

**GRAECO-ROMAN MEDICAL AND
SURGICAL INSTRUMENTS**

with special reference to Wales and the Border

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Surgery is a great technical art. In applying scientific knowledge to desired therapeutic ends, the surgeon must be a skilled manipulator of exquisitely appropriate tools. The history of surgical instruments becomes thus the story of the development of the essential technique of surgery—Chauncey D. Leake.¹

For a small sum anybody in this country can become the proud possessor of a copy of *Museums & Galleries in Great Britain and Ireland*. In this valuable publication, we find listed the names of all the important collections of Roman finds in the United Kingdom. The continued advance of archaeological discovery has slowly added find after find of surgical instruments, till now there is hardly a museum scattered up and down the land which does not exhibit among its contents a few of these objects, whilst in the Museo Nazionale, Naples, the writer has seen hundreds.² At the outset it should be understood that many of the items described here could be utilized in arts and crafts other than medicine, surgery, and pharmacy, for example those on the domestic front. Then, again, a blacksmith's tongs found at Tremadoc,³ Caernarvonshire, could be used, according to Celsus⁴ for replacing a bone in a case of compound fracture. Celsus also directs that certain medicinal preparations can be warmed and allowed to drop into the ear by means of a strigil, an appliance normally used by the Romans for scraping away sweat and dirt in the baths. Milne⁵ states that the claims of any doubtful instrument as once having been part of a surgeon's kit must be decided on such grounds as the circumstances of its discovery. This stringent rule has not been applied in this paper because of the special problems connected with the meagre material to hand. For our purpose, an instrument is regarded as medical or surgical if it compares well in size, shape, material, weight, and delicacy with similar instruments from other collections accepted by

authorities as belonging to this class.

Our survey begins with the tweezers or epilation forceps, which apart from the simple probe, is one of the most ancient of surgical devices made by man. Many examples have been discovered in Egypt dating back at least 5,000 years and were evidently first used for the removal of hair from the face for cosmetic purposes, a custom which has come down to us from prehistoric times. According to Thompson⁶ the invention of the tweezers stems from the basic idea of gripping, tugging, or pulling with the thumb and fore-finger any foreign or other body it was necessary to remove from the flesh. From this fundamental, instinctive movement this rudimentary instrument giving a firmer hold arose. Very appropriately, the Romans called this instrument "Vulsella". These forceps are amazing in that their spring is generally strong even today, although they have, in most cases, been buried in the earth for the best part of two thousand years. Their manufacture was easy. They consist of a thin flat piece of bronze bent back on itself about its centre to create two arms which terminate in jaws bearing no teeth. The absence of teeth is characteristic of this class. Ornamentation, if present, is very plain. Some from Caerwent show a large, chequered design, while the arms of one found at Cwmbwrwyn (Carmarthen-shire) are grooved along its margins. An example at Segontium museum, Caenarvonshire, is supplied with a sliding-catch designed for permanent fixture of the jaws for cutting when applied to a tissue or hair (cf. example in Mainz museum). Sometimes, these forceps are suspended together with a nail-cleaner or tooth-pick to make up a hygiene-set called a "pocket-companion" or chatelaine (Plate I). In a chatelaine found at Segontium there is evidence of enamelling on the sinkings in the metal from which the instruments are suspended. Granular conjunctivitis (trachoma) was common amongst the Romans. Indeed, it is one of the oldest known and most widespread of diseases, and remains, today, as one of the greatest world causes of serious and progressive loss of sight⁷. In the later stages of the disease it was necessary to use these forceps for pulling out eye-lashes which turned in (trichiasis) and scratched the cornea. This operation was described in the famous Ebers papyrus⁸ which dates back to about 1550 B.C. Hippocrates, too, was conversant with the disease.

