Eponymous terms explained

by David Allan OBE BSc MB FRCS

Recent years have seen changing attitudes to eponymous medical terms. Having, in many cases, survived for centuries, they came under attack and calls were made for their removal. A more ambivalent view now prevails and, where they carry an accurate description of anatomy or disease, their presence is largely accepted.

Some have been abandoned for lack of clarity. Pott's fracture of the ankle is an example. The rather uncertain nature of the fracture which Percival Pott described has rendered the term unhelpful. In contrast the description of the wrist fracture by Colles remains accurate and the eponym lives on.

Eponyms are found to be a useful aide memoire by many people and certainly add some peripheral interest to the subject. I will visit some of the eponymous terms relating to trauma and other conditions encountered within mountain rescue casualty care in the hope that one, or both, of the above are achieved.

Achilles Tendon

The alternative term for what is the biggest and strongest tendon in the body is the calcaneal tendon. It attaches the powerful gastrocnemius calf muscle to the calcaneus (Achilles: 1). It enables the muscle to flex the foot at the ankle and carries enormous forces, especially in those of an athletic disposition with well developed calf muscles.

The name arose from Greek mythology. Thetis, the mother of Achilles, received a prophecy of her son's death and, in attempt to avert this, she dipped him in the river Styx, an act which was believed to carry immortality. To avoid losing him altogether she held onto his heel leaving this small area untreated. He subsequently succumbed in battle to an arrow injury to this heel. The river Styx was an interesting body of water. Despite its life-preserving properties, any of the gods drinking from it were rendered speechless for nine years. (I have, without success, tried to obtain a quantity of Styx water for Mountain Rescue meetings.)

Injury to the tendon occurs when it is subjected to great force lifting the body weight onto the toes of one foot (Achilles: 2). It is a common injury in tennis and squash players and the like. Within mountaineering circles it is most likely to be encountered in fell runners. Lack of fitness and some medications such as steroids make the injury more likely.
Injury to the tendon may result in an incomplete tear (Achilles:3). This is a very painful event. Casualties will commonly feel that they have been struck on the leg and often look round to seek an offending object. They are still able to flex the foot, albeit with considerable pain, but will find weight bearing difficult to impossible. Immediate care requires only simple packaging and non-weight bearing evacuation. Most of these injuries will heal with a prolonged period of rest.

Complete tears are relatively painfree. The same feeling that a blow has been received is present. A palpable gap in the tendon can often be felt quite easily (Achilles:4). These patients are completely unable to flex the foot. Squeezing the calf muscles produces no movement of the foot. Again walking is all but impossible and the same immediate care is required. Many complete ruptures will need surgical repair.

Adam’s Apple

Adam’s apple is the anterior prominence of the thyroid cartilage seen in the adult male. It is a very easily detected surface anatomical point (Adam:1). The cartilage develops during male adolescence and is linked with voice changes of that time.

The origins of the eponym lie in the Garden of Eden. Adam’s indiscretions with the serpent, the apple and Eve resulted in a part of the apple lodging in his throat as a permanent reminder of his wayward nature.

The thyroid cartilages, right and left, are joined to form the main structure of the larynx. (Adam:2). Injury to the larynx in civilian practice is fortunately rare. When such injury occurs it does so from a direct blow to front of the neck. In youth the cartilage is flexible and more resistant to damage but with increasing years the elasticity diminishes and ‘fractures’ of the larynx are more likely.

A severe injury is likely to lead to collapse of the thyroid cartilage with loss of the airway and rapid silent asphyxiation. Inspection of Adam:3 shows that the only successful way of managing such an injury is to establish a new route into the airway below the thyroid cartilage with a tracheotomy or cricoid airway. Intubation in severe laryngeal injury is often impossible.

A less severe blow to the larynx may simply result in air leaking into the neck. Hoarseness, loss of voice and surgical crepitation in the neck are pointers to this state of affairs.

Rapid evacuation with oxygen should be pursued as there is a risk of the airway becoming compromised.

Atlas Vertebrae

The Atlas vertebra is the first cervical vertebra linking the skull to the rest of the spinal column. It is specially adapted to this role. Two large areas on its upper surface articulate with the base of the skull. (Atlas:1). This link allows for the
noding movement of the neck. Rotation is achieved through the link between the atlas vertebra and the second vertebra (the axis). The ‘peg’ of the second vertebra sticks upwards and the atlas rotates around it.

The role of this vertebra in supporting the head was likened to the role of Atlas in Greek mythology in supporting the celestial sphere. Atlas had the misfortune to cross the path of Zeus who punished him with the task of carrying the Heavens on his back. Over time this became corrupted to the celestial sphere and later the earth. Confusingly the atlas, or globe, of geography comes from a different source. This was the mythical King Atlas of Macedonia who is credited with drawing the first maps.

