THE EVOLUTION OF SURGERY IN THE LOW COUNTRIES DURING THE SIXTEENTH CENTURY.

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I. Introduction

A discussion of the evolution of surgery in sixteenth century Flanders may be devoted to various aspects of surgery during this period such as: What was the extent of knowledge of surgical science at the beginning of the sixteenth century and how did it evolve during this century? Who were the surgery practitioners, how was their work arranged and how did their working conditions evolve during the restless periods of Reformation and Counter Reformation? What surgical knowledge did the various practitioners possess and how did their training evolve? Finally, how did the surgical profession receive the anatomical and surgical renaissance changes in our Low Countries?
Quite a number of questions that we shall attempt to answer in this paper.

II. The evolution of surgical science during the 16th century

Medical knowledge at the end of the Middle Ages was still primarily based on the humoral concepts of Hippocrates and Galen.
These concepts formed the basis of knowledge not only about internal pathologies but also external surgical conditions for the majority of surgeons. Middle Age surgeons like Lanfranchi (? - 1315), Henri de Mondeville (ca. 1260-1320), and shortly thereafter, Guy de Chauliac (1298-1368), had laid down the foundations of surgical knowledge in their manuscripts, which could be acquired by both university educated doctors and most of the uneducated surgeon-barbers.
It was mainly Guy de Chauliac, who in an unprecedented way left his mark on surgical science from the late 14th century until well into the 17th century. The "*Chirurgia Magna*" by de Chauliac was already available in handwritten form in Middle Dutch (1) as well as in French before 1450, whilst after the introduction of printing, at least four of the 56 known editions were printed in Dutch, between 1507 and 1646 (2). Apart from the surgical topics from the Canon of Avicenna, de Chauliac's "*Chirurgie*" was the most important subject matter for future doctors and surgeons at both the Universities of Louvain and of Paris (3).

If we wish to evaluate the reforms in surgery during the 16th century, we have to examine them in the light of de Chauliac's textbook.
The "*Grande Chirurgie*", as was customary after Avicenna (4), comprised the 5 great divisions (5) that were later referred to by Fabricius di Acquapendente (1533-1619) as the Pentateuch, in analogy to the Moses story (6).
In these chapters illnesses were no longer described from head to feet, as in ancient times, but were divided into tumours, wounds, ulcerations, fractures and dislocations (7).

In accordance with the definition by Celsus, the chapter on tumours covers both swellings and lumps, and includes descriptions of the treatment of cysts, abscesses, furuncles and buboes. In addition, thyroid enlargement or goitre, the swelling of limbs, including elephantiasis and varices, and the true tumours such as breast lumps and other cancers are described in this chapter.
Cancer treatment is mainly conservative, in the manner of Hippocrates. Indeed, the age old theory was upheld that an operation on a cancer patient would have a detrimental influence on the prognosis.
For inguinal swellings (8) de Chauliac states the conservative treatments and also the six common surgical treatments of the time. Two methods described by Albucasis (936-1013) comprise castration on the same side as the hernia, either through an incision or by means of a red-hot cautery. De Chauliac also chooses the technique used by Theodorico Borgognoni (1210-1298) with a cautherium potentiale, based on an arsenic-containing solution.
As well as these, de Chauliac refers to two techniques for transcutaneous tying of the spermatic cord, one using fixation to a piece of wood until the spermatic cord is torn through, and the other with a golden thread and more controlled pressure, intended only to prevent the intestines from entering the hernial pouch.
It is this latter technique that was recommended once again in the 16th century and set out in detail by Pierre Franco (1500-1561) in his publication entitled "*Petit traité contenant une des parties principalles de chirurgie, laquelle les chirurgiens hernières exercent*". This work, which appeared in 1556 and was re-printed in 1561, and which was adopted by Ambroise Paré (1510-1590) in his "*Dix Livres de Chirurgie*" without mentioning Franco's name incidentally, received attention from Flemish surgeons after Carel Baten had translated Paré's work into Dutch in 1592.
Apart from this technique, which still had its roots in the Middle Ages, Franco introduced a major innovation to the treatment of inguinal hernia by describing a method for obstructed or strangulated hernias. For this, using a

probe introduced via an incision in the scrotum, the hernial sac is opened to expose the internal inguinal ring, and the trapped piece of intestine can then be replaced in the abdominal cavity.
The fact that this new technique could be published in 1556 is no coincidence: indeed, Gabriele Falloppio had described the anatomy of the inguinal canal for the first time in great detail (9) several years before his *"Observationes Anatomicae"* appeared in 1561.
This operation for incarcerated hernia was equally made widely known by Paré and could thus reach the Low Countries via the translation.
A similarly innovative reform was introduced in lithotomy.
The perineal incision for stone extraction from the neck of the bladder referred to by Aulus Cornelius Celsus became well known and was handed down at the end of the Middle Ages. Most medieval surgeons, including de Chauliac, did not attempt it.
In 1522 the Italian, Mariano Santo (1488-1577), a pupil of Giovanni da Vigo, published a monograph, entitled "*Libellus aureus de lapide in versica per incisionem extrahendo*", in which he made an incision, also through the perineum, and with the help of a metal urethral probe which gave access to the bladder above the sphincter, then extracted the stone with the aid of a number of probes, dilators and forceps (the so-called great apparatus). This technique caused fewer complications than the Celsus method and rapidly became popular in France, in particular around the middle of the century thanks to Laurent Colot (1519-1559), the founding father of a family of lithotomists, which was to remain famous until the 18th century.
In the Low Countries we had to wait for the translated works of Paré before being able to see the introduction of the Santo method. The previously mentioned Provencal, Pierre Franco, had described another method of stone removal, different to the Santo technique. In his quoted work from 1556, Franco does indeed describe the supra-pubic cystotomy, a method for entering the bladder that remains to this day.
A separate chapter from the *Grande Chirurgie* by Guy de Chauliac is devoted to the treatment of wounds.
For small wounds a simple bandage was considered sufficient, sometimes soaked in white of egg.
In the Galenic tradition, larger wounds were sutured with separate sutures or with a fibula, possibly also with supporting sutures or even with a type of metal clip.
Abdominal wounds were closed with a double running suture or else with a type of mattress stitch.

Relatively few changes were made to this treatment of wounds in the 16th century. The trauma- surgeons from Strasburg, Jeronimo Brunschwig (1450-ca. 1512) and Hans von Gersdorff (fl. 1500) adopted de Chauliac's techniques virtually unchanged.
Their contemporary, Paracelsus, on the other hand was much more conservative: he used ointments and powders, plasters and cataplasms, also for larger wounds. His 1536 "*Grosse Wundarzney*" was published in Dutch twenty years later in Antwerp and had an immediate impact on the Flemish surgeons. Thus the Brussels surgeon Peter Haschaert (10) was for instance to use the Crocus Martis for large and deep head wounds, prepared, according to him, "*after the manner of Doctor Paracelsus*" (11).
An even more important evolution was seen for foreign bodies that found their way into wounds, especially bullets and shot.
The theory of poisoning by firearms was introduced in 1460 by the German military surgeon Heinrich von Pfolspeundt and the Strasburg surgeons mentioned earlier agreed with it. The theory was further substantiated by the Roman surgeon Giovanni da Vigo (1450-1525) in his "*Practica in arte chirurgica copiosa*" of 1514. The appearance of its Dutch translation in Antwerp in 1533 (12), made the poisoning hypothesis, including its treatment with boiling oil or red-hot cautery, common knowledge here as well.
The story of Paré's shortage of such oil during the campaign in the Italian Piedmont in 1537 is well known and led to his revolutionary publication in 1545. This last publication appeared just two years later in Dutch, once again in Antwerp.
Nevertheless, hot cauteries would still be used for quite a time in this country to treat these "poisoned" wounds. Possibly the symptoms of sepsis that usually appeared after such wounds, caused the surgeons not to dismiss the poisoning theory out of hand.
However, this was finally to happen towards the end of the 16th century, as the text by Jacques Guillemeau shows (13), in a translation by Carel Baten of Ghent, in 1598.

> "*Speaking of the power of lead shot, I have for so long not wished to believe that gunshot could poison, since until now no poisonous gunshot wound has been treated by any surgeon of our time and described by him ...*" (14).

