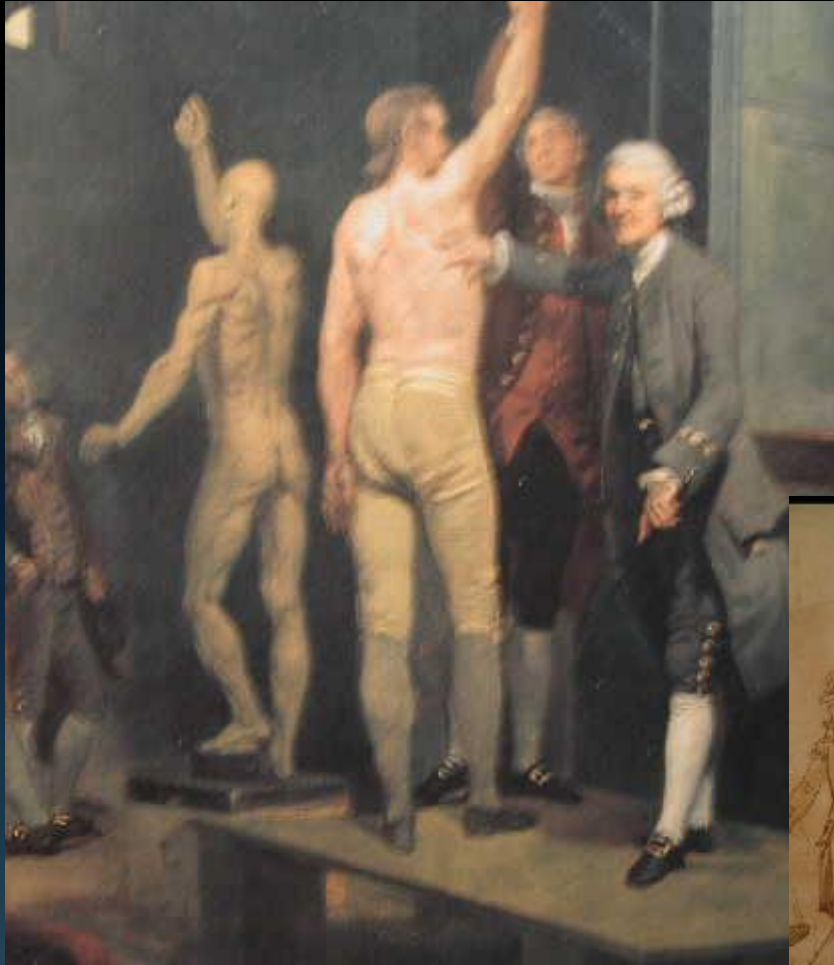
Circle of Willis 1671



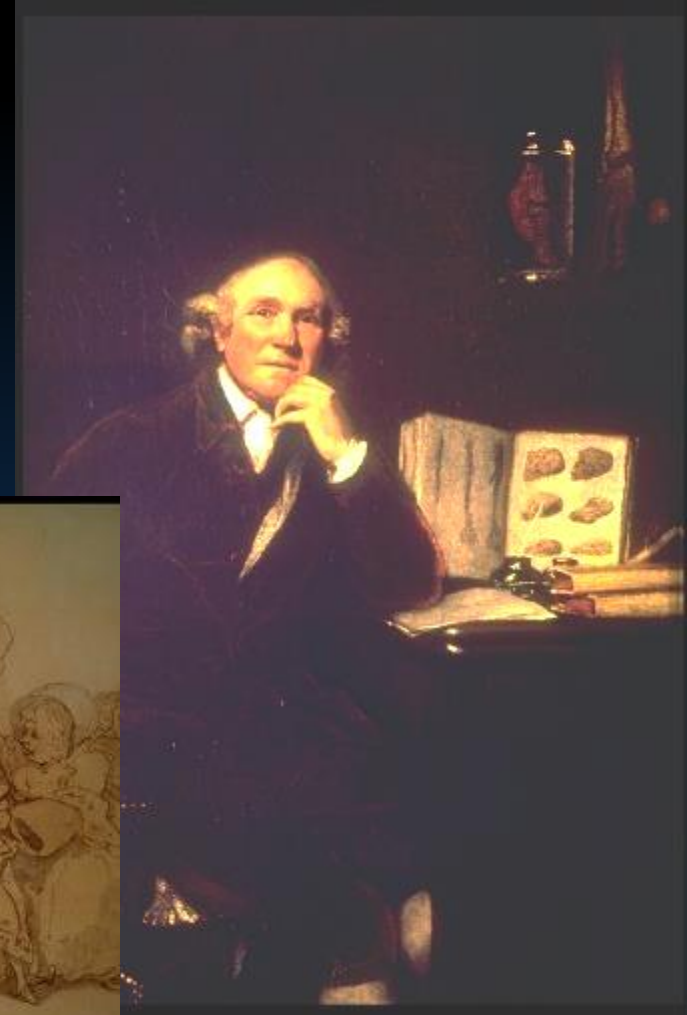
Luigi Galvani 1791



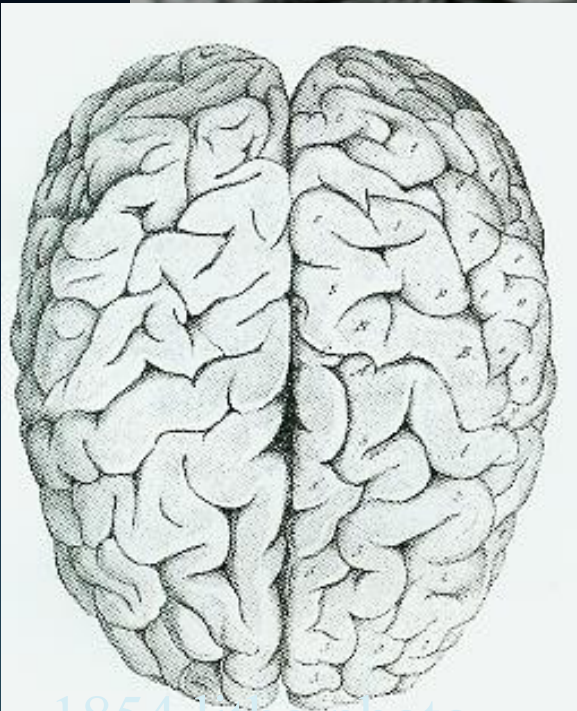
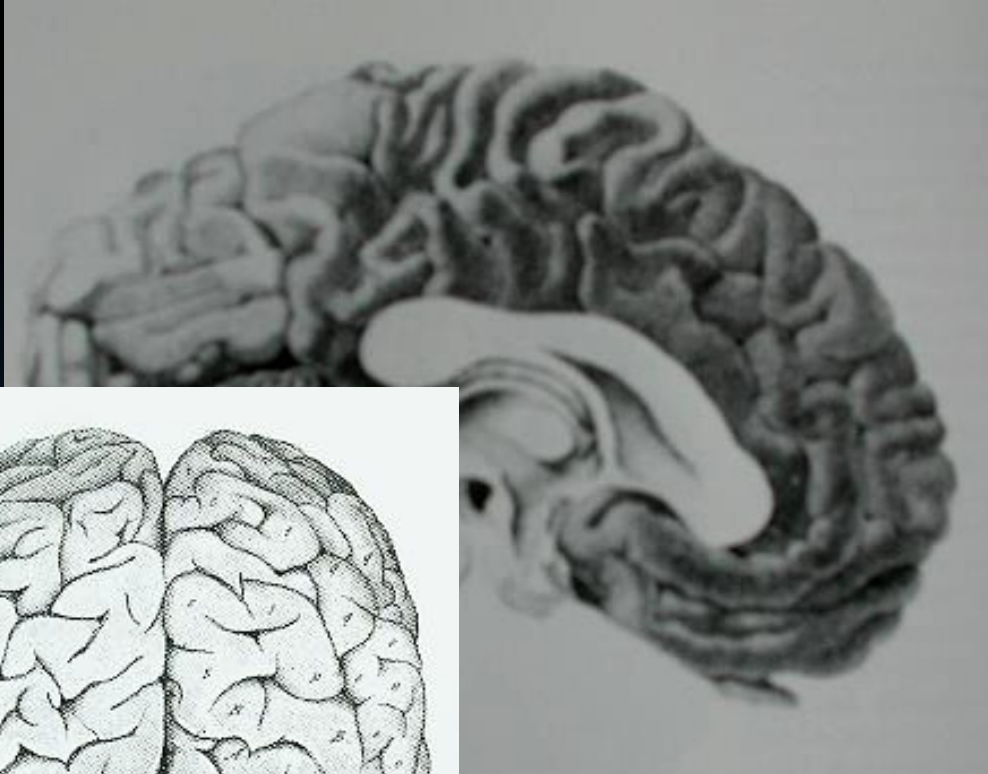
Hunter Brothers Art&Anatomy



1772



Convolutions and lobes 1800's



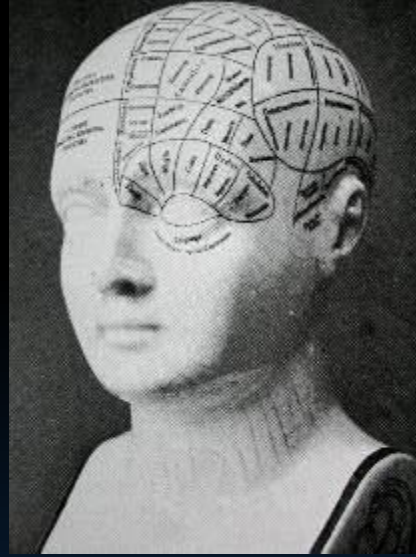
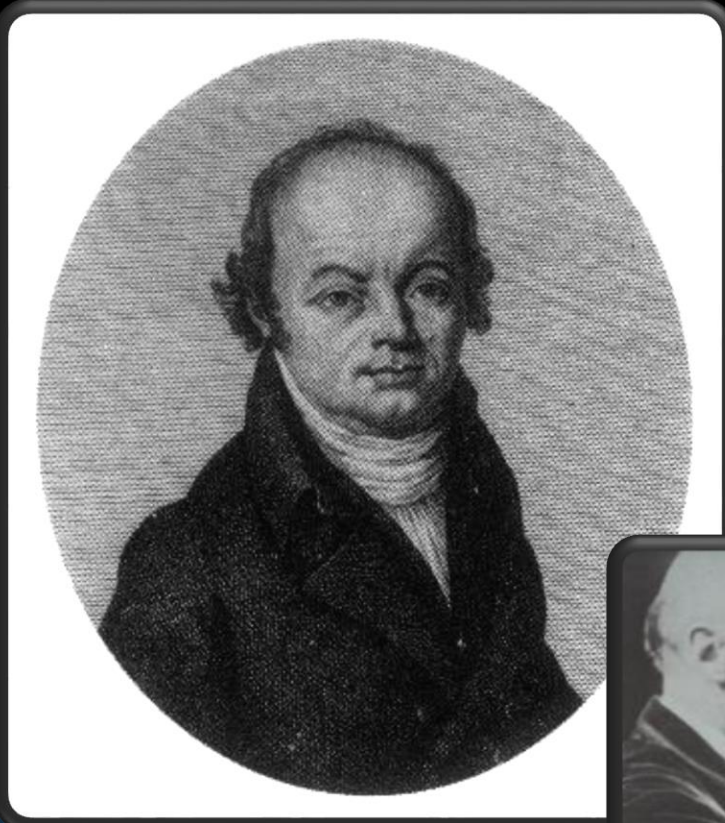
1854 litho photo
FIGURE 132