Along with mobility comes reduction in strength. (Compare the shoulder joint with the hip.) Thus the atlas vertebra sitting like a washer between head and neck is vulnerable. It is particularly at risk from crushing or compression injuries (Atlas:2). The ring of the vertebra is likely to be disrupted (Atlas:3). This is known as a Jefferson fracture. Another eponym here.

Geoffrey Jefferson was a British surgeon, practising at Manchester Royal Infirmary and widely regarded as the father of the specialty of neurosurgery. This is a very unstable fracture. Casualties may well have recognised this instability and taken to supporting their head (Atlas:4). Do not dissuade them from this until you have a better system of cervical spine immobilisation in place. If patients with this injury do not sustain irreparable cord damage at the time of impact they will usually make a good recovery.

Alzheimer’s Disease

Often referred to as ‘pre-senile dementia’ this is a degenerative organic mental disease. It results in progressive atrophy of the frontal and occipital lobes of the brain. Some 5% of the under 65 population are affected. This rises to 20% in the over 80 age group. Women are twice as likely as men to develop the condition.

Cerebral vascular disease is believed to be at the root of the disease and there are a number of predisposing factors, namely obesity, cigarettes, high alcohol consumption, hypertension, diabetes and severe head injury. The symptoms largely affect the mental state of the patient. Those which bring the condition into frequent contact with mountain rescue teams are unpredictable.
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Battle’s Sign

This is an important clinical sign in the management of head injuries. It consists of bruising over the mastoid behind the ear (Battle’s Sign: 1). It requires careful inspection to detect in the early stages and is easily obscured by hair etc.

It results from and indicates a fracture of the base of the skull (Battle’s Sign: 2). A fracture of this nature is only produced by a blow of considerable violence to the head. It is therefore a confirmation of a serious head injury.

William Henry Battle was born in Lincoln in 1855 and lived until 1936. He became a surgeon at both St Thomas’s and the Royal Free hospitals in London. In addition to leaving his name with this sign he described an incision for removing the appendix and an operation to deal with a femoral hernia.

Bell’s Palsy

This condition is an affliction of the VIIth cranial nerve which supplies the muscles of the face. If the nerve is not working properly the muscles are paralysed resulting in drooping of that half of the mouth with an inability to smile. Closure of the eye is compromised and in severe cases is impossible (Bell’s Palsy).

Most cases are due to a virus infection or to auto-immune disease. It may, however, develop from exposure of the face to severe cold and is occasionally encountered as a complication of a head injury if the nerve is involved in a fracture of the skull. Rarely is it encountered as a result of wounds where the nerve is

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His laboratory motto remains relevant today, ‘Excessive reservations and paralysing despondency have not helped the sciences to advance nor are they helping them to advance, but rather a healthy optimism that cheerfully searches for new ways to understand as it is convinced that it will be possible to find them’.

behaviour with a tendency to wander aimlessly, confusion of time and place, recent memory loss and muddled reasoning. Others include depression, anxiety, restlessness, and self neglect. Loss of speech and difficulty walking may eventually occur. Most patients die from pneumonia, heart attack or a stroke. Although a number of treatments are being evaluated there is currently no cure for the disease.

The disease takes its name from Aloysius Alzheimer, a German psychiatrist and neuropathologist, who is generally regarded as the founding father of neuropathology. Born in 1864 in Markbreit, Bavaria he studied medicine in Wurzburg. A 51-year-old patient came under his care in 1901 and exhibited the above symptoms. When she died in 1906 he carried out the post mortem and identified the changes in the brain typical of the disease. In 1910 one of his colleagues attached the name of Alzheimer to the condition.

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Benjamin's Fracture

A fracture, or fracture dislocation, at the base of the thumb which involves the metacarpophalangeal joint (Benjamin's Fracture); this injury is produced by a longitudinal blow to the thumb with the thumb partly flexed. The usual mechanism of injury is from a fall onto the thumb or from a blow delivered by the hand. The alternative name for the injury is 'Boxer's fracture'. The injury is associated with immediate considerable pain and loss of use with the rapid development of bruising and swelling. Loss of use of the thumb will make gripping with the hand impossible.

Immediate treatment requires simple padding and splinting to provide a degree of comfort.

If the fracture has little displacement it can be reduced and held in plaster but those with greater displacement require surgical reduction and pinning of the fracture. For an injury involving a joint there is surprisingly little long term arthritis but some loss of mobility of the thumb is common. The injury almost always affects the dominant hand.