> "*Sprekende van de cracht der Busclooten ick en hebbe dus langhe noch niet connen ghelooven datmen de Busclooten soude connen verghiften overmidts tot*

noch toe gheene gefenijnde geschoten wonde eenige vermaert Chirurgijn binnen onsen tijde is in handen gecomen, die daer van geschreven heeft..... "

Chronic wounds are classified as ulcers in a separate chapter of de Chauliac's "*Grande Chirurgie*". In the manner of Avicenna, who was the first to dedicate one of the five books of surgery specifically to ulcers, de Chauliac also used the red-hot iron many times to treat ulcers. Haemorrhoids, peri-anal abscesses and fistulae, which are also included in this chapter, were also cauterised in the same way.

New at the beginning of the 16th century were syphilitic ulcers. These were not immediately cauterised; conservative treatment for them was described by the Spanish doctor Francesco Arceo (ca. 1493- after 1574) in his "*De Recta curandorum vulnerum ratione..*", a work that was published in 1574 with the help of Alvaro Nuñez of Antwerp, and which was translated into many languages, including Dutch.

In the 16th century a progressively more conservative point of view was equally adopted with regard to non-syphilitic ulcers. Paracelsus, in particular, set himself firmly against the use of painful cauterisations.

According to Arceo, ulcerous fistulae and abscesses were best drained, by means of a hollow leaden tube. Nevertheless, the Hippocratic technique using a seton, and the incision of the fistula canal above a probe, as suggested by Paul of Aegina, remained in common use in the 16thcentury and even to the present day.

A fourth book of the de Chauliac Pentateuch deals with fractures and dislocations.

The Hippocratic tradition of limb immobilisation for fractures has remained throughout the ages and is even described in detail by the Flemish Middle Age surgeons Jan Yperman and Thomas Scellinck. The immobilisation is done using splints along the straightened limb, as described in the Dutch version of Paracelsus' "*Grosse Wundarzney*".

For upper leg fractures de Chauliac even suggests limb extension with a lead weight hanging from a cord, attached to the foot.

The Renaissance surgeons had little to add to this treatment. Nevertheless the illustrations in the textbooks of the Strasburg surgeons gave the first perfect visual representation of such fracture treatment. If there was a deviation in the alignment of the fracture, Jeronimo Brunschwig followed the advice of Celsus: to break the bone again at the site of the callus and immobilise it in the correct position (15).

Von Gersdorff, on the other hand, suggested a new technique to help joint contractures, caused by long-term immobilisation after an open fracture. In

this the contractures are mechanically stretched until the correct position is reached.
The 1517 book by von Gersdorff was soon published in Dutch but under the incorrect name of Brunschwig. The real "*Veldt Boeck*" by von Gersdorff was fortunately re-printed in a Dutch version in 1593, under the correct author's name.
The German, Fabry von Hilden, also reproduced von Gerdorff's technique for the treatment of contractures in his work.
Traumatology books were without doubt keenly read by our surgeons. They also included the treatment of skull fractures. In the same way as other broken bones, skull fractures were already described in the brilliant treatises of Hippocrates and Galen. For example, Galen was a strong advocate of trephination for depressed fractures. De Chauliac also describes in detail the instruments necessary for this, including the elevator, file, and especially the trephine.
Our surgeons were very familiar with these instruments, for example the previously mentioned Peter Haschaert, who illustrated them so brilliantly in his commentary on Hippocrates' treatise on head wounds.
The trephine was also perfectly illustrated by Haschaert with the accompanying crowns.
Peter Haschaert even pointed out some typical symptoms of cerebral concussion that were missing from Hippocrates' work on head injuries. After introducing "*loss of consciousness*", the feeling "*as if the head is spinning*", the fact that "*they fall down*", and the sight that "*was taken away from them*", Haschaert adds:

> "*We must also add the nausea and vomiting, which Hippocrates does not mention here... since that vomiting gives us a sure sign that the brain or its membranes are damaged*".
>
> "*Wij moghen oock hier bij doen datse braecken ende overgeven, daer af Hippocrates hier niet en vermaent...., want dat overgheven geeft ons een seker teecken dat de herssenen oft zijn membranen ghequetst zijn*".

Haschaert also dares to go further with the treatment than Hippocrates. Where the latter advised not placing the trephine on a suture line for fear of drilling into the dura mater, Haschaert writes:

> "*But it sometimes happens that once the master is called and has gone to the patient, that he is already caught by illness that inhibits the dissection of the wound: then one should choose the lesser of the two evils rather than leaving the*

patient without any treatment, and set the trephine on the suture, which I have done in some cases and the patient has recovered".

"Maer het gheschiet somtijts dat den meester van eerst daer toe gheroepen en is gheweest, ende dat die patient alreede met korsten ende accidenten bevanghen is, die de dissectie vander wonden beletten: dan so moet men van twee quaden 't beste kiesen ende setten die trepane op de siture, liever dan die patient sonder eenigen troost te verlaten, 't ghene dat ick somteyds gedaen hebbe ende sy zijn genesen geweest".

In the 16th century von Gersdorff invented a special instrument for trephination, with which the depressed bone fragment could be more easily reduced.
Von Gersdorff later improved this instrument to make a three-legged trephine.
Francesco Arceo even suggested the correlation between a progressive coma in the patient and an internal subdural haematoma. He was to be the first to use a trephine for subdural haemorrhage.
In the 16th century the advice of the Old Masters was, for the most part, followed for the treatment of dislocations and fractures. The famous Hippocratic reduction of a shoulder dislocation was expertly illustrated by both the Strasburg surgeons and Jean Tagault (?-1545).
During the 16th century strong traction was usually achieved by means of wooden implements, both for shoulder and hip dislocations.
For recurrent shoulder dislocations, the Arabs had devised a skin-searing cauterisation that was applied to the joint, resulting in a skin contracture that reduced joint mobility, thus preventing recurrence of the dislocation.
There is very little to be found about this in 16th century Dutch texts.
In general it can be said that the techniques for fractures and dislocations of the olden days were followed undiminished, and that in the16th century it was mainly the instruments concerned with them that changed.
A further book by de Chauliac puts together a number of surgical diseases that are mentioned here and there throughout the Pentateuch by other authors, including eye diseases, tooth decay, gout, various skin diseases, including scabies, leprosy and burns, and finally also amputations.
Here too the 16th century surgeons made some important achievements.
The credit for the considerable improvements in amputation techniques went to Ambroise Paré.
Similarly to de Chauliac and the Strasburg surgeons, Paré took the limb off at healthy tissue, but in contrast to his predecessors, he did this by sliding the skin and muscle much further back, which reduced pain and bleeding.

After sawing through the bone, Paré moved away from de Chauliac's use of the red-hot cautery for haemostasis and brought the vessel ligature back into favour, something that been encouraged by Celsus in olden times and had also been used by Yperman for bleeding wounds. The results of Paré's amputations were apparently better than those of his predecessors.
As well as various haemostatic ointments and cataplasms, Carel Baten of Ghent nevertheless still first used the cauterising iron in cases of severe bleeding. Only when this did not help, he wrote in his *"Handboeck der chirurgijen "* from 1590, *"If one sees that the damaged vein or artery cannot be closed with one of the aforementioned means, then a curved needle should be used to stitch through the healthy tissue and thus bind it, rather than let the patient bleed to death*" (16).

> *"Alsmen siet dat de ghequetste ader of arterye met geene van dese voorgaende middelen en is te stelpen, soo salmen de ader met een kromme naelde ondersteken door 't gesonde vleesch, en also toe binden, liever als den patiënt te laten doot bloeden".*

It should be said that Paré, as a military surgeon, treated mainly trauma patients and generally performed amputations of the lower leg. In contrast, von Gersdorff performed many of his amputations on victims of St Antonius' fire, who suffered limb gangrene caused by grain mildew infections. The accompanying narrowing of the vessels certainly influenced the healing of the stump.
The surgeons in the 16th century Low Countries had to battle mainly with shot wounds: extensive injuries, open, mainly multi-fragmentary fractures, frequently combined with tissue loss, caused by bullets and shells from muskets and canon.
The havoc caused by this was usually enormous and the mortality high.
In 1575-76 the surgeon Niklaes Egbertsz described a consecutive series of 176 patients, according to a bill he presented to the governors of Zierkzee for surgical treatments (17). Almost all of the patients were soldiers who had been wounded during the attack on that city by the Spanish-Flemish troops of Requesens.
Of the 176 cases, Mister Claes lists at least 28 deaths, which means a total mortality of at least 16%.
The most serious were certainly the chest and abdominal wounds: 6 of the thoracic bullet wounds, and all 5 of the abdominal wounds, were fatal.
Nevertheless, like Paré, Egbertsz found himself forced to perform bullet extractions, arm and leg amputations, fracture treatments, wound care etc. A

significant number of these treatments were successful, since 5 of the 176 patients were listed by name twice, each time for different battle wounds.
A few examples will suffice to show that the surgeons in this country not only had the enthusiasm and skill of their foreign colleagues, but also kept up with recent developments of the time:

> *"On the 9th January (1576) as the fleet came in to Zierikzee, there was shooting, and a soldier under Captain Renoy, named Harman van Breemen was wounded. He was shot a hand's width above his right breast and out again behind his shoulder blade. I cut it out from there"* (18).
>
> *"Op ten neegenste Jannevarius (1576) als die vloot tot Zircxzee inquam, soo wordt ghescootten en ghewondt noch een soudaet onder cappeteyn Renoy, ghenaempt Harman van Breemen. Dees was daer ghescooten een hantbreet boven zijn rechterer borst in, ende after tot zijn scoerblat weder uut. Daer hebbe ickket uutghesneden"*

It is possible that the bullet did not go through the chest cavity but around under the skin of the ribcage. Anyway, the soldier recovered, only to have worse luck two months later:

> *"On the 11th of March Harman van Breemen was wounded during a skirmish on the Meel Dyke. He was shot in his right thigh into the bone, and I cut the lead out of his groin, and he died on the 15th of March"* (19).
>
> *"Den 11den Maert wordt ghewondt op een scarmutsinge op die Meeldijck .... Harman van Breemen. Dees was ghescooten in zijn rechter diebeen, buytensbeen in, ende ick hebbe dat loot in zijn lies uitghesneden, ende hij is ghesturven op den 15den Maert"*

In the case of another victim, Mister Claes was able to fully demonstrate his technical skill:

> *"There is a soldier under Captain Jasper called Heyndrick Diericksz from Coomen in Flanders. . He had his thighbone shot into pieces with a large musket ball. This is the most difficult work that one could be faced with, as someone had a similar gunshot in the year 1574 that cost the state two hundred guilders or more, apart from the doctor's fee, and he still died. But, thanks be to God, the aforementioned Heyndrick did recover"* (20).
>
> *"Een soudaet onder cappeteijn Jasper is ghenaempt Heyndrick Dierricksz van Coomen uit Vlaenderen. Dees was die fosile van zijn diebeen an morselen*

ghescooten met een groot mosketloot. Dit is het moijlijckste werck dat men onder handen soude mogen crijgen, want er alsoe een ghescooten was in 't jaer 1574, die den stadt wel twe hondert daelders costen ende noch meer behalven het meesterloon, ende hij is daer noch of ghesturven. Mar desen Heyndrick voorscr. is wel ghenesen, god sy lof"

Finally, one more otherwise rare example of a remarkably successful amputation:

"On the 22nd February (1576) a seaman under Captain Heyndrick Manneken van Alteren, was shot. His name is Jan Zeegersz. He was shot here in the harbour in the burning ship and his right arm was taken off above the elbow joint, the upper bone was exposed and there were a number of pieces of flesh hanging from it. I had to remove his arm a wide hand's span of his shoulder. Moreover the ball of his left hand was shot away and the first joint of his finger, and his pain was excruciating, and he was so badly hurt internally that he coughed bloody phlegm for a long time" (21).

"Opten XXIIen Februarius (1576) worden ghescooten een bootsghesel op cappeteijn Heyndrick Manneken van Alteren. Dees is ghenaempt Jan Zeegersz. Dees was ghescooten hier voor die haeven in 't verbrande wrack zijn rechter arm tot boven sijn ellebooch gnap of, ende die bovenste scijnckel was bloot sonder vleijende daer hijngen noch veel lappen van vleijs aen, ende ick mostse ontrent een grote hantbreet van sijn scoer ogsetten, ende noch was die slinker hant sijn muis ofghescooten, ende sijn goudtvinger het voorste lidt of, ende sijn pijn heel te barsten, ende hij hadde hem zoo zeer ghedaen van binne in 't lijf, dat hij een tijt lanck bloedighe fluyme spooch"

Thus, some examples of the classical multiple traumas that 16th century surgeons had to deal with.

The surgeons of the 16th century were also ready for new techniques in eye surgery. Here too it was the relevant instruments that improved considerably. The cataract operation had been known since olden times, although many surgeons hesitated to attempt it out of fear of the frequently fatal septic ophthalmia. Even though the Flemish surgeons Yperman and Scellinck had described cataract operations in great detail, it was mainly eye doctors or oculists who performed this operation on the squares and marketplaces.

The array of instruments that the German surgeon Georg Bartisch developed, combined with his anatomical knowledge of the eye, as he had learnt it from the Fabrica by Vesalius, enabled him to not only perform cataract operations more precisely, but also to carry out the first successful enucleation of the eye and to suggest treatments for squints, ectropia and conjunctivitis.

Bartisch's "*Augendienst*" was published in 1583 and was immediately hailed as the first great basic textbook of ophthalmology (22).
The surgeon could also help internal illnesses, namely the infectious diseases. Typical examples are the incision of buboes caused by bubonic plague, or the treatment of thoracic empyema, which was a complication of pleuritis and pneumonia.
The Hippocratic technique of thoracocentesis and partial rib resection for the drainage of purulent pleuritis was re-introduced in the 16th century by the famous Brussels doctor Andreas van Wesel, or Vesalius, who described several examples in his Consilia.
When looking briefly at surgical pathologies and their operative treatments during the 16th century I have almost deliberately omitted the revolutionary developments in anatomy starting with Berengario da Carpi, through Vesalius and his pupils, to Fabrizzi di Acquapendente.
These anatomical discoveries have, without doubt, influenced the surgical developments previously outlined. As I recently covered the influence of Vesalius' work on medicine and surgery in the 16th century, I will limit myself here to one example, that is related to the above mentioned thoracocentesis for pleural empyema, in which the anatomy of the intercostal blood vessels and nerves is described in detail by Carel Baten in his translation of Guilemeau's "*Chirurgie*":

> "*In as far as there is no swelling on the outside of the chest [otherwise this should be incised], one should make an opening into the cavity of the chest between the third and fourth rib counting from below, around the middle of one side, six or seven finger widths from the back bone, with a curved lancet, not in any direction but always going from up to down, pushing the point of the lancet from under the fourth rib, the cutting side of the edge pointing towards the upper part of the third rib so that it does not cut into a vein, artery or nerve, hidden under the lower curve of the rib*" (23).

> "*Ende so verre alsmen geen swellinge oft heffinge gewaer en wort buyten in de Borst [anders moet men daar insnijden], so salmen tusschen de derde en vierde vande warachtige Ribben beginnende van onder te tellen omtrent het middel der eener sijde ses of seven vyngerbreet van het Rugghebeen met de cromme Lancette een openinge maken tot inde hollichheyt der Borst, niet t' eender reysen, maer allenskens beginnende van opwaerts nederwaerts, dwingende den punt van de voors. Lancette van onder de vierde Ribbe, de snijdende sijde der selver streckende op de opperste partie van de derde Ribbe op dat men niet en snijde in een Ader, Arterie ofte Senne die onder de onderste hollichheyt der Ribbe gelegen ende verborgen zijn*".

III. The evolution of the organization of the surgical profession in the 16th century.

The medical-historical investigation concerning the organization of the surgical profession in 16th century Flanders is still far from complete.
In contrast to the situation in the Northern Netherlands, where attention has already been given to barber-surgeons, their organization, guilds, activities and training for many decades (24), in Flanders this is only the very fragmented case.
This may not be true for the 17th and 18th centuries where a number of historians have already investigated the corporation of surgeon-barbers (25).
For the 16th century however, one must look either to summaries that span several centuries (26) or to bibliographical details of specific surgeon-barbers out of our former regions. (27).
In this section, therefore, the 16th century surgical profession is looked at in more detail with emphasis on regions that belong to present day Flanders.

III.1 Surgeons and barbers trades in the Low Countries during the 16th century.

