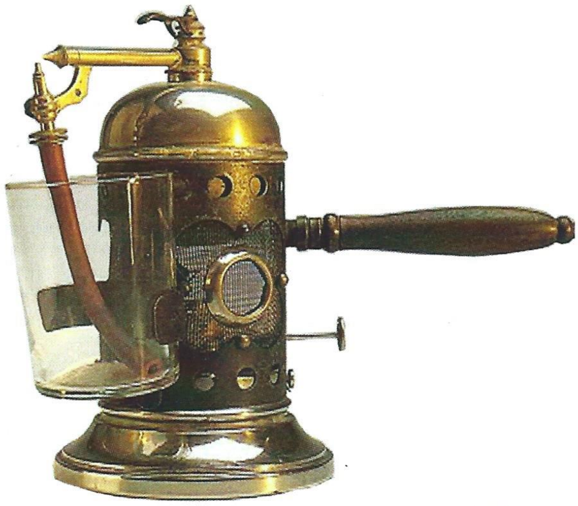
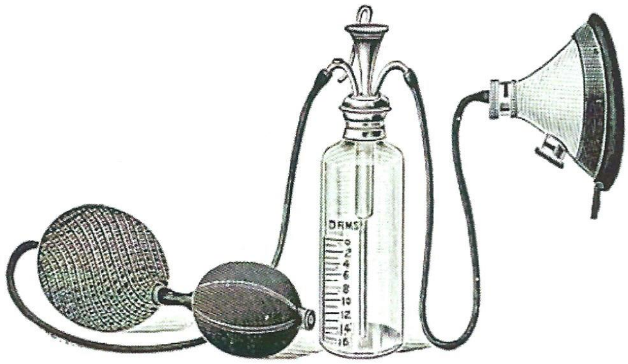
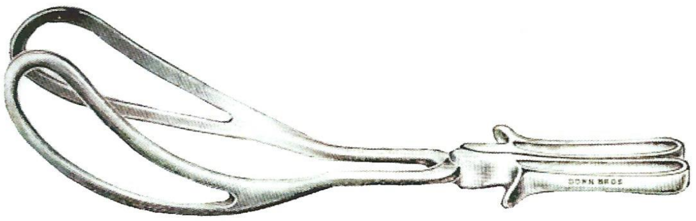




The Historical Medical Equipment Society



BULLETIN NO. 34 ISSN 1366 - 4719 SEPTEMBER 2019

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CONTENTS

FUTURE MEETINGS

To be arranged

EDITORIAL

Twenty-four members, guests and speakers attended the HMES meeting on Saturday 6th April 2019, which was held in the Parlour Room of St. Nicholas Priory in Exeter. We owe thanks to Professor David Radstone and the volunteer staff of the Priory for organising the meeting and setting out a nice display of medical equipment including a rare Mackenzie polygraph. Also, we would like to thank Dan and the staff of 'ExE Catering' for their good service and an excellent lunch. The Priory is grade-one listed building. It is part of an 11th century Benedictine monastery and is under the protection of the Exeter Historic Building Trust (EHBT) and also houses the museum collection of medical equipment belonging to the Devon & Exeter Medical Society (DEMS). There are about 8,000 items in the collection; some surgical instruments, pharmacy items etc. are displayed in cabinets on the first floor, but the vast majority are kept in storage. Volunteers help to identify and catalogue the objects. David Radstone is Trustee of the EHBT and Honorary Curator for the DEMS.

John Crellin, a member of the DEMS, opened the meeting with an overview of the DEMS collection. He argued that a 'medical collection' is not just surgical instruments and equipment but may include a wide range of different types of artefacts; even non-medical items can have a medical history. John illustrated this with an image of a Devon stone cider press and explained its link to 'Devon Colic' due to lead poisoning - a nice example of divided medical opinion and the vested interest of the cider makers.

Adrian Thomas illustrated the history of medical radium from its discovery by Pierre and Marie Curie in 1898. The dangers and the need for safe storage were recognised early, nevertheless some early workers, including Pierre Curie, were subjects to radium burns. Its use for treating cancer developed quickly in 'cancer hospitals' using a range of techniques including radium needles and seeds, radon gas tubes, direct application using moulds and the 'radium bomb'. The use of radium decreased in the 1940s and was replaced by more effective radiotherapy techniques.

Elsbeth Geldhof (historic conservator and adviser to the Collection) discussed the problems of looking after old pharmacy bottles and their contents. Cabinets with sets of pharmacy bottles are desirable objects; however, an unused, intact set is a rarity. Often the bottles are empty, badly sealed or even contain a substance different from the label and those that contain 'dangerous drugs' can present a legal problem.

Evelyn Barbour-Hill revealed the veterinary 'old-ways' of 'balling' packets of medicated herbs into a horse's mouth – the horse is restrained by a groom while the vet's arm & hand are protected by a balling iron gag in the horse's mouth. 'Drenching' is a way to treat an animal with a liquid medication which is dispensed from a 'drenching horn' container inserted into the animal's mouth. The 'horn' was originally a modified cow's horn, but later ones were made of tin or copper.

Peter Mohr traced the development of Humby's skin grafting knife invented in 1936. It was fitted with a roller bar to control the thickness of the graft and later also used disposable blades. During the 1940s Archibald McIndoe, surgeon at the East Grinstead Hospital RAF Burns Unit, used the Padgett-Hood dermatome and Thiersch razor to harvest large areas of donor skin.

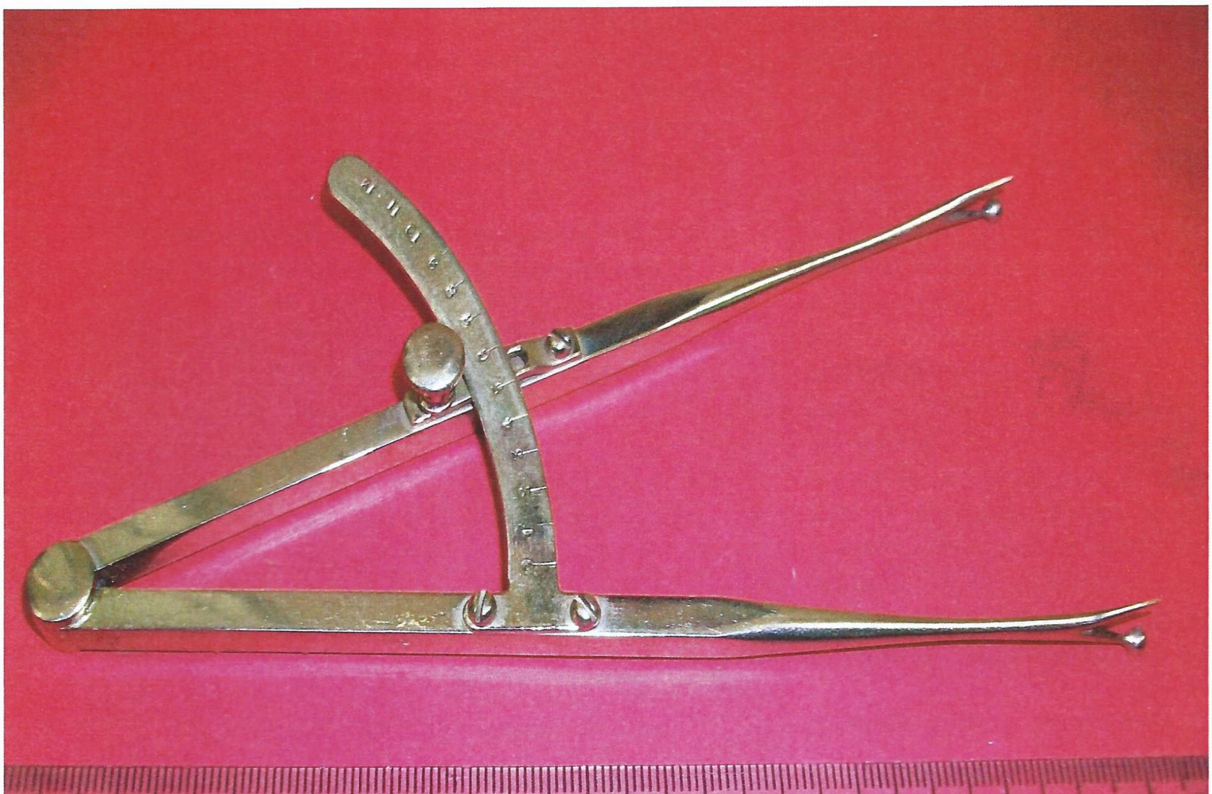
The final paper by Jonathan Goddard described the complex origin and uses of the urethroscope, 'a simple tube' which like the cystoscope depended on a distal light source. It was used mainly by the venerologist and dermatologist to examine the male proximal urethra for infection, whereas most urologists preferred to use a cystoscope to examine the whole of the urethra and bladder.