At this stage it is convenient to discuss the forceps from the point of view of technical development, a method adopted by Thompson⁹ and Ricci¹⁰ in their books on surgical instruments. The next stage in the evolution of the forceps was to supply the extreme ends of the jaws with fine or coarse teeth. The new instrument then became a myzon or tumor forceps and was superior to its predecessor for making traction on any object. There is a good example in the

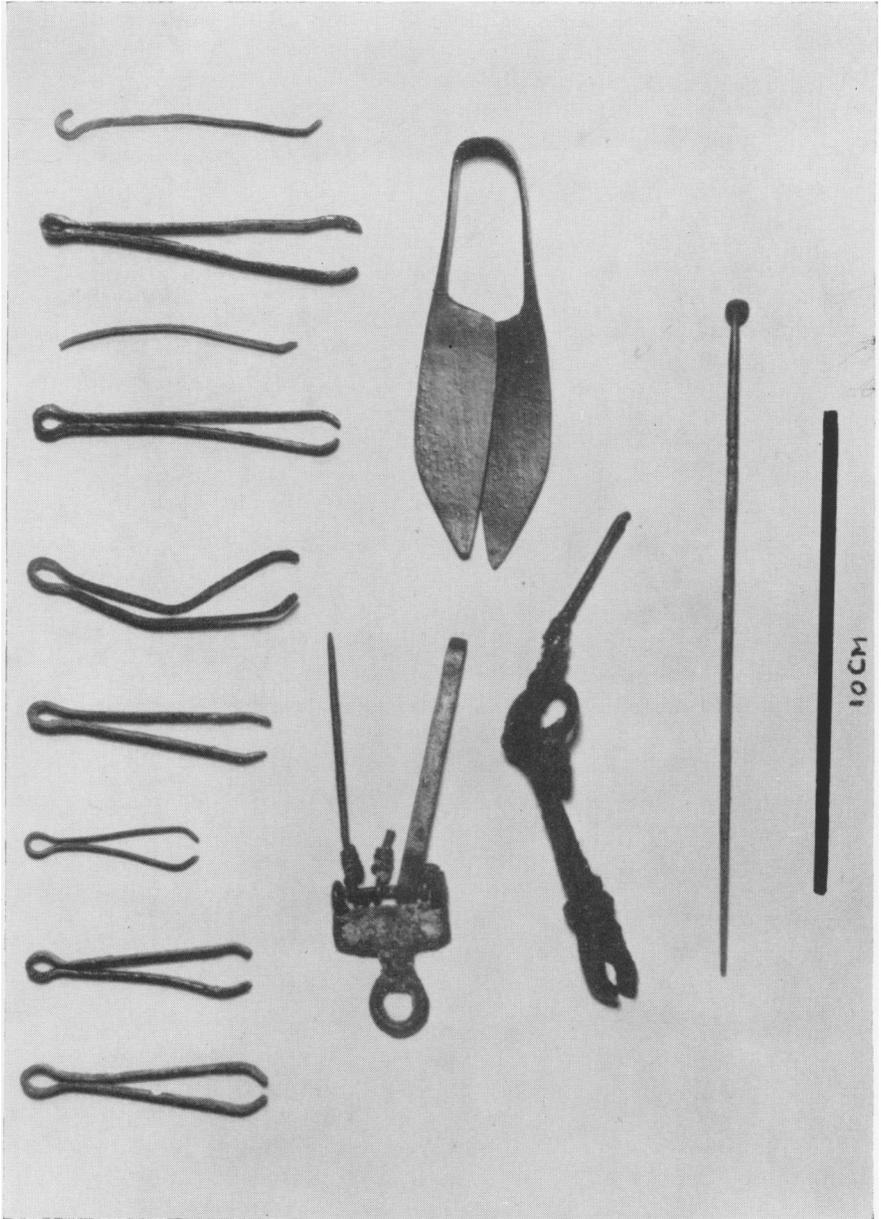


Plate I. A chatelaine, shears, tweezers, and ligula from Rowley's House museum, Shrewsbury