The social situation in which surgeons and barbers found themselves in the Low Countries during the 16th century still remains fairly unclear for the present –day medical historian.
This is for two important reasons. On the one hand, during the 15th century both trade groups more or less merged but at different times and to different degrees in various Dutch and Flemish towns and villages. On the other hand, various activities that these two groups practiced were also frequently carried out by other traders, whether "specialists", village healers or quacks.
The regulation of surgeons and barbers' activities was in the hands of the trades of the two professions. Since the late Middle Ages the two diverse groups of traders had been able to join the same trade, that of the surgeon-barbers. This was one of the so-called small trades, sometimes part of one of the other guilds such as mitten-makers or linen-traders (28), sometimes a small trade in itself, like in Ghent. (29)
The establishment of these trades seems to have occurred somewhat later in the Low Countries than in the surrounding countries (30). Nevertheless in Bruges for example there was already mention of a barbers' trade in the course of the 13th century (31), more or less at the same time therefore as the

establishment of the Confrèrie de Saint Côme in Paris (32). Relative source documentation is however scarce (33).
One of the oldest decrees that gives an idea of the activities of the barbers' trade in our area dates from 1357 and was granted in Ghent, on the Sunday following St Peter's Day, by the city's aldermen.
The decree describes the structure of the trade organization consisting of a dean, committee, a number of overseers and the members. It also stipulates a number of prohibitions for the members. The following, for example, were forbidden: the keeping in the barber's shop of blood from blood letting; the displaying of blood on the window ledge if ten beakersful had not been let; the acceptance of annual subscribers; shaving, haircutting or blood letting below a certain tariff; imbibing in alcoholic beverage and working on Church holidays. In short, a number of regulations that, if ignored, could lead to a suitable fine being imposed (34).
In 1411 the barber's trade in Bruges was in possession of statutes similar to these. That of Mechelen followed in 1438 (35).
In this way real corporations came into being (36) whereby the feeling of belonging was emphasized by both religious and military activities (37). This feeling was undoubtedly strengthened over the years.
Once trade books started to be published, namely in Ghent in 1433, it became possible to retrieve information about the trade's members. The names of the so-called "*free-masters*" of the trade were registered in this book.
In this way we know the names of around a hundred surgeon-barbers that practiced in the City of Ghent in the pursuing years (38).

The activities of the barbers and surgeons were, in the pre-corporative phase of the late Middle Ages, for the most part different. The former were primarily involved in beard shaving, hairdressing and blood-letting whilst the surgeons concerned themselves more with the health of their clients and carried out smaller or larger operations on them.
This group of Middle-Age surgeons consisted of, on the one hand, those like the famous Jan Yperman (39) who had a university education and on the other hand those who had worked their way up through the barber's trade and were primarily concerned with the treatment of small surgical pathologies (40).
At the moment when the two types of care-assistants in the Low Countries went to enroll in their trade, this then concerned both the simple barbers as well as surgeons (41). Initially there was a clear distinction between the two. In the Brussels' trade for example a differentiation was made between the so-

called "*whole masters*" and " *half masters*" (42). The first were really barbers who carried out surgical as well as barbers' activities. The second group was the surgeons, who only performed surgical activities (43).
There was also a clear difference in the training of the two sorts of craftsmen, not only in Brussels but also in other cities (44).
Quite early on, the trade provided training for the apprentice barbers (45).
The knowledge, which this training had to impart, was stipulated some years later in a byelaw dating from 1466. This byelaw immediately listed the specific knowledge that surgeons were meant to have: "*those who in future wish to practice in cutting, cauterizing and corrosive treatment of the human body*"

> *"zij, die voirtaen Cirurgiën hantieren wil als van snijden, barnen en corrosieve hantieren in des menschen leden"*

will be questioned by the sworn master of medicine and the sworn trade master about *"everything concerning the body parts both inward and outward; they would then judge who was competent in anatomy*" (46).

> *"alle die 't samenzettinge der leden van bynnen en buyten; na uutwijsinge der anathomen en van de voorsz. personen, die bequaeme daer toe sijn"*.

A different training was therefore required in order to gain the required knowledge necessary to become a surgeon as opposed to a barber: In the supplement to a decree from Utrecht dated 1434 it can be read that the apprenticeship for a barber was 3 years whilst that of a surgeon was 4 years (47)!
In the apprentice contract that the guardians of Claiskin Boele of Ghent signed with surgeon Jooris van Poelvoorde in 1469, it appears that the above mentioned Claiskin had to serve an apprenticeship of 5 years, despite the fact that the contract was signed outside the jurisdiction of the corporation of surgeon-barbers (48).
The fact that this was possible indicates that, at the end of the 15th century, there was no regulation neither given by the council to the trade nor endowed on the trade.
The decree issued by Charles the Bold on 5 July 1473 to the barbers in Brussels brought about the first change in this situation (49).
This decree stipulated that without exception, blood letting, tooth extraction and small surgical operations were the exclusive domain of the surgeon-barbers (50). There was only one exception to this, namely the university

trained doctor, irrespective of whether he lived in- or out- side the city. The surgeon-barber who was admitted to the profession had to be a member of the trade and on admission to this trade had to have fulfilled all scientific and financial obligations. If any discussion arose about his qualifications or recognition the advisory councillor or the chairman of the council of Brabant could deal with any complaints. (51).
Similar decrees were certainly meant to increase the importance and standing of the various municipal barbers' trades.
The surgeon-barbers also wanted to increase their importance by using separate guild houses for their meetings as well as for teaching and giving demonstrations to their pupils. In Ghent, a few years after Charles the Bold's decree, i.e. in 1477, there is mention of such a house on the Bennesteeg (52).
In addition we see the "more developed" surgeons now obliged, as it were, to join the trade in order to enjoy the same privileges. Even some of the university *doctores medicinae,* who had dedicated themselves to surgery, joined the trade. A typical example is a certain Jakob de Stuckere, freeman in surgery, who for this reason joined the surgeon-barber's trade in Ghent in 1485 (53).
When joining a trade a sort of "entry fee" had to be paid. This formed one of the most important sources of income for the trade (54).
One of the first patron saints of the surgeon-barbers' trade was Saint Bartholomew. He is already mentioned in one of the oldest decrees referring to this trade, the previously quoted Ghent decree of 1357. His attribute is a scalpel that points to his martyr's death by flaying. After first being worshipped in the Augustine church in Ghent he was then worshipped in the St Nicholas church where in 1471 a separate chapel was dedicated to him (55).
In the meantime St Cosmas and St Damian had also been given the title of patron saints of this trade.
The barbers' corporation in Bruges held a solemn mass on these saints' days, as early as 1427, in a separate chapel in St James church. In 1432 they even became the owners of this chapel and paid the sum of 12 pounds parisis per year to be allowed to hold services there (56).
A change came about to this earlier mentioned situation in Ghent when, in 1533 "*the trade choose St Cosmas and St Damian over St Bartholomew*" (57).
The reverence of Bartholomew seems to have finally stopped in the 17th century (58).
In addition to the fact that all the craftsmen surgeon-barbers had a solid religious foundation, from the start of the Habsburgs reign their "legal" role

became more important. The new members were required to swear an oath of allegiance to the trade and the city as was stipulated in Ghent in 1525 (59).
The trade was able to rent property according to the needs of its members. In this way members were able to open a barber's shop. This happened, for example, in Ghent with the barber's shop "*In den Sampsoen*" in the Hoogpoort ,where, according to an act dating from 1516, barber Lieven Rogghe rented a shop that formed part of a property intended for the goldsmith's trade (60).
In this Ghent decree of 1516 even the detailed contents of the barber's shop are described (61).
In this fashion the trade brought about a process that is described within medicine as the professionalizing and institutionalising of surgery (62).
In the same way as the decree of Charles the Bold had now given a clear institutional importance to the trade of surgeon-barbers, this change, as stated, simultaneously brought about an important mingling of the two groups, that now already belonged to the same trade, which in turn blurred the Middle Age division between barbers and surgeons (63). This is clear ten years later when, in 1483, in Brussels a certain Lieven van 't Zenneke (64) used the dual title of barber and surgeon and apparently carried out both professions at the same time. Half a century later, towards the middle of the 16th century, we see that a fusion of both groups has occurred, not solely in title but also in activity (66). In the Brussels registry of the "*boxes for the poor*" we see that in a 7-year period between 1556 and 1575 (67) the already limited number of "half masters" had fallen from 4 to 1 whilst the number of "whole masters" was many times greater and numbered a fairly constant 36 (68) (69) (70).
At the beginning of the 16th century there were however, from North to South, still considerable differences in the mingling of these two trade groups that varied from place to place (71). This resulted in large differences within the diverse local trades, both with respect to the protection of their authority as to the competence of their members in both cities and the countryside (72).
On top of that is the fact that, apart from the recognized practitioners, a whole range of other health workers were active; their services were to a great extent called upon by the poorer section of the population.
One of the oldest of these particular groups was that of bath master. This group enjoyed certain renown, particularly in Germany, even though their statute was inferior to that of barber. This was apparent from the fact that they were not allowed to use any coat of arms and that their children were not allowed to learn certain trades (73).