After the papers David Radstone and a colleague conducted a guided tour of the building and medical equipment displays.

'Acquisition Policy' is now a frequent topic for discussion. As museums struggle for space and funding they refuse new donations, dispose of duplicate items or only accept 'special items'. John Crellin's paper makes the point about having a broad view of what to include in a medical collection. The speakers at this meeting reflected this wider interest – with talks relating to pharmacy, surgery, radiology and veterinary practice. Most medical museums do not focus just on surgical instruments but include diagnostic equipment, nursing, hospital items and pharmacy objects. Nevertheless, we should also look to other areas, for example laboratory glassware is rarely collected and lacks any detailed historical study. Other areas such as public health, industrial diseases, disposable equipment, medical art, medical school teaching equipment, models & posters could be fruitful areas for collectors. The Science Museum is holding a meeting about the collection of objects related to 'health activism', i.e. items such as badges, artwork, poster etc. from campaigns and protests about vaccination, abortion, tampon tax, hospital closures etc. (20th June 2019). And finally, as one member pointed out – 'what about the patient's perspective' of our medical collections?

Peter Mohr, Honorary Secretary

WHAT IS IT?



John Kirkup, founder member and past Chairman of the HMES, has for many years supplied the fascinating 'What is it?' section of the bulletin. He has now sadly had to relinquish this task. This image was kindly sent by Peter Mohr.

MEDICAL MUSEUMS, PUBLIC ENGAGEMENT AND LOCAL HISTORY

JOHN K CRELLIN

Introduction
The following notes are adapted from a power point presentation titled "Devonshire history and medical artefacts," delivered to the HMES 2019 Exeter meeting. At the outset this made clear that the medical collection of the Devon and Exeter Medical Society (DEMS) owes much to the recent guardianship of Dr. David Radstone. He has also given new life to the collection by gathering a team of volunteers to help develop the collection as a medical museum.

As one volunteer, I offer my own musings on issues that face innumerable museums, medical included. My thoughts reflect not only my fifty odd years spent working in or serving as advisor, board or committee member for around ten medical and general museums, but also changing times for museums. The latter must now give thought to the current climate that has led to (a) around 200 museums closing in the UK since 2010, and (b) the new (2019) accreditation guidelines published by Arts Council England. After noticing some current issues, I focus on "engaging" the public.

General issues facing museums
Museums in general, but especially local ones, face shrinking budgets, the frequent shortage of volunteers who are not over-committed to attend training/educational courses, and the changing expectations of diverse visitors (maybe anticipating audio tours, digital technology, or even programmes of handling artefacts). In fact, responding to expectations is also implicit in the new Accreditation Guidelines that indicate a museum's role in public learning and engagement by making collections accessible to the public and by providing new experiences. This demands knowledge and imagination in developing exhibit themes when limited choices of artefacts exist.

Medical museums/collection; public expectations
Given such demands, medical collections do have one big advantage in catering to almost all types of visitors, namely the general interest in gore (e.g., amputations without anaesthesia) and "shock" items such as "mummy" as a medication. Yet given this bonus/advantage of medical col lections, I ask the question: Is there a danger in reinforcing/encouraging an over-simplistic view of medical progress and the triumphs of medical science? And does this, when reinforcing stereotype images, contribute to innumerable positive comments in Visitors' books and on Trip Advisor?

Moreover, does reinforcement encourage, at least among some visitors, a sense of superiority over "the bad old days," even arrogance, a lack of respect for the past? Does it foster over-confidence in what "modern" medicine can accomplish?

Conversely, can a focus on progress exacerbate some public suspicions of medical science? Can it be seen to whitewash, even hide, contradictions and fraudulent research? At the same time, can this foster pink-tinged nostalgia for more humane medicine? A reminder of the supposedly simpler days of the old "country doc?" (remember the ongoing resonance of "Luke Fildes' *The Doctor).*

As an aside, does nostalgia (plus concerns about side-effects of "pharmaceuticals") contribute to the popularity of complementary/alternative medicine? And, is a sense of "them" and "us" sometimes exacerbated, unwittingly, by, say exhibits on quackery, anything outside usual and customary medical practice.

"Understanding" medicine/health care
Given the emphasis on public engagement, I pose the question: Should medical collections have, as one responsibility, a role in helping the public *understand* medicine/health care, its warts, intricacies and uncertainties? In suggesting the answer is yes, how can small, even developing, museums with limited resources, accomplish this?
There are many ways, but here I suggest a context of local history that, for some visitors, can encourage a sense of "associations," kinships with the past. ("that was on my backdoor step!") Examples given in the Exeter presentation noted the current location of the DEMS collection at St. Nicholas Priory, an ideal setting for an outline history of medical care since mediaeval times (fig. 1)

A second example, using a specific time period to raise questions about current health is Devonshire colic, the 18th-century controversy, ostensibly between physicians John Huxham and George Baker, over whether lead was the cause of multiple symptoms following drinking cider. These started as "*excessively tormenting pain in the*

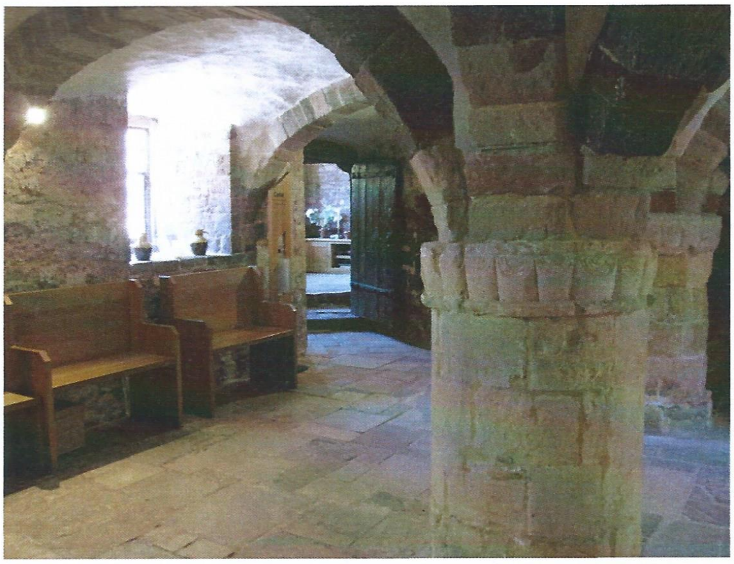


Fig.1 The Norman Cellar, St. Nicholas Priory

stomach and epigastric region." Many points can be raised to facilitate some appreciation of the often tortuous nature of medical progress, for instance, (1) the complexity of scientific/medical controversies that involve diverse objective and subjective variables, and (2) ongoing public health issues of lead poisoning. Helpful here is the Socratic method of question and answer that allows one to ask visitors for feedback about artefacts.