Wax Models Vienna 1800



Phrenology 1810



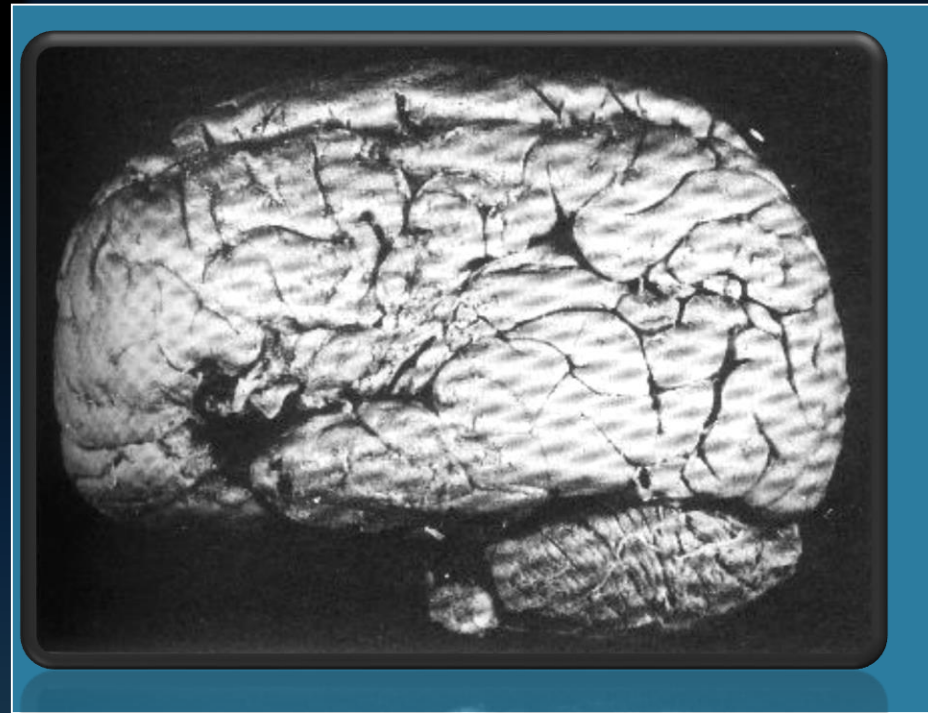
Charcot 1860's

- Developed an interest in diseases of the brain and spinal cord
- Performed autopsies and developed medical photography
- Correlated autopsy findings and diseased anatomy of the nervous system

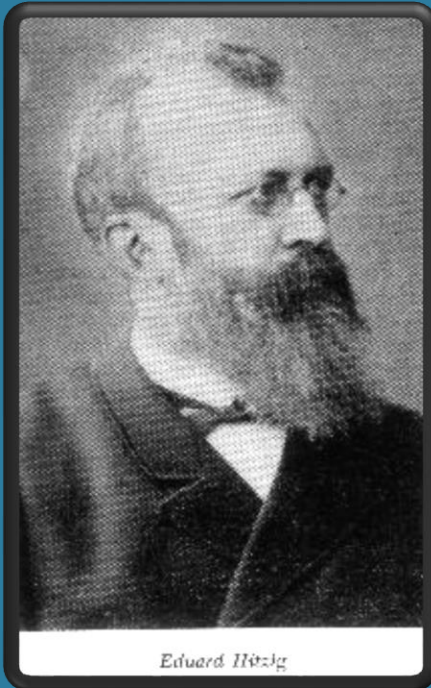


Paul Broca 1860

- Born 1824 near Bordeaux
- Brilliant student and appointed surgeon to Bicetre Hospital
- April 12 1861 Leborgne admitted under his care with gangrene

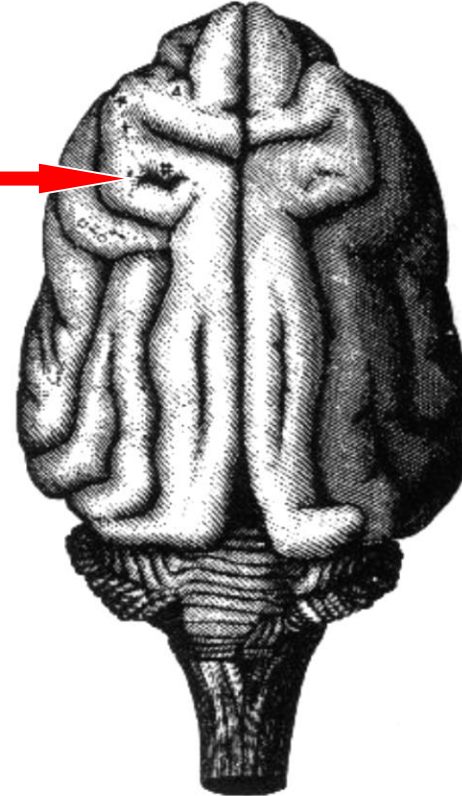


Hitzig and Fritsch pub1870



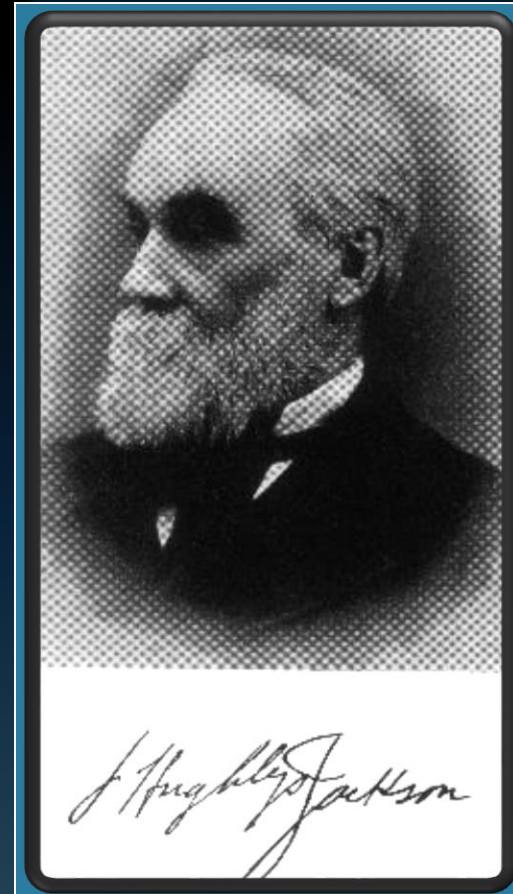
Eduard Hitzig

- Home laboratory used to electrically stimulate the cortex of dogs
- Searched the cortex for stimulation sites
- Discovered a motor centre
- Motor centre represented body parts
- Somatotopically organised



Hughlings Jackson 1835

- Appointed to Queen's Square in 1862 by Brown-Sequard
- 1869 Epilepsy was due to excessive local discharge of the grey matter
- Quiet unassuming serious and hobby less



Function of the Frontal Lobe

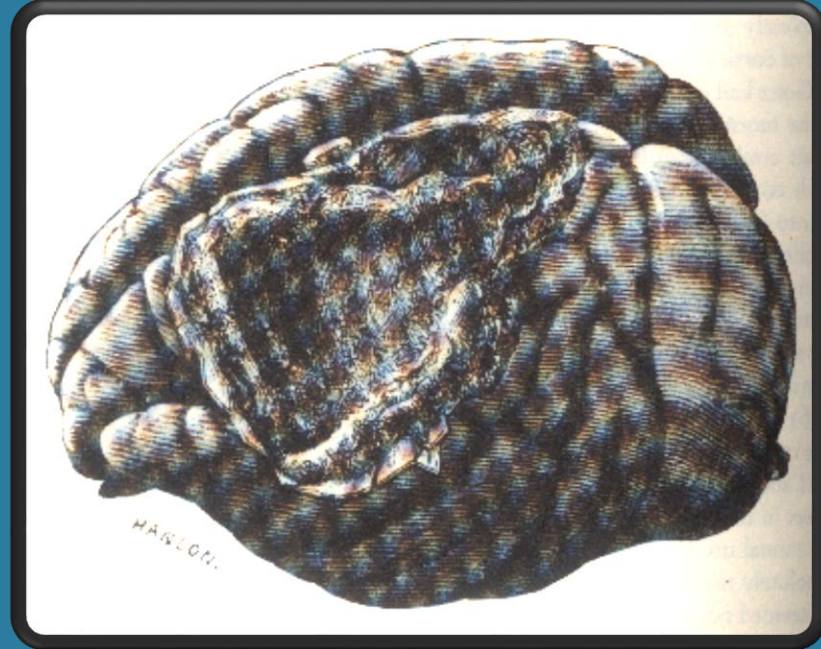


1848 Phineas Gage
No autopsy



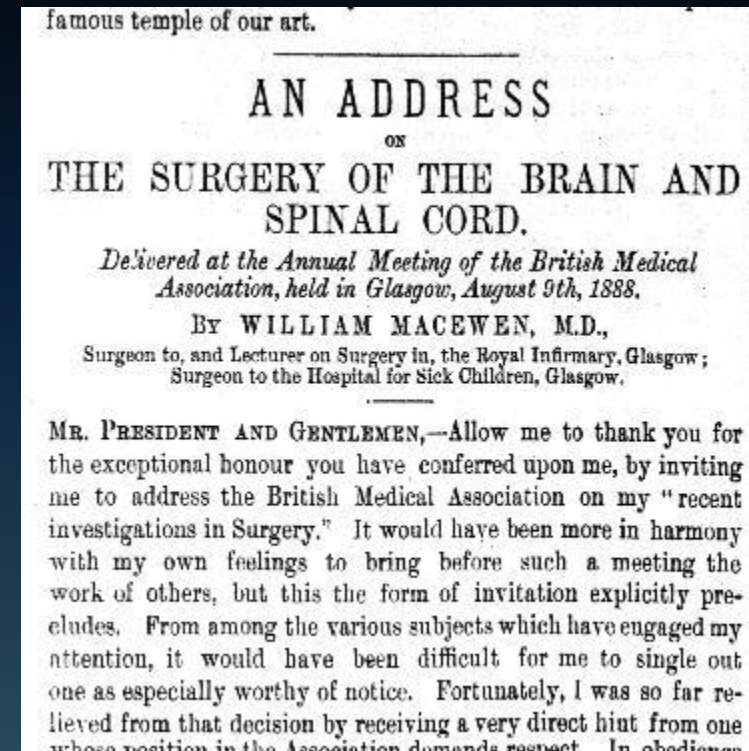
David Ferrier

- Studied the effects of damaging the motor cortex in monkeys
- Presented his findings at a gathering at the West Riding late 1873
- 1874 conflict with publication and eliminated dog results from his paper