Edward Halloran Bennett was an Irish surgeon born in Cork in 1837. He studied medicine and then became a surgeon at Trinity College in Dublin. He described the fracture after sustaining the injury himself in a fall from his horse in 1882. He is also credited with carrying out innovative surgery for children with rickets and for introducing antisepsis into surgery in Ireland. He died in Dublin in 1907.

Cheyne-Stokes respiration

Also known as periodic respiration this clinical picture is seen in a range of conditions. It is characterised by short episodes of rapid breathing followed by a period of complete apnoea (Cheyne-Stokes).

It arises when there is disturbance of the respiratory centre in the brain. In mountaineering experience it is very common in sleep at altitude when the periods of apnoea are often alarming to companions. In this situation the lowered partial pressure of oxygen affects the respiratory centre.

Head injuries may exhibit this, usually as a late and ominous sign as part of the Cushing triad. It is also encountered in carbon monoxide poisoning, morphine overdose, heart failure and following a CVA.

John Cheyne and William Stokes first described this picture. John Cheyne was born in Leith and graduated from Edinburgh Medical School at the age of 18. He served for several years with the Royal Artillery and then taught war surgery in Dublin. William Stokes lived from 1804 until 1878 and was Professor of Medicine in Dublin.

Colles Fracture

This is possibly the most widely recognised fracture. It is certainly very common and a frosty morning may see an Accident & Emergency department dealing with several such injuries. The injury is caused by a fall on the outstretched hand (Colles: 1) and is a fracture of the distal radius. It becomes commoner with advancing years, particularly in women with a degree of osteoporosis affecting the bone. The classical appearance is that of the ‘dinner fork’ deformity of the wrist (Colles: 2). The severity of the bony injury varies. A simple fracture with little
displacement may occur (Colles: 3A). More severe injury results in involvement of the joint and often an associated fracture of the ulnar styloid (Colles 3B) and displacement of the fracture may occur (Colles: 3C).

Simple splinting of the injury is the only on-scene treatment required. Almost all of the fractures will heal uneventfully but if the joint is involved, later pain and stiffness will almost certainly develop.

Abraham Colles was born in 1773 in Kilkenny and studied medicine in Edinburgh. He then spent time training with Sir Astley Cooper in London before returning to Ireland where he became Professor of Anatomy and Surgery in Dublin. Remarkably, his accurate description of the nature of this fracture was made some 100 years before X-rays were available. He died from gout in 1843!

Cushing’s Triad

This syndrome is also called Cushing’s reflex. It describes the three things that develop with an advanced stage of raised intracranial pressure. These consist of elevated blood pressure, raised pulse rate and slow, or Cheyne-Stokes, respiration.

Any condition causing raised ICP will eventually lead to this. In trauma, both cerebral oedema and intra-cranial bleeding may be responsible. Rapidly expanding brain tumours also produce the same picture.

The effects are the result of pressure being exerted on the mid-brain in the region of the foramen magnum at the base of the skull (Cushing’s Triad). There will usually be a GCS recording of 3-5. Dilated pupils and some limb paralysis will also be present. The situation will quite quickly progress to respiratory and cardiac arrest.

Henry Williams Cushing was an American neurosurgeon. He was born the youngest of ten children in Cleveland and studies medicine at Yale. He progressed to Harvard, the Massachusetts General Hospital and finally John’s Hopkins in Baltimore. He served with the
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US Army Medical Corps during WW1. He also described Cushing’s disease, a tumour of the pituitary gland which is also common in dogs and horses. He died in 1939 and was commemorated on a US postage stamp issue in 1988.

**Eustachian Tube**

This is the canal which connects the middle ear to the nasopharynx and permits equalisation pressure within the middle ear. (Eustachian Tube). Normally the tube is closed but opens when a pressure difference is detected. This produces the ‘popping’ sensation with change of altitude. Swallowing and yawning can open the tube to help with pressure equalisation. Without the facility to equal pressure the middle ear would be damaged and hearing and balance impaired.

The tube also drains mucus from the middle ear into the throat. In upper respiratory infections and allergies the tube becomes blocked with resultant impaired hearing etc. In children the tube is narrow and more horizontal hence the higher incidence of ear infections in childhood.

Bartolomeo Eustachius lived from 1500 to 1574 in Italy. He produced the first account of the anatomy of the ear. He was also the first to identify the adrenal glands. He published a work of ground breaking anatomical illustrations and engravings following which he lived in fear of excommunication from the Roman Catholic church!

**Foley Catheter**

The Foley catheter was first introduced in 1930. Its primary purpose was as a bladder drainage catheter. The development of a double lumen tube enables a balloon to be inflated at the end of the tube and thus retaining the catheter in place (Foley Catheter).

