The Historical Medical Equipment Society

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Apology - We apologise to members for the delayed production of this Bulletin due to unforeseen circumstances.

FUTURE MEETINGS

THE ARMY MEDICAL SERVICES MUSEUM, ALDERSHOT - 15th OCT 2005

SHEFFIELD - 1st or 8th APRIL 2006 (to be confirmed)

EDITORIAL

Since the last Bulletin, we have received complimentary reports on its revised presentation, and particularly for our experiment with colour illustrations. We hope this form of presentation can be continued although some items, especially detailed studies of instruments are often better in black and white, as I think the unusual vaccinators pictured in this issue demonstrate. We have also been complimented on the excellence of the last meeting, at the Royal College of Surgeons, which attracted a record attendance of the membership, perhaps because the last Bulletin advertised in advance details of what is a revolutionary rearrangement of the Hunterian Museum, with its considerable emphasis on surgical history over the last two hundred years, and also the associated equipment and instrumentation housed in its Silver and Steel gallery. We will continue to advertise future meetings with a detailed précis of each museum's history, contents and significance, and hope this will help you when making a choice to attend or not. If you cannot attend, you will find details of opening times at the end of the article, so that personal visits can be arranged at leisure.

The success of our last meeting was mainly due to the innovative displays now available in the new Hunterian Museum, not of course the responsibility of HMES. In particular we thank Simon Chaplin, Senior Curator who masterminded the detailed arrangement of the Museum and who introduced the meeting with a synopsis of its genesis and contents, and also Jane Hughes, Audience Development Officer, for her introductory comments. As a number of members told me, there was too much to absorb in the time available but they plan second visits! Certainly, there is plenty of choice in what is now a museum reflecting British surgical progress during the 19th and 20th centuries and, in my view, a presentation long overdue in the College.

For our next meeting on 15th October, we are also visiting a new and comprehensive museum, recently re-constituted from four Army medical museums and re-opened in 2004. The former Army Medical Museum, at Keogh Barracks, Aldershot which represented the Royal Army Medical Corps, is now joined by the museums of the Royal Dental Corps, the Royal Army Veterinary Corps and the Royal Army Nursing Corps. Further details of the Army Medical Services Museum are provided by the Curator, Captain Peter Starling (see page 11).

Our Bulletin requires more input from the membership and I appeal to those who would like HMES to visit their museum or collection, to write a short note on their history, current holdings, recent exhibitions and future projects with, if possible, two or three photographs of aspects of the museum or intriguing items in their collection. This would encourage the Society to visit and, in any event, would be helpful publicity, perhaps sparking off new contacts in their particular fields of interest. May I also appeal to those of you who have visited exceptional, unusual or obscure museums abroad to write a brief summary of their content and significance, even if this is only a sentence or two, provided they include an accurate address, phone number or email address with days and times of opening. Again this can only be useful publicity as well as offering our members opportunities to correspond with those having similar objectives. Please don't hesitate to contact me if you wish to discuss such a contribution to the Bulletin.

I look forward to seeing you at the Army Medical Services Museum in October.