In Germany, from the 14th century, barbers and bath masters belonged to different trades (74).
The fact that the activities within the bathhouses frequently led to promiscuity certainly did not do the name of these houses nor their tradesmen any good! In particular, by the beginning of the 16th century venereal disease was rife in Western Europe, especially in the neighbourhoods of these bathhouses, which were condemned by both the Roman and the Lutheran church as centres of depravity. It should however be said that although the convergence of large numbers of guests frequently gave rise to epidemic illnesses, they were the only place where any attention could be given to personal hygiene.
The fact that hygiene played an important role in the maintenance of general health is apparent from the fact that on the "Reichstag" of 1548, held in Augsburg, the trade of bath master was elevated to be equal to that of barber (75).
What the situation of the bathhouses was in the Low Countries in the 16th century is less well known. In our areas there were in any case fewer similar bathhouses available. In addition, they were, just as in other parts of Western Europe, frequently closed out of fear for the spread of the dreaded syphilis (76).
No one less than Desiderius Erasmus expressed his regret at the closure of bathhouses and indicated their relationship with the Naples illness:

> " *25 years ago nothing was more fashionable with the Brabanders than a visit to a public bath. Now they have died out because this new leprosy (syphilis) has taught us to stay away*" (77).

Another group of tradesmen was that of the travelling "tooth extractors". Extracting teeth was an activity that was performed solely by barbers in the Middle Ages. It is not completely clear from what point in time travelling "tooth extractors" arrived at the Flemish markets and cities. The fact that this sort of competition was possible is due to the fact that during markets and fairs in our towns there was complete freedom to sell and deal, also thus for the trade in "medical" products and treatments. This was the reason why, in 1448, Bruges allowed barbers from Brussels to extract teeth for the 3 days of the annual market on the condition that they could present proof that this same arrangement was possible for Bruges barbers in Brussels (78). These tooth extractors were obliged to respect a minimum tariff so as not to create unfair competition with respect to the Bruges barbers. A 1517 decree from the same city confirms this in detail (79):

"It shall be so that those at the fair who are accused of or caught red-handed offering to pull or pulling a tooth for less than two shillings parisis will be fined a sum of twenty shillings parisis for every tooth that they pull as often as it occurs, in addition they will also be required to pay the same fine to the almoner for the poor"

"Voordt dat ooc gheenen van den voors. ambochte voordan gheorloven en zal eeneghen tand min te treckene of doen treckene danne twee scellinge parisis up de boete van 20 scellinge parisis van elcken tand die hij min trecken zal, alzo dickend als dat geschiede, ende daermede bevonden of daerof bedraghen worde bij der ghoeder waerhede; emmer dat elc van hemlieden ghehouden word den aermen levende up de aelmoesene als vooren dat te doene omme godswille up ghelike boete".

It was impossible to earn a living by tooth extraction.
So, in 1531, there is talk of a Frenchman in Antwerp, Erard de la Valleé, who, originating from Paris, lived in the metropolis for 2 years together with his wife Jehanne and children Verdette, Imbert and Anne," *for the purpose of drawing teeth and cutting stones in children*". One witness, a certain Jehan Maillart, mentions that de la Valleé cannot earn a living doing this and plans to return to Paris or elsewhere in France (80)!
Travelling tooth extractors and real charlatans are frequently lumped together so that a few decennia later their activities were forbidden on the streets and squares of Antwerp on Sundays and Holy days. This is witnessed in a decree, passed in Antwerp in 1572, and renewed there in 1580 and 1581 (81).
Apparently a number of cheats and charlatans disguised themselves as travelling tooth extractors and they knew how to pull the wool over the eyes of the well meaning public.
A third separate group of traders that were most likely working solely as travelling "specialists" were the "stone cutters".
Precisely when this age-old treatment came into being in the Low Countries is unclear. These were most likely "specialists" from France, where the technique had existed for a long time, who fled here in the middle of the 16th century led by Laurent Colot (1519-1559) the first in a family of famous lithotomists (82).

In 1545 in French-Flemish Rijsel (Lille) the magistrate granted permission to Jehan Dumares to *" cut the poor people inflicted with stones";* for a fixed fee of 12 pounds parisis per operation (83).

The fact that the patients operated on were frequently children is confirmed in the afore mentioned evidence of Jehan Maillart of Antwerp in 1551 (84).
As well as this more or less recognizable group of surgical "specialists" there existed an even larger group of quacks and folk healers.
Who were these charlatans and what were their activities to which the gullible population so readily turned?
An Antwerp decree of 1572 describes them clearly:

> *"various vagabonds, tramps and unemployed, quacks, rat-poisoners, etc. who sell waters, ointments, pepper, drugs, herbs and spices within the city on tables or sometimes on horse-back, what brings the population in various perils, sickness and illnesses that resulted in death or other inconveniences"* (85).

> *"diverscbe vagabonden, lantloopers ende ledichgangers, quacsalvers, rattecruytvercoopers, enz."* die *"wateren, salven, poyeren, droogen, cruyen ende andere specerijen"* binnen de stad verkopen op *"taffelen ofte oick te peerde"*, waardoor de bevolking gebracht wordt *"in diverscbe periculen, siecten ende cranckkeden ende oick mede sterften ende meer andere inconvenienten"*.

The university-trained physicians also complained about the quacks as this text from Peter Haschaert states with respect to trephination: "*I had a patient who I was called to; when I arrived he lay speechless and unconscious with constant and burning sores, and when I had trephinated him I found a large quantity of material under the cranium; and when that was out he recovered consciousness and lived for many years afterwards.*
In such situations, even though such openings do not always guard against death, they do not hinder or shorten life; the least they do is lengthen it.
It therefore amazes me the faith that men have today in cheats, quacks and fast-talkers who place strange ideas in others (who are unaware of their lies and illiteracy) and who tell the people that everyone who is trephinated will die and that no-one should bring about a wound to the head; yet we read in this book that the prince of medicine, Hippocrates, has taught us how important it is to do so." (86).

> *"Ick hebbe eens eenen (patiënt) ghehadt daer ick gheroepen was; de welcke als ick daer quam, lagh sonder verstandt ende sprake, met continue ende bernende korsten, ende als ick hem ghetrepaneert hadde, ick vondt groote menighte van Materie onder het Cranion; ende als die uyte was, hij kreegh terstont weder sijn verstant, ende heeft daer naer gheleeft noch veel Jaren.*

Want in sulcker noot, al is 't dat sulcke openinge hem van der doodt niet altijdts en behoedt, nochtans en hindert sij niet, noch en verkort hem oock 't leven niet, maer het minste datse doen mach, is datse 't leven verlenght.
Daeromme verwondere ick my seere dat men hedensdaeghs soo groot gheloof gheeft sommighe Bedriegers, Quacksalvers ende Mondtspeelders, die van vreemde plaetsen in ander, daermen hun valscheydt ende ongheleertheydt niet en kent, loopen, wijsmaeckende de Ghemeynte sonder eenighe redene noch experientie, dat alle de ghene die ghetrepaneert zijn, sterven moeten, ende dat men gheensins in eenighe gewonden in 't hooft en behoort te ghebruycken; ende nochtans hooren wij in desen Boeck, hoe neerstelyck ons dat te doen, bevolen heeft den Prince der Medicijnen Hippocrates."