The catheter is now produced in a wide range of sizes of tube diameter and balloon volume, the latter running from 5ml to 30ml. It soon became apparent that the device has many more applications than as a simple bladder drainage device. It can be effectively used as a chest drain with the balloon serving to anchor it in place. The balloon can also be employed to exert pressure and thus to control bleeding in confined spaces. The small sized catheters have been deployed to control severe nasal bleeding and can be inflated within a large blood vessel to act as a safe ‘tourniquet’.

The concept of using a balloon devise has been widely extended to the removal of blood clots, stones etc from various organs.

Dr Frederick Foley worked as a general surgeon at Boston Massachusetts hospital.

**Gamgee**

Gamgee was the first absorbent surgical dressing to be produced.
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It took its name from Dr Joseph Samson Gamgee who described the dressing in the Lancet in 1880. Two layers of absorbent gauze were used to surround a centre of cotton wool. This was an enormous step forwards in the management of wounds leaking fluids as well as in the treatment of bleeding wounds.

The term ‘Gamgee became a trademark in 1911. During the First World War, the cotton wool was replaced with dried sphagnum moss as an absorbent because of the shortage of cotton. The dressing has effectively been in use with little modification for well over 100 years.

An interesting link with ‘Lord of the Rings’ exists. Sam Gamgee was taken from the dressing and, of course, Sam’s wife is Rose Cotton!

Dr Gamgee was born in 1824 in Italy but practised his medicine as a surgeon in Birmingham. He shared lodgings with Joseph Lister, the first proponent of aseptic surgery. Joseph Gamgee also founded the Birmingham hospital Saturday fund. This collected the Saturday overtime earnings of various groups of workers to ensure medical care was available when needed.

This was very clearly a talented medical family. One of his brothers was Professor of Anatomy and Physiology at the Royal Institute in London and the other was Professor of Anatomy and Physiology at the Dick College of Veterinary Medicine in Edinburgh.

Geudal Airway

This is another breakthrough piece of medical equipment that has stood the test of time. It was introduced by Dr Arthur Geudel in 1933. It is a simple airway allowing control, especially of the tongue, in unconscious patients (Geudal Airway).

Apart from refinement of the materials used in its manufacture, the design is effectively unchanged. In use, it is important to match the size of airway to the patient and to insert it at 90 degrees to its working position.

Dr Geudel was a United States anaesthetist who also first recognised and described the stages of anaesthesia using ether whilst serving with the US expeditionary force in France in WW1. He went on to publish the stages of anaesthesia in 1937:

- Stage 1: Analgesia
- Stage 2: Excitement
- Stage 3: Surgical anaesthesia in 1-4 planes
- Stage 4: Respiratory arrest and death.

Heimlich Manoeuvre

Alternatively known as ‘abdominal thrusts’, the Heimlich manoeuvre has become well established as the method of choice for treating airway obstruction due to inhaled foreign bodies in adults (Heimlich Manoeuvre).

Prior to 1980, the advice for this clinical situation was to begin with ‘back blows’ and then to resort to abdominal compression if the back blows failed.

In 1974, Dr Henry Jay Heimlich wrote an article in Emergency Medicine called ‘Pop goes the café corronary’ in which he asserted that abdominal thrusts were superior to back blows. He subsequently convinced the American Red Cross of this and renamed the abdominal thrust as the Heimlich Manoeuvre.

In recent years, a fascinating story has emerged. Firstly the American Red Cross have reviewed the evidence provided by Heimlich and queried its veracity. In 2006, the term ‘Heimlich’ was removed and ‘abdominal thrust’ reintroduced. In addition, the advice reverted to the earlier guidelines of five back blows to be followed by abdominal thrusts if the back blows failed to resolve the problem. There is also ongoing work comparing the efficacy of chest thrusts against abdominal thrusts.

Peter Heimlich, the son of Henry Jay, has meanwhile been running a campaign alleging that his father’s work has been fraudulent and not original. There is certainly some evidence that the whole idea of abdominal thrusts was introduced by a Dr Ed Patrick, a one-time colleague of Dr Heimlich.

At one stage Heimlich advocated the use of his manoeuvre for the treatment of drowning but this was quite rapidly shown to be wrong.

He also achieved a certain amount of notoriety for advocating infection with malaria as a means of treating HIV infection. Investigation revealed little or no scientific basis for this approach.

In 1983, Heimlich also described the Heimlich valve as a means of...
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producing one way drainage on a chest drain. Although this remains in use there have been questions about the originality of his idea.

Dr Henry Jay Heimlich was born in 1920 in Delaware. He attended Cornell University where his claim to fame was as the drum major in the marching band! Perhaps an early indicator of his liking for the limelight. He practised as a surgeon for a number of years but gave this up when he was no longer able to obtain medico-legal insurance following a number of ‘incidents’. He then appeared to embark on a career of ‘medical discovery’.