HMES MEETING AT THE ROYAL COLLEGE OF SURGEONS, LONDON 16th APRIL 2005

JOHN KIRKUP

We met in the MacRae Gallery which highlights the diversity of the collections for teaching and research purposes, to be welcomed by Simon Chaplin, Senior Curator of the Museums who then traced the history of John Hunter's original late 18th century museum to its current distinctive successor, following extensive rebuilding and furnishing thanks to generous donors including the Heritage Lottery Fund. We discovered many pathological specimens of the old museum had been removed and stored, freeing space for new presentations to reflect the development of surgery and its specialities during the last two centuries. Remaining pathological as well as the new items on display, now benefit from explanatory graphic material and also the use of equipment and instrumentation to inform and enliven the exhibits. After further explanatory remarks by Jane Hughes, Audience Developmental Officer, we divided into two groups for conducted tours by Simon and Jane. We admired the beautifully illuminated Crystal Gallery, centrally situated on the first floor rising to the second floor, containing selected Hunterian specimens and surrounded by items explaining Hunter's life and times. Further displays on the first floor considered historical aspects of anatomy, the College and the Museum; there is also an art collection and the Silver and Steel exhibition devoted to surgical instruments; this leads on to a Study Centre and the reserve collections. On the second floor, the upper Crystal Gallery occupies the central space but is surrounded by the Science of Surgery Gallery which dominates all four walls and is the most innovative feature of the new Museum. This historical survey of British surgery, from the end of the 18th century to the present, utilises pathology specimens, artefacts of all descriptions including instruments, anatomical casts, photographs, documents, hands-on apparatus, film presentations, Lister's cabinet and antiseptic equipment, World War One plastic surgery drawings, an early heart-lung ,machine, an early leg-lengthening frame, recent micro-surgical and endoscopic devices, and joint prostheses, to mention a few items. A special area for temporary exhibitions adjoins this Gallery.

In the afternoon, papers were presented by Mick Crumplin on "The Fatal Shot –on Nelson's Death" in view of the 200th years celebration of Trafalgar and by John Kirkup on "Historical Instruments at the College" (see summaries below). We then split into groups, firstly to visit the Historic Instrument Room where items are processed, catalogued and stored, and where for the purpose of the visit items were removed for examination and discussion, and secondly to take a closer look at the Silver and Steel cabinet and associated graphics. Although this huge cabinet was not yet complete, there was plenty to interest the Society. Briefly, instruments are displayed from the point of view of their basic structure, the materials of composition, their application to basic procedures including the arrest of haemorrhage, the extraction of foreign bodies, amputation and endoscopic developments. The sixteen rolling drawers below the cabinet, devoted to the surgical specialities, proved especially intriguing. The graphics on the wall opposite demonstrate aspects of instrument manufacture, instrument identification marks, manufacturers catalogues and instrument ergonomics.

The day ended with our usual session of attempting to identify mystery objects brought by members.

THE FATAL SHOT - ON NELSON'S DEATH

MICK CRUMPLIN

In the year we commemorate the 200th anniversary of the battle of Trafalgar, we also remember Lord Nelson's fatal wound and recall that, previously, he was wounded four times when serving at sea.

Entering the Navy at the age of twelve, he sustained his first injury when aged 36 years at Calvi, Corsica in 1794, when struck on the face and right eye with a shower of small stones, by a round shot striking a parapet. He lost sight in this eye which never recovered and subsequently his eyes were stressed by weather and sunlight. Unlike some portrait representations he never wore a patch to cover the eye but had a green eyeshade built into the brim of his hat. Off Cape Vincent in February 1797, he gallantly lead a boarding party when taking two Spanish ships and received a splinter wound of the left abdominal wall which resulted in a hernia. This evidently did not trouble him much. In July, 1797 Nelson, now a rear admiral, led a difficult assault on the mole at Santa Cruz, Teneriffe. As he clambered onto the mole in foul weather, he was hit near the right elbow by case shot or a musket ball. After some difficulties and staunching of the arterial bleeding by his stepson's silk stock, the right arm was amputated above the elbow, without any form of analgesia, by surgeons Eshelby and Remonier, on HMS Theseus, by dim tallow light; after surgery he was given laudanum. Subsequently he experienced considerable stump pain for four months. At the battle of Aboukir Bay in 1798, Nelson was struck above the right eye suffering a deep soft tissue wound, which resulted in a flap of forehead skin falling over the right eye. This bled profusely but after bandaging by the surgeon, he returned to his action station; the wound healed soundly.