One question can be the stone bases of cider mills that, nowadays, can be found in estates and old gardens, often as ornaments. Is it credible that, even if Baker was correct in implying that lead was used to fill fissures between the large stones, would it have been significant? The pow-

Fig.2 The base of a cider mill, its origin often forgotten by the public.]

er point presentation also called attention to aspects of poisons as a fertile resource to resonate history with current public health issues including the release of toxins as a result of climate change.

A closing question and thought
Are medical collections underused in actively fostering public awareness, understanding, and debate on a range of important current health issues?

I also suggest that medical collections have a contribution to make to the current movement by many historians to ensure policy makers have a better understanding of historical trends.

For number of closures, Larkin, J., "Mapping Museums: Preliminary Results on U.K. . Museum Closures, 1960-2017," (blogs bbk.ac.uk). Guidelines can be down loaded from Arts Council England https://www.artscouncil.org.uk/sites/default/files/download-file/Accreditation_Guidance_Mar_2019_0.pdf accessed May 2019.

The Arts Council England guidelines differentiate types of museums, but my comments are applicable to all.

For an example of a public episode, "Homeopathy and quackery at the Science Museum," https://www.theguardian.com/science/the-lay-scientist/2011/feb/08/1 accessed May 2019.

Here, I acknowledge following the Wellcome Trustees in once focusing on the word "understanding" when used as a full title of its Library.

DRENCHING, BALLING AND TUBING – VETERINARY DOSING DEVICES

EVELYN BARBOUR HILL

Since recorded time at least, man has needed to administer medicine to animals *per os.* This implied administration of liquid – a "drench" or "drink" – or in more recent centuries, a solid dose – a "ball".

The oldest instrument for drenching cattle or horses is the ***drenching horn*** – a suitably sized and shaped cow's horn, cut off obliquely at the broad end to make a sluice for the liquid (fig.1). Several fillings of this might be required to give the whole dose.

With the advance of manufacturing industry in

Fig.1 drenching horn

the eighteenth and nineteenth centuries came the ***drenching can*** – of many forms and metals, but commonly tinplate or other sheet metal, whether factory-made or from a local tradesman – which could hold the whole dose (fig.2).

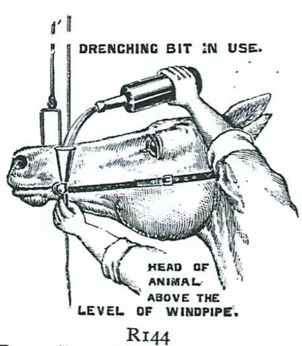
Fig.2 drenching cans

Naturally, both cattle and horses tend to resent medicine administration. A cow would not present too much difficulty to a brawny stockman, but, as conventionally done, drenching a horse involved a lot of fuss and several men – the horse reversed in the stall and held firm, a loop of rope or strap put round the upper jaw which with a pitchfork was then held as high as possible, while another man (who probably had to stand on something) introduced the can and tipped the liquid to the back of the throat, always ready to stop if there were any choking – one suspects it would be a noisy and a messy process. Some even resorted to tipping the liquid down the nostrils, almost guaranteed to result in its being inhaled.

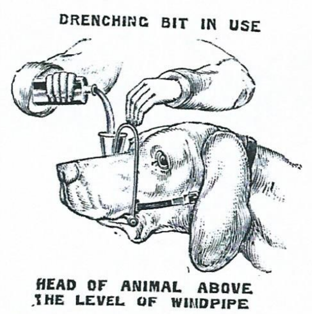
The wise professional man, however, dismissed all the attendants and used "the quiet method" – approaching the horse quietly, raising his head only to the horizontal and easing the liquid in at a natural swallowing rate.

The picture shows three different drenching cans. One with a flat back, made of sheet copper, with a nozzle of heavy brass tube. The next is of tinplate, thoughtfully designed, and has a glass bottom, possibly to check that a suspension had been properly given without leaving a sludge behind. The third, of sheet metal with a brass nozzle, is made by Arnolds: a sophisticated instrument, it has a filling funnel stored in the base, fingergrips and an ingenious anti-glug device which could be used to control flow.

Another idea was the ***drenching bit** (fig.3)*, a device which the horse would easily accept in his



R144
R144. **Drenching Apparatus for Horses,** nickel-plated, curved **22/6**
R145. A cheaper pattern, galvanized **12/-**

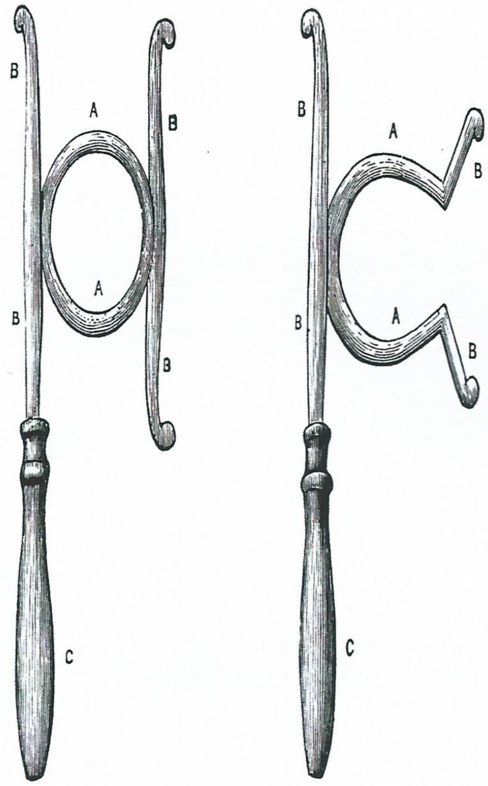


R146. **Drenching Apparatus for Dogs, Sheep, etc.,** 3 sizes **6/9**

Fig.3 drenching bits (from the Holborn Company's catalogue, 1937) mouth. Medicine poured down the integral funnel went into the hollow bit and emerged from a hole at its centre.

A ***horse ball*** is not spherical, it is roughly cylindrical, about three quarters of an inch in diameter. The dry ingredients were compounded with any suitable substance – palm oil or soft soap, for instance – to make a stiff putty which was wrapped in paper (fig.4). These could be bought from pharmaceutical suppliers.

Fig.4. horse balls



THE COMMONEST FORM OF BALLING-IRON.

A A. The ring of iron which, being forced into the animal's mouth, keeps the jaws asunder.
B B, B B. That portion of the metal which steadies the ring by remaining against the jaws.
C. The handle

THE IMPROVED FORM OF THE COMMON BALLING-IRON, WHICH AFFORDS A PROBABILITY OF ESCAPE FOR THE OPERATOR'S ARM.

A A. The part forced into the mouth.
B B, B B. The parts which remain against the jaws. C. The handle.

Fig 5. balling irons (from Mayhew's Illustrated Horse Management (1864))

The ball had to be introduced by hand to the back of the mouth – over the massive body of the tongue. Again, the skilled professional would employ the quiet method, with no restraint of the horse except to hold the tongue out of the side with the free hand. This took courage as well as skill.

The conventional method was to apply a "twitch" to the upper lip for restraint, then to insert a ***balling iron*** – a sort of gag – in the mouth and insert the ball-giving hand through the central circle of the instrument (fig.5). Again, several men involved and probably lots of shouting. Should the horse rear, if the operator escaped a broken arm he was lucky, and he still might get pounded by the hooves.