Hippocrates

It might be justified to include this name purely in his capacity as ‘the father of modern medicine’ but it is in fact his attachment to reduction of the dislocated shoulder that brings him in.

The Hippocratic technique is the forerunner of the method currently advocated in mountain rescue. The difference is that the Hippocratic method is a single operative technique and involves using the foot in the axilla as counter traction. Although out of favour now I have, over the years, found this to be a very effective procedure even on the east face of Pavely Arc. It should not be necessary to add that removal of footwear is important.

Hippocrates of Cos lived from 460BC to 370BC and travelled widely throughout Greece teaching medicine. He was the first person to describe illness as a natural phenomenon rather than divine intervention and established the idea of diagnosis and prognosis. He attempted to establish medicine upon a backdrop of anatomy and physiology although the concept of four humours as the basis of physiology imposed some limits on his success.

He did make significant advances in the management of trauma and was the first to advocate rest and immobilisation along with traction for the reduction of fractures.

Langerhans

The Islets of Langerhans in the pancreas were described in 1869, long before the existence of insulin was confirmed. Indeed the word insulin is taken from the Latin ‘insula’ meaning island. The islets form some 1-2% of the total mass of the pancreas and are found mostly in the tail of the organ (Islets of Langerhans).

Initially thought only to produce insulin, the cells of the islets are now known to be of five different types. Alpha cells produce glucagon and beta cells produce insulin. The destruction of the latter by auto-immune processes is responsible for Type 1 diabetes, and the possibility of transplanting these cells may radically change the treatment of this type of diabetes.

Paul Langerhans lived and worked in Berlin. He combined the roles of pathologist, physiologist and biologist. He served in an ambulance unit in the Franco-Prussian war and later became Professor of Pathology in the University of Frieling.

In 1874 he contracted tuberculosis from his work and, in 1875, retired to Madeira in search of warmer air. He made a partial recovery and made a study of marine worms and wrote reports on the weather in Madeira. He died of renal failure in Fuchal in 1887.

Le Fort

The name of Le Fort is linked with facial fractures. He was the first to recognise and describe the three patterns of facial fracture.

Three types were listed as Le Fort I, II and III (Le Fort: 3, 4 & 5).

Published in 1901 the descriptions...
have proved accurate and, although the advent of CT scans and 3-D images have rendered the descriptions less important, they are still of value in clinical assessment.

He also recognised the frequency with which brain injury accompanied facial fractures (50%), probably the most important thing to remember about these injuries.

His experimental work was carried out using cadavers and dropping weights onto the faces from different heights.

Rene Le Fort lived from 1869 to 1951. He was born in Lille and worked for most of his career as a French Army surgeon.

Louis

The Angle of Louis is also known as the manubrio-sternal angle. It is an angle of 140 degrees, formed between the manubrium and the body of the sternum, and is at the level of the second rib (Angle of Louis). This is a very useful reference point in locating the second rib and is a surface marker for the bifurcation of the trachea and the beginning of the aortic arch. It is at the same level as the disc between the 4th and 5th thoracic vertebrae.

Antoine Louis lived from 1723 to 1792. He was a French surgeon and physiologist and became Professor of Physiology at the Salpetriere in Paris in 1750. He almost achieved much greater fame by inventing a prototype guillotine, the Louisette, but this was superseded by the superior model of Joseph Guillotine!

Monteggia fracture

This is an unstable fracture/dislocation of the forearm (Monteggia Fracture). It is sustained by a fall onto the outstretched arm with rotation of the forearm at the point of impact. Rather than a fracture of both the radius and ulna, the ulna fractures and the head of the radius is dislocated from the elbow joint. The presentation is that of a very painful unstable injury with some deformity of the forearm and inability to use the hand at all. It is not possible to be sure of the exact diagnosis without X-ray evidence although, remarkably, Monteggia described the exact nature of this injury 100 years before X-rays were available. Vascular damage does not occur and the injury is best managed by simply splinting with a gutter splint, vacuum splint or similar. Operative internal reduction and fixation of this injury will almost always be required.

Giovanni Batista Monteggia was an Italian surgeon born in Milan in 1762. In 1795, he became professor of Anatomy and Surgery at the University of Pavia. He died in 1815 from syphilis contracted when he sustained a cut whilst performing an autopsy on an infected patient.

Munchausen Syndrome

In 1951, Richard Asher introduced this term in an article in the Lancet. He used it to describe the group of people who feign illness or injury in order to gain hospitalisation, investigation and above all attention. Because they move on to avoid detection it has
also been described as the ‘hospital hopper syndrome’. The ‘patients’ are very well informed about the conditions they mimic, and present with convincing stories to the extent that many have been admitted to ICUs and some have undergone surgery. Abdominal pain is perhaps the commonest clinical picture they assume but histories of trauma are well documented and there are instances of people claiming to have been injured in the hills, diving etc. The large majority are male patients. A small group use children as the medium for presenting with symptoms of illness – “Munchausen by proxy” – and it is also recognised that animals may be used instead of children.

