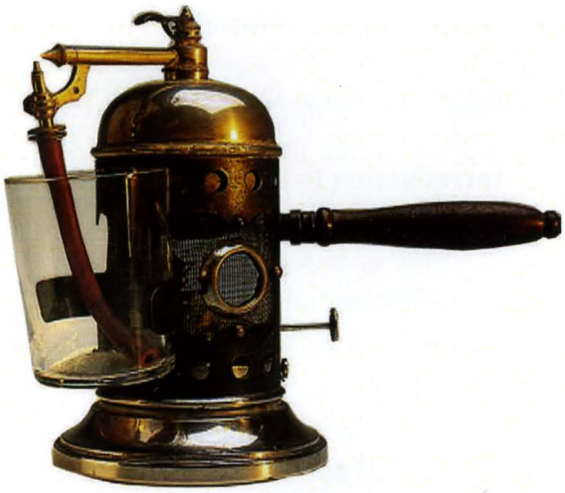


The Historical Medical Equipment Society

BULLETIN NO. 26 ISSN 1366 - 4719 AUGUST 2011

EXECUTIVE COMMITTEE

CONTENTS

FUTURE MEETINGS

AUTUMN MEETING: OCTOBER 15th 2011 AT THE ROYAL BERKSHIRE HOSPITAL READING [LOCAL ORGANISER TIM SMITH]

EDITORIAL

The spring 2011 meeting was held at the Museum of the British Optical Association (BOA) and College of Optometrists, just off Trafalgar Square. I am grateful to Neil Handley for his help organising the meeting and his excellent guided tour of the stunning collection. The Museum was founded in 1901 by optician JH Sutcliffe who wanted an 'Optical House Beautiful,' and today the College's Georgian building is enriched with works of art and craftsmanship alongside a collection of historical optometry equipment, spectacles, glass-eyes, and all manner of intriguing visual aids. The library includes many rare books on optics and ophthalmology.

Neil's introduction raised some interesting discussion of terminology and definitions. The words 'spectacles' and 'glasses' date from the 16th century. The former is derived from the Latin, 'spectatulum' (a public show) and 'speculum' (a mirror), and 'a pair of spectacles' includes both the frame and the lenses; whereas 'glasses' is an older and more general term for any type of optical lens. The term 'ophthalmic optician' has gone out of fashion and practitioners now prefer to be known as 'optometrists,' a word coined in 1904 by Mr Eberhardt, president of the American Association of Opticians.

Krishna Kunzru's talk on Susruta's operation for cataracts was an exercise in applied scholarship and a timely reminder of the importance of primary sources. Susruta practiced around 500-600 BCE in India, but written accounts of his 'couching' operation do not appear until c.400 CE. Subsequent copies and translations have introduced many errors. Mr Kunzru, aided by Sanskrit scholars, revisited a 12th century commentary and from this were able to reconstruct the instrument and surgical technique used by Susruta, which he tested by experimental surgery on pigs' eyes. This work continues. ('Couching': old English to lower & point a lance or pike.)

John Prosser brought the cataract surgery story up-to-date with his excellent account of the development of the ingenious and delicate instruments used in cataract extraction and the use of intra-ocular lens implants. Cataract surgery was once a major in-patient procedure, but the use of operating microscopes and the phacoemulsifier has reduced it to a 'day-case' stay. The greatest advance has been in ocular local anaesthetic; the combination of effective topical agents with a sub-tenon cannula injection of 'local' around the globe has made the procedure safe and painless (the 'eye-opening' video was much appreciated by those in the audience who had undergone the operation!)
I would have liked to arrange this meeting jointly with a visit to the Royal College of Ophthalmologists to see their historic collection of ophthalmoscopes and nineteenth century ophthalmic surgical instruments. However, the problems of transportation between the two sites and restricted venue space made it impossible. It would have been interesting to see how the two collections complimented each other. Just to give us taste of what we have missed, Richard Keeler has kindly written a short overview of the collection at the RCO, included in this *Bulletin*.

A final thought. The College of Optometrists has all the hallmarks of a progressive professional body: registration, CME, research etc., yet it still values it historical origins personified in its museum. Surely a lesson for those 'modernisers' of NHS and university institutions who see the very destruction and disposal of historical artefacts as the definition of their 'progress.'

INTRODUCTION TO THE BRITISH OPTICAL ASSOCIATION MUSEUM

NEIL HANDLEY, Curator

The Society's visit to the British Optical Association Museum at the College of Optometrists raised the question as to what exactly comprises a medical museum. Optometry is officially classed as a 'medical-related' profession and, despite the commendable cross-disciplinary work in the early mid-twentieth century of enlightened ophthalmologists such as William Ettles and Margaret Dobson, for much of its existence as an organised profession optometry was at daggers drawn with the medical eye doctors. Only the advent of the NHS in 1948 stifled the bitter, selfish and frankly unbecoming opposition of the ophthalmologists since the increased demand for sight tests was far beyond their capacity to meet, though it was another decade before the ophthalmic opticians were to achieve the regulatory legislation for which they had so long campaigned in the form of the Opticians Act of 1958. The museum documents these professional politics, sometimes in a lighthearted way, for instance giving pride of place in its Print Room to a portrait of the notorious cataract surgeon John 'Chevalier' Taylor whose botched operation almost certainly brought about the death of the composer J.S. Bach. The museum also seeks to collect items that reflect the increasing medicalisation of the optometrist's role including their work as part of mixed professional teams in hospital eye departments, in the initial diagnosis of ocular disease and in the aftercare of post-surgical patients. The awarding of full optometry degrees from the mid 1960s, the creation of additional specialist roles such as that of the ocularist or orthoptist and the increasing rights and responsibilities of the optometrist in the prescribing and administering of certain ophthalmic drugs are also documented. The BOA Museum, named after the world's first professional body for sight-testing opticians is now 110 years old. It is also a museum of the physical sciences – of light and its reflection and refraction, as well as a museum of design and fashion. It is notable for its collection of vintage spectacle frames, many now representative of so-called 'retro chic', and also for its collections of paintings, sculpture, coins and medals and other fine and decorative arts subjects. These serve to place the museum alongside counterparts such as the V&A and the Wallace Collection as much as the Science Museum or Wellcome Collection.