The modified balling iron shown in the picture might have granted a little reduction in risk!

Naturally various instruments were devised – ***balling guns*** – to introduce the ball without the need to insert a hand (fig.6).The picture shows three: a wooden one and a brass one which each work with a plunger to push the ball from the end of the device, and one with a sprung tongs that releases the ball when the trigger is pulled.

All these instruments might be labelled "Victorian" but they continued in use until after the end of the Second World War. Horse balls faded from use perhaps rather earlier, with the general adoption of stomach (naso-oesophageal) tubing of horses (a story for another day). On the other hand the author drenched many a beast in the seventies with the modern device: a lemonade bottle, the neck bound with string to guard against injury of the patient.

Fig.6 balling 'guns'

EVOLUTION OF THE HUMBY DERMATOME

PETER & JULIE MOHR

Introduction

A 'dermatome' or skin graft knife is a surgical instrument designed to remove a thin layer of healthy skin which can then be used for grafting burns etc. Early attempts could only use small snippets of skin. Later fixed straight-bladed knives with a handle were used to cut larger pieces but required great skill in judging the thickness. During the 1930s Humby developed a knife with an adjustable roller bar to control the thickness of the graft and was later modified to use disposable blades. More complex mechanical and electrical dermatomes came into use in the 1940s-50s.

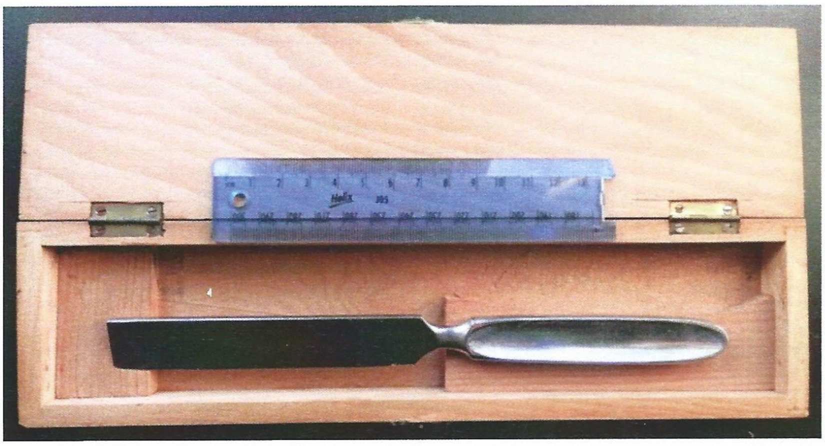


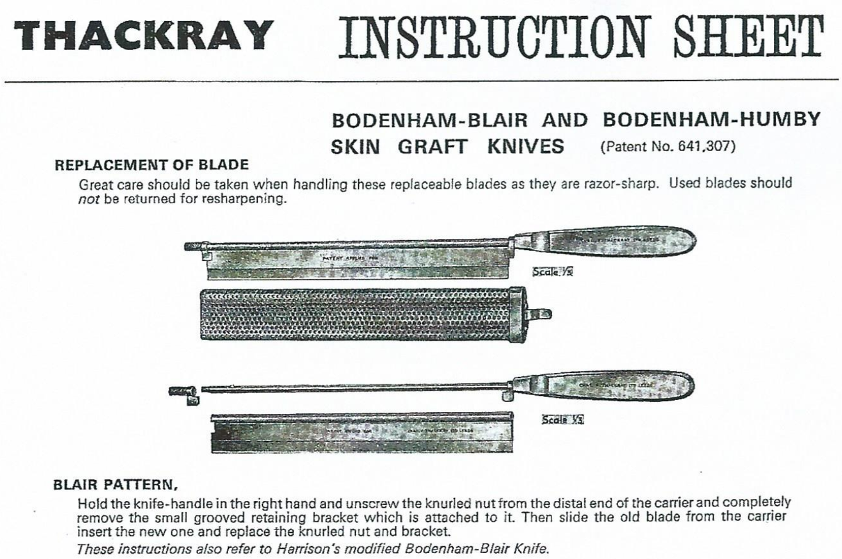
Fig. 2. Thiersch skin-graft knife 1880s.

Jacques-Louis Reverdin (1842-1929),

Fig. 1 Bryant's skin graft forceps-scissors 1870s,

professor of surgery in Geneva, developed the 'epidermic pinch graft' technique in 1869. He simply pinched small pieces of skin with forceps and snipped them off with scissors. The procedure was tedious, and the grafts varied in thickness and size, so in 1871 Mathieu of Paris invented special skin grafting 'forceps-scissors' which could 'pinch & snip' in one action and provided more uniform pieces. In 1872 Thomas Bryant (1828-1914) at Guy's Hospital used similar forceps-scissors made by Ferris & Co. (fig.1).

Carl Thiersch (1822-1895), professor of surgery at Leipzig, experimented with skin grafts and wound healing using a solid fixed blade knife to cut a larger piece of skin for grafting (fig.2). He invented the 'split-skin graft' which included a thin section of dermis along with the epidermis. He usually took it from the thigh; the skin was held under tension with a piece of wood and Thiersch would cut the graft free-handed; a technique that required great skill and experience. Vilray Blair (1871-1955), professor of surgery at Washington Medical School was in charge of head and neck surgery for the US Army during World War 1. In 1920 he developed a new skin graft knife which was lighter and longer than Thiersch's knife (fig.3). The blade was fixed but was thinner with a flat profile. It was easier to sharpen and had a protective perforated guard for sterilisation. His basic design was a prototype for the Humby dermatome.



THACKRAY INSTRUCTION SHEET

BODENHAM-BLAIR AND BODENHAM-HUMBY SKIN GRAFT KNIVES (Patent No. 641,307)

REPLACEMENT OF BLADE

Great care should be taken when handling these replaceable blades as they are razor-sharp. Used blades should *not* be returned for resharpening.

Scale 1/3

Scale 1/3

BLAIR PATTERN,

Hold the knife-handle in the right hand and unscrew the knurled nut from the distal end of the carrier and completely remove the small grooved retaining bracket which is attached to it. Then slide the old blade from the carrier insert the new one and replace the knurled nut and bracket.

These instructions also refer to Harrison's modified Bodenham-Blair Knife.

Fig. 3. Blair's skin graft knife with Bodenham's modifications (Thackray Catalogue 1966)

The Humby Dermatome

Thomas Graham Humby (fig.4) trained at Guy's and great Ormond Street Hospitals during 1930-35. As a dresser he became interested in plastic surgery and in 1934 (still a student) he designed a 'skin graft knife frame', reported in the *BMJ*. The square frame was strapped around the thigh and the skin held under tension by teeth in the stretcher cross-bars of the frame. The knife is guided along the frame and the thickness of the cut can be adjusted by two screw bolts (fig.5). This prototype dermatome was used but never manufactured. The frame was cumbersome and the straps around the thigh made it difficult to move the patient. In 1936 Dr Humby redesigned his 'skin graft cutting razor' (fig.6); there was no frame, just a hand-held knife like the Blair knife but fitted with roller bar along the cutting edge which smoothed the skin and controlled the thickness of the cut. The thin blade was held in a tight slot along the back of the knife so it could be removed (with some difficulty) for sharpening. The knife was fitted with a perforated guard, the same as on Blair's dermatome.

Fig.4 Thomas Graham Humby MRCS LRCP (1909-1970)

Humby was a flamboyant character. He was in the Royal Navy Volunteer Reserve and during the War he was a Medical Officer in the Fleet Air Arm and learnt to fly. After the War he bought a Halifax aeroplane and planned to start a London-Pacific flying service, however in 1948 he was diagnosed with TB and had a pneumonectomy. After a long convalescence in a yacht in Poole he resumed his career. He eventually emigrated to Australia in 1958 where he established a successful (and controversial) career in plastic and cosmetic surgery.

