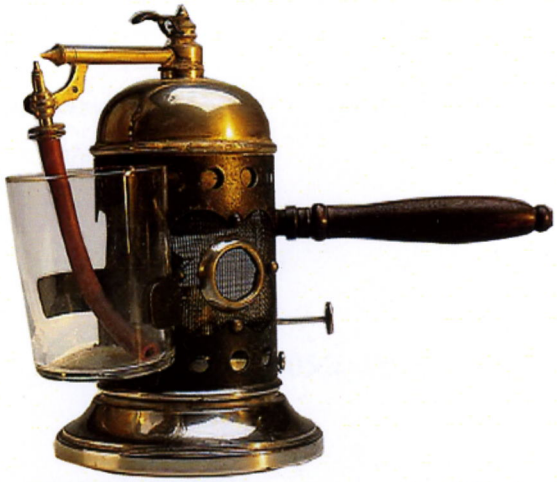

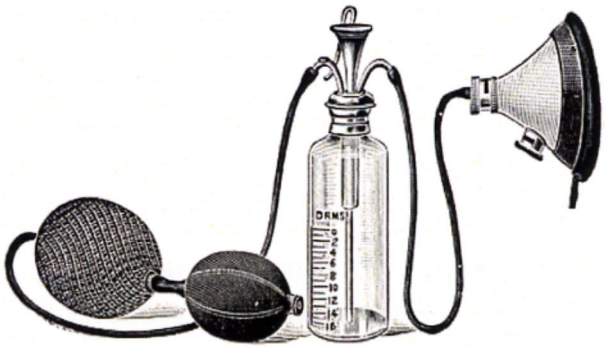

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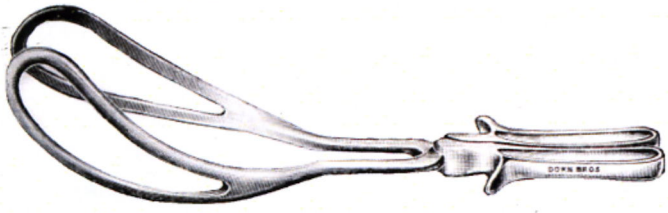

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FUTURE MEETINGS

SPRING MEETING AT THE ROYAL PHARMACEUTICAL SOCIETY MUSEUM, LONDON ON MONDAY 20th APRIL 2009

AUTUMN MEETING – TO BE ARRANGED

EDITORIAL

Your editor was very disappointed to miss the October, 2008 meeting at the James Herriot Museum of Veterinary Surgery at Thirsk and has to thank Peter Mohr for his meeting summary which follows. I am also pleased to publish speakers' accounts of the veterinary papers given at Thirsk. Although not as many members as usual were able to make the long journey to North Yorkshire, I understand it was an outstanding meeting revealing an intriguing array of specialised instrumentation and veterinary operative procedures.

As a result of the October AGM, we welcome Peter Mohr as our new Honorary Secretary and Julie Mohr as a new Committee member. It is with great pleasure we thank Tim Smith for his excellent seven years as former Honorary Secretary; fortunately, I am pleased to report he has agreed to continue his assistance with production of the Bulletin, taking responsibility for the lay-out, excellent colour illustrations and for printing arrangements.

Since Peter's election he has been very busy implementing suggestions made at the last AGM, in particular producing a leaflet to publicise the Society and stimulate membership, a copy of which has been sent to all members, plus additional copies to over 30 museums and Royal Colleges. Peter also introduced a Christmas Newsletter, arranged a Society website on line at www.hmes.org.uk and has recorded all the contents of our first 21 Bulletins on a CD which should be available for a modest fee. Anyone with an instrument or equipment identity query is invited to send a jpeg illustration with information on size, material construction and any makers or other marks by email to pmohr@doctors.org.uk and Peter will put it on our website for members' opinion.

This year 2009 not only commemorates Charles Darwin's birth (200 years) and his "Origin of Species" (150 years) but also, on 3rd September, 1939 the start of World War Two (70 years), a day I recall clearly. That morning my sister and I walked across fields to play with children of a neighbouring farm in Northumberland – suddenly, just after 11 am. their mother called us to say war had just been declared and we must hurry back to our aunts' house. In some anxiety my sister aged 9 and myself aged 11 ran off non-stop, expecting a machine-gun attack by enemy aircraft at any minute! With respect to Charles Darwin, 1944 is the year of my introduction to his "Origin of Species" (65 years) by a stimulating biology teacher, and my resultant conversion to Darwinian evolution.