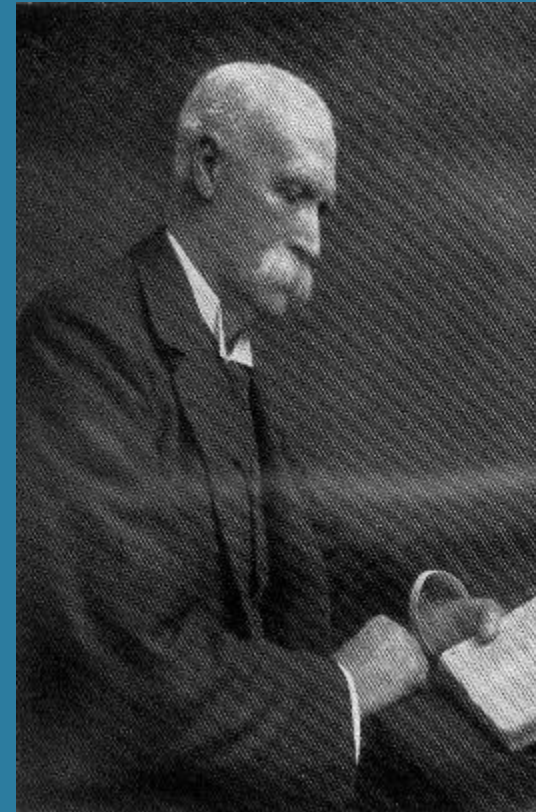
Localisation of Cerebral Function

- 1861 Broca
- 1886 Alexander Robertson
- 1869 Hughlings Jackson
- 1870 Hitzig and Fritsch
- 1873 Ferrier
- 1870's Charcot

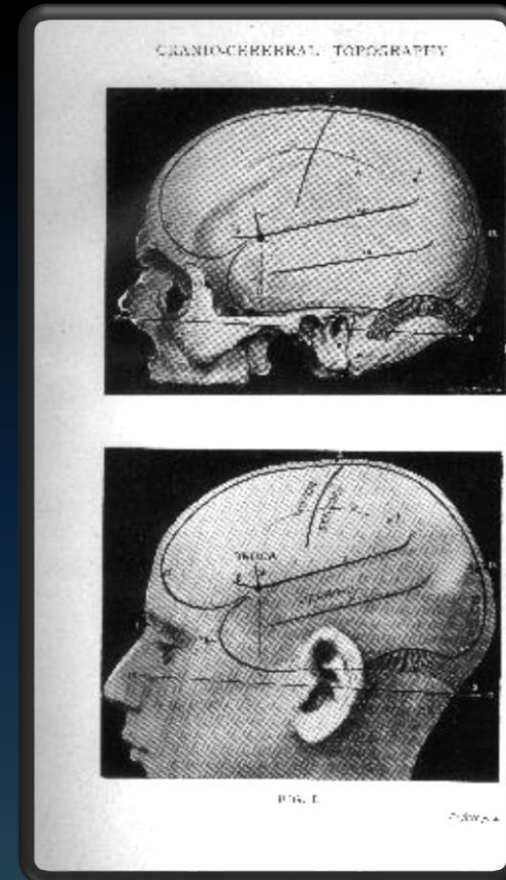
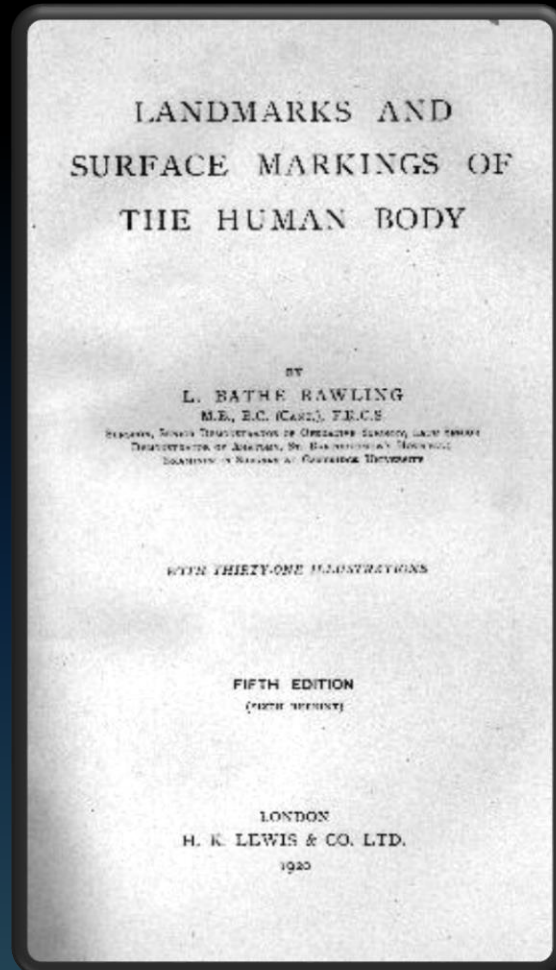


Sir William Macewen

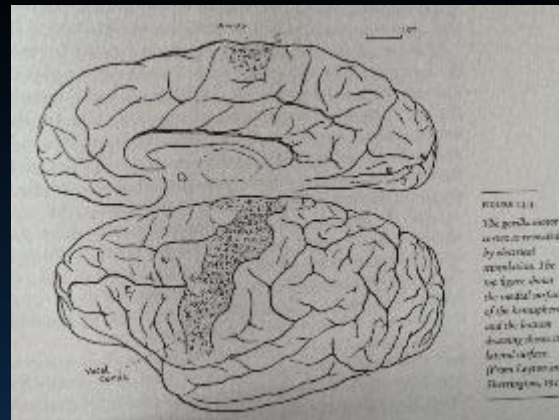
- Born 22 June 1848 Isle of Bute
- Youngest of 12 children
- Read the works of Charcot, Hitzig and Jackson and Ferrier
- 1876
- Performed first planned brain operation on a dead boy
 - Operation consent refused
 - Autopsy granted



Late 1800's Localisation



Sherrington



Eccles

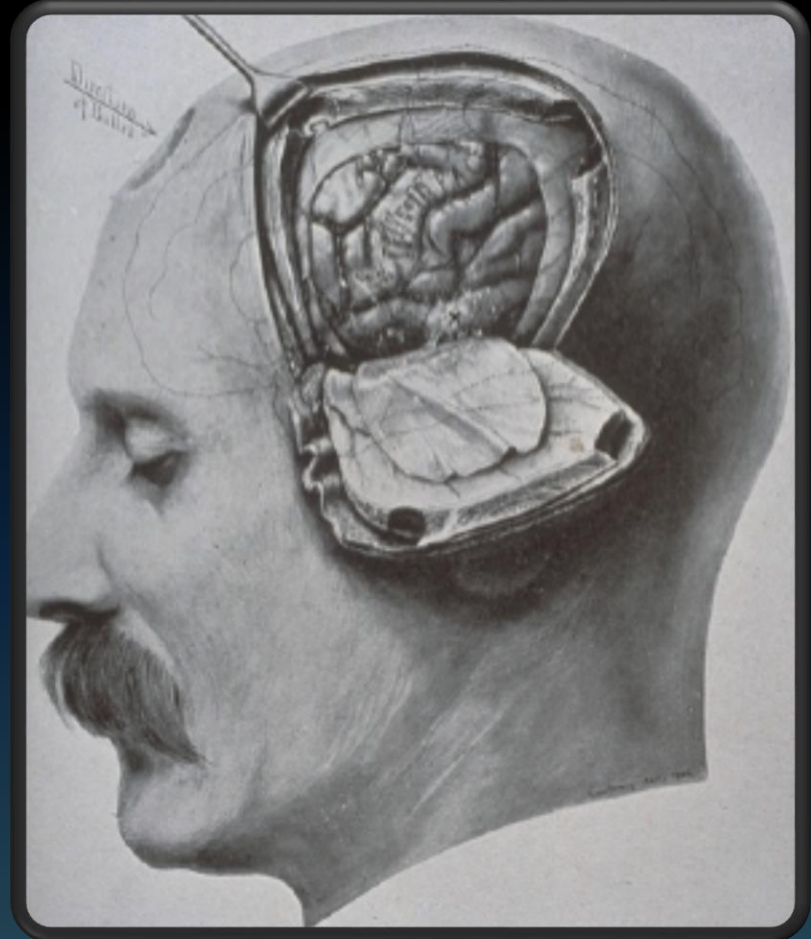
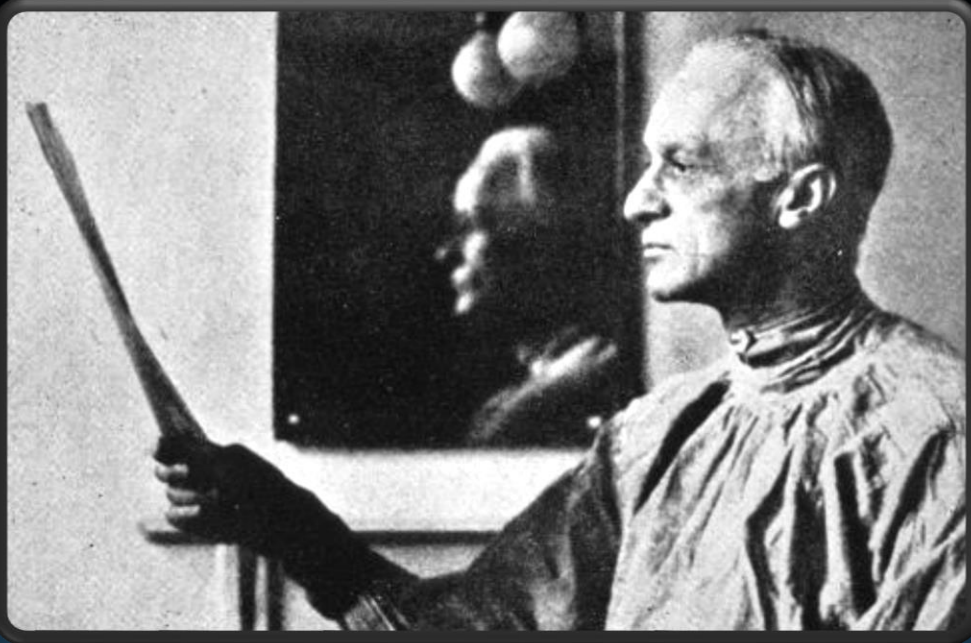