Fig.1

On 21st October, 1805, at the battle of Trafalgar, HMS Victory engaged the French

ships Redoubtable and Bucentaure becoming entangled in the rigging of the Redoubtable in which there were trained sharp shooters. Highly visible on his

Fig. 2

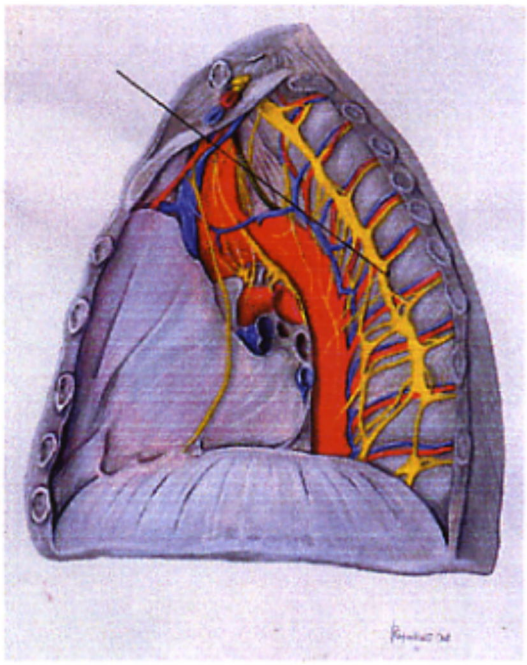


Fig. 3

quarterdeck, Nelson was struck by a bullet entering near the left shoulder, in a downward direction, at about 13.15 hours. Falling on his left hand, he was carried down to the orlop and surgeon William Beatty (fig.1). Both soon acknowledged the mortal nature of the wound; Nelson knew his "backbone was shot through".

The ball struck with a force of around 200 joules, injuring his chest wall, lung, spinal column and cord, rendering him paraplegic, and he must have sustained a pneumothorax with bleeding from two sets of intercostal vessels, left lung vessels and the paravertebral veins (figures 2 & 3). He was aware of fluid movement in his chest and became progressively more hypotensive. This combined with low pulmonary arterial pressure must have limited his haemorrhage to a degree for, at his post mortem, Beatty commented there was no great collection of blood in his chest. Perhaps the final event was a profound hypotension aggravated by the spinal cord transection. Nelson died, aware of his great victory, at around 16.30 hours.

Editorial Comment. Mr Crumplin is to be congratulated for his innovative study of the fatal shot's trajectory and its anatomical pathway, plus his illuminating deductions concerning the mechanism of Nelson's relatively slow death, that is slow in the light of the important structures damaged. We were fortunate to hear this original research which greatly clarifies the final episode of Nelson's illustrious career. Members may like to know that the fatal bullet, with fragments of uniform, are preserved in the Royal Collection at Windsor Castle, and that Beatty's instrument case is to be seen in the Royal College of Physicians and Surgeons of Glasgow.

HISTORICAL INSTRUMENTS AT THE COLLEGE

JOHN KIRKUP

This presentation demonstrates items and equipment in the College's reserve Historical Instrument Collection not on display in the new Hunterian Museum but which I hope are of interest.

Fig. 1

1.Buckston Browne's Walking Stick.

When prostatic obstruction was only treatable by repeated catheterisation, Browne (1850-1945) mastered this technique and made a fortune. Conducting his London practice on foot, even walking 26 miles to Box Hill to catheterise the author George Meredith, he transported catheters inside his top hat and minor instruments in the silver handle of his walking stick (fig. 1); in the body of the stick, a tube contains twelve cylindrical glasses for collecting urine samples, presumably for later chemical analysis. This stick was made by Krohne & Sesemann of London, perhaps at Browne's direction. We have another less sophisticated stick with glass tubes only.

2. Amputation Knives, 1730-1930

Five amputation knives were chosen to demonstrate (i) their gradual reduction in size over time and (ii) changes in the blade edge from a sickle, to concave, to straight and finally to convex shape, mainly in response to the popularisation of flap amputations and to the successive discoveries of cast, plated and stainless steel.