Our next meeting on 20th April, 2009 takes place at the Royal Pharmaceutical Society Museum in London. Arrangements are still underway for the Autumn meeting. Our Secretary will be forwarding details in due course .

THE THIRSK VETERINARY MEETING, 18TH OCTOBER, 2008

A total of fourteen members and guests attended the autumn meeting at the James Herriot Centre and Museum in North Yorkshire. Our thanks go to John Broberg and Tim Smith for organising the programme and venue which proved to be an excellent choice and full of surprises. The meeting provided an opportunity to learn about the design and use of operating instruments employed in veterinary practice. An important theme of the Thirsk meeting was to emphasise the differences rather than similarities between animal and human instruments.

Evelyn Barbour-Hill's large collection of fleams and fleam hammers (bloodsticks) illustrated the once universal practice of bleeding a bucket-full of blood from the jugular vein of horses as a matter of routine! Dating from the sixteenth century, it was more of a ritual than a therapy. Sherwin Hall's talk outlined the history of the Eastern Counties Veterinary Medical Association (1895) with their scheme to loan out expensive instruments for infrequent operations to members. He illustrated this with a 'side-bone' saw and an ecraseur he had acquired, both in good condition made by Arnold and Sons of London. John Broberg's presentation on the many instruments for castrating and spaying horses, cattle, etc. brought home the reality of veterinary practice and its relationship to farmers. These ingenious implements for crushing and cutting, more than anything else, illustrated the difference from human practice; a cervical coil for Argentinean cows defeated the identification skills of the whole group.

The highlight of the visit was a tour of the Museum's excellent collection of veterinary instruments of all types, as well as extensive displays about James Herriot (1816-1895) and his work. Finally, a big thank you to the Museum's staff who were extremely helpful in setting up the meeting and looking after us.

Peter Mohr

INSTRUMENT LOANS OF THE EASTERN COUNTIES VETERINARY MEDICAL ASSOCIATION

SHERWIN HALL

About thirty years ago two boxed sets of veterinary instruments came into my care. Each has an inner case of polished wood with a brass escutcheon bearing the inscription "ECVMS" in script and an outer-case of unpolished wood which, having come unstuck, was falling apart. The initials were those of the Eastern Counties Veterinary Medical Society which was formerly a territorial division of the National Veterinary Medical Association. In 1952 the NVMA became the BVA, the British Veterinary Association, and the ECVMS became the Eastern Counties Division thereof. One box contained a saw (fig.1), the other an ecraseur (fig.2); both they and their boxes were custom-made to a high specification by Arnold of London. I drew the inference that they were expensive, infrequently used instruments purchased by the Society for occasional loan to members and that the outer boxes were used for transporting them between the Society and practices. I dated the sets as probably late nineteenth or early twentieth century.

Fig.1 Smith's Side Bone saw

Some years later, by a remarkable chance, a fellow-member of the Veterinary History Society showed me an item he had acquired at a sale of ephemera. It was a small pamphlet produced by the Eastern Counties Veterinary Medical Society announcing that "the ... Society have purchased instruments for the use of Members of the Society". It was dated 1st April 1895. The inside pages were headed "List of Instruments" and "Rules for Borrowing Instruments". The eleven items on the list included "Robertson's Ecraseur, complete" and "Smith's Side Bone Instruments", which, clearly, were the two items I held.

At the time these instruments were made, veterinary practice, both rural and urban, was largely horse practice. The ecraseur would have been used for castrations and ovariecto-

mies to render animals not required for breeding more tractable for work. There were several versions of ecraseur each with its eponymous identity such as Mile's, Dewar's and Chassaignac's but the essential action was the same -- to crush the blood vessels while cutting through

Fig.2 Robertson's ecraseur

all tissues in order to remove everything distal to the instrument without causing serious haemorrhage. The castration operation was performed with the horse either standing or cast. Ovariectomies by this time were usually performed per vaginam but, traditionally, they were done through the flank.