synapses

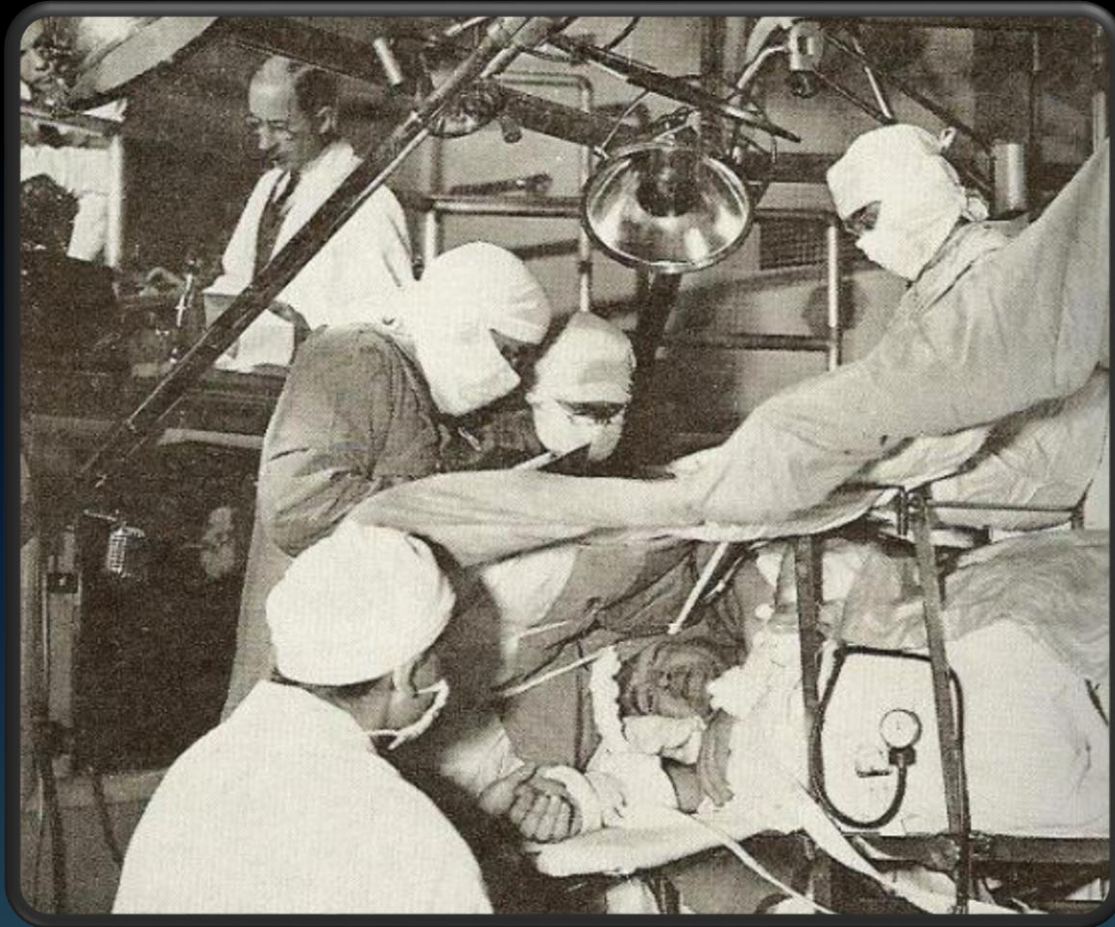


10 billion neurons with 10,000 synapses

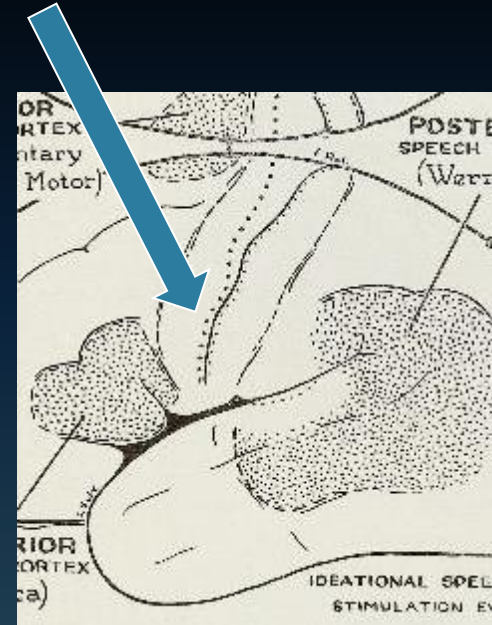
Harvey Cushing 1900



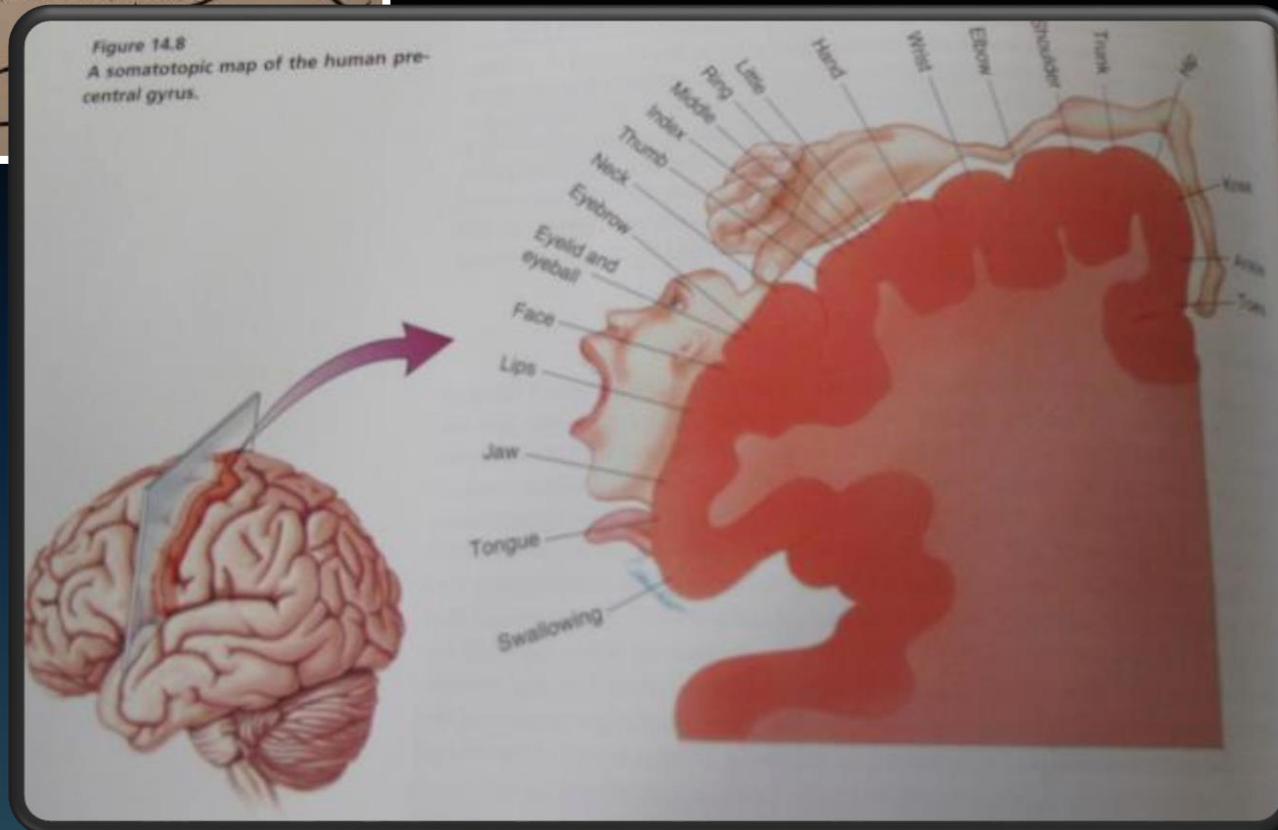
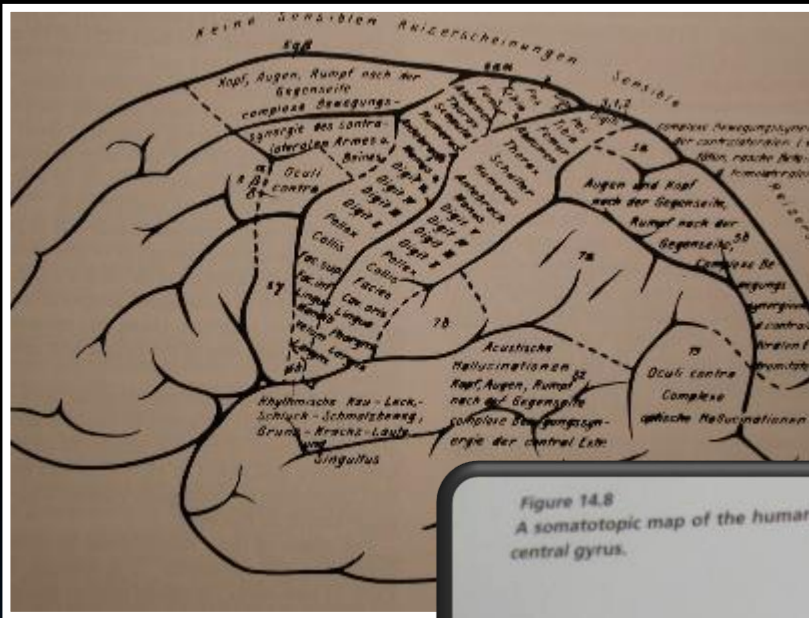
Wilder Penfield 1960's