In the widest sense the BOA Museum is a museum about an organ, the eye, and its medical, symbolic and cultural significance. The only actual eyes on display are those of insects prepared as microscope slides, but there are plenty of artificial eyes to be seen including First World War prostheses issued to troops in the field by the Army Spectacle Depot (brainchild of the great Mr J.H. Sutcliffe who was also the founder of the museum) and a gruesome collection of blown glass models of eye injury and disease thought to have originated as a teaching collection in the 1880s. Truly it can be said that this is the only museum where the exhibits look at you, rather than the other way round and, when you tour the first floor meeting rooms, the eyes in the paintings really do follow you round the room, but these are squinting eyes, screwed up and peering through an assortment of vision aids. Unlike the other royal medical colleges the Optometrists (who were awarded their Royal charter in 1995 but do not yet hold the Privy Council's permission to adopt the Royal prefix) do not exhibit sombre portraits of their ex-Presidents; in fact there is only one of those, tucked away in an office away from the visitor route. Rather, they display paintings that relate

to the subject matter of eyes and vision... Benjamin Franklin reading the Evening Post through nose spectacles, King George III staring at Napoleon through a spyglass and Galileo holding a telescope, though emphatically not his since the telescope is of an 18th century pattern! J. H. Sutcliffe's original aim, inspired by Oscar Wilde's aesthetic notion of the 'House Beautiful' in the 1880s was to create an 'Optical House Beautiful', a building that left the visitor in no doubt as to the subject matter of what goes on inside, no matter where he or she turns. The fact that this concept has been continued across a succession of short-term premises, the latest in Craven St occupied only since 1997, is a remarkable phenomenon, worthy of a visit from anyone who professes an interest in the correction of refractive error, the provision of services for sensory impairment and the cure of eye disease.

ILLUSTRATIONS FROM THE MUSEUM OF THE BRITISH OPTICAL ASSOCIATION

St Lucy, patron saint of sufferers from eye disease. Probably an 18th c. copy after a 17th c. original entitled 'Four eyes'. In the picture she carries a pair of eyes on her plate whilst looking through the pair restored to her head.

Model practice eye by George A. Adams c.1789

ILLUSTRATIONS FROM THE MUSEUM OF THE BRITISH OPTICAL ASSOCIATION (CONTINUED)

1930s advertising for Zeiss spectacle frames. After the war Zeiss concentrated on exporting ophthalmic instruments, with the UK market buying from rival Zeiss companies in both West and East Germany.

Contacscope by SMC Metal-Tech Company 1970s. This enabled the patient to assess the co lens condition and cleanliness as well as the st their eye make-up!

Schiotz Improved Tonometer for the measurement of intraocular pressure under topical anaesthesia, circa 1955. For many years this was the principle test for glaucoma.

Capo di monte figurine of the optometrist at with his ophthalmoscope, circa 1987.

THE MUSEUM AND LIBRARY OF THE ROYAL COLLEGE OF OPHTHALMOLOGISTS

RICHARD KEELER

The collection of instruments at The Royal College of Ophthalmologists (fig.1) was commenced in 1998 and the antiquarian books some years later. The nucleus of the collection comes from three main sources, the Keeler and Hamblin companies and the old Glasgow Eye Infirmary. There have also been many individual donations.

Fig.1 The Oxford Room with the instrument collection

The main feature is the large collection of over 200 models of ophthalmoscope with pride of place being taken by an early model of Helmholtz's ophthalmoscope (fig.2). As one would expect there are many examples of sight testing instruments such as trial frames and trial lens sets but the collection is largely made up of instruments used by ophthalmologists from the middle of the 19th century including a large collection of surgical instruments. Although there are a number of spectacles they do not feature prominently.

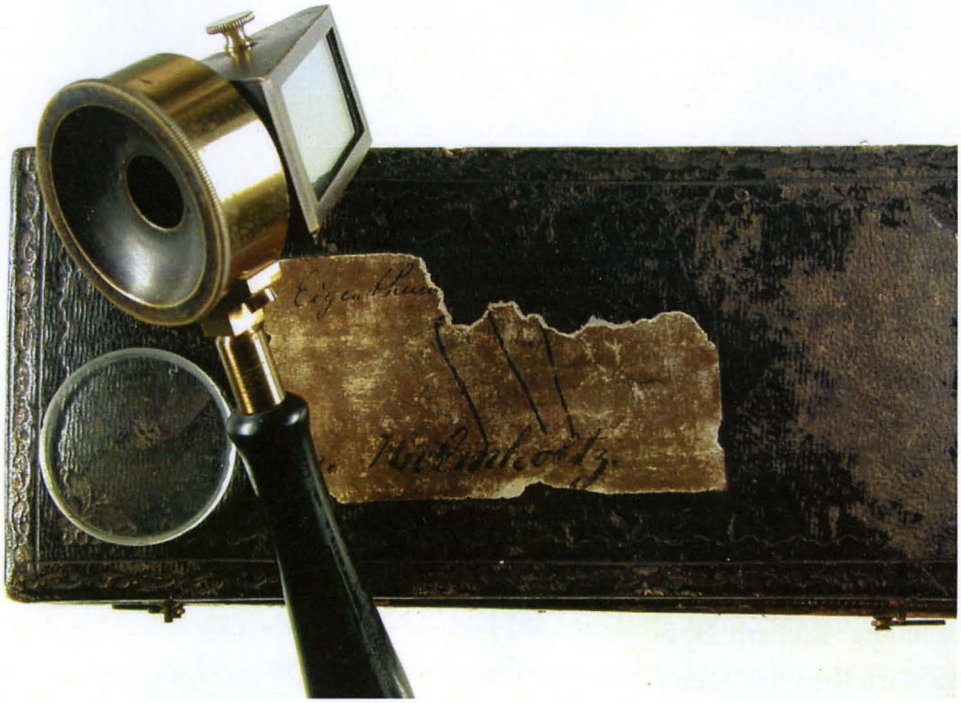


Fig.2 Helmholtz ophthalmoscope

The archive material of several individuals has been gifted, the most important being those of Henry Stallard, Ida Mann and Professor Norman Ashton. These include original drawings and correspondence and in the case of Stallard his incredible collection of athletic medals (he was the bronze medal winner in the 1924 Paris Olympics in the 1500m behind the legendary Nurmi) The collection includes many water-colour paintings of the fundus of the eye undertaken in the 1920s and 30s by artists mainly from Theodore Hamblin. The John Weiss company have placed on permanent loan a magnificent mahogany presentation cabinet of the 19th century containing 120 surgical instruments in pristine condition.