Side bones are the ossified cartilages of the pedal bone which is the third phalanx of the third and only digit of the horse's limb. The bone lies entirely within the hoof but when the lateral cartilages become ossified the 'sidebones' may be palpable at the coronet. It was a common lesion in heavy horses working on roads in towns rather than in horses working on farms and it did not invariably cause lameness. If ossifications were extensive and proliferative they were sometimes excised surgically under nerve-block anaesthesia.

VETERINARY CASTRATION & SPAYING

JOHN BROBERG

CASTRATION

I imagine everyone knows the old joke- *"You castrate a camel with 2 bricks". "Doesn't it hurt?" - "Not if you keep your thumbs out of the way".*

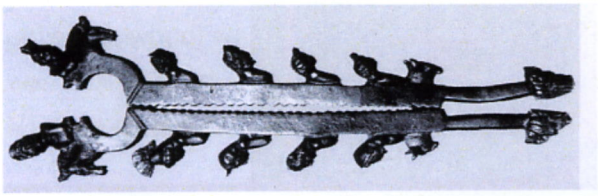

Fig.1 Roman castration clamp

The earliest technique I have found is from the Dutch East Indies, using a smooth, large pebble and a wood log, as seen by me in the Utrecht Veterinary College Museum. These were to crush the cord rather than the testes which would cause much inflammation stress and thus was limited to ruminants with a pendulous scrotum. As the horse lacks a pendulous scrotum, skin must be excised to exteriorise the testes; haemorrhage is then controlled

Fig.2 Castration clamps and cauterising

by ligature or clamping the spermatic cord. By Roman times a standard castration clamp was developed (fig.1), changing little until the 20th century. This resembles those made in the 19th and 20th century, some of quality and others of cruder manufacture but equally effective (fig.2) .

The iron and steel clamps were applied and a heated iron cut the cord and cauterised vessels, whilst the wooden clamp simply required a knife. The stainless steel clamp on the right was purchased new about 1977 and, although obsolete, is still available. Also wooden "clothes peg" clamps were used, plain or coated with a caustic dusted onto a thin coating of gum, and held tight with pliers until the following day.

In the 1890's, the "Emasculator" was patented, to cut and crush the cord in one operation (fig.3). Early models were marked for correct application to ensure the cord stump was

Fig.3. Emasculator by C. Huish of London. Late 19th century

crushed and not the cut off portion. Huish's instrument is marked on one side, NEXT TO SCROTUM. Later emasculators followed a similar pattern (fig.4). As horses are very susceptible to tetanus infection, valuable geldings could only be castrated on farms free of tetanus. Cattle having a pendulous scrotum could be castrated by the log and stone technique. However, in Europe castration was usual by incision of the scrotum and either cord division

Fig.4 Left, "The Reliance" emasculator (Arnold, 1900) marked on the proximal side NEXT TO BODY; centre, clamp inherited with my practice; right, one I currently use with an extension to enlarge the crush side.

with ligatures, or with additional pulling to extract the testes.

Lambs were commonly docked and castrated simultaneously, often up to 200 at a time; docking is a very messy, and either teeth or forceps were used to pull the testes out cleanly. In the late 19th century bloodless castrators for cattle were designed to cut the spermatic cord without incising the scrotum (fig.5). The main dark metal part of this instrument is what I purchased; the cam lever I had made and is assumed to resemble the complete tool. Many manufacturers, all over Europe, introduced designs but only the Italian "Burdizzo" succeeded and is still manufactured (fig.6). The small 'Burdizzos' have straight jaws and the large a small projection on each jaw, to stop the cord slipping on closure, a particular problem when castrating a large bull calf. The same techniques were used on sheep as on cattle, the main difference being that they were normally docked at the same time and that a few hundred might be

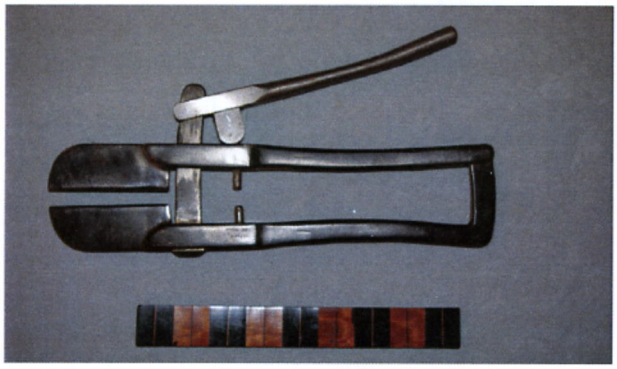

Fig.5 Castrator designed to divide the spermatic cord but not the overlying skin (Arnold, late 19th c. but never marketed).