Karl Frederich Heironymus von Munchausen (Munchausen) was a German baron who lived from 1720-1797. He served in the Russian army and travelled quite widely. He established a reputation for relating stories of remarkable events always purported to be true. Riding to the moon on a cannonball and shooting stags with cherry stones are typical examples of his claimed exploits.

Purkinje Fibres

These are the specialised cardiac muscle cells responsible for conducting electrical impulses around the heart. They travel from the sinu-atrial and atrio-ventricular nodes to reach all the muscle of the heart (Purkinje Fibres). As the impulses travel along these fibres they generate the P-wave and QRS-complex of the electrocardiogram. Myocardial infarctions that involve these fibres result in disruption of the regular rhythms of the heart.

Jan Evangelista Purkinje was a Czech anatomist and physiologist who lived from 1787-1869. He graduated from the University of Prague and went on to become Professor of Physiology in Breslau where he founded the world’s first physiology department. He was possessed of a very versatile enquiring mind, discovering sweat glands, doing the first work on finger prints and identifying plasma. For his work in astronomy a moon crater and an asteroid bear his name. At the height of his career, letters were reputedly simply addressed ‘Purkyne, Europe’!

Raynaud’s Phenomenon

A G Maurice Raynaud was a French physician who described the condition bearing his name in 1864. The condition is characterised by constriction of the small arterioles in the extremities, most commonly the fingers, leading to pallor or cyanosis (Raynaud’s). In mild cases this appears simply as an exaggerated response to cold exposure. As the condition worsens, the attacks may occur without exposure to significantly cold conditions. Initially it was believed that was a disease in itself but, more recently, the view is largely held that it is an indicator of an underlying condition although twenty years may elapse before it is fully manifest. The commonest causative disease are arthritis linked, but trauma and cold injury – particularly frostbite – may be responsible.

The condition usually appears between the ages of 18 and 30 years and is much commoner in females. Cigarette smoking and caffeine aggravate things. Most cases can be managed simply by avoiding cold exposure.

Salmonella

This bacterium and the infections it causes have nothing to do with salmon or, indeed, any other fish. Although carried by tortoises, snakes and various rodents, fish...
Salmonella

do not feature as a host. The term arises from one Dr Elmer Salmon who first recognised and described the bacterium. The bacteria are rod shaped motile, appearing blue with Gram stain and can multiply very rapidly in the right conditions (Salmonella). They are found worldwide infecting numerous animals as well as humans. There are several forms of the organism. The most virulent is responsible for typhoid fever, fortunately now rare in this and other European countries. The commoner form is responsible for Salmonellosis, an often incapacitating from of food poisoning.

Salmonellosis is an illness featuring vomiting, diarrhoea and stomach cramps. It will develop some 12-72 hours after ingestion of infected food and persist for 3-7 days. In severe cases there is a risk of dehydration.

The infection usually arises from food but contaminated water may be responsible. The bacteria can survive freezing and have been found to be alive in dried faeces for 2-3 years. A temperature of 75°C for at least ten minutes is needed to kill the bacteria and casual reheating of food is often the cause of infection. This and contaminated water have been responsible for a number of cases occurring in people camping in ‘remote’ areas.

Dr Daniel Elmer Salmon was an American veterinary surgeon. He established the first department of veterinary medicine in the USA at Cornell University and later established a veterinary college at Montivideo. He carried out extensive studies of infections involving animals and humans and publishes his work on salmonella in 1876.

Smith’s Fracture

This injury is a fracture of the distal radius. It is often referred to as a reverse Colle’s fracture as the mechanism of injury and the resulting deformity are the opposite of those in the much commoner Colle’s.

The mechanism involves a fall onto the outstretched arm but landing on the back of the flexed hand rather than the outstretched hand (Smith’s: 1). The displaced fragment of the radius therefore lies anteriorly (Smith’s: 2). This injury is quite stable and simple support alone is needed as primary treatment. The fracture can usually be reduced with a good recovery.

Robert William Smith was an Irish surgeon who lived from 1807 to 1873. He was the first professor of surgery at Trinity College and Vice president of the Royal College of Surgeons in Ireland. He made extensive studies of the pathology and anatomy of injuries and publishes an account of the fracture bearing his name in 1847.

Spencer-Wells

The name of Sir Thomas Spencer-Wells is linked to arguably the most widely recognised and used surgical instrument after the scalpel. The principal of a ratchet controlled...
instrument designed firstly to stop bleeding from blood vessels was a landmark in practical operative surgery (Spencer- Wells).