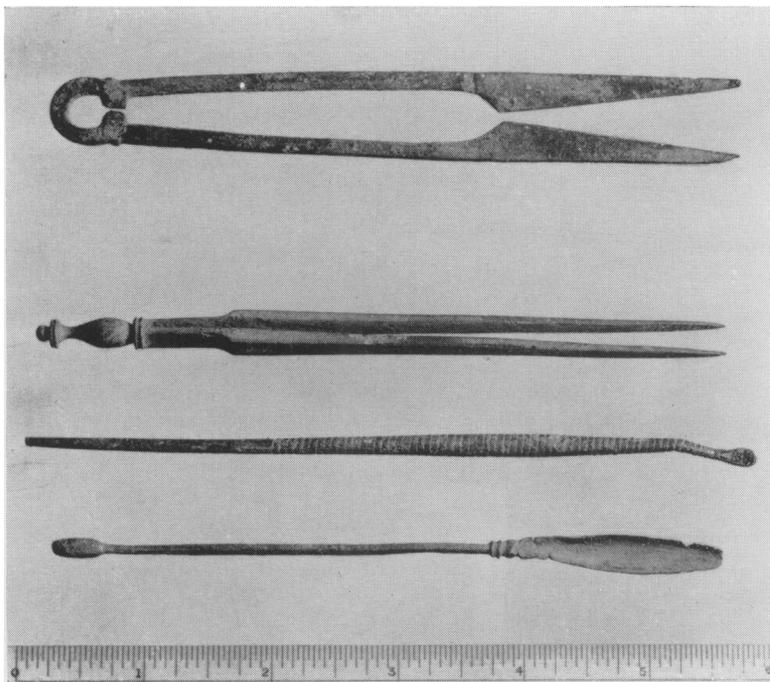


Plate II. Cyathiscomele, ligula, dissecting forceps, also a post-Roman shears.
(Caerleon museum)

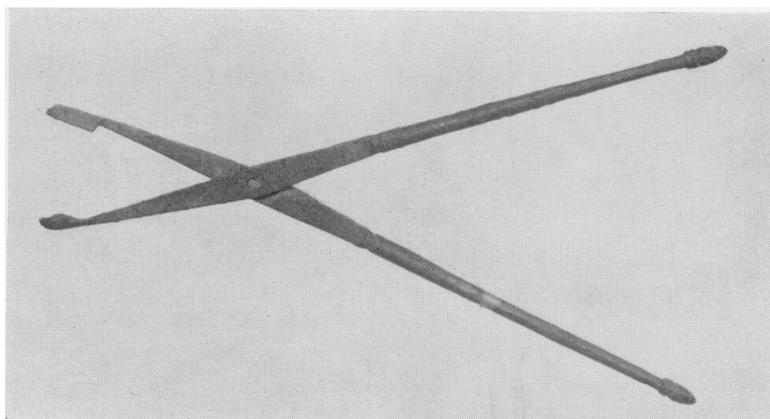


Plate III. Staphylagra from Newport Museum (almost actual size)