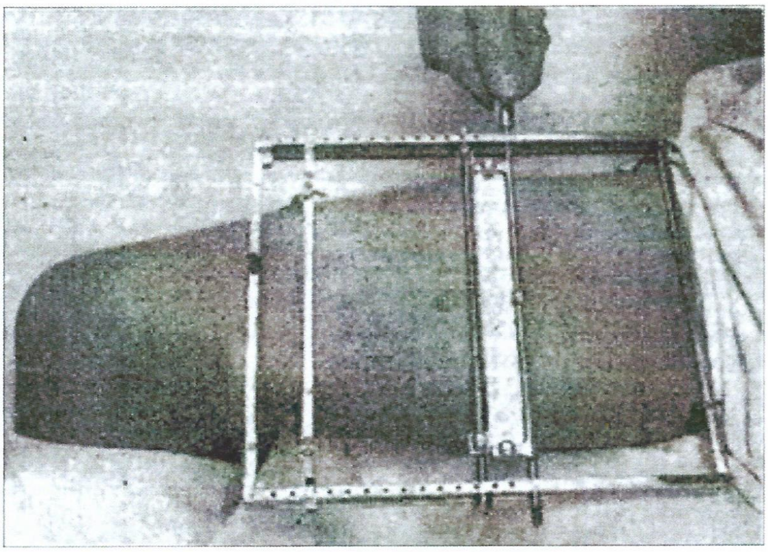


Fig.5 Humby's original skin graft knife frame, which is strapped to the patient's thigh

Bodenham's improved skin grafting knives

Denis Bodenham (1915-1996), plastic surgeon at the Frenchay Hospital in Bristol, was in the RAF and during the War had extensive experience with skin grafting severe burns. Around 1960 he made significant improvements to Blair's and Humby's dermatomes by redesigning them so they could be fitted with identical replaceable blades which easily slid on and off the instrument (fig.7). Disposable blades were introduced at a later date.

Fig.6 Humby's early skin graft knife with roller bar, adjusting nuts and perforated metal guard. Note the slotted back to hold the blade.

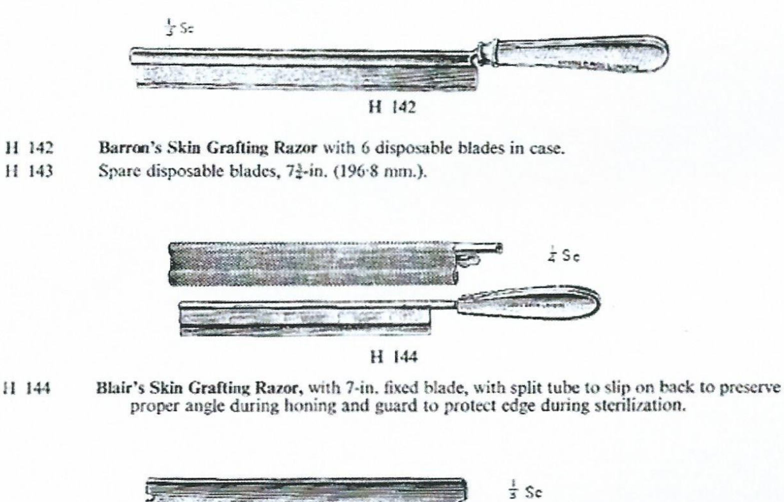
Fig.7 Bodenham's 'improved skin grafting knife'

The Padgett-Hood mechanical dermatome

George Hood (1878-1965), professor of engineering and Earl Padgett (1893-1946), professor of surgery, at Kansas University, invented a rotating dermatome in1939. As the blade moved along the skin, the drum rotated, and the graft adhered to the adhesive surface providing a large, flat piece of skin for grafting. During the War the demand for skin grafting was huge. The celebrated surgeon, Archibald McIndoe (1900-1960), used the Padgett-Hood for hundreds of grafts at the East Grinstead Hospital RAF Burns Unit. He also used a Thiersch knife to cut thicker grafts to repair fingers and cover knuckles. These techniques were illustrated by Mollie Lentaigne (b.1920), volunteer nurse and amateur artist who is the subject of a recent biographical essay.

Discussion

The availability of a graft of adequate size and thickness is the main limiting factor for the surgeon. Many people contributed to the development of the 'dermatome', but it can be argued that Humby's design was critical: it brought together a long knife combined with a roller bar which smoothed the course of the blade and could be adjusted to control the thickness of the graft. There were later modifications including disposable blades (fig.8). There are other skin graft knives, e.g. the 'Cobett' and the 'Watson', but they are all modelled on Humby's basic pattern. The small 'Silver' skin graft knife (1959) uses ordinary razor blades and is useful for small grafts and the Harry Brown electro-dermatome was made by Zimmer in 1948.



PLASTIC SURGERY

1/5 Sc

H 142

H 142 **Barron's Skin Grafting Razor** with 6 disposable blades in case.
H 143 Spare disposable blades, 7¾-in. (196·8 mm.).

1/5 Sc

H 144

H 144 **Blair's Skin Grafting Razor,** with 7-in. fixed blade, with split tube to slip on back to preserve proper angle during honing and guard to protect edge during sterilization.

1/5 Sc

H 145

H 145 **Humby's Skin Grafting Razor,** standard model with roller adjustable for thickness of graft, fitted with **solid forged detachable blade** with split tube to slip on back to preserve proper angle during honing, with one spare blade complete in case.
H 146 Spare solid forged blades, 18 s.w.g. thick, 7¾-in. (196·8 mm.).

1/5 Sc.

H 147

H 147 **Humby's Skin Grafting Razor,** light model for use with **disposable blades,** with roller adjustable for thickness of graft, with 6 spare disposable blades complete in case.
H 143 **Spare disposable blades,** 7¾-in. (196·8 mm.).

½ S.

H 147-01

H 147 01 **Silver's (H. L. Silver, Toronto) Miniature Skin Grafting Knife.** Patent Pending.

**Not illustrated.*

DOWN BROS. AND MAYER & PHELPS, LTD.

Fig.8 The selection of skin graft knives in the Down Bros. Catalogue, 1968

THE URETHROSCOPE

JONATHAN CHARLES GODDARD

The urethroscope is exactly what you would expect from the name, an instrument to examine the interior of the urethra. This is not an instrument seen in modern urological departments; the cystoscope is used to examine the urethra on the way in or out at the time of examining the bladder. So why are there so many urethroscopes (and there are many variations) from the past?

From the closing years of the Nineteenth Century until the 1920's a confusing multitude of urethroscopes were presented to the profession, some differing only in minor details, in some one struggles to find a difference in anything other than the eponym! In order to bring some clarity to this urological bestiary it is convenient to divide urethroscopes into broad categories depending on the light source, method of urethral distension and anatomical destination. The light source could be external and shone into and down the urethroscope, or internal, within the scope itself, usually at the distal end. In order to better visualise the whole of the urethral mucosa some distended it with fluid or air, although distension was not always used. Different instruments were used to examine the anterior (penile or pendulous) urethra and the posterior (bulbar and prostatic) urethra. Optical systems ranged from those seen in contemporary cystoscopes to the human eye.