During the whole of the 16th century (and also later) the authorities tried very hard to limit the activities of these charlatans and to protect the people from this sort of "illegal" medicine.
As van Lieburg correctly commented, quack healing in the 16th century was not necessarily seen as reprehensible treatment and it was up to the authorities to do more to limit the disruption that the competitive nature of quack healing brought about; in other words quack healing was not forbidden but regulated (87).
As early as 1510 Emperor Maximillian and his young son Charles issued in Leuven an edict (88) in which it was decided that:
"*No-one is allowed to practice surgery or medicine in Leuven or within a two mile radius without being accepted by the faculty, except court physicians or those who receive permission from the king*" (Brussels, 16 July the year of our Lord, 1510).
Some 30 years later, in the emperors decree prepared by Charles V on 8 October 1540 the general conditions for the practice of medicine are even more clearly defined (89):

"Given the fact that we have been informed, that in our City of Brussels people of both sexes live and work, who for the most part do not speak or read Latin, Flemish of French, who permit themselves to practice medicine in our city of Brussels and who attempt to visit and treat the sick; that this is above their knowledge and competence and in addition gives rise to many accidents to the disadvantage of the sick and therefore of our whole population; this as a result of the fact that these masters and mistresses do not have any real experience nor can they give the name of any person or place where they could have gained medical experience; from this it appears that these same masters and mistresses have prescribed for some illnesses very dangerous and intolerable medicines as a result of which only death or other serious physical deformities would have resulted if certain apothecaries of this afore mentioned city had not improved or

at least tempered it; this to the disadvantage of the inhabitants of this city, and this in increasing quantity, if we were not to take any action"

decided that:

" *no-one may call or present himself a doctor unless he or she is a doctor of, or licensed in, medicine by a recognized university, has either been examined by the doctores medicinae of the University of Leuven or by doctors who live and practice in the City of Brussels, and this on the provision they can produce a certificate of competence.*"

In 1569 the Duke of Alva decreed that all students of medicine were only allowed to study at either this same university of Leuven or at the, in 1559 established, university of Dowaai (Douai) (90). In 1577 the General States rescinded this restriction.
In the mean time the emperor's decree of 1540 had ensured that a medical committee had been established whose duty it was to describe the rights and duties of the medical and pharmaceutical professions.
The decree ended with the announcement that an appropriate "*Placard*" would be issued. Despite the fact that this "*Placard*" was never issued this decree did considerably limit quack healing, although it protected the university-trained doctors more than the surgeon-barbers.
Nevertheless this decree, albeit in a round about way, did ensure that so called *Collegia Chirugica* (Colleges of Surgeons) were established in many cities that could provide an officially recognized training for surgeon-barbers and thus also protect this group from charlatan's practices.
So we see that in Antwerp such a Surgical College was brought to life before 1542 (91), that could, in consultation with the University of Leuven, award medical diplomas (92). It can be assumed that many surgeons received their training in these Colleges. So Thomas van Mauden, father of David who was later to publish his "*Bedieninghe der Anathomieen*" with Plantin, followed lessons at the Antwerp College in the second half of the 16th century.
A papal bull from Pius IV, registered in the Paris parliament on 19 November 1561, divided the diplomas from such colleges into the degrees of baccalaurean, license, and doctor, although this was not implemented immediately (93). In some cities, including Ghent, it was to be the middle of the 17th century before similar Colleges were established (94).

III.2 Official and other tasks of surgeon-barbers in the 16th century

a) Since the late Middle Ages the surgeon –barbers have actively participated in the care of patients in city hospitals.
From as early as the 12-13th centuries, when hospitals were established in the larger cities to serve as sanctuaries for the sick, poor and needy, city authorities have attracted health workers to provide for the care and healing of these patients.
Generally "*doctores*" were sought, that is qualified doctors with a diploma from either Leuven or a foreign university. They were appointed to diagnose the illness and to prescribe the appropriate medicines. As these *doctores* did not usually concern themselves with manual treatments such as dressing of wounds, blood letting etc (95) this was given to the surgeon-barbers, who in the beginning were occasionally called in to perform these tasks but who, later, due to the increase in demand for these tasks, were given their own specific appointment by the city authorities (96).
The authorities paid the activities, for which the surgeons were appointed. Thus we know that master Cornelis Jacopsz of the St Barbara's hospital in Middelburg was paid to take care of "*the wounded and injured miserable people*" (97).
Ten years later, in a bill from the same hospital, there is mention of a till this point unknown illness "*that we the hospital authorities have coined Spanish Pox, so we have spoken to the master, and said to him, that he was to use due care and diligence to heal such people*" (98).

> *"dien wij hospitaelmeesters aenghemarct hebben als van de spaeysse pocken, so hebben wij met de meester gesproken, hem seggende, dat hij diligencie ende naersticheyt daer toe doen wilde gebruycken, om alsulcke personen te ghenesen"*

Sometimes city authorities appointed a surgeon to work in two hospitals as for example in Amsterdam where in a byelaw dating from 26 January 1515 it is stated: "*master Meerten Hessels, who was appointed City surgeon, shall visit both hospitals standing within Amsterdam and shall, to the best of his knowledge and ability, cure these patients that are to be found in the hospitals...*"(99).

> *"meester Meerten Hessels, die tot der Stede chirurgijn werd benoemd, zal visiteren beyde gasthuisen, staende binnen Aemsteredamme, ende die siecken ende patiënten daer wesende, naer sijn vermogen ende beste wetentheyt zal genesen ende cureren....."*

In the Habsburg period such activities became more strictly regulated.
So in Ghent in 1525 the aldermen passed statutes that laid down the oath that the city surgeons were to swear on their appointment to their paid position (100).

> *"Hereby you swear to be a qualified surgeon of the city of Ghent, to care well and honestly for all those in your care who are sick or injured whether they be rich or poor, and not to take advantage of cured patients neither financially nor in the judgment of care delivered by you or others, and all this without prejudice or secrecy, so as to duly and loyally comply with the decrees and statutes that the legislator has decreed with respect to surgeons or those listening to this title without in any way contradicting these and finally to perform the duties that a good qualified surgeon is supposed to do."*

In a circular of Rijsel (Lille), dated 27 July 1587, the tasks of a city surgeon are clearly stated: the care of abscesses, wounds, etc, as well as the administering of medicines and powders (101).
In addition blood letting was one of the most important tasks of surgeon-barbers in the hospitals. Just like the administration of ointments and potions, bloodletting could only be performed on prescription from the *doctor medicinae* as a ledger book from the hospital In Middelburg states when referring to the 16th century practice:" *Except in emergency situations, dangerous or unforeseen illness or in the absence of a doctor, they will not carry out any bloodletting without the doctor's prior knowledge."* (102).

> *"Behalve bij een geval van zeer haestighe, periculeuse ende onvoorsieninghe sieckte, of afwezigheid van doctoren, zullen zij, zonder voorkennis van de geneesheer, geen latinghe verrichten"*

According to this Middelburg ledger book the city surgeons were obliged to work a rote system within the hospital. At the end of their term of duty they had to pass on all necessary information about the sick and injured to their successor (103). In other words, a clear social obligation existed in the 16th century that was organized by the city authorities to continue to have the sick and needy cared for not only by doctors but also by surgeon-barbers.
If, as mentioned, the differentiation between barbers and surgeons became vaguer during the 16th century it can be assumed that the surgeons appointed by the city were recruited from the members of the surgeon-barbers trade.
b) A second task given to the surgeon-barbers by the city authorities was the care of those suffering from plague.

This was most likely made official from the end of the 15th century because already in 1502 there was a decree that spoke of a payment of 13 stivers to the local plague master to cover the cost of his household cleaning (104).
Christiaan De Backer has even retrieved the names of these surgeon-barbers who had been appointed plague master for Diest from 1513 onwards from the city accounts (105).
Frequently there was a separate payment planned between the magistrate and the master-surgeons for the treatment of those suffering from plague (106).
In this manner Pieter Van Dieghem, city surgeon in Mechelen, and one of the court physicians to emperor Charles was, for example, paid by the Mechelen authorities specifically for the care of those with infectious diseases (107).
Plague masters were, of course, appointed by the city whenever an epidemic arose in the neighbourhood of the city or in the city itself. In this way surgeon Corneel Jossins was appointed in Ghent on 19 September 1559 to "*be the bloodletter for the quick illness*" (108).
In a decree issued by the city of Antwerp in 1580 there are a number of restrictions for barbers and surgeons that had equally been stipulated in Diest the previous year, i.e.:

> "*The barber who lets the blood of a plague sufferer may not practice his trade on healthy people for a period of one month.*"
> "*The surgeon may not let blood or shave a healthy person for a period of one month after visiting and treating a plague sufferer.*" (109).

c) A third task of the surgeons was "wound autopsy" on injuries and wounds that had been caused by quarrels or fights and which had given rise to legal proceedings.
After so called "*chirugi iurati*" had decided on the nature and seriousness of the injury the legal authorities were able to settle on a suitable punishment and complementary damages based on these findings (110).
In addition these surgeons could be asked to take care of those who had suffered injury by torture (111).
These injuries were inflicted by all types of instruments of torture, not least by a glowing iron staff that was used to burn the body (112). In addition the city surgeons were also required to give instructions to the axe-man as to where, from an anatomical viewpoint, a limb precisely had to be amputated, as is clear from a text from the *Brugse Vrije* in 1540:

"On 27 November, 1540, Masters Claeys van den Leene and Gregorius Roelpot, sworn surgeons of the city of Bruges, were required by officers of the law to go to the executioner on the scaffold to indicate exactly where the right hand of one Joos Quaille, sentenced by the tribunal in the region, was to be chopped off" (113).