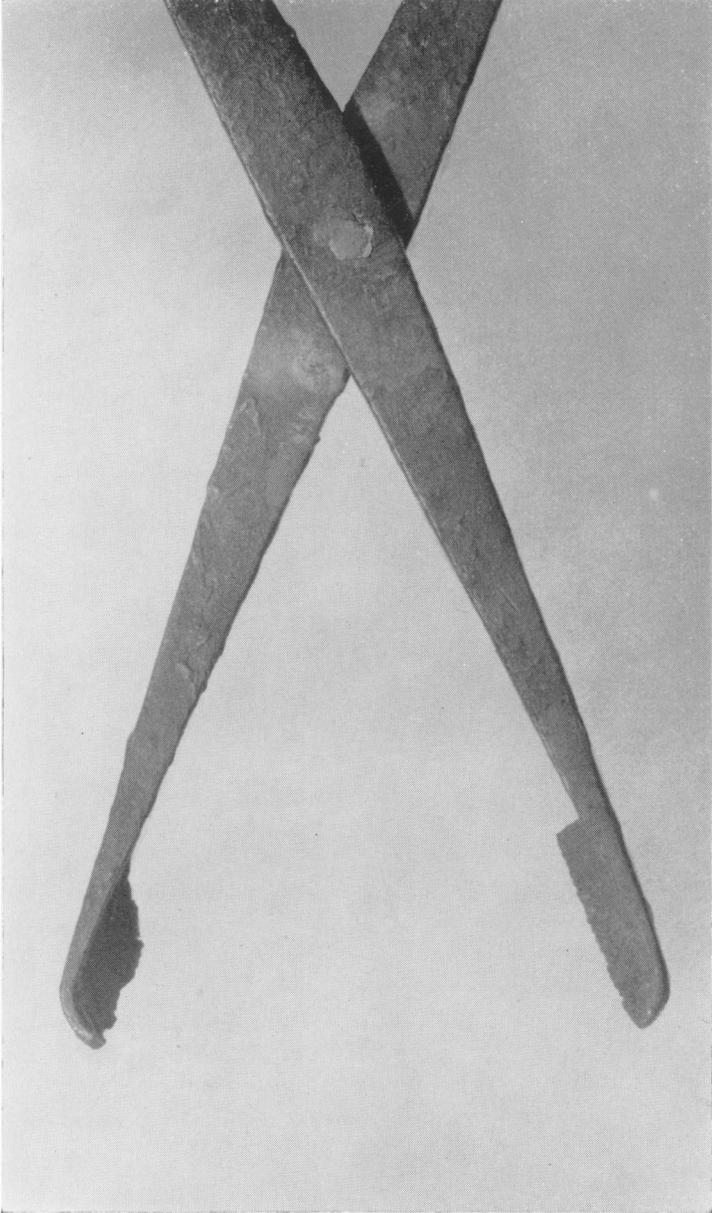


Plate IV. Staphyliagra from Newport Museum (enlarged)

British museum, but the writer has not come across one of these in Welsh museums or in those on the border. Another advance was to make these instruments from a plate of bronze and sawing it partly along the mid-line. Plate II illustrates a well-preserved bronze dissecting forceps made in this way. It was found in an excavation at Caerleon, Monmouthshire, several years prior to 1862¹¹. The closed end of the forceps is surmounted by an ornamental baluster probably shaped on a lathe. The file-marks usually made on the inside of the pointed free ends, to secure a firmer grip, are still distinct. The design of this instrument would have no better even today. No small boast for a Graeco-Roman instrument discovered in a Welsh legionary fortress! By having pointed limbs, the tissues are damaged as little as possible. Gürlt illustrates a similar instrument in his monumental work¹² (*Pinceette mit langen, dünnen Branchen*: Naples Museum collection).

Newport museum is fortunate in that it houses a very good specimen of a bronze staphylagra or uvula forceps illustrated in Plates III and IV from Caerwent. It is seen that the branches of the forceps are crossed and pivot about a rivet-joint just like a pair of scissors. The instrument is 19.4 cms. long. The jaws bear fine teeth, four on one jaw and sixteen on the other, the rest having disappeared as a result of corrosion. The jaws project forward forming a cup and enclosing a cavity designed to hold that part of the relaxed uvula which is not to be cut during operation. By a crushing action when the jaws are closed, haemorrhage is effectively prevented. The jaws connect with the handles by flattened shanks 4.5 cms. long. The delicate handles are 13.4 cms. long. It will be observed that part of the handles (3-4 cms.) continuous with the shanks through the rivet is also flattened. This flat surface facilitates depression of the tongue during the course of operation. The remainder of the handles shows distinct sets of circular ornamentation. Unfortunately, one of the handles is broken. There is only one serious criticism to make regarding the design of this otherwise elegant forceps. From the operator's point of view, it would be more efficient if the handles terminated in loops for the thumb and fingers as in our scissors. If this were the case, the control over the instrument would be increased enormously. Dundas-Grant's uvula forceps incorporates this feature together with a gentle curve in the handles to increase the view of the surgeon¹³, and so, the zenith of its evolution is reached in this instrument. Perhaps it should be mentioned that the staphylagra was also used for clamping haemorrhoids, but normally a short variety was used for this purpose. Uvula forceps are to be found in the museums at Basle, Mainz, London (B.M.) and one was found by Toulouse in the grave of the surgeon of Paris. Milne¹⁴ states that all surgical instruments found in the provinces have an *air de famille* which

would lead one to suppose that they had been manufactured in Italy, but he is not certain. Deneffe¹⁵ writing earlier supports this view and says

“ En voyant des types presque identiques provenant de fouilles pratiquées a d'énormes distances les unes des autres, je suis porté à croire qu'ils on été apportés dans ces colonies Romaines par des médecins qui se, fournissaient en Italie chez les mêmes fabricants. Je pense que les médecins romains qui partaient pour les colonies se fournissaient d'instruments dans la mère-patrie avant de la quitter ”.