The original instrument has been copied, altered and extended to many other patterns but the basic design has stood the test of time for 150 years. It has formed the basis of a series of holding, grasping and occluding instruments in all surgical disciplines. It has also found wide use outwith surgery and, from model-making to threading pyjama cords, has an endless variety of applications.

Sir Thomas Spencer- Wells lived from 1818 to 1897 when he died from a CVA. He was born in St Albans, trained at Trinity College Dublin and worked at St Thomas’s hospital in London. He also served in the Royal Navy and was a field surgeon in the Crimea. He clearly had good motivation to develop an instrument efficient in the control of haemorrhage. He was possibly the first surgeon to operate using general anaesthesia and from 1863 to 1896 was surgeon to Queen Victoria.

Starling’s Law

This physiological principal in cardiac function was described in 1914 and was a major step forward in the understanding of the working of the heart.

Basically the ‘law’ that the greater the volume of blood entering the right side of the heart the greater will be the volume ejected by the left side.

This comes about because the stretching of cardiac muscle leads to greater force of contraction and the length of myocardial muscle fibres determines the amount of work done. There is of course a limit to this response (Starling).

Starling also demonstrated that this would only apply to healthy heart muscle. Diseased heart muscle would very rapidly lie in the ‘limit of response area’ in the diagram.

All of this is now assumed as fairly basic knowledge but, at the time of Starling’s description, it was a very new concept.

Ernest Henry Starling was a physiologist at University College hospital in London. He lived from 1866 to 1927. In addition to his work on the heart and circulation he carried out important research work on digestive enzymes, renal function and was the first to fully describe peristalsis in the gut.

He received some unwelcome publicity in what was known as the ‘Brown Dog Affair’. A run-in with anti-vivisection lobby centred round the erection of a statue of a brown dog in Battersea Park and riots in the park, to the extent that the statue was removed in 1910 and not re-erected until 1985.

Thomas Splint

There is no doubt that the introduction of the Thomas splint was one of the great advances in casualty management. A century later, the splint is still in use with only minor modifications, a sure testament to its effectiveness.

The first widespread use of the splint came during WW1, and during the construction of the Manchester Ship Canal. The mortality from femoral shaft fractures fell from 80% to 20% in both these situations.

The femur is the largest bone in the human body and is a very strong structure. The arterial supply to the leg runs very close to the bone and normally this is a secure arrangement (Thomas: 1).

Considerable force is required to fracture the femur and consequently major displacement of the bone ends occurs (Thomas: 2a). It is also very common for the fracture to be comminuted (Thomas: 2b). When the casualty is supine there is a marked tendency for posterior displacement of the bone ends (Thomas: 2c). The powerful thigh muscles also pull on the fractured bone causing shortening and moving the sharp fragments into surrounding tissues. It is easy to envisage how
the blood vessels are at risk and how life-threatening haemorrhage can develop.

Thomas recognised the need to stabilise this injury by applying traction to the limb. His splint utilises a ring pressing against the pelvic bones against which a pull can be exerted on the distal limb. It also allows for posterior support to the fracture site and prevents rotation (Thomas: 3).

The major challenge in use of the Thomas splint in a pre-hospital setting is to obtain effective attachment of the lower limb to the splint. If the splint is used for longer periods in hospital, a pin is inserted through the upper tibia and this frees the lower leg (Thomas: 4a). For immediate and short term use, most hospital departments rely on strapping applied to the lower leg but this requires the leg to be dry (and preferably shaved) and is not practical for outdoor use (Thomas: 4b). Some form of attachment around the ankle is the only practical solution but this means the pull is exerted through both the ankle and the knee and must only be used for relatively short periods.

Traction is obtained either by pulling the limb down to the end of the splint, as in the basic Thomas design, or by securing the foot to the splint and then extending the bars of the splint itself as in, for example, the Donway modification. Only a twin bar system as designed by Thomas will allow control of rotation and of posterior displacement at the fracture site.

Hugh Owen Thomas lived from 1834 until 1891 and is regarded by many as the father of British orthopaedics. He came from a family of bone setters who were descended from a survivor of a shipwreck on Anglesey in 1765. Hugh studied under the direction of Dr Owen Roberts in St Asaph and then at Edinburgh University and University College London. He finally set up practice in Nelson Street, Liverpool and devoted special study to fractures and tuberculosis of bones. He was quite a striking character, always wearing a black frock coat, smoking an endless supply of cigarettes and wearing a black peaked cap at a rakish angle to cover an eye injury he had sustained at school.