The development of the urethroscope is intimately linked with that of the cystoscope. Indeed, early attempts at endoscopy by Bozzini (1807), Desormeaux (1853) and Cruise (1865)[1] were better suited to visualise the urethra than the more distant bladder. However, it is Joseph Grünfeld (1840–1910), dermatologist of Vienna, who is credited with the first dedicated urethroscope in 1874. This was a simple hard black rubber tube with a removable obturator. Light was reflected down the scope via a head mirror[2]. The external light source soon became physically attached to the urethroscope. The model presented by William Otis (1860–1907) in America is typical. Over in England other variations appeared using, once again, an external light source reflected by mirrors down the urethroscope. Edwin Hurry Fenwick (1856 – 1944), surgeon of the London Hospital and the driving force behind the introduction of cystoscopy to Great Britain, presented one in 1892[3] (fig.1)

The first internal light source used in cystoscopes was the heated magnesium wire pioneered by Maximilian Nitze (1848–1906) and Joseph Leiter (1830-1892) of Vienna[1]. Felix Martin Oberländer (1849-1915) worked with Nitze to create a urethroscope using this. However, in both cystoscope and urethroscope the heat created was excessive and the cooling system used was large and cumbersome. The Oberländer urethroscope was used but it was not very practical[4].

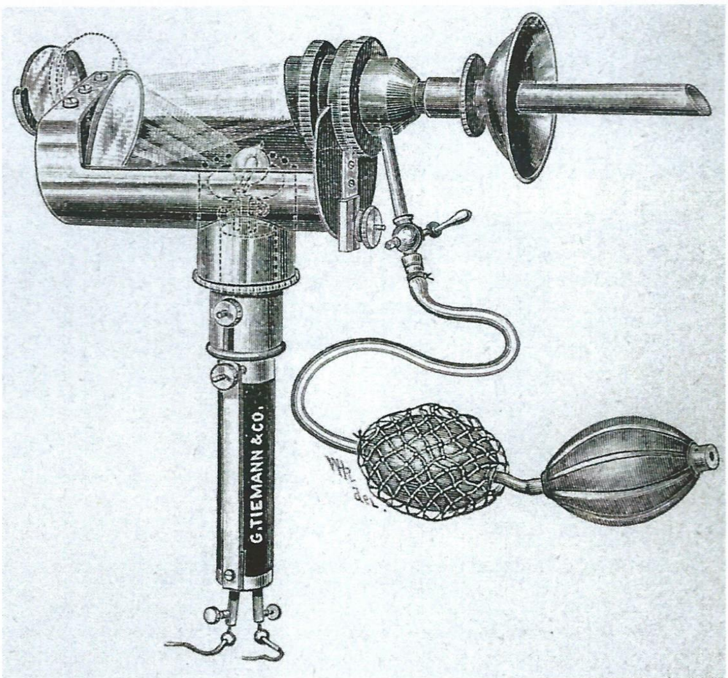


Fig.1 Fenwick Aero-urethroscope. 1892

The next vital development was the electric light bulb of Swann and Edison. Even this was quite hot for urethral use. A small, cool bulb was developed by W. Charles Preston in America. Preston demonstrated a tongue depressor lit by his bulb to Henry Koch, a surgeon working in Rochester, NY. Koch who struggling to use the Oberländer urethroscope recognised its potential and had Preston fit it to the scope (fig.2) Koch discussed the new bulb with his colleague Ferdinand Valentine (1851–1909); they had both trained together in Germany. At first Valentine dismissed the idea, then, working separately to Koch produced his own bulb lit urethroscope. Valentine presented this to the New York Acadamy of Medicine on 14th March 1899 (fig.3).

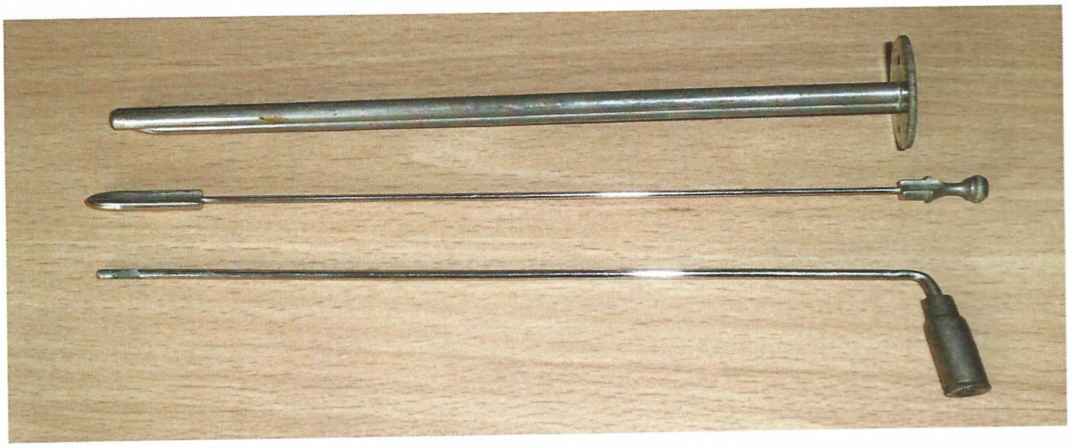


Fig.2 Koch Urethroscope, c.1900's

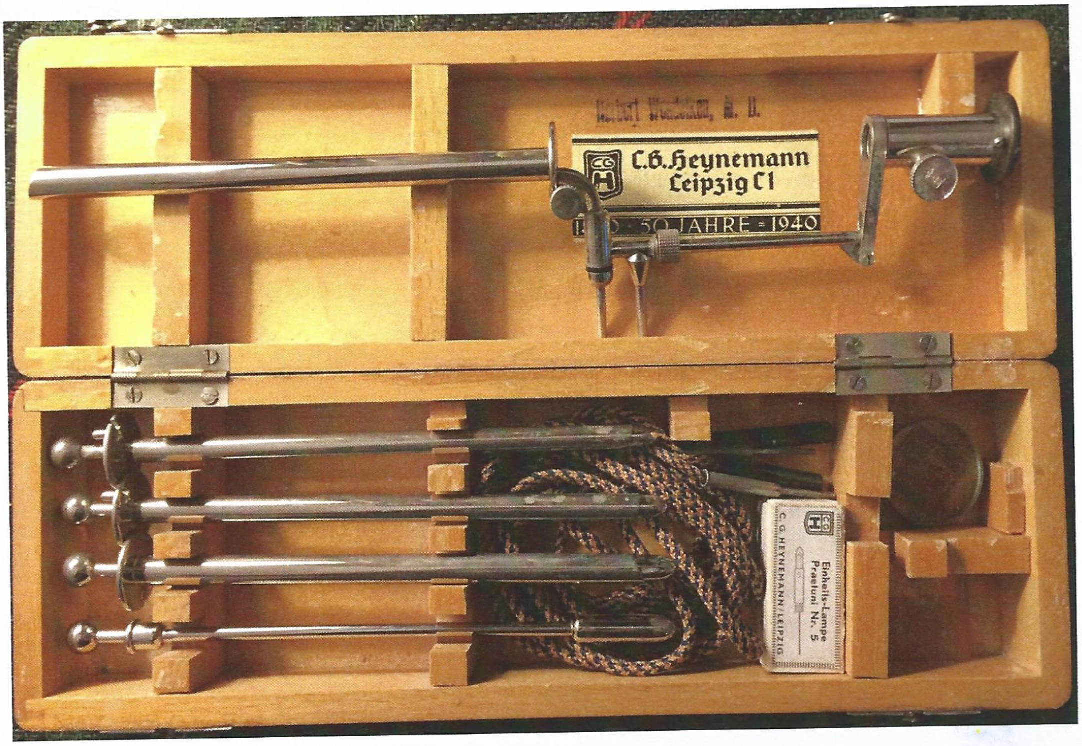


Fig.3 Valentine Urethroscope, with a Kaufmann lens, c.1940

Koch published his scope in the January edition of their journal in 1900. Needless to say, there was some disagreement about priority[4 5].