Fig.6 *Below, a 50 cms "BURDIZZO" from my work kit; above, two smaller versions for lambs (Holborn, London)*

treated together; this was very dirty work, cleanliness being the biggest problem. Testicles were pulled out of the incised scrotum with teeth, pliers or with an Australian pattern knife with attached forceps (fig.7).

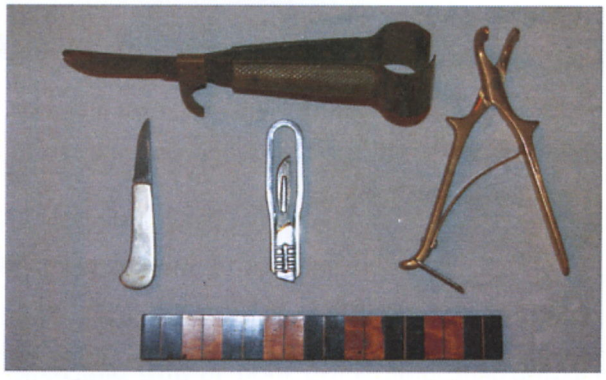

Fig.7 Top, an Australian castration knife and forceps combined; left, a folding knife; centre ,a mid 20th c. folding scalpel, safer to find in a bucket of disinfectant than a plain scalpel; right, an Australian pattern castrating forceps.

The Burdizzo was used on sheep, but today rubber rings are applied to strangulate the blood supply to scrotum and testes. Burdizzo advertised their instrument also for use on horses, pigs and dogs!

SPAYING, OVARIECTOMY.

Spaying is done simply to stop breeding, to control behaviour by stopping oestrus and to improve fattening by quietening. Aristotle wrote of ovariotomy in sows as an established procedure. In the Middle Ages the gelding of sows, or more accurately gilts, was common practice and various illustrations of "sow gelders" are known. The recommended technique for a right-handed operator was to hold the pig's left hind leg with the left hand, place a foot on its neck, incise the left flank, hold the knife in the mouth, insert a finger and draw out the uterine horns, excise them and suture the wound with a single cross stitch; total time about 30 seconds. The only preparation was to starve the pig for 24 hours, no cleansing, no after care the sutures being left to fall out. A Victorian veterinary surgeon bet that he could spay 200 gilts in three hours and he won his bet. Adult sows past breeding were also spayed to fatten them up for sale.

The first recorded successful human caesarean section reported in Europe was performed by a Swiss pig castrator in 1500 on his wife; it is reported she subsequently had two more children born naturally.

Difficult mares were spayed to keep them docile while working. The normal technique was to approach the ovaries vaginally, first with a guarded knife or perforator (fig.8) to cut the vaginal wall above the cervix large

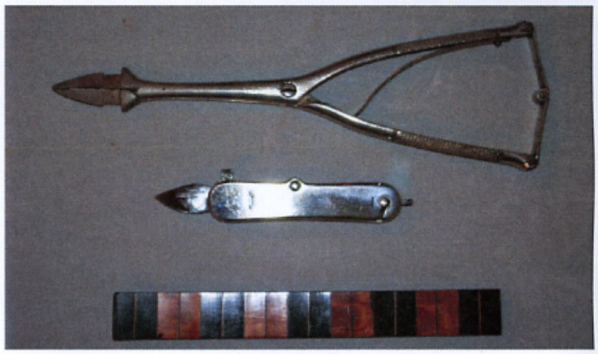

Fig.8 Top, perforator; below, guarded knife with retractable blade.

enough to get a hand through followed by an ecraseur (fig.9). The hand grasped one ovary to remove it with the ecraseur, followed by the other.