Motor control area
of face



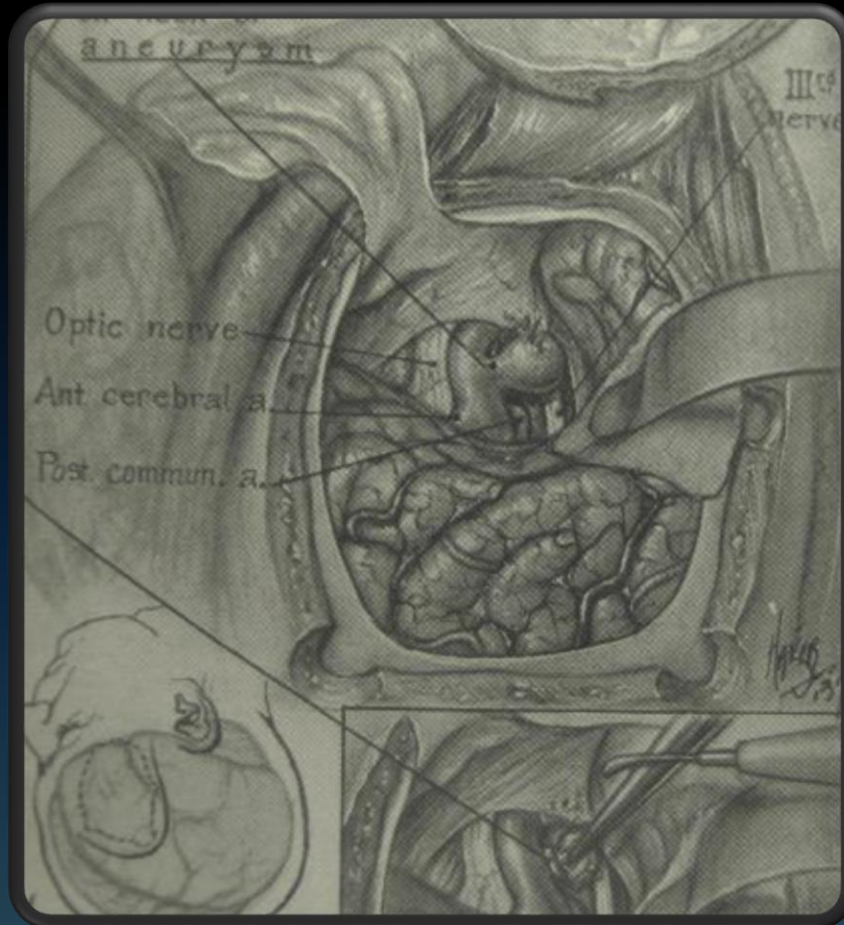
Brain Mapping



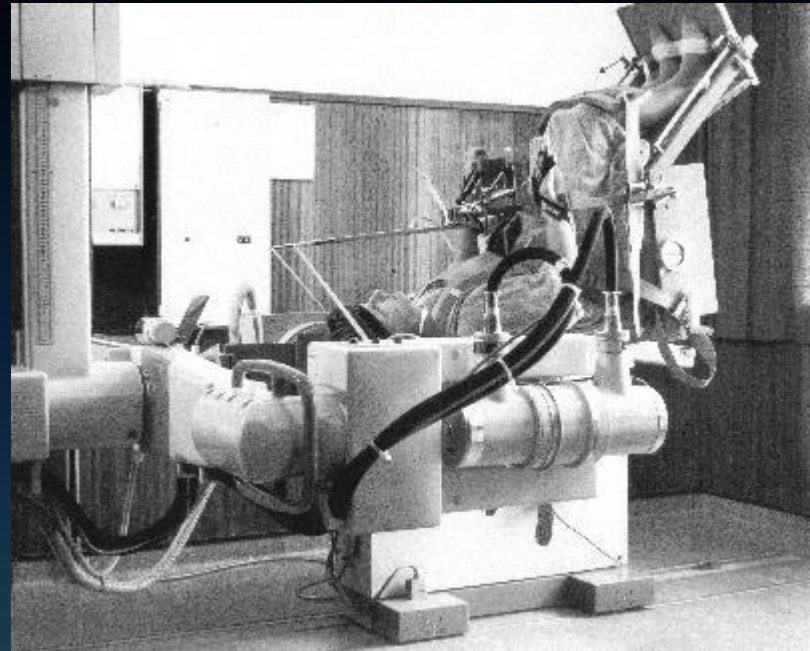
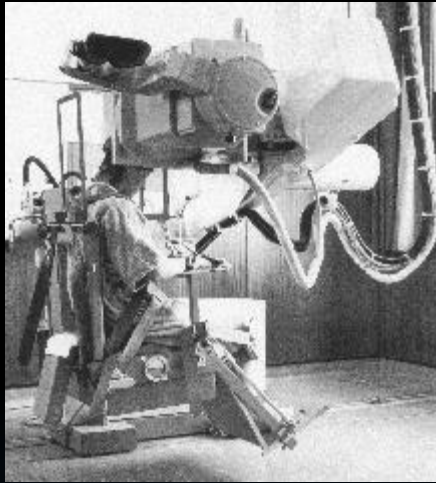
Homunculus