"Meester Claeys van den Leene en Gregorius Roelpot ghezworen cyrurgienen der stede van Brugghe dat zij den XXVII in november XveXL ten verzuche van myne heeren van der wet waren up 't schavaut by den scherprechtere omme hem te wysen eenen Joos Quaille volghende der sententie daeraf ghegheven in vierschare van den Lande zynre rechter vuyst af te hauwene ....."

Finally, whenever bandits or witches were sentenced to death it was these same *"chirugi iurati"* who performed the autopsy and the city magistrate paid for their report (114).
Worth noting is that the city surgeons also had the power to postpone an execution or torture for certain reasons as is clear from the following text dating from 1520:

"But because of the intense cold and frost and the advice already received from the doctors and surgeons that it could be dangerous to carry out the executions these same executions were differed till the weather changed" (115).

"Maer midts de groote coude ende vorst ende alvoorens gehad hebbende tavijs van de medecijnen ende chirurgienen endat dat by dien bevonden es datter dangier inne gheleghen soude zyn in d'executie van den lijve es de zelve executie ghediffereerd toter veranderinghe vanden wedre".

IV. Training to be a surgeon in the 16th century

The increase in professionalism of the surgeons trade is for a large part the result of the improved training that the previously discussed groups were able to obtain.

IV.1 The university-trained doctor-surgeons

The most important, theoretical and often intense training was obtained by the *doctores medicinae.*
Since the doors of the university of Leuven had opened in 1425 most of our students studied in their native country.

This number, however, remained relatively small and the medical faculty in Leuven remained the smallest of all its faculties for the whole period of the Ancien Regime (116).
The curriculum included anatomy, physiology, diseases and their treatment as well as pharmacology (117) and it gave the right, after the diploma had been obtained, to practice medicine.
In order to obtain the title of doctor it was also necessary to defend a thesis, after which, according to tradition, the promovendus had to invite the chancellor, the professors and all colleagues to a dinner.
The very theoretical and scholastic medical education that was available in Leuven was in essence based on the knowledge of Hippocrates, Galen and Avicenna.
The fact that the works of Avicenna were the most important study source at the change from the 15th to 16th century was due to the fact that there were very few printed versions of Galen's original texts until the first decennial of the 16th century.
Indeed Galen's most important work, contained in '*Methodus Medendi*" had its first important distribution after Nicolo Leoniceno (1428-1524) had helped with the printing of the original Greek version in Venice in 1500 (118). The first successful Latin translation by Thomas Linacre dates from 1519 (119), and was so welcome that in the 16th century alone it was reprinted almost 30 times (120).
The Leuven classics professor, Johann Guenther of Andernach (1505-1574), produced the Latin translation of the spurious surgical work of Galen, and had it published for the first time by Simon de Colines in Paris in 1528 (121). The remaining surgical works of Galen were only published for the first time in Latin in the 1540's (122).
In Leuven, therefore, by the beginning of the 16th century the most important source of study material was from the works of Avicenna.
Jacob Bogaert, (1410-1520), who between 1480 and 1516 was the sole professor of medicine at Leuven, thus wrote a five part "*Collectorium Avicennae Practicam*" that he based on the Canon of Ibn Sina (123) and which was used by students as study material for more than 35 years (124).

The students could of course make use of medical writings and incunables that were to be found in the first university library of Leuven. This library, that was established by Jan Spierinck (? -1499) probably also contained the Middle Age texts of Guy de Chauliac and Henri de Mondeville out of which the students could obtain their surgical knowledge. This library was unfortunately destroyed in 1578 by Alva's soldiers (125).

The Arabic influence that was present in the medical education at Leuven (126) left little room for anatomical and surgical instruction. Even the influence of Guenther of Andernach and the short period that Vesalius studied in Leuven could do little to change it.
This is one of the reasons why in the first half of the 16th century, the *doctores medicinae* in our country were almost never concerned with surgery and limited themselves to the prescribing of bloodletting or abscess lancing that were in turn to be performed by the barbers.
This slowly changed around the middle of the 16th century.
On the one hand this was the result of the previously mentioned mingling of university-trained surgeons with barbers particularly within the trade organizations, while on the other hand there was notable evolution within the university education itself.
This happened both by a slow change in medical education in Leuven and due to the fact that an ever-increasing number of students went abroad for their medical studies.
The breakthrough in medical thinking in Leuven came about due to the establishment in 1518 of the *Collegium Trilingue* that provided students with a thorough education in Classics. Thus a shift in thinking evolved away from the Arabic towards the Greek-Latin texts, and so Hippocrates and Galen were, so to speak, rediscovered. This applies to some extent to Hubert van Baerland (1510-1550) but even more to Jeremy de Drijvere (1504-1554) who taught medicine at Leuven for almost a quarter of a century and relied almost totally on the original texts of Hippocrates and Galen. Alongside this the rediscovered manuscript of Aulus Cornelius Celsus also belonged to the medical study material, the more so because de Drijvere supplied text and commentary on this work.
One of his later successors, Nicholas Biesius (1516-1572), also made himself useful to the Leuven *Alma Mater* although this man from Ghent concentrated more on philosophy and medical methodology and less on practical medicine and certainly less on surgery.
It was not until the second half of the 16th century that qualified *doctores* and university trained doctors became interested in true pathology and treatment albeit then in the more theoretical aspects thereof.
One of the most important protagonists of this new thinking was Maarten Everaert of Bruges who, on the one hand translated the "*Spitalbuch*", one of the *"Drei Buecher von Wunden und Schäden"* (127) and on the other hand produced a Dutch edition of Valverde's "*Vivae imagines partium corporis humani*" (128).

In addition there was the Ghent doctor-surgeon Carel Baten (1550-1618), who published his "*Handboeck der Chirurgijen*" in 1590 but gained even more fame with his already cited translations of the works of Ambroise Paré (1510-1590) and his student Jacques Guillemeau (1550-1613).
The Antwerp physician-surgeon David van Mauden (1538/9-before 1612) also played his part with his book "*Bedieninghe der Anatomieën*" published by Plantin in 1583. Apparently his "*Examen chirurgiae*" never came off the press, but bears witness to his role in the *Collegium Chirurgicum* (129).
Finally there was the Leuven professor of medicine, Thomas Fijens (1567-1631), who published a book about the applications of cauterisation, and a few years later his "*Duodecim Chirugicum Operationes*" in which the twelve then most important major operations were described in detail.
Notwithstanding the evolution in medical education in Leuven it is necessary, as stated, to accentuate the fact that a large number of students went to follow university education abroad.
The attraction of the university of Montpellier, where many Flemish students had enjoyed studying in the 14th and 15th century (130) had declined and made room for the university of Paris but above all for those of Bologna, Padua and Ferrara. The number of students from both the Northern and Southern Netherlands, that went to study in Italy was innumerable, not only because there the Renaissance thinking was in the foreground also in medicine, but especially because only these universities offered surgery as a separate subject on the curriculum.
In these universities, more than in the Arabistic orientated universities of the North, texts of Middle Age surgeons were studied including those of Guilelmo da Saliceto, Bruno da Longoburgo, Guido Lanfranchi and especially Guy de Chauliac. His books "*Chirurgia Magna*" and the spurious "*Chirurgia Parva*" were much valued.
It is no wonder that the first Flemish translations of these authors rolled quickly off the presses (131). These translations, which were reprinted throughout the 16th century, led to the acceptance of the renewed surgical thinking even by those who did not go abroad to study. Various authors excelled and, out of need from the surgeon –barbers who were not versed in Latin, wrote their own texts. Many of these were included in so-called "*Articella's*" i.e. a collection of texts some of which were anonymous while others had the authors' name stated. Moreover, after the renewal in anatomy brought about by Vesalius, also surgeons concentrated on such for external surgical pathology so important basic knowledge.
Both Vesalius's followers in Padua and many of his foreign students who returned to their fatherland taught the Vesalian anatomy in their own

universities of Germany, France, Spain, England, and even Poland and the Scandinavian lands (132).
Thus, around the middle of the 16th century, anatomy tuition could begin in the Low Countries. Daan de Moulin has pointed out that this was fairly slow to happen (133). Nevertheless it became quite apparent in the second half of the century both at the university of Leuven, whose professor of medicine, Jan Wouters of Vieringen was responsible for the Dutch translation of Vesalius' Epitome, as at the universities of Leiden and Dowaai (Douai).