Versions of the internal bulb lit urethroscope were again made in the UK. The Holborn (fig.4) and Harrison ones are good examples.

The Fenwick and Holborn urethroscopes also demonstrate air distension. Similar to a small rigid sigmoidoscope, air was pumped into the urethra with a rubber bulb. The idea was first applied by Geza von Antal (1847–1889) of Budapest in 1887 [6]. Water was used frequently as a distension medium in cystoscopy so it was inevitable that it would also be applied in the urethroscope. Hans Goldschmidt (1852–1910) used it first in 1907[2]. However, one cannot help but think it would be somewhat less convenient than air in the clinic. The Koch and Valentine scopes used no distension medium.

We return to the question of why, when cystoscopes were available, separate urethroscopes were so popular. There are several aspects to this; firstly, who was using them. Passing an instrument into the posterior urethra, through the sphincter and into the bladder was a specialist technique and the preserve of urologists. Frank Kidd (1878–1934) urologist at The London Hospital, encouraged all practitioners dealing with urethral diseases to familiarise themselves with the urethroscope. These included GP's, dermatologists and venereologists, gonorrhoea of course being a major cause of urethral disease. Kidd however was quite clear; posterior urethroscopy was very much the preserve of experts[7]. Then as now, passing an instrument beyond the sphincter and into the bladder carried a risk of bacterial cystitis and perhaps urosepsis. At that time of course, no antibiotics were available. It was recommended the two distinct procedures of urethroscopy and cystoscopy were carried out as separate sessions, a few days left in between. The technique of cystoscopy was slightly different from now: the cystoscope with a blind obturator was passed, not under vision but by feel into the bladder, the obturator removed, the bladder drained and the telescope then passed through the cystoscope so the bladder could be visualised. The urethra was passed by unseen.

The urethroscope, as a stand-alone instrument is now gone from the armamentarium of the modern urologist. The urethra can be examined using a 0° (i.e. forward facing) lens with a cystoscope. The

Fig.4 Holborn Urethroscope, c.1920's

closest we come to a dedicated urethroscope is an optical urethrotome, an instrument designed to cut through a urethral stricture under direct vision. One cannot help but think however, how useful a little ureteroscope, with air distension and now lit with modern fibre optics, would be in a urology clinic to very quickly rule out a urethral stricture.

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THE RADIUM DANCE (CURIETHERAPY)

ADRIAN THOMAS

In 1896 Henri Becquerel (1852-1908) noted the action of uranium salts on a photographic plate and so discovered a new natural phenomenon. He did not develop the subject himself, and this was left to Marie Sklodowdska (1867-1934), later called 'Curie' after her marriage to Pierre Curie (1859-1906) in 1895. Marie Curie took up the study of this new phenomenon at a time when the world was absorbed in the X-ray craze. Marie Curie worked with her husband Pierre in one of the great scientific partnerships and coined the term radioactivity. In 1898 she discovered the new element radium. That this new element had biological actions that might be beneficial in therapy was apparent almost immediately. For the public there was a great sense of hope and expectation that this new element would defeat the scourge of cancer and so obviate the need for disfiguring surgery. In the early period there were a number of issues that made treatments with radium difficult. Firstly, patients often presented late in the course of the disease which made any treatment difficult, and it was not uncommon for patients to be referred for radiation therapy only when other treatments were unsuccessful. As the decades progressed the optimal balance between different forms of treatments developed, and this continues today. This period prior to the Great War was a time of dramatic scientific advance. On 5 November 1906 Marie Curie, at the start of her first professorial Sorbonne lecture stated, "When one considers the progress that has been made in physics in the past ten years, one is surprised at the advance that has taken place in our ideas concerning electricity and matter."

Curietherapy is defined as the treatment of disease by means of radium. Radium was used in a variety of ways and was classifieds as either general Curietherapy and local (or focal) Curietherapy. General Curietherapy was the concept of systemic treatment following the introduction of radioactive material; into the bloodstream. Action could therefore take place throughout the body, and so treat both the primary and secondary neoplasm. However, the concern was that a systemic dose that would treat the whole neoplasm would be toxic to normal tissues. Radiation as a systemic intravenous treatment only became possible in more recent times with the use of radio-labelled tracers.

Local or focal Curietherapy consists in placing an enclosed radioactive source either inside or adjacent to a neoplasm. The radioactive source was either the scarce and expensive radium or the gaseous emanation from radium, the radioactive gas radon.

1. **Internal Curietherapy**. A focus of radium is placed internally in a natural cavity such as the uterine cervix or oesophagus.
2. **Interstitial Curietherapy**. A focus of radium is placed in a needle and introduced into the tissue, such as the breast or tongue. The needle was made of silver or platinum.
3. **External Curietherapy**. A tumour is treated by radium placed a short distance from it. The radium may be held by a special mould. This developed into tele-Curietherapy with the use of a large amount of radium (4-5 grams) enclosed in a lead box or in a bomb. The radium bomb was located on a long wheeled rod to keep the operator at a safe distance. Devices were finally developed to remotely move the radium source in and out of a protected sealed container, again reducing the operator's radiation exposure. There were significant radiation protection issues associated with the use or radium, partly related to its long half life. Radiation safety related to number of groups:

Physicists.
Physicists were involved in preparing the radium and radon, and the enclosure in a seed or needle. A friend of mine showed me his hands which had been damaged. He was a retired physicist and had spent many hours in the preparation of radon seeds.

Surgeons.
The accurate placing and fastening of needles in a tumour was a painstaking and time consuming task for the surgeon, and performed with the guidance of the physicist. A variety of radium needle holders (forceps and trocars) and radon seed introducers were developed (figs.1, 2, 3). The radium needles were usually stitched in place to avoid their dislodging. The surgeon had to both insert the needles, and also remove them. The needles could not be left in situ but had to be removed to avoid overdosage and complications. The radon seeds could be left in situ .

Nurses.
There were significant radiation protection concerns relating to the nursing of patients, who were a source of radiation.

The Operating Theatre.
Nurses in the operating theatre were exposed to the radioactive sealed sources during the procedures

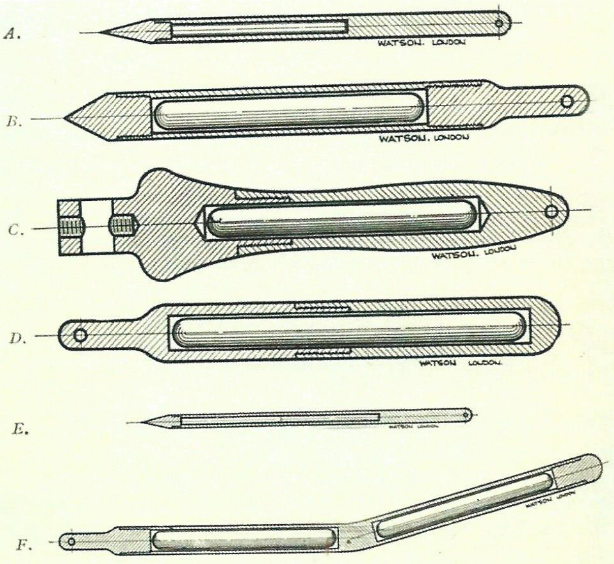


FIG. 23.—NEEDLES AND SPECIAL CONTAINERS.

A. Needle with long silent shank.
B. Container for thrusting under tumour as in the breast.
C. Hour-glass container for stricture of oesophagus or rectum.
D. Special container for cervix.
E. Long-shanked needle containing two cells.
F. Uterine container for cervix and body of uterus.