3. Mungo Park's Pocket-case.

Mungo Park, a young surgeon, was chosen by the Africa Association to trace the upper waters of the Niger River which was considered to flow eastwards, even perhaps having a connection with the River Nile. From Gambia in 1795, with two servants and two horses, he progressed slowly meeting much local suspicion and hostility to arrive at the Niger, but short of Timbuktu, by which time he had lost his companions, horses and most of his possessions. Fortunately, he retained his pocket case of minor surgical instruments (fig. 2), and by undertaking venesection, opening abcesses, etc he obtained food in return. His mission far from complete, he turned west and by miraculous good fortune staggered back to the Gambia in 1797. He wrote "Travels in the Interior of Africa" and gave the pocket case to Sir Anthony Carlisle, twice President of the

Royal College of Surgeons of England. The case is in poor condition as befits over two years exposed to the elements but the instruments remain effective.

Fig. 2

4. Special Tourniquets.
These tourniquets demonstrate intriguing concepts but none proved of much value in practice. (a) Lister's mark II abdominal, for the aorta during hip disarticulation; his three other versions were also abandoned as dangerous to the bowel. (b) Robert and Nelson's for the lung root during excision; the cord lasso proved difficult to sterilise. (c) Chabert's for the jugular vein, following a cut-throat, could well strangulate. (d) Godwin's metal loop, to reduce scalp bleeding during cranial surgery; clumsy and difficult to locate securely.

5. Symes' Amputation Case for the Saddle.
When horse transport dominated practice and operations were often performed in patients' homes, this form of instrument transportation was valuable (fig.3). Nevertheless it is a unique item in the collection. It is assumed the saddle was modified to receive the wedge shaped outer case. James Syme passed it to his son-in-law Joseph Lister.

Fig. 3

SMALLPOX VACCINATION : THE PROVISION OF STERILE INSTRUMENTS

DERRICK BAXBY

The work of Lister, Koch and Pasteur established the need for sterile surgical instruments and aseptic precautions and this applied as much to smallpox vaccination as to more invasive techniques. John Kirkup briefly reviewed vaccination instruments and illustrated some of them in an earlier Bulletin (2000; no8, 2-3), and I reviewed techniques and illustrated the instruments used for them elsewhere (Vaccine, 2002; 20, 2140-49). This paper extends those studies by briefly describing ways in which the need for sterile instruments was met.

A set in the author's collection, German in origin, is an interesting attempt to provide a constant supply of sterile instruments. Eight instruments, with round section handles, were

Fig. 1

Vaccination set for eight instruments with sloping rest to allow 'automatic' flaming and cooling. One of the two arms which clamps the instruments for storage is raised. (German, no maker, inscribed 'Dr K Grothey', mid-20th Century).

One approach was to continue production of existing designs; eg the common bleeding lancet, grooved spearpoint lancet or fork-pointed instrument, as illustrated by Kirkup, using metal handles rather than tortoiseshell, ivory etc. The point of the instrument could be flamed after each vaccination, and the whole boiled at the end of the session. A variety of slim all-metal instruments was introduced with needle or spear points which could be treated in the same way, eg designs by von Pirquet (with a screw-thread reversible tip, copied from an earlier ivory-handled design) and Stevens (solid metal without a screw-on cap).

stored on a sloping rest. A used instrument placed at the top of the slope would be sterilised by the spirit lamp incorporated in the base. Then as sterile ones were taken from the bottom, it would roll down out of the flame, cool, and be ready for use (Fig. 1). This orderly progression and simple routine would prevent the use of contaminated instruments. Nothing so ingenious nor with as many instruments as this has been seen in any catalogues; Jetter & Scheerer (French ed, 1905) illustrated a 'carousel' to take six lancets rotated into the flame by hand, and two sets each with three instruments neither with 'automatic' provision for sterilization.

Another approach modified the spring-loaded lancet/spearpoint originally introduced by Bensaude early in the 20th Century, (Fig. 2A). Here, the point was inserted into the skin by releasing a spring-loaded plunger. The modification, again probably German in origin, replaced Bensaude's integral point with removable tips. These were of substantial construction, and so probably expensive, and clearly intended to be re-used after sterilization.