In cattle oophorectomy had various indications. In heifers it was intended to improve fattening, most commonly in the large herds of the U.S.A., and in older cows to prolong milking, to increase milk yield and quality, very commonly undertaken in Switzerland. Techniques were basically as for mares, except for heifers when incisions were made in the left flank.

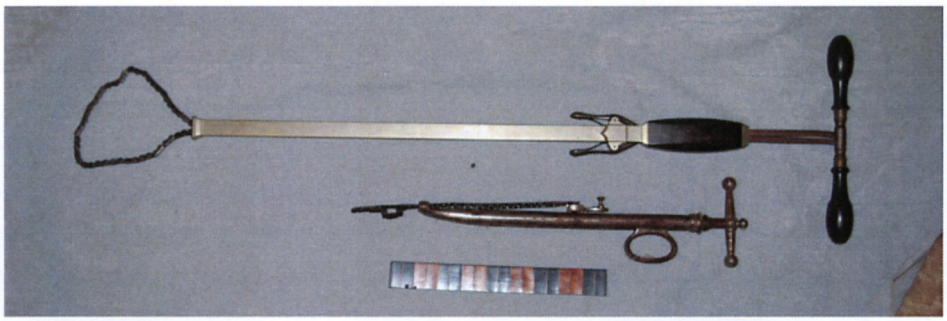

Fig.9. Top, Chassaignac's ecraseur (lever action), 19th c.; below, Farmer Mile's pattern (screw action), 20th c..

METALS MATTER: *AIDS TO DATING SURGICAL INSTRUMENTS*

JOHN KIRKUP

It is evident organic surgical instrument handles in rosewood, ebony, tortoise-shell and ivory were destroyed by boiling and autoclaving, to precipitate their rapid withdrawal from manufacture during the early 1890's and substitution with all metal instruments. Such dramatic adjustment was less evident when the composition of instrument metals changed, yet appreciation of these changes is vital when attempting to date items, both before and since thermal sterilisation (fig.1). The principal metals are:

SILVER

This is perhaps the longest surviving metal of the surgical armamentarium, at least from Roman times until today, if only in small quantities. Most popular in the 18th and 19th centuries when tongue depressors and lancet cases might be hall-marked unlike probes, tracheostomy tubes and other small items. Silver electro-plating , usually on copper, was introduced in 1840 although rarely applied to fine malleable probes which continue application in solid silver today.

COPPER

Little used except for the manufacture of hollow handles, plated with nickel or chrome, to replace larger organic handles eliminated by aseptic sterilisation.

BRONZE

This alloy of copper and tin is resistant to corrosion and was the principal metal for Roman instruments, significant quantities of which have survived, usually with a dark green patina. Bronze instruments effectively disappeared when the Western Roman Empire collapsed in the 6th century, perhaps due to failure of the tin importation trade.