Walter Dandy

Clipping of Aneurysm 1936



1978



1978

CT scan

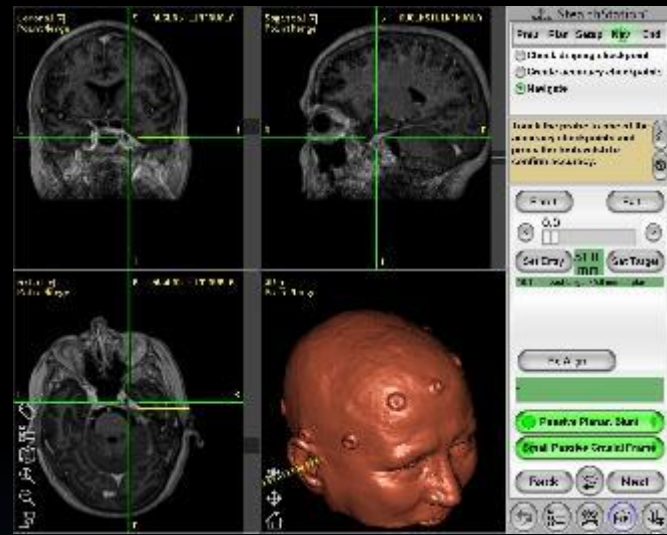
Auckland



Neurosurgery at Auckland Hospital



1996



1996



2006



The StealthStation S7 Surgical Navigation System

Close or Esc Key

Stealth Neuro-navigation

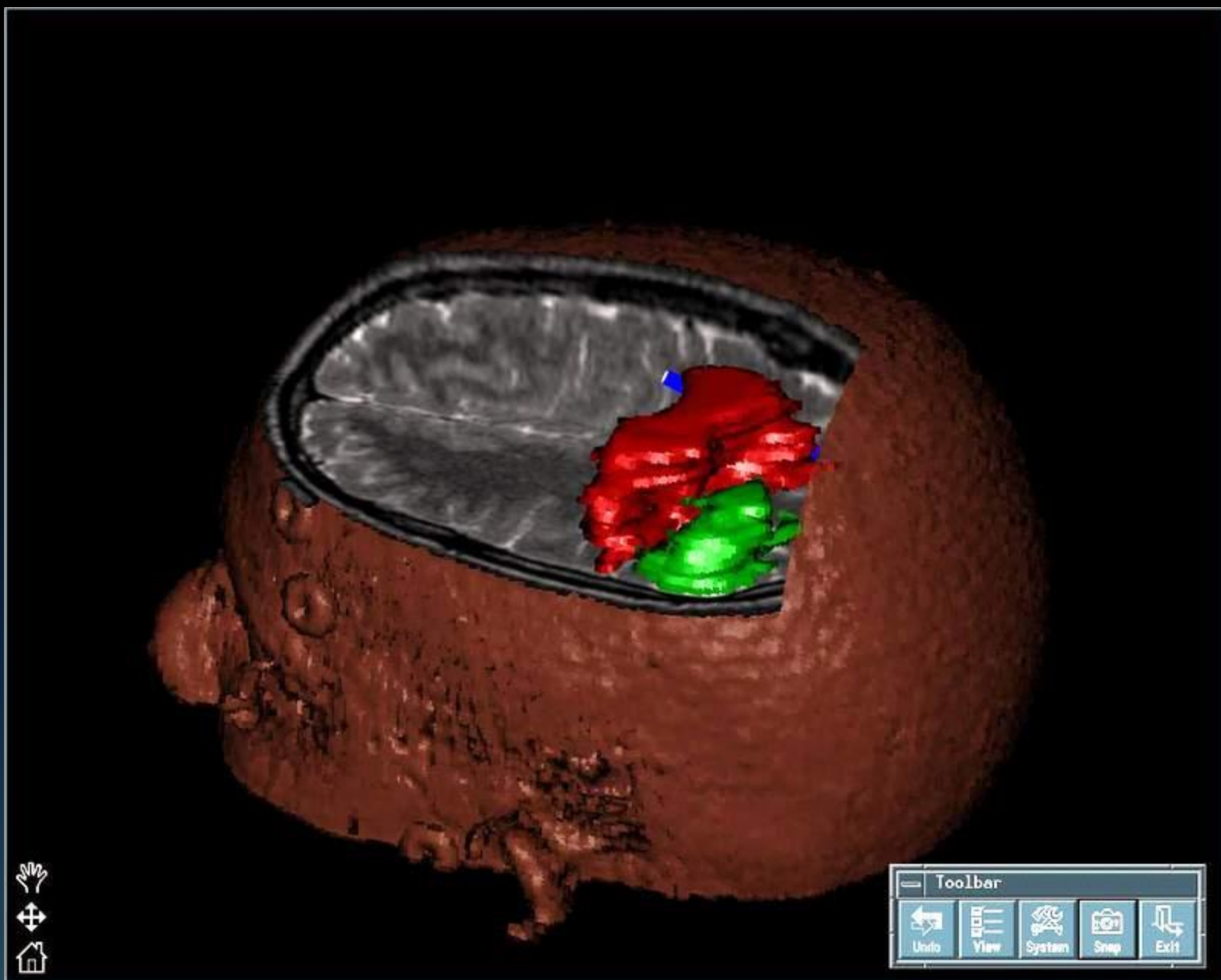
2009



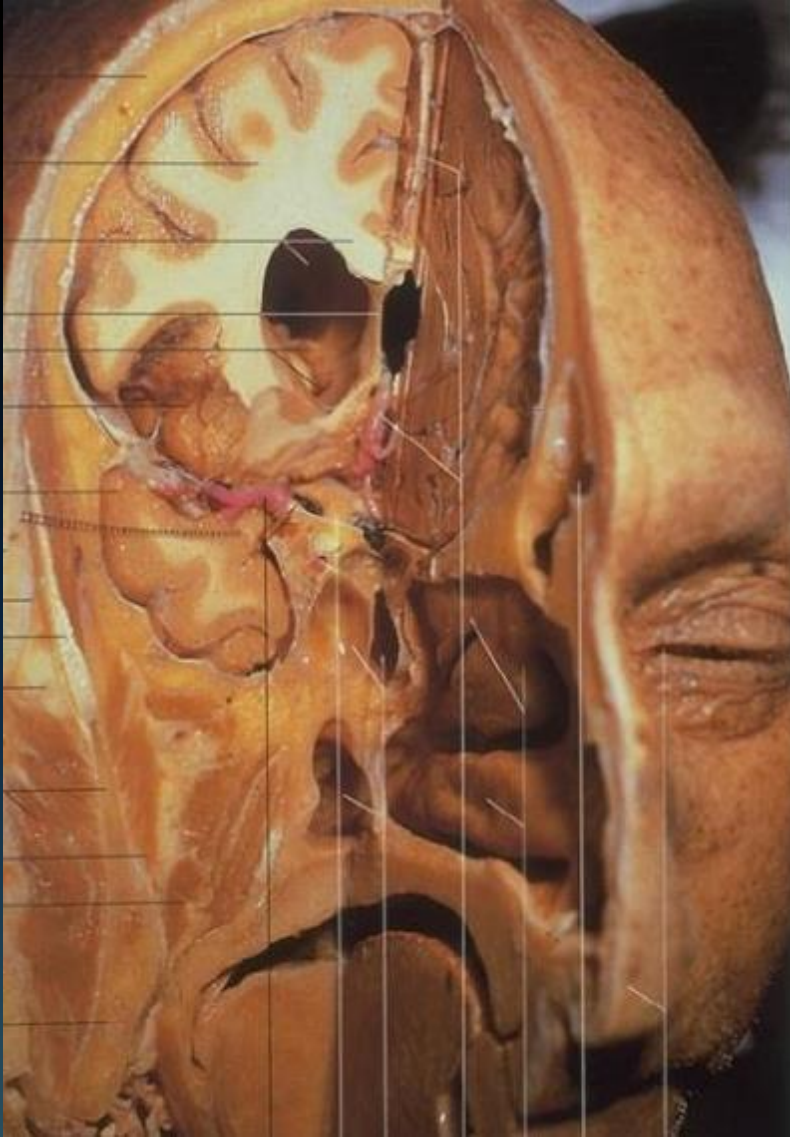
3d Modeling and Guidance

1995

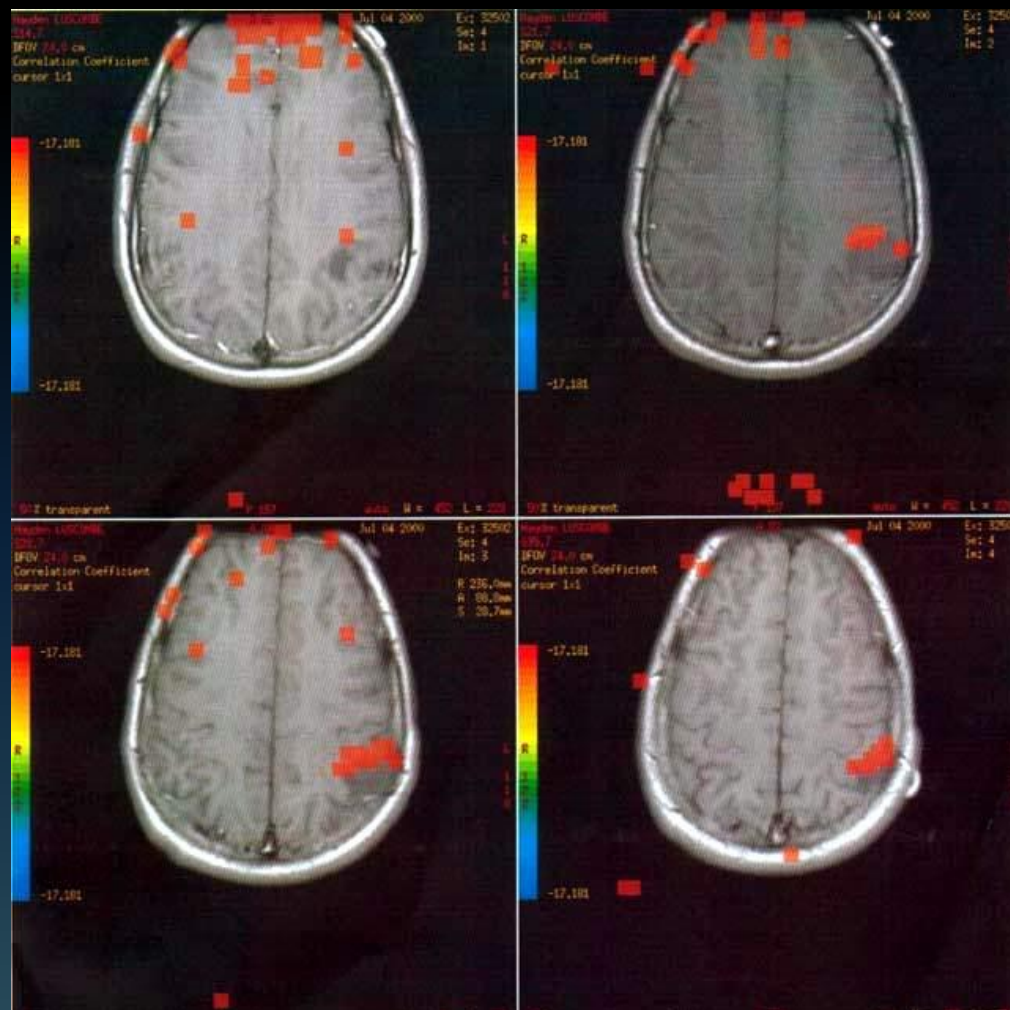
Iraq 2003



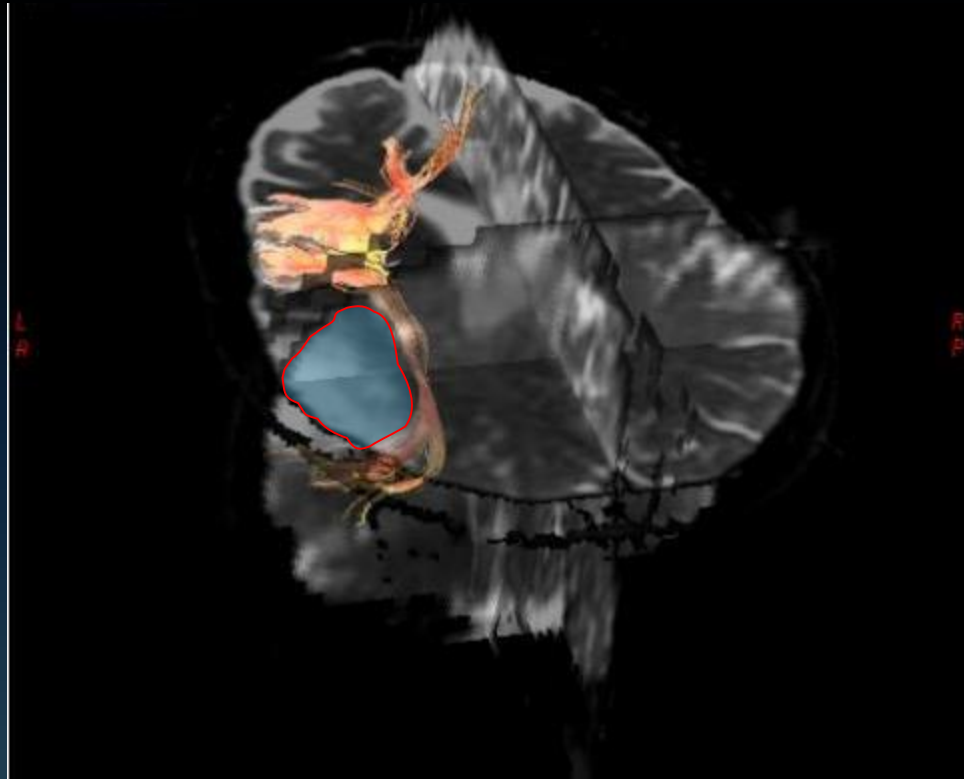
Modern Imaging



Functional Scanning



Language Circuit



Brain Explorations 2016



Awake Craniotomy Cortical Stim. S7 guidance Pentero



INFRARED 800

INFRARED 800 is an efficient technique which delivers critical information quickly and conveniently to the surgeon without procedural disruption, optimising the overall operating work flow. This fluorescence