One such used the 'vaccinostyle' developed by Mareschal in 1890 and produced initially by the French pen manufacturer Blanzy Poure & Cie. The styles (Fig. 3A), exactly like a pen knib without the central split, were supplied cheaply in boxes of 100 and 144 and, although re-used by some, soon rusted and were intended to be disposable. A variety of holders was available from Blanzy Poure including a simple metal holder from which the used

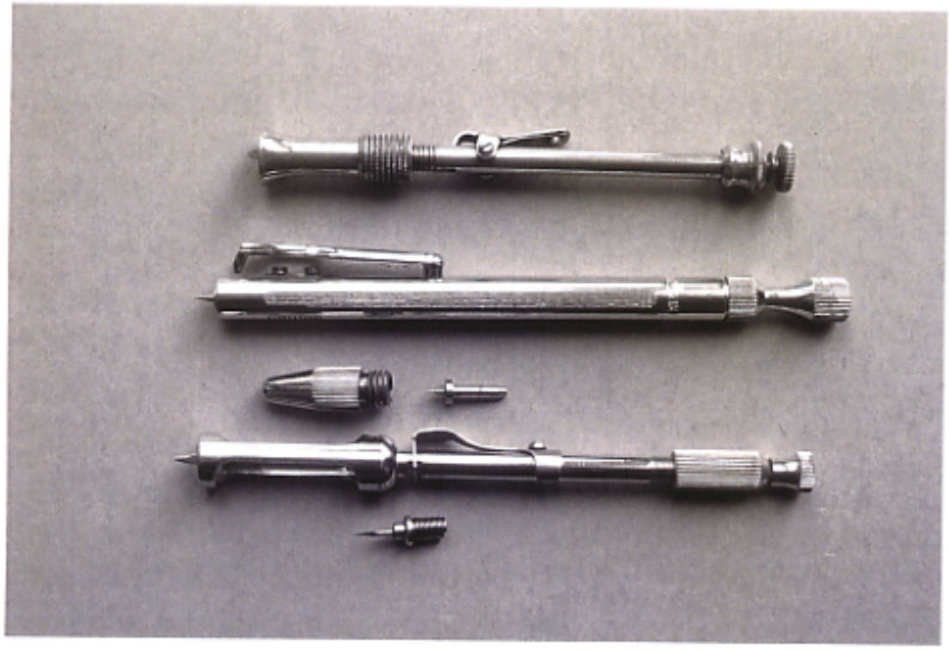


Fig.2A

Fig.2B

Fig.2C

Spring-loaded 'Bensaude-type' vaccinators. (2A); basic model with integral spear-point, adjustable for depth of incision (no maker, early 20th Century). (2B); Spring-operated non-adjustable instrument with screw-on cap and detachable needle point, (German, Durr 'Federlanzette', mid-late 20th Century). (2C); Spring-operated adjust-able instrument with detachable spearpoint, (German, DBGM, mid-late 20th Century).

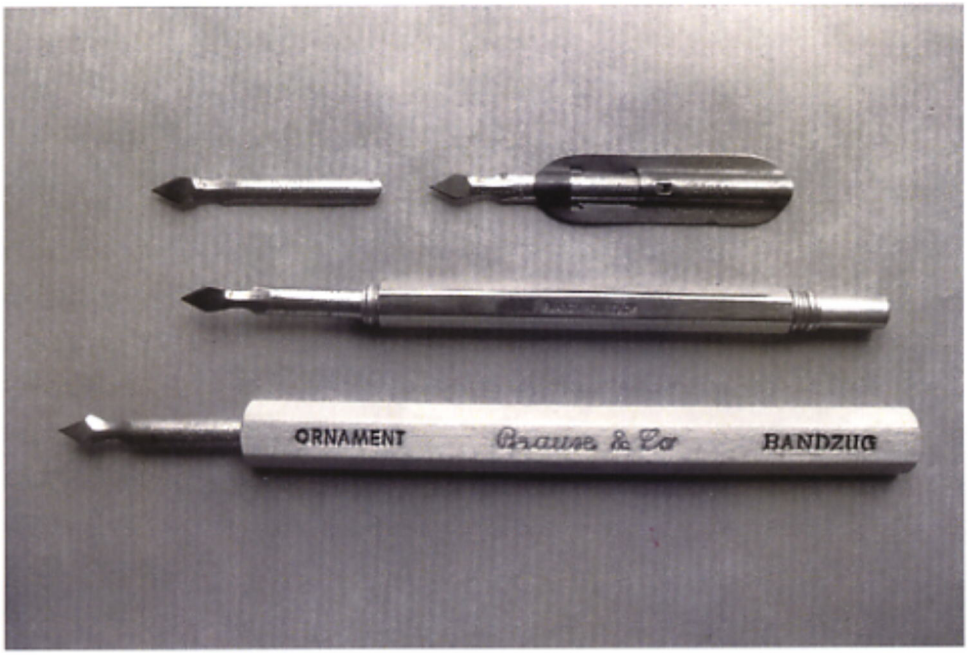
The points were supplied in and returned to a magazine holding 10 or 20 and presumably sterilized as a batch. Two slightly different designs in the author's collection, were almost certainly made in the mid-late 20th Century and rendered obsolete by the eradication of smallpox (Figs. 2B, 2C).