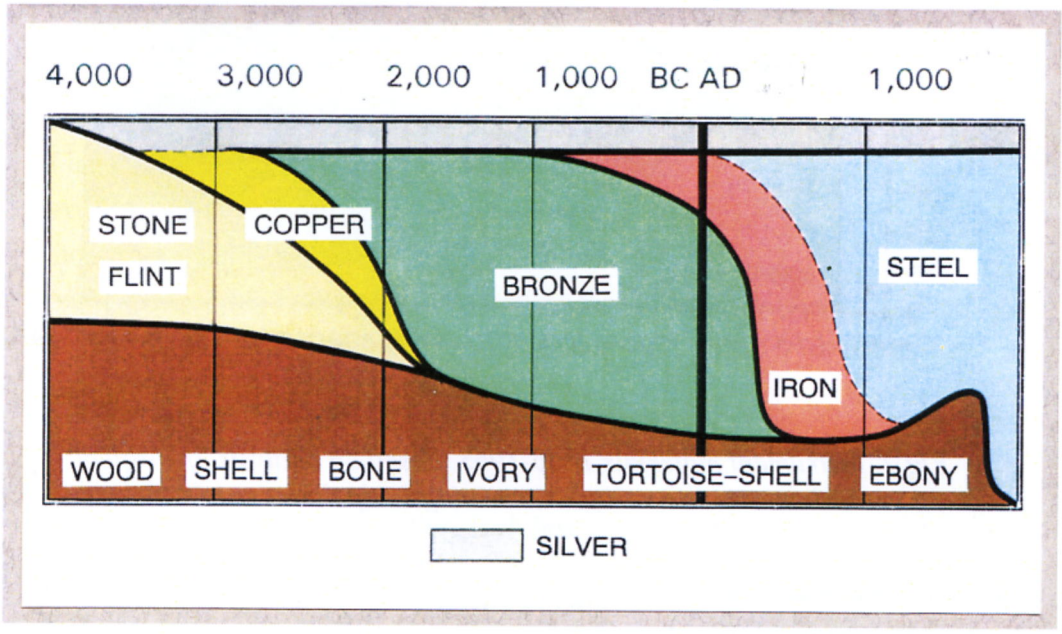

Fig.1. Surgical instrument materials, 4.000 BC to 2000 AD. A hypothetical arrangement to show basic trends.

IRON

Exposed to the atmosphere, wrought iron rusts and disintegrates rapidly, although a few well preserved Roman collections contain damaged blades and dental forceps. It is conjectured that iron or poor grade steel instruments replaced bronze between the 6th and 16th centuries, from which period very few recognisable items have survived.

SHEAR STEEL

From the 16th to 18th centuries, furnace heating of wrought iron bars in bundles produced a laminated form of steel, stronger than iron but inclined to split between the original laminae. Thus surviving instruments of this period are predominantly large and of heavy construction, e.g. amputation saws up to 67 cms. in length.

CRUCIBLE OR CAST STEEL

A more homogeneous steel was produced by Huntsman, a Doncaster watchmaker, by heating wrought iron and shear steel in ceramic crucibles in 1750. This percolated into the surgical instrument industry about 1780 to provide much lighter and stronger items, e.g. amputation saws of 50 cms. maximum and rapier-like amputation knives. Crucible steel remained supreme in the 19th and early 20th centuries, amputation saws reducing to 40 cms., but was modified by plating. Even in the 20th century, some manufacturers stamped instruments 'Guaranteed Huntsman Steel'.

PLATED STEEL

In 1866, the Buffalo Dental Manufacturing Company patented nickel-plated crucible steel surgical instruments as free of tarnish and rusting. As rusty instruments were anathema to the surgeon Spencer Wells, he had his armamentarium nickel plated before 1879, simply from the point of view of cleanliness, for such protection did not become generalised until thermal sterilisation was introduced in the early 1890's. This huge and swift revolution to all-metal plated instruments initially excepted scalpel and other blades, as plating tended to reduce their acuity. From 1916, disposable Bard-Parker blades became available and were unplated; indeed, many remain unplated in the 21st century, never being retained long enough to rust.