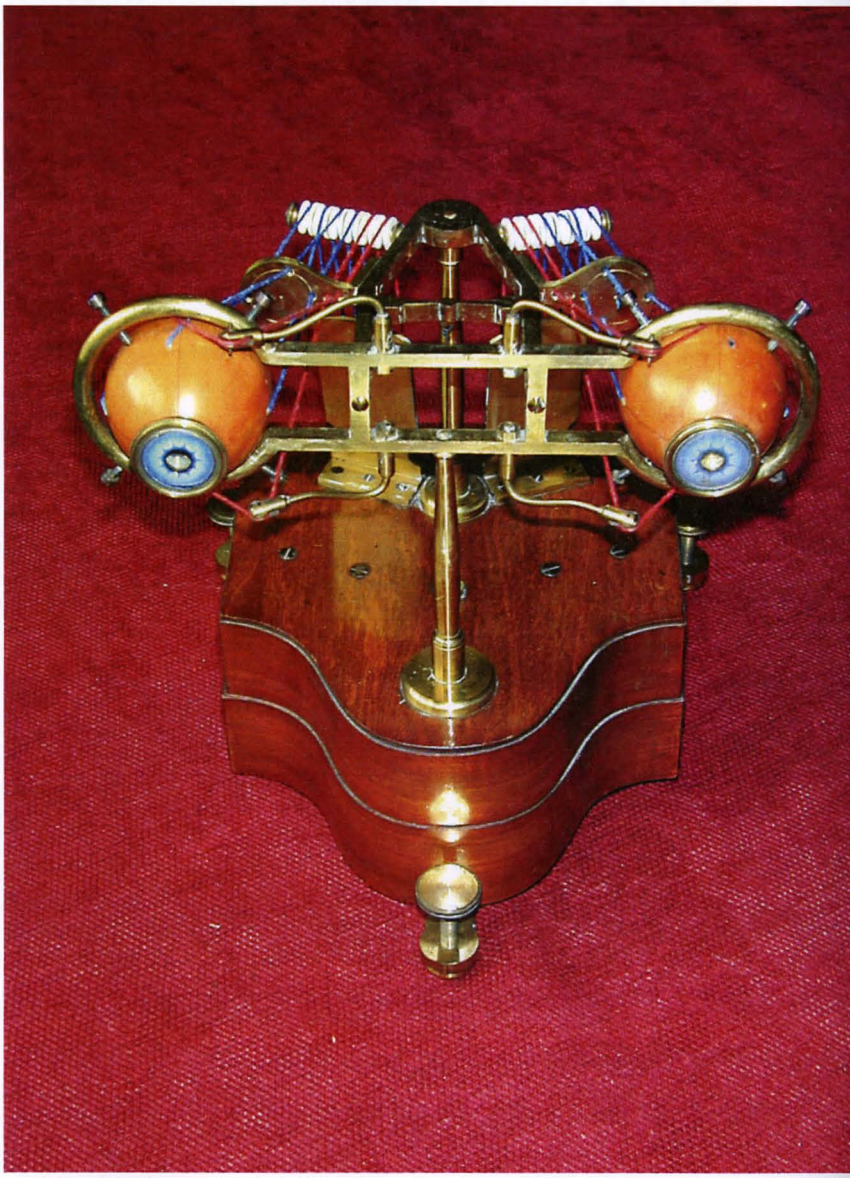


Fig.3 Ruete Ophthalmotrope

Apart from the Helmholtz ophthalmoscope the most important and rare instrument is a Theodor Ruete 1864 Ophthalmotrope (fig.3) for demonstrating the action of the muscles of the eye. This instrument was obtained at the same time as the Helmholtz from an optician in Halle in East Germany having been rescued from a skip when the eye hospital cleared out its attic.

The antiquarian library started with a gift of 160 books from the late John Winstanley, consultant ophthalmologist of St Thomas' Hospital. Included in this valuable collection were several rare editions including Richard Seabrooke's Caveat of 1620. Since then the library has expanded and includes books from the ol Glasgow Eye Infirmary and more recently th old Birmingham and Midland Eye Hospita including a copy of Isaac Newton's '*Optice* 1706.

Although the word "Museum" is used for th collection of ophthalmological instruments a The Royal College of Ophthalmologists this i incorrect as it is not open to the public and ca only be viewed by appointment.

CATARACT OPERATION OF SUŚRUTA: EXPERIMENTAL APPROACH

KMN KUNZRU and RITA OHRI

Suśruta* practised in the 1st millennium CE, in Varanasi in India. The exact dates of his existence are not clear,[1,5] however the claim that he practised 'before 800BC'[2] is difficult to accept. He describes the operation for treatment of cataract in *Suśruta Saṃhitā,* chapter 17, vv.57-68, and the patient's further care in vv.69-70. The instrument is described in vv.82-85.

Dr Dominik Wujastyk (then at the Wellcome Centre for History of Medicine) and KMNK read, and translated from the Sanskrit, the description of this procedure in 1998-99. We were dissatisfied with the translations available to us, and did our own to clarify errors and ambiguities, however we were still unsure about the exact technique employed by Susruta.

Later, KMNK (having gained a better understanding of the subject), reread the text, with the help of Mrs. Isabelle Glover. Rita Ohri looked at our translation and she and KMNK together ironed out the apparent anomalies, anatomical as well as physio-pathological. KMNK had the instrument made in brass, to *Susruta's* description.

The instrument[4,5] (vv.82-85.1)

It is double ended, with tips tapering from a bulbous shoulder to a sharp point, variously described as size of a barley corn, or bud shaped. Total length is 8cm. ('eight fingers') with a wide middle, 'a thumb's width,' **or** 2.5 cm in diameter (fig.1.)

Description of the operation

(Our translation)

'In temperate weather, the well prepared and restrained patient sits and fixes his gaze continuously at the nose (internal and downward squint). The surgeon holds the instrument (barley shaped) between the thumb, index and middle fingers, operating with the right hand on the left eye (the surgeon facing the patient), and vice versa.'

'The puncture point is at the junction of outer two-thirds and inner third of a line joining the pupil to the outer canthus of the eye' (we have found this to be about 4mm. away from the limbus, the corneo-scleral junction) 'neither too high, too low, nor too far way to the

Fig.1 The instrument described by Susruta

side' (implying precision) 'avoiding the network of vessels. The instrument is pushed confidently aiming at the pupil. Proper puncture is accompanied by a sound and a drop of fluid coming out.'

'On puncturing, the eye should be irrigated with human milk and fomented with leaves of wind pacifying medicines. The lens is punctured and scraped with the point of the instrument, and the patient made to blow out explosively through the ipsilateral nostril, closing the opposite one, thus displacing the *dośa (the affected lens).* The operation is properly done when the vision clears like the sun in a cloudless sky. If the lesion does not displace or reappears in the pupil, the procedure is repeated in its entirety. When the vision is clear the instrument is removed carefully. The eye is irrigated with ghee (clarified butter) and bandaged.

The patient lies supine, undisturbed in a sheltered room, and should avoid straining. The eye is washed every third day with wind alleviating decoctions and fomentations. Light diet is allowed. Normal diet and activities are allowed after ten days.'