Note.—*B.*, *C.*, *D.* and *F.* are not all drawn to the same scale as the tube of radium they contain will fit each and all.

Fig.1 Special radium needles

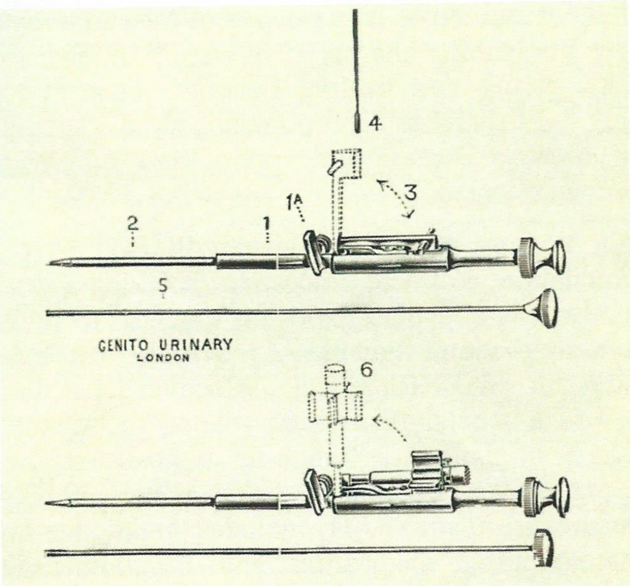
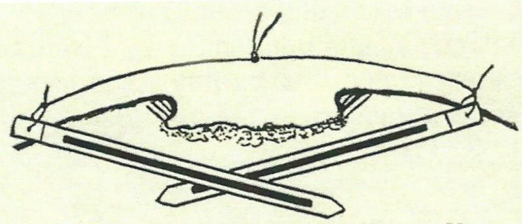


Fig.2 Radon seed introducer



—NEEDLES PUSHED IN UNDER RODENT ULCER AND TIED TOGETHER, EACH PREVENTING THE OTHER COMING OUT OF THE TISSUE.

Fig.3 Needles arranged for rodent ulcer treatment

involved in placing and removing radioactive needles and seeds.

Ward Care.
There were nursing care specific instructions for the care of radium patients. For example, nurses were not to spend any more time in patient's room than was necessary to care for the patient. In particular, the time spent at the patient's bedside was to be kept to a minimum. Only essential cleaning should be done whilst the patient was in the room. Visitors were to be 18 years of age or older, and no pregnant visitors were allowed. Visitors should remain at least 6 feet from the patient and should not stay for more than 2 hours per day. A radiation survey was to be performed before the patient was discharged.

Industrial workers.
The risks associated with the radium dial painters is well recognised, and the book *The Radium Girls* by Kate Moore (Simon and Schuster, 1916) is recommended as an account from the perspective of the victims themselves.

Supposed Health Benefits.
It was believed that radium was beneficial to health and might increase immunity and the quality of life. Radium was used in various beauty creams and tonics. Of particular note was the radium emanator which produced radioactive drinking water and designed to treat a variety of conditions such as arthritis, nervous diseases, diabetes and nephritis. As might be imagined, such treatments could cause significant harm.

There were many concerns about the storage of radium in wartime, and the Marie Curie Hospital for Cancer and Allied Diseases in Fitzjohn's Avenue in London, was totally destroyed in 1944 by a high explosive bomb, fortunately with no casualties). The radium, stored in steel cylinders, was buried beneath the demolished building and was not recovered for almost three weeks.
With the developments of new cancer treatments following the Second World War such as cobalt beam therapy and megavoltage, even sophisticated radium apparatus such as the 10-gramme teleradium (radium beam) unit were superseded. However, we should remember the sense of hope that radium gave to many. There is a very large literature associated with radium, with many books written by surgeons. Two such books are *Radium & Cancer (Curietherapy)* by Duncan Fitzwilliams (1930), and the hugely influential Malignant *Disease and its Treatment by Radium* by Sir Stanford Cade (1940).

Two such books are *Radium & Cancer (Curietherapy)* by Duncan Fitzwilliams (1930), and the hugely influential Malignant *Disease and its Treatment by Radium* by Sir Stanford Cade (1940).

Book Review: Soaking up the Rays, Light therapy and visual culture in Britain, c.1890-1940 By Tania Anne Woloshyn (2017) Manchester University Press

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In writing a review for the Historical Medical Equipment Society one might speculate on the nature of medical equipment, and on what exactly is medical equipment? I suppose it's anything that a doctor might use other than his or her bare hands, and as such may extend from a rubber glove to a cyclotron. However many other groups use "medical equipment' such as nurses, physiotherapists, and patients. The treatments used may relate to "modern conventional medicine" (whatever that may mean), traditional medicine, alternative medicine, popular medicine and quack medicine. In reality what do these terms signify? What we call "western medicine" is itself an alternative to conventional western medicine, and what is perceived as conventional medicine by one generation is quackery to the next, and vice versa.

This excellent book covers the huge topic of light therapy, and embraces all aspects of this therapy. Light therapy and Actinotherapy were immensely popular in the pre-war period. Actinotherapy is defined as the use of chemically active (or actinic) radiation for treatment. The term included ultraviolet radiation therapy, but could also refer to light therapy and even to the use of soft (low energy) X-rays for skin radiotherapy.

As an example, whilst Dr Florence Stoney, who was the first woman radiologist, is primarily remembered for her X-ray work she was also deeply interested in light therapy. Following the Great War Florence moved to Bournemouth where she was appointed Honorary Consultant in Actinotherapy to The Victoria Home for Crippled Children in Burnaby Road, Alum Chine. The Victoria Home was a branch of the Shaftesbury Society and Ragged School Union and cared for 73 crippled children (now called children with special needs) aged from two to ten years of age. The children suffered from various paralyses, and also diseases of the bones and joints, rickets and various deformities, and were admitted for long periods of time varying from three to twelve months. They were given a combination of electrical, sunlight and massage treatments. Florence was able to obtain an ultraviolet unit for use at the Home. It was said of her that she was "a great believer in sunshine and scant clothing for children". Bournemouth was an ideal location for the Victoria Home with its mild climate and local parks. The Home had a permanent beach hut and the children could enjoy the sea and sand, and most of all sunshine and fresh air.

Actinotherapy was very popular in the 1920s and 1930s, and many types of apparatus were produced. Treatments were recommended for tuberculosis, rickets and nutritional disorders, and for a variety of medical conditions. The Finsen light was used and the book gives an account of the unit at the (Royal) London Hospital. Many lamps for therapy were devised including different designs of quartz lamps. Heliotherapy was promoted for its health benefits and may involve medical equipment, however heliotherapy may need no equipment at all as in the promotion of sun-bathing. The writer D H Lawrence suffered from pulmonary tuberculosis and went to the Côte d'Azur for convalescent and the healing powers of the sun's rays. Nude sun bathing and naturism were promoted for health giving and healing benefits. There were many "sun societies" and popular journals such as *Sun Bathing Review* and *Health and Efficiency* were widely read.

Light therapy continues today with PUVA is a combination treatment consisting of taking a drug psoralen (P) and then exposing the skin to long-wave ultra- violet light (UVA). We also use ligh boxes for SAD (Seasonal Affective Disorder) SAD is a mental depression related to seasona changes in sunlight. Symptoms typically start i the autumn and continue over the winter months The treatment of SAD includes light therapy (phototherapy), medication and psychotherapy Modern concerns about the harmful effects of sun light may result in a loss of the beneficial effect of exposure to the healing rays of the sun, includ ing low serum levels of vitamin D.
This book covers an important topic. I learnt muc from reading it, and it is warmly recommended. will become a standard text on the topic.