He passed his work on to his nephew, Sir Robert Jones, who was responsible for ensuring the splint was utilised during WW1. Robert Jones himself was an eminent figure in orthopaedic surgery and was responsible for establishing the Robert Jones and Agnes Hunt Orthopaedic Hospital in Oswestry.
Trendelenberg Position

This eponym was given to the position of a patient when lying supine with a head down tilt. It was originally advocated by Trendelenberg for use in abdominal and gynaecological surgery to allow better access to the pelvic organs. Gradually the same position began to be used in instances of hypovolaemic shock, in the belief that this position would protect circulation to the brain and the heart. It is difficult to pinpoint the time when this became established procedure but, having done so, it remained as standard practice for many years. Recent wide studies have failed to demonstrate any benefits from this position. On the contrary there is some evidence it may actually have an adverse effect by increasing the risk of regurgitation and of compromising respiratory capacity as the abdominal contents are pushed up towards the diaphragm. On current evidence this position should be used only for its original purpose.

Frederick Trendelenberg was a German surgeon born in Berlin in 1844. He studied medicine in both Edinburgh and Glasgow and eventually practiced surgery in Leipzig. He carried out extensive research work on surgery of the venous system. He died in 1924 from a tumour of the mandible.

Valsalva Manoeuvre

This procedure is probably less well known than in earlier years. It involves forced expiration against a closed airway. Closing the mouth and the nostrils is followed by a maximum effort to breathe out. This results in a rise in intra-thoracic pressure which in turn impedes venous return to the heart and causes a fall in heart rate. Carrying out this manoeuvre in a squat position and then standing up is an almost certain way of inducing a faint. (Do not try this at home!)

The manoeuvre has been used in patients with cardiac arrhythmias and episodic tachycardias to bring them under control. In the absence of any other medical facility it is certainly worth trying. It is remarkable how accurately Valsalva described the physiology of this process in 1696.

Antonia Maria Valsalva was an Italian anatomist born in Bologna in 1666 and died in 1723 from a CVA. He became professor of anatomy in Bologna but also studied physiology and practised surgery. He was the first person to recognise arterial aneurysms and to attempt surgical treatment. His classic work was the understanding of the structure and function of the middle ear and his treatise ‘De aura humana tractatus’ was the standard text on the subject for the next 150 years.

Weil’s Disease

Weil’s name is irrevocably linked to severe leptospirosis, an infection caused by any one of a number of leptospiral organisms. The most common to cause human disease is leptospira haemorrhagica. The organisms are carried by rats and secreted in their urine and faeces. They are also found in foxes, dogs, cattle and skunks. Human infection arises when they come into contact with water that has been contaminated. The bacteria can enter through cuts on the surface, form inhalation or from being swallowed.

In many cases the infection is very mild, resembling an episode if influenza, and it is probable that many such cases are never diagnosed. The more severe cases begin with headache, fever, muscle aches and jaundice. They go on to develop a bleeding tendency with the development of spontaneous bruising and bleeding under the skin. The liver and spleen are involved and become enlarged. There is a significant death rate in untreated cases. An incubation period of 4-9 days occurs between exposure and the appearance of symptoms.
Diagnosis in the early stages is difficult because of the similarity of the symptoms to those of other common virus infections. It is essential that persons who may have been at risk make this known to their doctor at the outset so that antibody testing and treatment is carried out immediately. Early treatment with antibiotics results in a full recovery in almost all patients. Penicillin in large doses is the antibiotic of choice.

There have been a number of instances of Weil’s disease in this country affecting cavers and canoeists.

Adolf Weil was born in 1848 in Heidelberg and died from tuberculosis in 1916. He became Professor of Medicine in Berlin but also was an Honorary Professor in Estonia. He recognised and described leptospirosis in 1881.

Circle of Willis

This is the vital communication ring of the arterial supply to the brain that enables cross over circulation in the event that the supply from one side is compromised.

It lies on the under surface of the brain (Willis: 1 & 2). The inputs from the carotid arteries and the vertebral arteries are linked together and distributed to the brain through a large number of offshoots from the circle.

The existence of this communication link means that, in the event of one supplying artery being occluded, usually from arteriosclerosis but also on occasion from trauma, the input from the remaining vessels is equally distributed and no one area of the brain is deprived of a blood supply. If this circle did not exist then damage to one carotid artery, for example, would result in severe brain damage.

Thomas Willis was born in Great Bedbury in Wiltshire in 1621 and lived until 1695. He studied medicine first in Oxford and then in London. An interest in neuroanatomy led to his work on the circle bearing his name but he had many other accomplishments and published the first scientific book on pharmacology.

He achieved some fame in 1650 when he attended the hanging of Ann Gunn, aged 22 years, in the Castle Yard in Oxford. Following the execution she was found to have a pulse and Willis carried out a successful resuscitation following which she was freed and lived a long life.