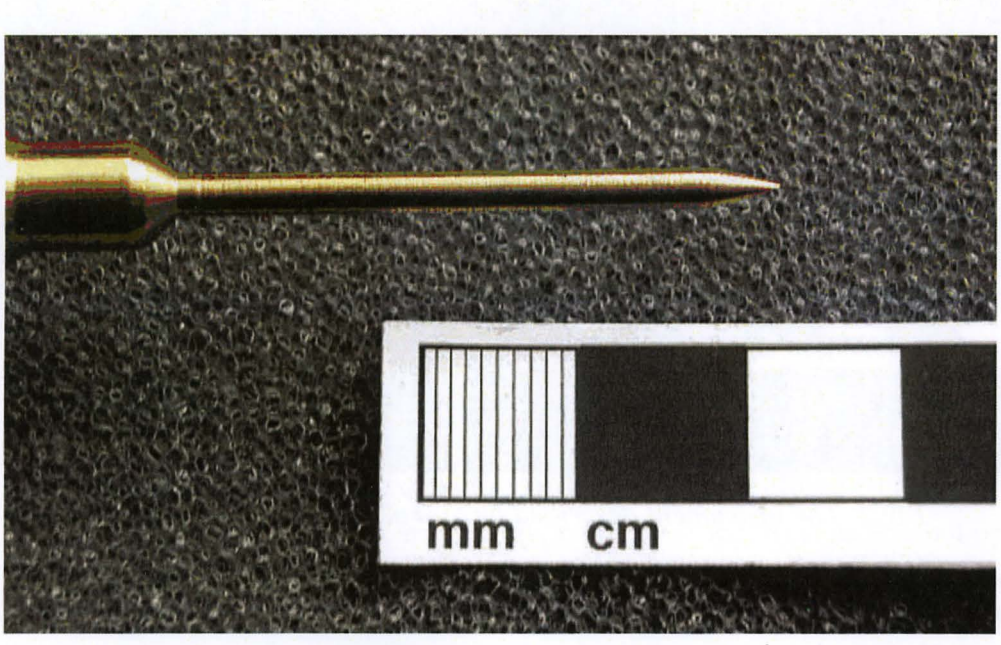


Fig.2 The operating tip of the instrument

Hypothesis and experimental evidence

RO measured the intraocular pressure and pr trusion of the eye in KMNK, as well as mar ing the puncture point. On performing t blowing-out manoeuvre there was no rise the intraocular pressure, but a 1mm. protrusio of the eye. The observations were confirme by several measurements.

The puncture point is through the sclera, po terior to the ciliary body (we think this is t 'network of vessels,') then through the vitr ous (the 'drop of water' that comes out,) in the posterior capsule of the lens. In a matu cataract (the indication for the operation) t suspensory ligament, the zonule, is fragile a would rupture ,allowing the lens to be di placed inwards, downwards and posterior when the eye protrudes forward, laterally, a upwards - the direction of the eye socket.

We have confirmed in the pig's eye model th the puncture produces the drop 'water' (fig.3) but we heard no sound. The t of the instrument appears in the lens witho any damage to the ciliary body or choroid, b cause the precise point punctures through t relatively avascul pars plana of the ey ball.

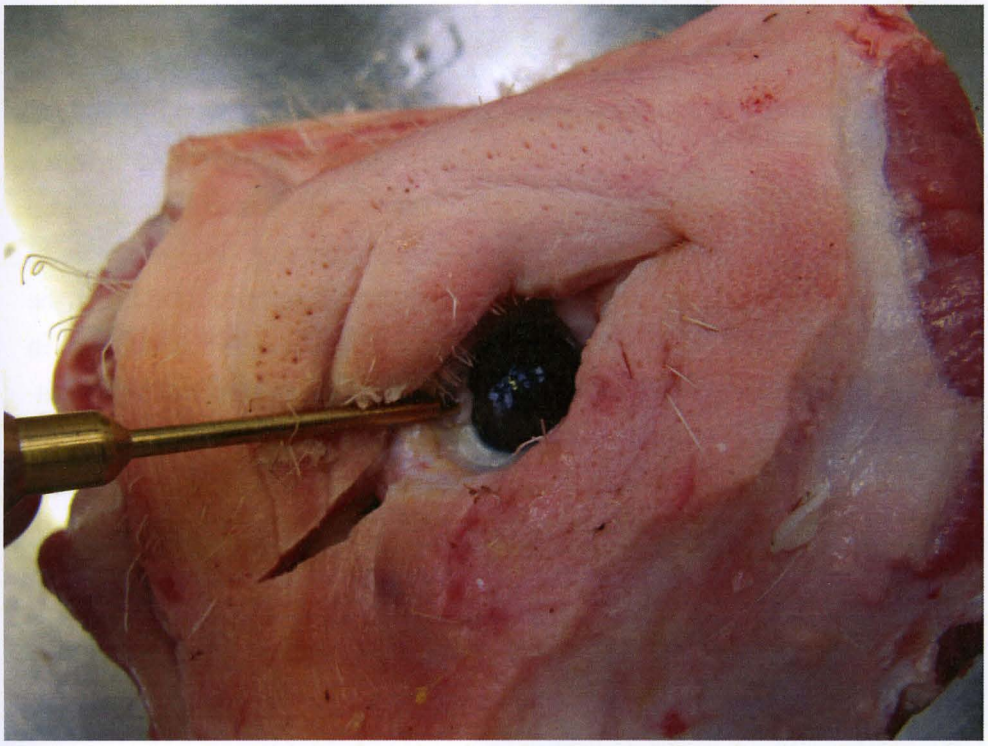
The next stage in t experiment is to fi a technique weaken the zonu and harden the le to reproduce the p thology of a matu cataract lens.

Comments

We have demo strated experime tally the anatomy

Suśruta's operation for cataract - a form of 'couching.' The approach is through the vitreous, avoiding the ciliary body. *Anterior* chamber perforation does not produce a stable drop of fluid, and therefore we cannot see how Roy et al.[2] can justify their claim to this being an 'extra-capsular extraction'. Their translation appears to attribute words and meanings that do not exist in the text. Their dating of Suśruta's existence is difficult to accept, especially in the absence of any significant supporting evidence from other scholars.

We are continuing our experimental work with the pig's eye model to reproduce the pathophysiology of the cataract lens and its ligament, and replicate the mechanism of the hemi-Valsalva-like manoeuvre. We will report back.



The experimental 'puncture' approach to couching the lens in a pig's eye

Summary

Our experiments validate the anatomical approach of Susśruta's cataract operation. It is 'couching' by the trans –vitreous approach through the pars plana. The instrument, manufactured to his specifications, appears to function satisfactorily. There is no evidence that Suśruta described extra-capsular extraction.

References

1. Meulenbeld, GJ (2002) *A History of Indian Medical Literature* Vol.1 (Groningen: Egbert Forsten) *Chapter on Suśruta*

2. Roy, PN; Mehra, KS; Deshpande, PJ (1975) *British Journal of Ophthalmology*, 59: 171. 'Cataract surgery performed before 800 BC.'