Uvulotomy is performed very rarely today. Indeed, it is now one of the rarest operations in modern laryngology: it is occasionally undertaken on account of attenuation; elongation, and swelling of this structure caused by allergy or chronic inflammation in the postnasal and pharyngeal regions.

Plate II illustrates a combined bronze instrument, 13.5 cms. long, found in the Castle villa, Caerleon, some years prior to 1862. One end of the instrument terminates in a long spoon, thus linking it morphologically with the ligulae. The other end of the shaft is continued as a small egg-like expansion called an olive or olivary nucleus, so it falls into the category of a probe or specillum. Milne¹⁶ states that the classification of probes is fraught with difficulty. No hard and fast line can be drawn between the different types. They shade off into each other by imperceptible gradation as in a spectrum, so whatever system of classification is adopted, bastard forms are sure to occur. This probe can be regarded as a cyathiscomele (Löffelsonde), a type of spathomele or spatula in which the blade is not flat. Apart from its use for mixing, measuring, and applying ointments and liquids, it is essentially a sound. The ancients were very skilfull in their use of probes or sounds. The advantage of this double arrangement lay in the fact that the surgeon had a quick change of instrument. The principle has come down to the present day, but for aseptic reasons it is virtually abandoned. Most probes carry a spatula, a scoop or a spoon, or a hook at the other end. A typical scalpel handle at Rowley's House Museum, Shrewsbury, carries at the end opposite the blade a spatula for blunt dissection. Plate II shows us an example of a ligula, 14.7 cms. long, made of bronze. Another one is seen in Plate I. They are toilet articles for extracting ointment, salves, balsams, and powders from tubes and boxes, but since they are often found associated with surgical instruments, it is advisable to bring them within the scope of this article. Before leaving the subject of probes a note should be made of a sharp hook (hamulus acutus) to be seen at Shrewsbury museum¹⁷. Milne¹⁸ states they were used for seizing and raising small pieces of tissue for excision and for fixing and retracting the edges of wounds. In the operation for tonsillectomy, the organ was brought into view

by dragging on it and then amputating it. In dissection, many of the manipulations which we perform with the dissecting forceps were executed by the ancients with sharp hooks. The surgeon Heliodorus, giving the first account of terminal ligature and of torsion, has this to say: " We ligature the larger vessels, but as for the smaller ones, we catch them with hooks and twist them many times, thus closing their mouths ".¹⁹

Another interesting group consists of the instruments concerned with weighing drugs. Of these there are two chief varieties, the simple balance (*libra*) and the steelyard (*statera*). In the former weight is set against weight, at equal distances from the point of suspension. In the latter the object to be weighed, suspended from the short arm of the lever, is set against a small weight at a suitable point on the long arm. Balances have been used in prehistoric Egypt since the 5th millenium B.C.²⁰, and also by the Greeks; the Romans used both. A portion of a small folding-balance was found at Caerleon in the earlier part of the last century and is illustrated by Lee²¹. Unfortunately, this balance is incomplete since one arm of the beam is missing. The whole instrument is suspended at its centre by a cleft handle to allow for the rocking and rotation of the pointed index in the process of weighing. An exquisitely ornamented handle for use with this type of scales together with an engraved scale-pan is sketched by Roach Smith²². Apparently, scale-pans are very rare in this country. In a very interesting article on ancient measures and weights, Skinner²³ informs us that from 1500 B.C. to the fourth century A.D., the sensitivity of the *libra* was of the order of: 1 grain (0.065g.) with 100 grains in the pan, and 5 grains (0.324g.) with 2,000 grains in each pan. Replicas of folding-balances can be seen in the Grosvenor Museum, Chester. Another was found at Lydney Park.²⁴