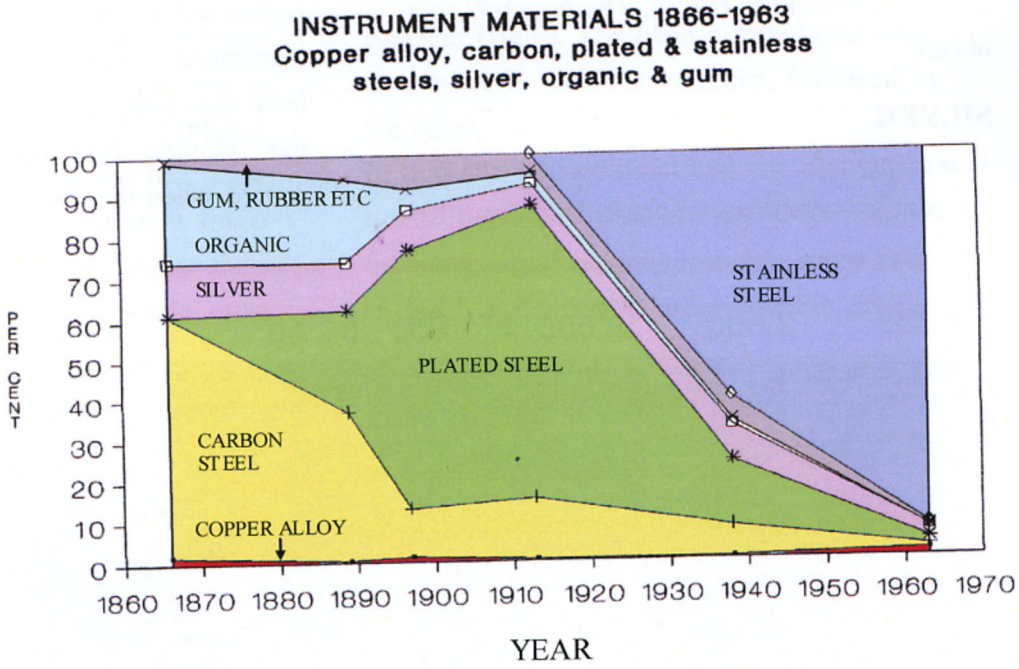

Fig.2. Instrument materials 1866-1963, based on analysis of surgical instrument catalogues, omitting scalpel blades.

STAINLESS STEEL

Introduced by Brearley, a metallurgist of Sheffield, in 1913 for the rifling of gun-barrels, this rustless and corrosive free steel soon entered the domestic cutlery market and by late 1916 surgical instrument manufacture. Initially relatively expensive, the conversion to trouble-free stainless steel was gradual until it was found cheaper than repairing and replating nickeled and chromed items (fig.2) Early stainless steels

were low alloy (13% chrome, 1% nickel) and blades required constant re-sharpening until high alloy steels (18% chrome, 8% nickel, 3% molybdenum) were formulated in the 20th century. Its eventual domination of manufacture has been reduced recently by disposable plastic and cheaper metal equivalents.

OTHER FACTORS

Presentation and prize boxes may bear the date of award, indicating the instruments, if original, were made prior to that date. Many instruments identify makers or distributors names, and sometimes an address, both of which may be traced in annual city directories. Further precision may be indicated by changes in name, additional names or terms such as 'son', 'sons', 'bros', 'ltd', etc.

Dates of introduction or modification are sometimes noted in catalogues or surgical publications and, at the least, indicate that items cannot be older than these dates. Styles of instruments change with time and may only have association with a particular surgeon whose active years can be determined. At great expense, the dating of metals is possible by Prompt Gamma-Ray Neutron Activation Analysis.

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WHAT IS IT? [February 2009]

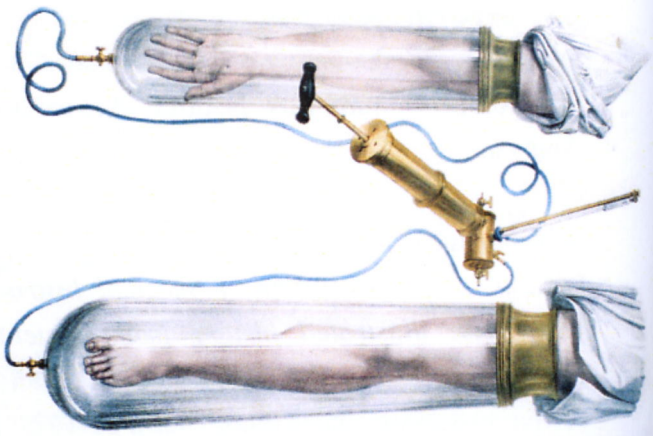
This box of instruments has its original contents; two items have been moved to the lid for the photograph. The instruments are marked 'Wood', a maker, probably William Wood of Manchester whereas the box is marked 'Philip Harris', a supplier. The steel is unplated.

1. For what major operation is it devised?
2. What vital instrument for this operation is not included in the box?
3. What is the approximate date of the box's manufacture?

WHAT IS IT? [August 2008]

These strong glass containers enclosing an arm and a leg were designed by Mons. Junod (fl. 1835) of Paris, to extract air from the containers by the pump and to produce a massive cupping effect by diverting fluid into the subcutaneous tissues. Despite a controlling manometer, this huge fluid diversion of supposed evil humours from a single limb could lead to nausea and fainting, and complete collapse if two limbs were 'cupped' at the same time. Even more dangerous was the opposite manoeuvre of pumping air into the containers to force fluid into an over-loaded circulation which might suspend circulation in the limb, cause dyspnoea and loss of consciousness due to cerebral apoplexy (1).

The cylinders were subsequently made of copper but the dangers persisted and, with the discovery of bacteria in the 1860's the concept of dispersing evil humours was discarded, and likewise



this mode of treatment.

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