3. Sharma, PV (2000) *SUŚRUTA SAṂHITĀ* (Varanasi: Chaukhamba Publications)

4. Singhal, GD (1976) Ophthalmological and *Otolaryngological Considerations in Ancient Indian Surgery*, volume 8 Ch.17, p73, 1972 (Varanasi: Singhal Publications).

5.Wujastyk, D (2002) *The Roots of Ayurveda* 3rd. Edition (London : Penguin) *Chapter on Suśruta*

(* 'Sushruta' is a commonly used alternative spelling of his name.)

MILESTONES IN CARARACT SURGERY AND ANAESTHESIA

JOHN PROSSER

Cataract is a very common affliction of mankind being currently estimated as producing blindness in 17 million people. Originally thought to be a waterfall in the eye, hence the term cataract. Not recognized as clouding of the lens until 1705. Ancient writings dating back to 200 BC describe the condition and its treatment. Today the surgical treatment of cataract is one of the world's most successful operations. The number of operation is ever increasing as demand rises and more people in the developed world live to ripe old age.

'Couching for cataract' has been performed since ancient times. This involved displacing the lens from the visual axis either by external pressure on the eye, more likely to work in the very elderly, or by inserting an instrument into the eye to break the zonule, holding the lens in place, to achieve the same purpose. It is very unlikely that the results were very good for many reasons particularly that spectacles with +10 dioptres are required for anything like normal vision.

Bronze Roman instruments from Semmelweiss museum Budapest

In 1748 Jacques Daviel published the first description of the removal of the nucleus of the lens but leaving the posterior capsule of the lens in place (*extracapsular extraction*). The surgery required a large incision which was not sutured. He claimed that the operation was "quite successful in 115 cases and successful in 100 cases" - a considerable improvement on the results of couching!

In 1753 Samuel Sharp described the surgical removal of the whole lens including the capsule by incision and digital pressure on the cornea to extract the lens (*intracapsular extraction*). Later the method gained popularity as a result of the use of forceps to extract the lens a technique introduced in 1871. The wound was first sutured in 1867. Both extracapsular and intracapsular techniques continued to be used but the extracapsular method predominated until the early 1900s. Many improvements were introduced over the years. The addition of atropine drops to dilate the pupil. Later antibiotics and steroids were added to control infection and inflammation.

From the 1850s general anaesthesia became available, before this time cataract surgery had been performed and developed without the benefits of anaesthesia. General anaesthesia at this time was frequently associated with post operative vomiting which was likely to increase post operative complications.

Box of cataract instruments mid nineteenth century Worcester Museum

In 1884 Karl Koller discovered the anaesthetic effects of topical cocaine which produced satisfactory analgesia of the anterior part of the eye. This was a considerable improvement over general anaesthesia but not ideal. Repeated application of cocaine to the cornea produced clouding making visualizing the lens difficult. Cocaine is quite toxic producing adrenaline like effects and may also produce addiction if used repeatedly. Later less toxic local anaesthetics were introduced both for topical use and by injection.

Later developments included an enzyme chymotrypsin which was used to weaken the zonule. In 1964 The use of a cryoprobe was introduced by Amoils. The cold tip of the instrument froze on to the lens thus adhering to it. The lens was then gently moved to break the zonule and the lens removed.

From the 1900s to the 1970s inracapsular extraction predominated. Without the natural lens patients needed very thick positive lens spectacles, in the order of +10 diopters, to be able to see. This produced 25% magnification and a limited visual field. This could be resolved with the use of contact lenses which are difficult to use by elderly people.

By 1970 general anaesthesia was predominant for cataract surgery with local anaesthesia being reserved for those thought to be unfit for GA. This was the situation when I commenced work with my ophthalmic surgical colleagues.

In 1928 Elschnig described retrobulbar local anaesthetic block. This involved injecting local anaesthetic at the apex of the orbit using a 50mm needle. This produced good analgesia of the eye but the facial nerve was unaffected thus the patient could squeeze the eye by closing the eyelids tightly, making surgery difficult and risky. Thus a facial nerve block was added to prevent this problem. The main problem with this block is the risk the damage to the ophthalmic artery causing vision threatening retrobulbar haemorrhage (about 5 to 10% of cases). Damaging injection into the optic nerve and also injection into the subarachnoid space causing midbrain anaesthesia are also serious problems.

In 1989 Fry and Henderson described a peribulbar block using a shorter needle infiltrating around the muscle cone with medial and lateral injections. A larger volume of local anaesthetic is required but the eyelids are paralysed and squeezing prevented. There is

a low risk of haemorrhage which is usually only minor, and the risk of damage to the optic nerve much lower. As with any needle block there is a risk of direct damage to the eye itself for this reason these blocks should only be done by doctors trained in these techniques and with great care.

In 1990 Julian Stevens popularized the sub-Tenon's injection using a blunt cannula to inject local anaesthetic under Tenon's fascia, a synovial layer which surrounds the sclera. This technique was described in a textbook published in 1914. Recently this technique has become very popular as it is effective and the risk of damage to the eye is minimal.

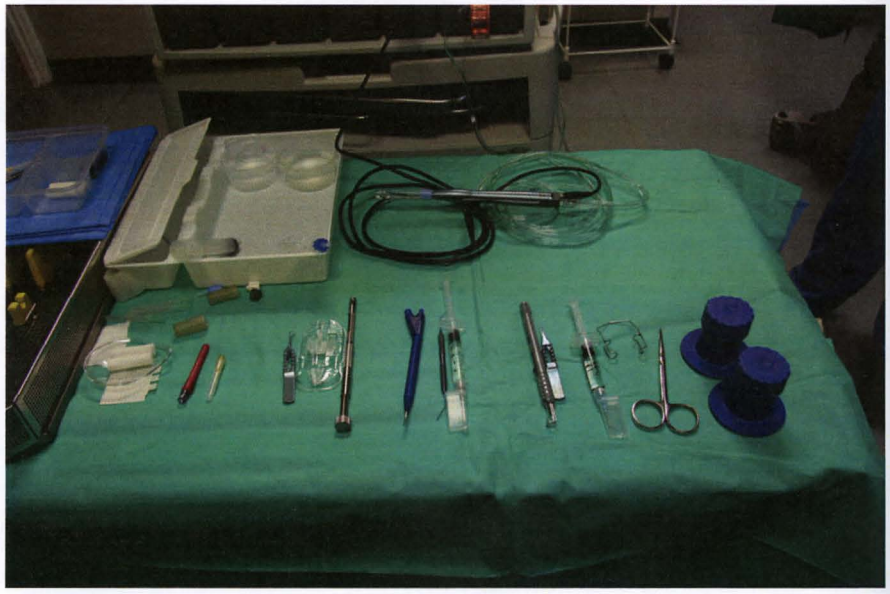
Since 2000 topical anaesthesia of the cornea has gained in popularity as surgical techniques have changed. Simple and quite effective with eye drops only. Sometimes minor discomfort is felt which can be improved with injection of local anaesthetic into the anterior chamber of the eye by the surgeon during the operation. The eye and the eyelids can move freely but modern surgical techniques are so good that this is not usually a problem. Many ophthalmic surgeons are happy to operate under topical anaesthesia only but some prefer to work with a peribulbar or sub-Tenon's block.

