Hunter was known for bringing scientific rigour to the practice of surgery. The surgical technique of Hunterian ligation was named after him.

John Hunter – NATURALIST, SCIENTIST AND SURGEON

J ohn Hunter the founder of ‘scientific surgery’ is remembered for his efforts to bring scientific rigour and method to the practice of surgery, thus releasing it from its 2000 year barbaric past. Although he was one of the most distinguished scientists and surgeons of his day, the image of a stuffy professor, aloof and immersed in academic life does not describe him in the least. On the contrary he led a colourful, varied and often controversial life. An ardent student of nature, bold experimenter and an astute observer of phenomena, both physiological and pathological, Hunter contributed much to further our knowledge of human physiology and the practice of surgery. A popular teacher in his time, he was well known for observations on important processes such as inflammation and the factors that promote healing of wounds. Among some of his important contributions are the understanding of collateral circulation, wound healing, bone growth, venereal diseases and foetal and maternal circulation. ‘Hunterian ligation’, named after him, is a surgical technique that is still relevant in modern surgical practice.

Early years
Born in Scotland on July 14, 1728, John hunter was the tenth child of his seventy year old father. His elder brother William Hunter, older by 10 years, was a well-known London anatomist and obstetrician. As a child, he was an often unruly and impudent child. Least interested in school and academics, he spent most of his time wandering in his father’s estate, enthralled by the wonders in nature, asking questions like “What are clouds made of, how does a tadpole become a frog and why do leaves change colour in autumn?”, a pursuit that would lead him to become one of the leading naturalists and scientists of his time. At the age of 17, he joined his elder brother William in London, to help him as an assistant in his anatomy dissections and astounded him with a flawless dissection in his first attempt. He subsequently studied under William Cheselden at the Chelsea Hospital, and later under the venerable Percival Pott at St Bartholomew’s Hospital. John then enrolled at Oxford University but the stiff academic setting left him cold. He quickly left this revered institution after two months, saying: “Why, they tried to make an old woman of me; they wanted to stuff me with Greek and Latin at the university, but these schemes I cracked like so many vermin as they came before me.” He later served in the army and in civilian life as a surgeon.

The devoted naturalist
John hunter was primarily a naturalist and he worshipped nature. Observation of natural processes and experimental study of animals formed the basis of his quest for understanding natural phenomena. His insatiable curiosity led him to collect and dissect animal specimens in his beloved laboratory in order to understand the complexity of the human body. He spent a considerable amount of money in collecting animal specimens (from kangaroos to leopards and lizards) ending up with more than 14000 animal species and had to buy a plot of land to house the bewildering array of rare animals from far-off lands. His collections came through contracts with local zoo keepers and circus shows, donations from friends and from a stint in the navy. His dissection specimens were classified
He demonstrated collateral circulation by tying off the carotid artery of a stag and applied this principle in the surgical treatment of a popliteal artery aneurysm.

Important contributions
- Physiology of collateral circulation
- Hunterian ligation
- Physiology of wound healing and inflammation
- Physiology of bone growth
- Maternal and foetal circulation

Into two main groups: (1) structures developed for the preservation of the individual; and (2) structures essential for ensuring the continuity of the species. This vast collection was his greatest unwritten legacy for those interested in studying them or simply admiring them. This remarkable collection is preserved at the world-renowned Hunterian Museum of the Royal College of Surgeons in Lincoln’s Inn Fields, London.

The experimental scientist
Not only was Hunter a student of nature, he was also an experimental scientist, tinkering with natural processes to learn and innovate. The application of the scientific method of experimentation and careful observation led to important breakthroughs in the understanding of physiological phenomena. In one of his experiments, he demonstrated the principle of collateral circulation to show that if a major vessel was blocked, new vessels would develop from the proximal end to feed the region deprived of blood supply. He did this by tying off one of the carotid arteries of a stag he caught in Richmond Park, London. Initially, the antler on the operated side became cold and stopped growing, while the contralateral antler remained warm and healthy. Within a few days however, the antler on the operated side slowly regained its warmth and started growing again. Using dye injections, Hunter showed that the circulation to the antler had been restored through collateral vessels. The practical application of this principle in humans was not too far off. He soon put this into practice in the surgical management of a man with a popliteal aneurysm. His mentor, Percival Pott had recommended amputation of the limb, but Hunter disagreed. He went ahead and ligated the femoral artery proximally and waited for the growth of collateral vessels. The patient’s leg was saved and went out of the hospital walking.