A totally different approach was to use a separate disposable tip for each vaccinee.

style was pulled by hand, (Fig. 3B) and a metal holder with a spring clutch so that the used stylet could be ejected automatically, (Fig.3C). The basic vaccinostyle was also produced in Germany by Brause & Co of Iserlohn and Blanckertz of Berlin, the former providing a set which included a number of simple wooden holders, (Fig.3D). Again these are of relatively modern construction.

In Britain, although some old designs continued in modern materials and new all-metal models were introduced, there was a move towards simplicity; basically some form of needle which could be re-used or was cheap enough to discard after use.

The continental models described here represent an unnecessarily complicated and expensive solution to the problem in hand and make an interesting contrast to the simple and cheap British approach. Obviously there was some cross-Channel



Figs. 3A , 3B

Fig. 3C

Fig. 3D

Vaccinostyles and holders. (3A); the basic vaccinostyle. (3B); in a simple metal holder. (3C); in holder with a spring-operated clutch mechanism for automatic ejection. (3D); with simple wooden holder. (3A-3C; French, Blanzy Poure & Cie, late 19th-early 20th Century. 3D; German, Brause & Co, Iserlohn, mid-20th Century).

'The Lancet' recommended the ordinary darning needle in 1901, and various simple holders for them were devised to prevent 'vaccinator's cramp'. However, surgical needles such as the Hagedorn No 1 or Sim's abdominal needle were very widely used in Britain, being suitable for both the scratch and multiple pressure techniques. They were still used for these techniques by some older experienced practitioners even after 1961 when Rubin developed the bifurcated needle for the multiple pressure technique. The need for a guaranteed sterile product and concern about the use of smallpox as a terrorist weapon led to the recent production of the bifurcated needle in a single-use sterile pack.

interchange and Mareschal's vaccinostyles were produced for a time by Arnold & Co. However, no British instrument has been found to match the complexity of the modified Bensaude models, nor the ingenuity of the German set. On the limited evidence available it is tempting to suggest that this difference between Continental and British practice is genuine, something only more research on these interesting instruments can determine.

I would like to thank John Kirkup for providing photocopies from a number of catalogues, particularly those of Jetter & Scheerer (1905), Simal (c 1910), and Brodard (c 1920).

THE ARMY MEDICAL SERVICES MUSEUM

PETER STARLING

As Curator of the museum, I look forward to welcoming you to the HMES meeting on 15th October where there is much to see: the following account outlines our history and displays for your information.

The Army Medical Services (AMS Museum) was constituted as a charitable trust in December, 1999, on amalgamation of the museums collections of the Royal Army Medical Corps, Royal Army Veterinary Corps, Royal Army Dental Corps and Queen Alexandra's Royal Army Nursing Corps. In 2002 it was awarded national registration.