Recent major advances in ophthalmic surgery.

In 1949 Harold Ridley implanted Perspex lenses into the anterior chamber of the eye to replace the natural lens, with some success. Since then improvements in the lenses and surgical techniques have made the replacement of natural lens with a synthetic lens standard treatment in UK

In the 1970s extracapsular extraction was revived with the prosthetic lens placed in the lens capsule behind the iris kept in position by plastic arms attached to the edge of the lens.

In 1969 Kelman introduced the technique of phacoemulsification. This uses ultrasound energy delivered by a thin probe to break up the nucleus of the lens into tiny fragments which are then aspirated through the probe. Thus only a small incision, about 3mm, is required to remove the cataract. The replacement lens can then be inserted folded or rolled up into the remaining lens capsule through the same incision. The operation can be completed in less than ten minutes. Usually no sutures are required. The disturbance to the eye is not great and the risk of astigmatism caused previously by large incision surgery is dramatically reduced.



Theatre trolley set up for modern cataract surgery

The current surgical and local anaesthetic techniques have enabled cataract surgery to be performed as day case surgery with minimum upset to patient welfare. However the equipment needed to perform this surgery is expensive and space occupying. Operating microscope, computer controlled phacoemulsifier with fluid inflow and outflow control, video camera and television screen all use a lot of theatre space. The fine surgical hand tools are not so very different from the original ones used in the 18th century.

THE EMBRYOLOGY OF THE OCULAR LENS: A TEACHING MODEL BY PROF. OTTO BECKER (1888)

PETER & JULIE MOHR

The item consists of a set of eight round plaster models in a velvet-line box (32x21 cms.) laid out to depict the embryological development of the lens of the human eye from a sphere in a 10 mms. embryo (37 days) to a fully developed lenticular shape in 200 mms. foetus (6 months.) Each model is carefully decorated to show the pattern of lens cells and their suture lines (fig.1). The model is accompanied by a leaflet entitled:

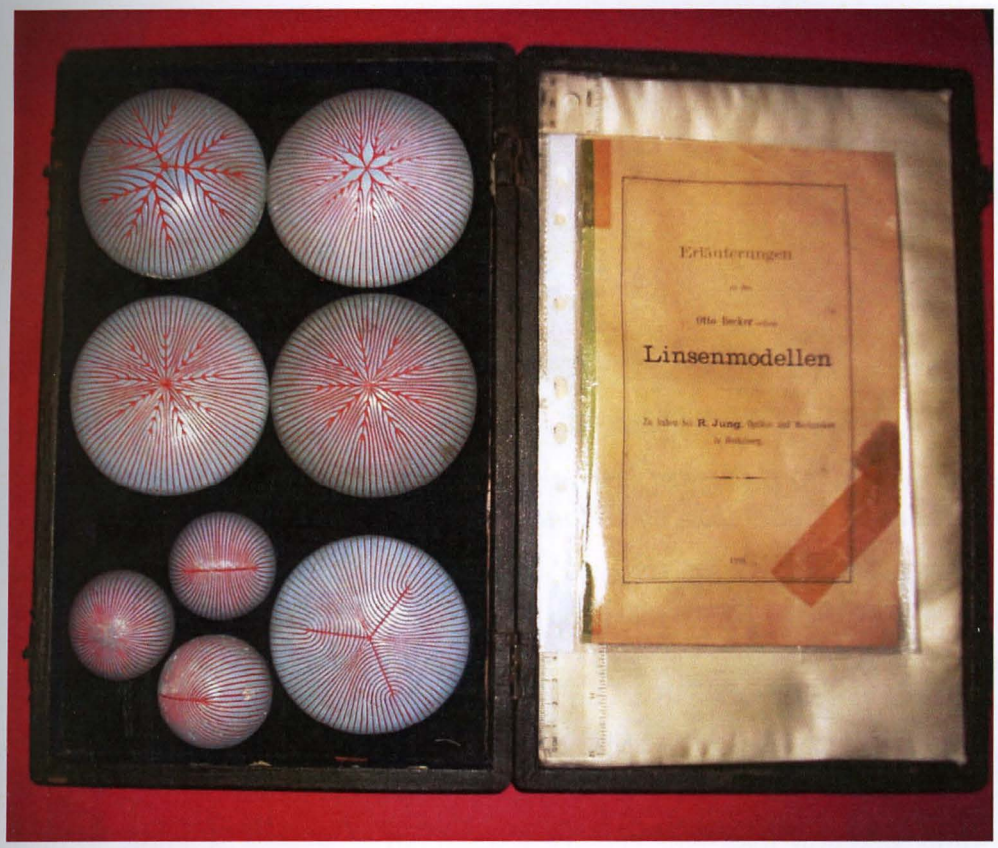


Fig.1 . Set of plaster models of the human eye lens to show embryological development.

Otto Becker' schen Linsenmodellen made by R Jung, Optiker und Mechaniker in Heidelberg, dated 1888 and priced 20 marks. The leaflet describes the embryology of the lens and its cellular development in detail.

Otto Heinrich Enoch Becker (1828-90)

How did this set of models come about? Otto Becker was professor of ophthalmology at Heidelberg University from 1868 and founded the University Eye Hospital in 1878. He first studied mathematics and science at Berlin and then medicine in Vienna 1854-59. After his MD he assisted Albrecht von Graefe before gaining the Chair at Heidelberg. His mathematical training gave him special interest in optics and the ocular lens; he published widely on ophthalmology including his great work '*Zur Anatomie der Gesunden und Kraken Linse'*, 1883 (Anatomy of the lens in health & disease.) In 1887 he founded the Graefe Museum and the following year hosted the International Ophthalmology Congress in Heidleberg. The lens models were made for the Congress as a gift for honoured guests and to sell to visiting delegates. In 1893 the set of models was again on sale at the World's Exposition in Chicago.

Embryology was an important research topic in the late 19th century and the 'induction' of the lens by the optic cup was a major discovery. Detailed embryological models helped to visualise a complex and dynamic process, not just in teaching, but also in research.