Bronze steelyards are frequently met with among other Romano-British antiquities. According to Wright,²⁵ they bear a perfect resemblance to those in use in the nineteenth century. An example is to be found at Rowley's House Museum, Shrewsbury. Two examples similar to the above were found at Richborough.²⁶ Another was unearthed at Stretton Grandison, Herefordshire.²⁷ The steelyard was widely used in the Roman world. Details of operation of this appliance are to be found in a B.M. publication.²⁸ Both a balance and a steelyard were found among the instruments of the oculist from Rheims. One of the Pompeian steelyards was found in the House of the Surgeon. Holth²⁹ states that the balance was only fitted for light weights, e.g. for very effective drugs. The steelyard, on the other hand, may have been suitable for a physician in the purchase of drugs from herb-gatherers. The hooks on the short arm were fastened directly to the goods which probably con-

sisted of bundles of plants. The physician of antiquity was, of course, his own apothecary.

Plate I illustrates a good example of a Roman bronze shears (forfex), whilst the post-Roman one found at Caerleon (Plate II) is shown for the sake of comparison. They are very common objects in museums, steel ones out-numbering the bronze. Milne³⁰ thinks that the ancients may well have found difficulty in putting an edge sufficiently smooth for surgical purposes on their shears. He goes on to say that they had several uses including the cutting of hair as a therapeutic measure, in the treatment of abdominal injury with protrusion of omentum, and in the operation for radical cure of hernia. Dr Corbett of the British Museum believes that the modern type of scissors did not come in until the sixth or seventh century A.D., but this view would seem to be at variance with that of Vidius, the sixteenth century anatomist and surgeon³¹. In order to illustrate his book he copied drawings allegedly transmitted directly from antiquity³². These drawings, he said, represented the genuine Hippocratic tradition of surgical practice communicated to Byzantium via later Greek channels. He includes in his work an instrument identical with our modern scissors. From this one deduces that he was satisfied that the scissors was a normal part of Graeco-Roman surgical equipment. It may be mentioned that Vidius' illustration of a Greek scissors was used by the erudite scholar, Adams³³ also, by Mukhopadhyaya³⁴. Finally, Ward³⁵ suggests that the Romans were acquainted with scissors on the lever principle. The true answer to this question lies in the earth and will only be revealed by further excavation.

Another note-worthy object at Rowley's House Museum is the iron netting-needle, about 15 cms. long³⁶. The prongs are incomplete and the tool shows much corrosion. In the typical netting-needle the prongs have blunt points and the planes in which the forks lie are at right angles, or nearly so, to each other. In his masterly article on instruments, Holth³⁷ gives us an elaborate and convincing exposition of the surgical use of these objects. He feels certain that the *navette à filocher* was used by a doctor as a long reel for the convenient storage of surgical suture. The same method is used today for the storage of sterile cat-gut in glass phials, though, in these, the "netting-needle", bifurcated at both ends, is made of plastic. To complete this study one should include a report on the unguent jars, whetstones, and the oculists' stamps found in this museum and elsewhere in the region under investigation, but these are deserving of description in a further paper.

Such then, is the legacy of instruments found in Wales and the border. We see that some of them are undoubtedly surgical tools

created for surgical purposes, whilst others, have a more universal use. The reader will observe that Romano-British surgeons handled the same standard equipment as their professional colleagues elsewhere in the Empire. Holth tells us that the shape of these instruments remained, more or less, unaltered for at least a millenium—from Hippocrates down to the Byzantine era, testifying well unto their design and utility. It is vital to remember that fundamentally Roman surgery is an offshoot or subvariety of Greek surgery. And so, with this strongly in mind, we can rightly say with Garrison, that under the influence of the Romans, surgery attained a high degree of perfection which it never reached again until the time of Ambroise Paré.

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“I would require Honesty in every Physician, that he be not over careless or covetous, Harpylike to make a prey of his patient, or, as an hungry Chirurgeon, often produce and wire-draw his cure, so long as there is any hope of pay. Many of them, to get a fee, will give phsyic to every one that comes, when theré is no cause, thus, as it often falleth out, stirring up a silent disease, and making a strong body weak”.

Burton. *Anatomy of Melancholy*. Quoted by William Andrews, F.R.H.S.—*The Doctor*. In *History, Literature, Folk-Lore*, etc.