The first museum and library of the Army Medical Department was established by Sir James McGrigor at Fort Pitt in the 1820's. This moved to Netley in 1860 and finally to Millbank in 1927. Prior to 1999 each Corps had an independent museum, at various locations in the Aldershot area. To bring these four collections into one museum entailed a major design programme and fundraising. The Heritage Lottery Fund agreed to make a grant of £292,000 towards the project, which amounted to 71% of the forecast cost. The refurbished museum was formally opened by Her Royal Highness the Countess of Wessex on 6th May, 2004.

The museum presently occupies a site of 9,200 square feet within the Defence Medical Services Training Centre, Keogh Barracks. It comprises two galleries, a reading room, a gift shop, offices, storerooms and a memorial chapel. Outside the museum are various examples of military ambulances and a Cold War era ward-coach from a hospital train. Items accessioned into the museum collection must relate to the medical services of the British Army and its campaigns and battles. There are large collections of uniforms and insignia, campaign medals, medical, dental and veterinary equipment, and personal souvenirs.

The medical collection contains much instrumentation dating from the 18th century to the present. These include capital sets for trepanning and amputation, pocket cases and individual instruments. Those on display include instruments used by Surgeon O'Meara to extract a tooth of Napoleon's during his exile, the pocket case used by Surgeon Longmore during the Crimean War, improvised dental instruments from a Japanese POW camp and a pocket-knife used to amputate an arm during the Borneo confrontation. A separate graphic and instrument display is entitled 'Tools of the Trade'.

The museum houses the Army Medical Services Victoria Cross collection with 23 of the 29 VC groups awarded to medical personnel, including the VC and bar to Lieutenant Colonel Arthur Martin-Leake. There is an extensive library and archive containing personal papers, official reports and publications, maps, a large photographic collection, Army Lists, Army Health Reports, Official Medical Histories of the two World Wars and other campaigns, and many books dealing with general military history.

We are open to the public Monday to Friday, from 10.00 to 15.30 hrs.

DISPLAYS FROM THE ARMY MEDICAL SERVICES MUSEUM

First World War Dressing Station

Second World War - improvised operating theatre at Arnhem

RECENT BOOKS OF INTEREST

James Edmonson, *American Surgical Instruments: an Illustrated History of their Manufacture and a Directory of Instrument Makers to 1900* (San Fransisco: Norman Publishing, 1977), large format, pp.xii, 352, over 307 illustrations, 27 in colour. ISBN 0-930405-70-6. This handsome volume provides a unique guide to the development of surgical instrument making in the USA, highlighting the craftsmen and companies who created their industry independent of Europe. James Edmonson is Director of the Dittrick Museum of Medical History in Cleveland and emphasises the rapid rise of the industry during the 19th century but also its decline at the end of the century due to cheaper German imports, a situation reversed by the USA's entry into the Great War. Superbly illustrated with instruments from major collections, the book offers curators and others answers to many questions of name, place and time.

Amelia Ricon Ferraz, *Inventario do Museu de Historia da Medicina "Maximiano Lemos"* (Porto: Faculdade de Medicina da Universidade do Porto, 2003), large format, limp covers, pp.511, 7 colour plates, no ISBN. The Maximiano Lemos Medical History Museum in Oporto is large by European standards, displaying a wide range of items including equipment and instruments in seven exhibition rooms; the Inventory is divided into seven sections accordingly, reflecting medical progress especially in Northern Portugal. The Curator, Amelia Ricon Ferraz, has undertaken methodical research into the development of instruments which are described in detail. Non-Portugese linguists should not be deterred from visiting this instructive Museum for the enthusiastic Curator speaks English fluently.

Harold Ellis, *A History of Surgery* (London: Greenwich Medical Media, 2001), hard or paper-back, pp. xxiii, 264, over 200 illustrations, many in colour, ISBN:1-841-100-234. Professor Ellis's enthusiasm for teaching and the communication of surgical history has produced another very readable book, his most detailed work thus far, with an account of developments from the pre-historic period to the present. In particular, the huge advances of the last two centuries, the impact of war surgery and recent triumphs of organ transplantation receive comprehensive cover. Illustrated throughout with many images of instruments and equipment, and appropriate text, this book should appeal to members of the HMES. Unfortunately there are no references.