Obituary Prof. Otto Becker, *BMJ*, Feb 22, 1890.
Ida Mann, *Development of the Human Eye*, 1928

VACCINATION INSTRUMENTS ? ANYTHING SHARP

DERRICK BAXBY

The first smallpox vaccination instrument was the ordinary thumb lancet, already used for smallpox inoculation (variolation). However, a wide range of instruments specifically designed for vaccination appeared particularly from the mid 1800s. They ranged from instruments with simple lancet or needle points to a variety of spring-operated items. These various types have been described and illustrated in the Bulletin (cf Nos, 8, 14, 19), and discussed at greater length elsewhere (1,2) where more references may be found. However, relatively little attention has been paid to vaccination with surgical instruments not designed for the purpose, and even less to the use of non-surgical items. This aspect is briefly covered here.

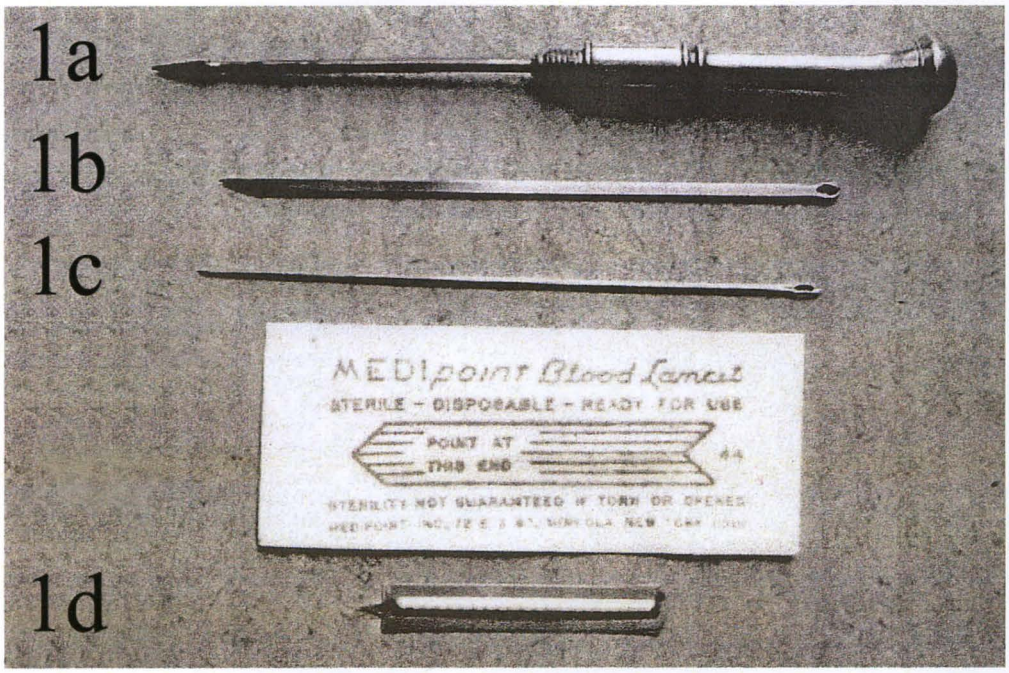


Fig.1 (a) Silver-plated trocar (no maker) (b) Hadegorn No1 surgical needle (c) Sim's abdominal needle (d) MEDI point blood lancet

Although particular instruments such as the 'occulist's needle', the 'simple exploring needle' and Paget's abscess knife were recommended by some workers, any item with a sharp narrow point would serve and a variety of ophthalmic and small surgical instruments were probably used. The particular trocar illustrated here (fig.1a) was certainly used for vaccination well into the 20th century. When the multiple pressure technique for vaccination was introduced in the mid 20th century simple surgical needles were widely used. Particularly popular were Hagedorn's No 1 with a narrow flat blade (fig.1b), and Sim's abdominal needle (fig.1c), with a sharp triangular end. (It should be noted that Dixon confuses the two in his *'Smallpox'*, 1962.) As demand rose for presterilised disposable instruments, the simple bleeding 'sharp' was used (fig.1d). Needles and sharps co-circulated were still used by some older doctors after the introduction of the bifurcated needle sometimes leading to different types being applied by different individuals at the same session.

Two instrument types perhaps deserve particular mention. The ivory folding knife (fig.2a) was said by Bennion to be the instrument 'usually used' for vaccination. However, no particular mention of this type of knife has been found. With its folding ivory blade, reasonably sharp and resistant to rust, it is probably a cheap fruit knife, although it would serve equally well for vaccination. Bennion probably confused it with the disposable ivory point, designed for vaccination and produced by the thousand in the later 19th century.

Items of the type shown in Fig.2b were advertised as 'erasers' in the early 20th century and

Wilbur has suggested they may represent attempts to sell off phlebotomy/vaccination instruments rendered obsolete by the requirement for heat-sterilisable instruments. Davis and Appel suggest the type could be used for phlebotomy, and hence by extension for vaccination; this seems reasonable. Although the instrument in Fig.2b does seem large Kirkup reproduces a page from Jetter & Scheerer's catalogue showing Chalibeaus's vaccinator. It is much larger than the more conventional types in the same illustration and identical to the one shown here.

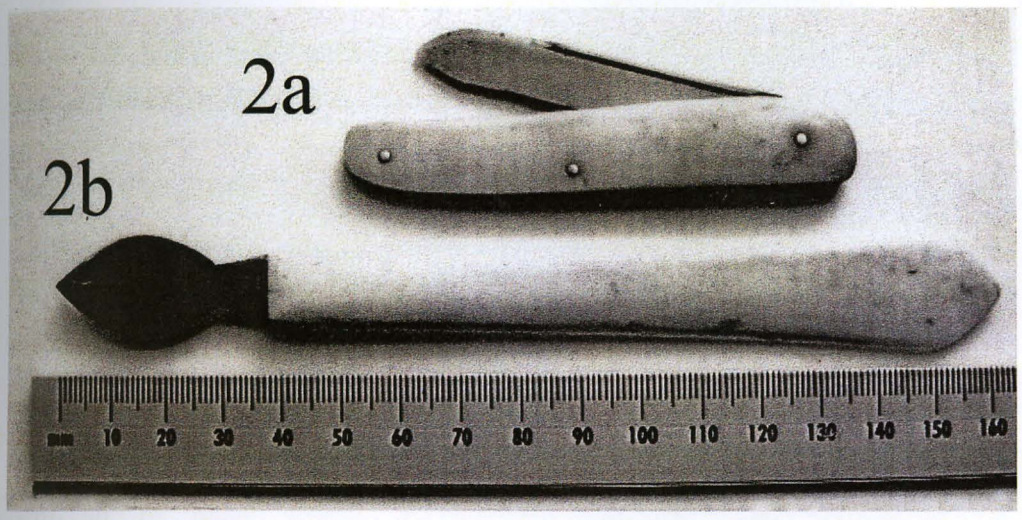


Fig.2 (a) Ivory fruit knife/vaccinator? (early 19th century) (b) Vaccinator/ eraser ? (late 19th –early 20th century)

By the end of the 19th century, opposition to the more complicated instruments, which were difficult to clean (and expensive), led some to turn to the humble darning needle. In 1899, a letter to the *'Lancet'* from 'FJL' recommended the ordinary darning needle; 'it is cheap, it is efficient, it is clean'. 'Vaccinator's cramp' could be avoided by inserting individual needles in special holders (fig.3a), and by 1901 the *'Lancet'* was referring to the ordinary darning needle as 'commonly used'. Those who still preferred multipoint instruments could obtain modifications of the well-known Weir and Cooper Rose instruments specifically designed to take replaceable darning needles (fig.3b,c).