2010



Operative Microscope and intraoperative angiogram

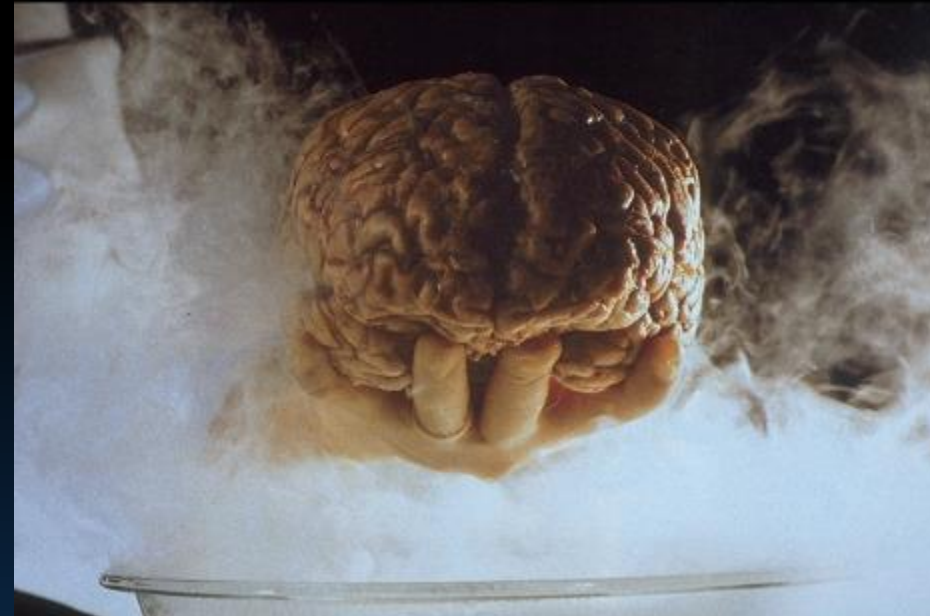
Awake Image Guided Surgery



2015



Modern Autopsy 2002

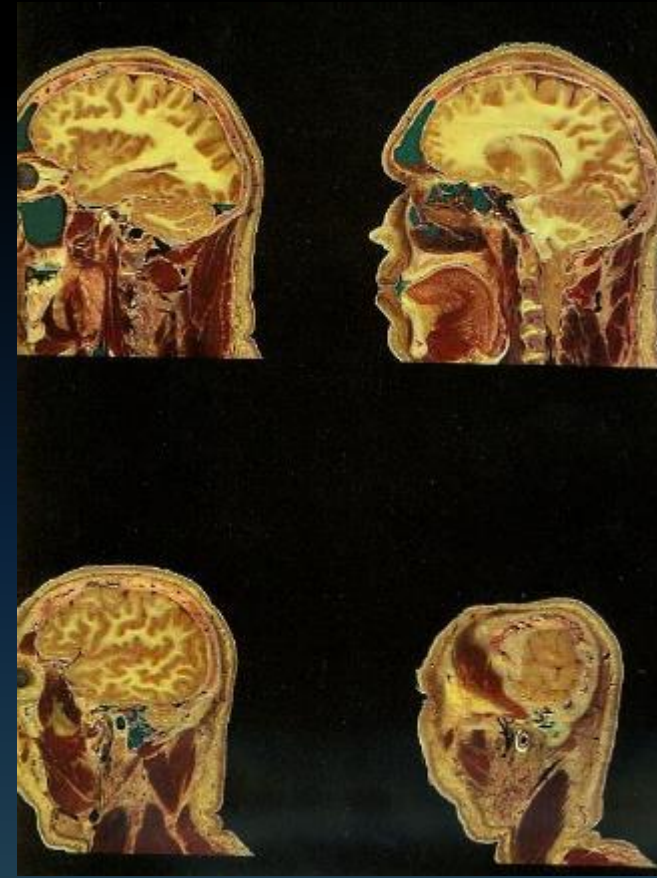


Decline in autopsy rate

1996	1000 autopsies at Auckland Hosp
2004	27 Hospital autopsies

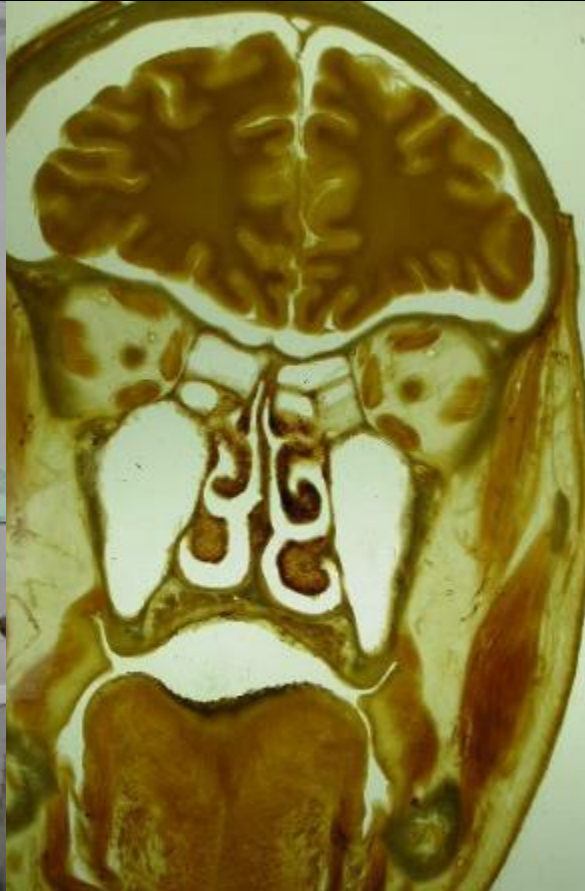
40% of death certificates may be incorrect

Digital Jeffrey Dahmer 1994

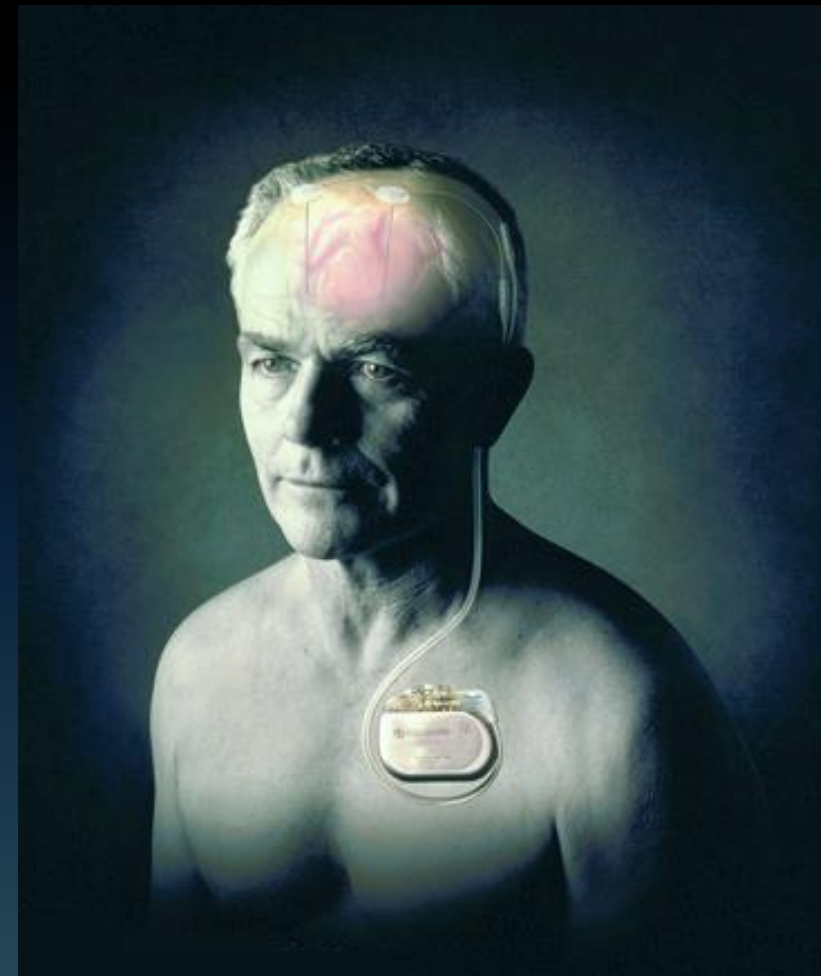
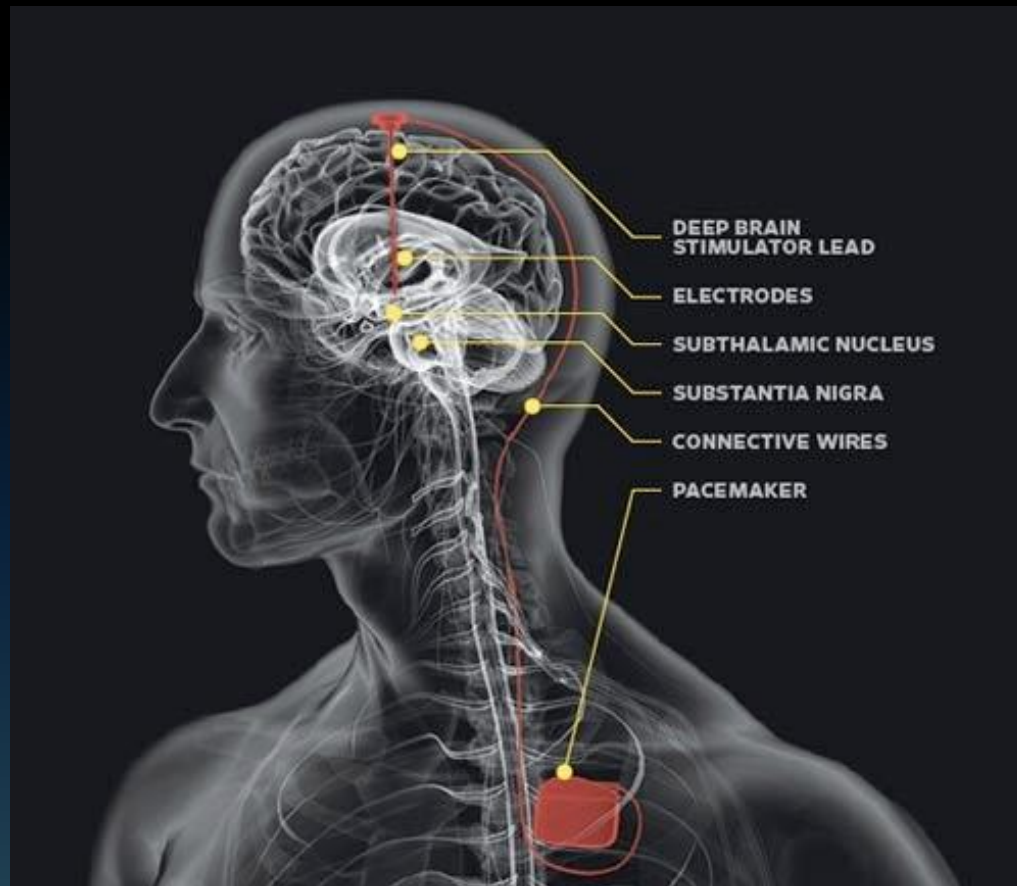


<http://www.nlm.nih.gov>

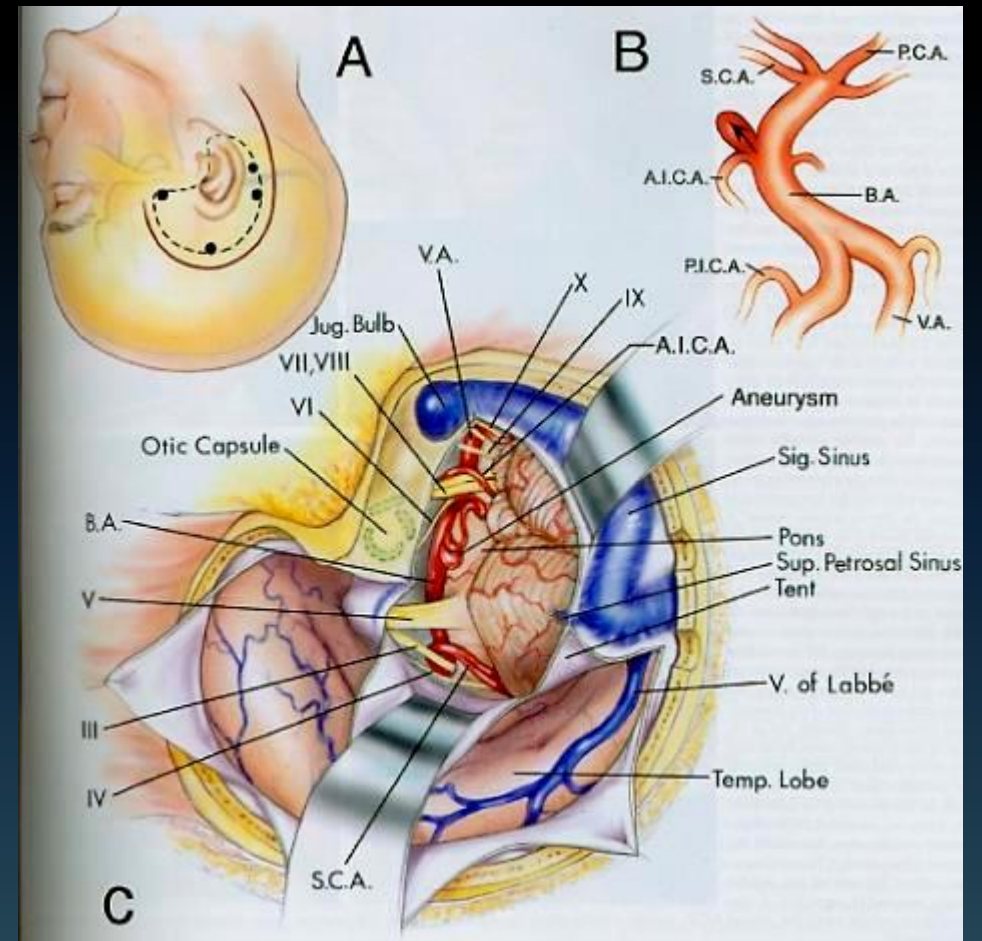
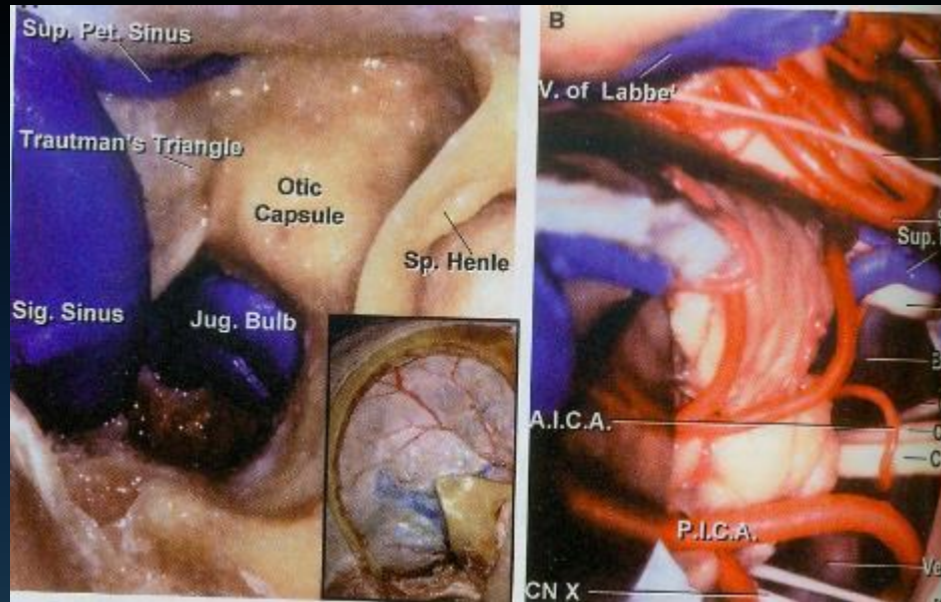
Plastinates 2000