His animal dissections were interrupted when he enlisted for England’s Seven-year war as a naval officer. This experience however, gave him an unexpected opportunity to study marine biology, and also to make important observations on wound healing and inflammation. This knowledge led him to write the book “A treatise on the Blood, Inflammation and Gunshot Wounds.” Following the war, he started a civilian surgical practice but his interest lay in experimentation and dissection rather than routine clinical practice.

Teacher and mentor
Hunter was a very popular teacher, attracting a large number of students who attended his lectures and demonstrations, not for his teaching style or surgical ability, but rather attracted by his insistence on scientific rigour and the breadth of his scholarship. Some of his students went on to become famous in their own right. His most famous student was undoubtedly Edward Jenner, the man whose pox-immunisation led to the eradication of smallpox. In 1768, Hunter was elected to the Company of Surgeons of London, subsequently renamed the Royal College of Surgeons. The following year, he was appointed surgeon to St George’s Hospital, and in 1776, King George III bestowed upon him the title of Surgeon Extraordinary. In 1786, he won the Copley Medal, the highest award of the Royal Society.

Controversies
Hunter’s genius was as remarkable as it was tempestuous and divisive. A bold and often short-tempered personality, he was not averse to experimental surgical procedures on others and even self-experimentation. Certain historians have attributed the venereal diseases he contracted to an application of gonorrhoeal pus co-infected with...
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syphilis on to himself. The conclusions of his experimental studies were not always accurate. For example, he concluded that gonorrhoea and syphilis were one and the same disease and that mercury and cauterisation were effective in its treatment. His methods of obtaining dissection specimens were unconventional and often controversial. In one instance it came to his knowledge that the Irish giant, Charles Byrne was dying of tuberculosis and wished to study his body after his death. Byrne caught wind of this and horrified, made arrangements for his body to be sunk in the North Sea after his death rather than be buried. Hunter however bribed the undertaker and obtained the body in the middle of the night. A heavy coffin filled with paving stones instead of a dead body, in the meanwhile found its way to the bottom of the sea. Some historians also implicated him as an accomplice to his brother William, in the practice of ‘burking’ or ‘body snatching’ where people were murdered to obtain their bodies for the purpose of medical practice and dissection. The veracity of these claims remains uncertain, shrouded as they are in the speculation that often accompanies historical interpretation.

The fiery personality

Hunter’s bilious anger and fiery personality were well known and he himself was not unaware of this weakness. He once commented to a student that his “life is in the hands of any rascal who chooses to annoy me.” He suffered spells of chest pain, exacerbated by his spells of anger, towards the end of his life. This was not recognised as angina pectoris at that time. Famous contemporary physicians attributed them to cramping of the heart muscles or to neuralgia. His famous student Jenner, however, following his master’s adage “why speculate – why not try the experiment” showed, using a series of autopsies that angina pectoris was caused due to obstruction of the coronary arteries. On October 16, 1793, John Hunter, at the age of 65 years, collapsed and died suddenly following a bout of chest pain (he had been involved in a fiery argument over a minor issue). An autopsy showed an atheromatous coronary artery plaque just as his student predicted.

A brilliant scientist, devoted student of nature and bold experimental surgeon, Hunter’s left behind a monumental scientific legacy especially in the field of surgery in spite of the controversies and his unconventional methods. The epitaph on his grave in Westminster Abbey reads “The Royal College of Surgeons of England has placed this tablet on the grave of Hunter to record admiration of his genius, as a gifted interpreter of the Divine power and wisdom at work in the laws of organic life, and its grateful veneration for his services to mankind as the founder of scientific surgery”. He will always be remembered as the man who brought science to the practice of surgery.

Bibliography:
5. Ross JJ. Shakespeare’s chancre: did the bard have syphilis? Clin Infect Dis2005;40:399-404

MEDICAL NEWS - Antibodies effective against HIV

HIV antibodies have been tested in humans in the past as a therapeutic measure with disappointing results. A new antibody - 3BNC117 which belongs to a new generation of broadly neutralizing antibodies has been isolated and shows promise as a viable treatment option. 3BN117, which was originally isolated by Johannes Scheid in the Nussenzweig laboratory, targets the CD4 binding site of the HIV envelope. According to Marina Caskey, co-author of a study published in Nature, what is special about these antibodies is that they have activity against over 80 percent of HIV strains and they are extremely potent. In this study, uninfected and HIV-infected individuals were intravenously given a single dose of the antibody and monitored for 56 days. At the highest dosage level tested in the study, all eight infected individuals showed up to 300-fold decreases in the amount of virus measured in their blood. By isolating and then cloning these antibodies, researchers can potentially harness them as therapeutic agents against HIV infections that have had less time to prepare.