I gave the first of my two papers on smallpox vaccination techniques the sub-title 'From knives and forks to needles and pins', not just because I thought it was catchy but also because it was accurate. In 1894 'HLD' wrote in the *BMJ* that he had been using common pins for some years. Easily sterilised, disposable and cheap; '360 pins cost one [pre-decimal] penny'. Not perhaps very practical but perhaps he had a point?

REFERENCES

1. Baxby, D., (2002). *Vaccine*, 20; 2140-49. Smallpox Vaccination Techniques

2. Kirkup, J., (2006). *The Evolution of Surgical Instruments*. Novato: historyofscience.com 424-43

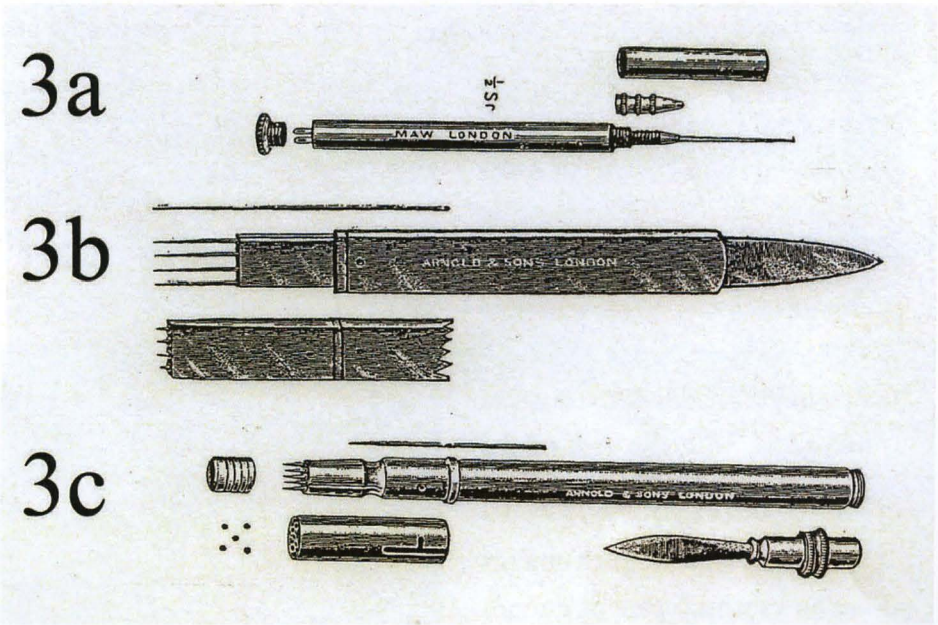


Fig.3 Vaccinators designed to take darning needles. (a) Bartlett's (Maw, 1913) (b) Little's modified Weir type (Arnold 1904) c) Arnold's modified Cooper Rose type (Arnold 1904)

THE REMOVAL OF THE DISPLAY CABINETS IN THE MANCHESTER MEDICAL SCHOOL MUSEUM - PROGRESS OR VANDALISM?

PETER MOHR
HONORARY CURATOR

The medical history displays, under the watchful eyes of the bust of founder Joseph Jordan, have been the centre piece of the Stopford Medical School since the building opened in 1974. Visitors, medical historians, alumni peer at the historic instruments and hundreds of students daily pass by the cabinets, absorbing some medical history by diffusion. It is with some sadness that I have to report that the display cabinets are to be dismantled to make way for a refurbished student lounge area and lecture theatre extension. The objects are to be put into store with the rest of the medical equipment collection.

Fig. 1 Some of the old displays in the Stopford Medical School foyer.

Progress and improvements are an essential part of a modern university; indeed the cabinets were showing their age – old fashioned and difficult to work with. Historic displays are often relegated to 'second place' when it comes to planning yet they are an important part of an institution's history; they need to be improved and modernised just as much as other facilities. It is likely that at a future date, some new display cabinets will be installed 'here & there', fitted-in to whatever gaps are left, but this has been a lost opportunity for the planners to do something special.

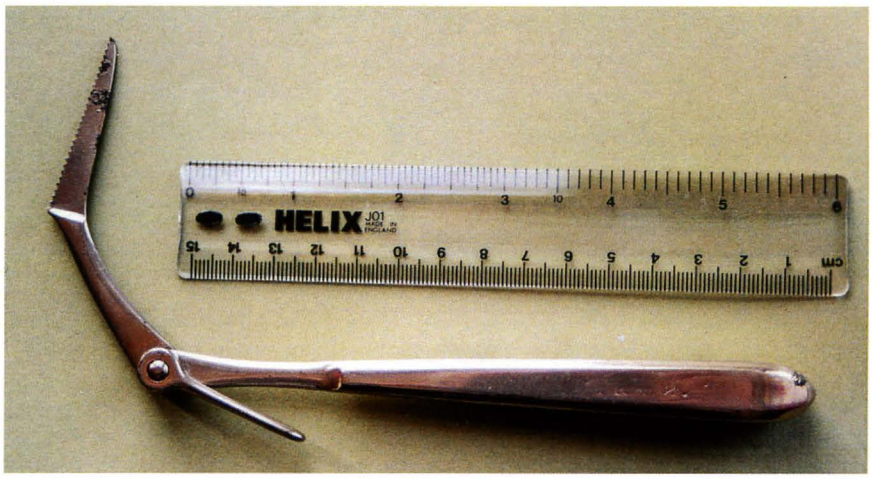
University of Manchester Medical School Museum,

Fig. 2 Display cabinets on the first floor.

WHAT IS IT?
[August 2011]

The limbs of this instrument are controlled by the central knurled wheel. What is it, for what was it used and who devised it?

WHAT IS IT?
[January 2011]



This is Sir William Macewn's osteotomy saw for laminectomy, firstly utilised to relieve paraplegia, c.1883. The complete instrument has two blades and two rasps, all interchangeable to any angle, enabling division and excision of laminae with their conjoint spinous process. Macewn also pioneered removal of a spinal tumour by this means in 1887. Currently he is most remembered for devising the osteotome or equal-angle bone chisel for correcting rickety deformities, an instrument still in use today.