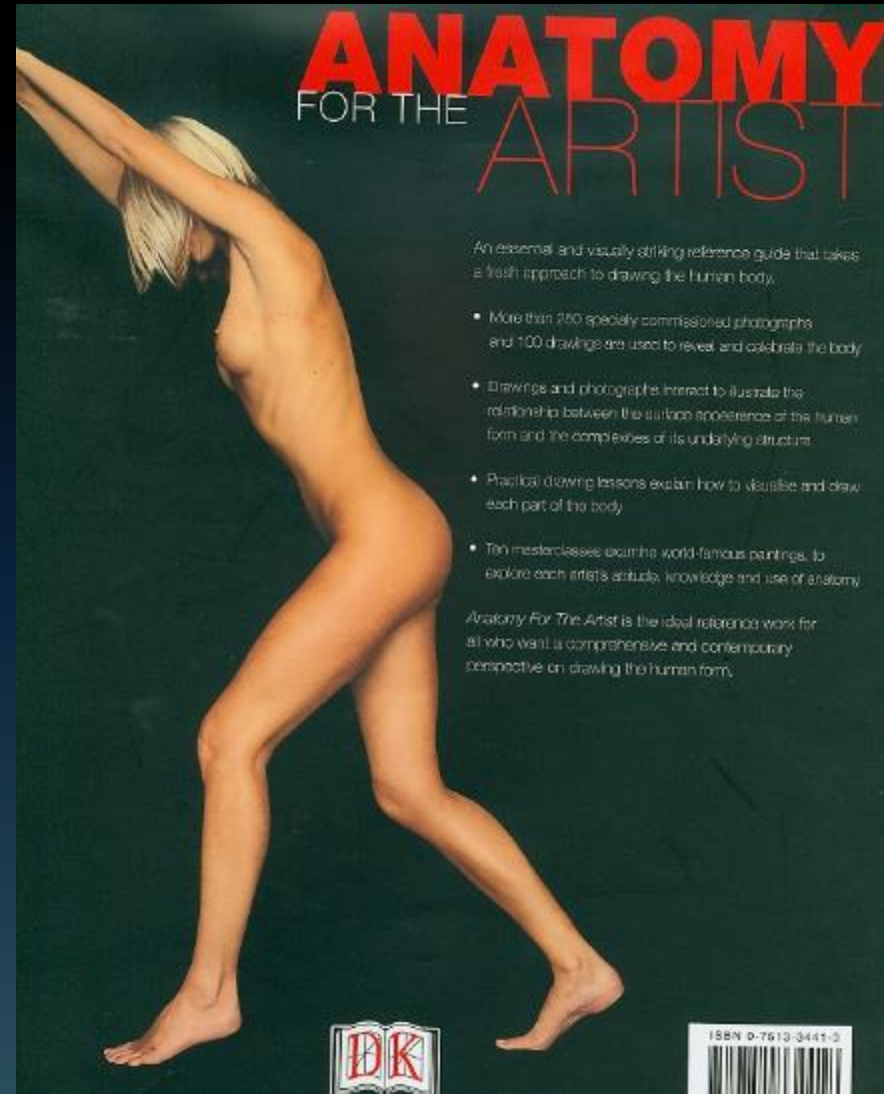
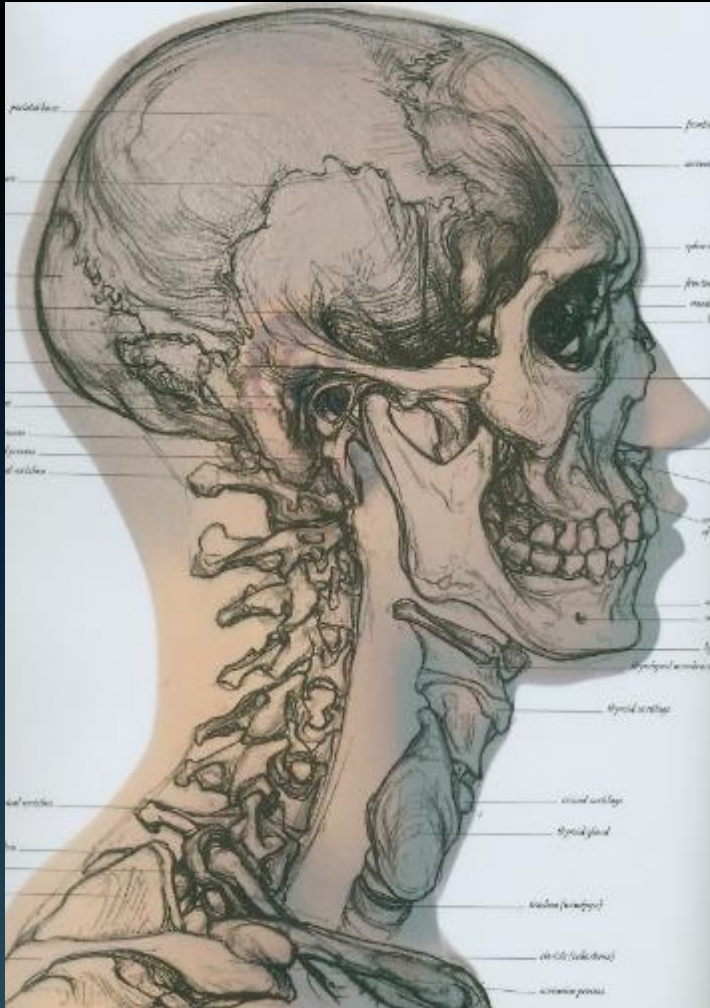
Deep Brain Stimulation



Modern Op Rhoton Art



Modern Artist



ANATOMY FOR THE ARTIST

An essential and visually striking reference guide that takes a fresh approach to drawing the human body.

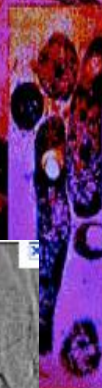
- More than 250 specially commissioned photographs and 100 drawings are used to reveal and celebrate the body
- Drawings and photographs interact to illustrate the relationship between the surface appearance of the human form and the complexities of its underlying structure
- Practical drawing lessons explain how to visualise and draw each part of the body
- Ten masterclasses examine world-famous paintings, to explore each artist's attitude, knowledge and use of anatomy

Anatomy For The Artist is the ideal reference work for all who want a comprehensive and contemporary perspective on drawing the human form.

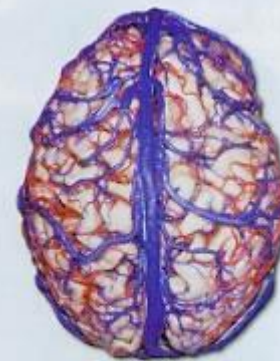
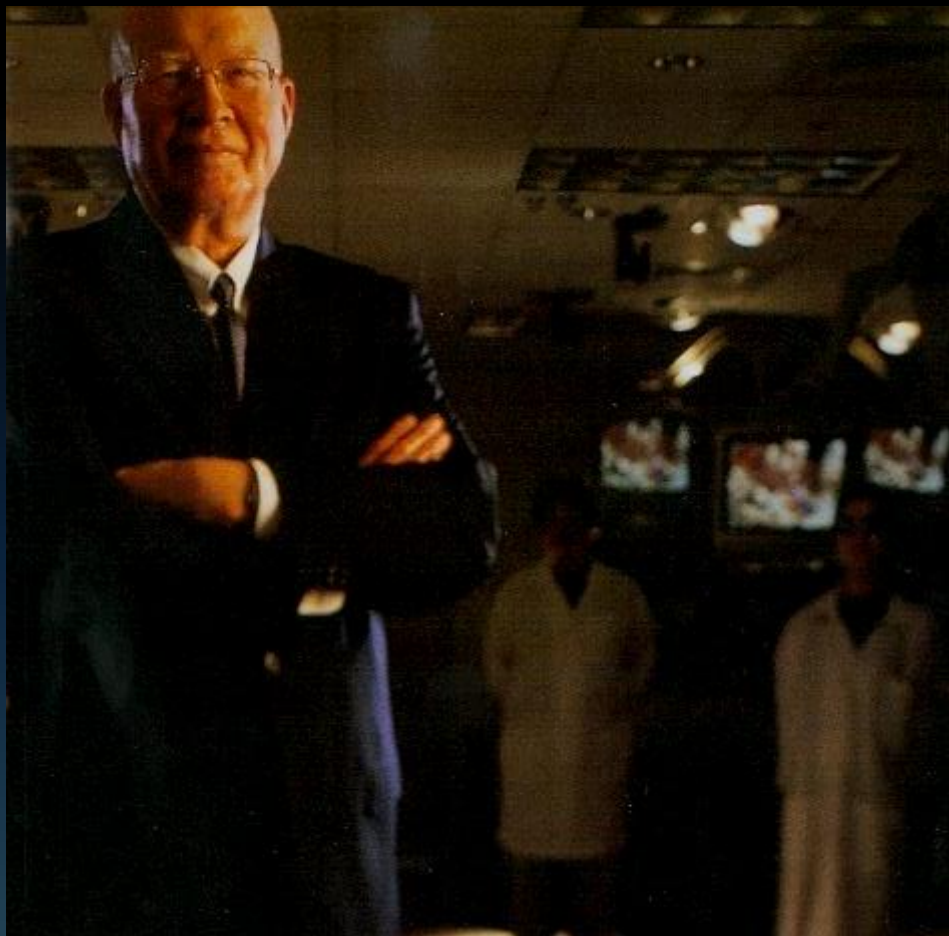


Francis Bacon Figurative Art





Modern surgeon



How the Brain Works 2016