It is therefore clear that, under impulse of Vesalius' anatomical renewal and the practical realizations of Ambroise Paré on the one hand, and the humanistic influence on medicine on the other (134), surgery made a revival in the second half of the 16th century that was, after a time, also supported by the university world (135).

IV.2 Non-university trained surgeon-barbers

As mentioned earlier, from the middle of the 15th century the surgeon-barber's trade laid down regulations concerning the training of surgeon-barbers.
In the previously quoted decree of 1434 it is clearly stated that the surgeon-barbers could only be admitted to the status of master-tradesman after giving proof of their knowledge with respect to bloodletting and tooth extraction.
In the decree of Leiden of 1441 astrological knowledge was also to be examined in order that the bloodletting could be performed at the right moment (136).
So it was stipulated that the surgeon barber needed to know, "*in what sign the moon is and also if he knows the difference between the arteries, veins and nerves, and whether he can differentiate between the veins and the nerves*" (137).

> *"in wat teykene die mane is ende of hij oick die kennisse ende onderscheidinge van de aderen, zeenen ende arteriën weet, en die aderen ende zeenen den enen voir den anderen weet te onderscheiden"*

In a renewed decree of 1466 for the first time a clear difference can be seen between the knowledge examined for barbers and for surgeons, whereby the latter needed to have clearly more anatomical and surgical background (138)

In the southerly Kamerijk (Cambrai) around 1445 apprentice barbers were expected to spend 6 days working by each of three masters in order that they could be assessed on their practical knowledge (139).
Even the simple barber was required to have an increasing knowledge, that according to the decree of 9 November 1471 from Bergen op Zoom, even included "*all the things that are to be done in the house*" in other words small operations such as lancing abscesses or making ointments (140) (141).
The surgeons on the contrary, as in Mechelen, were expected to know about many more facets of surgical pathology such as: " *abscesses, carbuncles, wounds, injuries and similar problems as well as sprained arms or legs*". Such surgeon had "*to be examined first by the doctors of the city and the sworn surgeons, found to be an expert and then finally admitted* " unless as was added *"he is a graduate of a university*" (142).
As mentioned, in the first half of the 16th century, a progressive mingling of barbers and surgeons was apparent and the trade thus gained a bigger hold on the professional practice, and therefore on the requirements expected from the apprentice surgeon-barbers. Knowledge of the *Materia Medica* and the preparation of medicines became more important for barbers as is seen in a guild roll of 1550 in which it is stipulated that the candidate "*shall be able to make a cataplasm and ointment to know basil, griseum, egyptiacum and apicum and this faultlessly*" (143).
Also progressive knowledge of pathology became essential for the barber' group. In an emperor's decree of 12 May 1552, issued by Charles V, is stated, "*Firstly that he or she must know and understand the human complectia as this is the foundation of all medicine and surgery. In addition he or she must know and understand the anatomy and constitution of the human body*" (144).

> *"In den eersten, dat hij oft zij zullen moeten weten ende connen die complectien van de menschen, want dit es het fondament van alle medicijns ende chirurgijns. Ten anderen, dat hij of sij sullen moeten weten ende kennen die anathomia ende gesteltenisse des mensche lichaems"*

There was, however, still a clear difference in the exams that the surgeons and barbers had to sit. This is apparent from a Guild letter that was issued on 4&5 May 1552 (145) in which two different exams are clearly described.
The future barbers were to be examined in the "*question of the phlebotomy*", both theoretical and practical, whilst the apprentice surgeons could now be questioned about 9 articles namely tumours and pathology, wounds, abscesses, breaks and dislocations (146) as well as the practice of clinical

investigation and treatment of certain illnesses, the working of various medications and the use of surgical instruments including the trephine (147). Non-university surgeons in the Low Countries therefore, around the middle of the 16th century, received a thorough education in which the exclusion of anatomy from the curriculum was now impossible to imagine.
In many towns even human dissection was organized, like in Amsterdam, where in a special privilege of Philip II dated 13 March 1555, was stated that annually one of those sentenced to death would be made available to the trade "*to anatomise*" (148).
The number of corpses that were given to the trade by the authorities increased considerably in the second half of the 16th century so that by the beginning of the 17th century there were two "*cutting days*" a week (149)!
Boudewijn Ronsse of Ghent, who in 1551 was city doctor in Gouda, some years later improved the training of surgeons in this city by making very clear training demands (150).
As the importance and seriousness of the exams increased, experts who had of course to be trustworthy were appointed by the trade to do the examining and they had to swear an oath to the dean and chapter (151).
Theodoor Boesman, who wrote extensively about surgical training in the past, quite rightly observes that there was, at the end of the 16th century, especially in the Northern Netherlands, an important change in the examination of the so called "proefknechten", in other words apprentices (152). This was to do with the introduction of a so-called "thesis" probably as a result of similar practices at the universities, in particular at the in 1575 established *Alma Mater* in Leiden. A Guild letter of 28 December 1589 reads as follows:

> "*Those who shall be eligible to practice in the art of surgery shall be questioned on their thesis, given to them by the designated professor, dean and taskmaster, in the presence of the afore mentioned professor, dean and two taskmasters, in the Dutch language, and shall consist of sixteen propositions, theories or articles namely two on surgery as Ex capitulo singulari Guidonis, or other authors who have written about surgery; two on anatomy; two on definitions of apostemas; two on wounds; two on ulcers; two on fractures; two on dislocations and two on bloodletting. After receiving the title of the thesis the student may have one month's time, or less if he so wishes, to prepare it*" (153).

> "*Die zullen begeeren te practizeren inde conste van Chirurgie, zal men ten overstaen van eenen Professor der medicijnen uyt der Universiteyt alhier, mitsgaders van den Deken ende twee Proufmeesters, in nederduytsche tale, voor zo vele doenlicken is, ondervragen op alzulcke Theses als hem by de voorschreven*

> *Professor, Deken ende Proufmeesteren zullen worden gegeven, bestaende van zestien propositien, voorstellingen, of artikelen, te weten, twee uyt de Chirurgie, ofte Ex capitulo singulari Guidonis, of andere Authoren die van de Chirurgie geschreven hebben; twee uyt de Anathomie; twee ex apostematum definitionibus; twee ex vulneribus; twee ex ulceribus; twee de fracturis; twee de dislocationibus ende twee van de Aderlatinge. Welcke Theses ontfangen hebbende zal de Proufdoender tijt van beraet mogen hebben een maent, of minder tijd, tzijnen believen".*

As well as defending a thesis about surgical knowledge, the surgeons were also required to know the theory and practice of bloodletting in order to be allowed to carry out this barber's practice (154). Finally the surgeons were also expected to have an extensive knowledge of the *Materia Medica*, what by the end of the 16th century resulted in the fact that "*an apothecary, admitted to the sworn profession*" had to be present at the exam (155).

It should be clear from this overview that the training and in particular the examination of student surgeons witnessed a strong development in both intensity and professionalism. In this way the non-university trades of barbers and surgeons gained on the one hand in theoretical and practical foundations whilst on the other hand the development of different forms of examination again led to a dissociation of the two trade groups whereby at the end of the 16th century, both the non-university and the university surgeons could perform the same type of "major surgery" whilst the barbers, although armed with a greater theoretical knowledge than before, concentrated more on bloodletting and "minor surgery".

V. **Conclusion**

In conclusion, it may be stated that barbers and surgeons in the sixteenth century Low Countries experienced an important evolution. The Middle Age separation between these two groups was considerably blurred towards the end of the 15th century, in particular by the increasing influence of the trade organisations. These played an important role throughout the whole of the 16th century in a progressive delineation of surgeon-barbers' activities from those of other professions and not least from to those of quacks. The trades organised the education, which became more and more structured and particularly in the second half of the century included renewals in anatomy and surgical treatments, and was concluded with specific examinations.

On the other hand the authorities made an effort to introduce firm rules into the profession both by the issuance of decrees and ordinances that subjected the practitioners to certain regulations and restrictions as well as by the

appointment of surgeon-barbers for the population, particularly in the larger towns and cities. These surgeon-barbers were appointed to carry out surgical and hygiene treatments, in particular for the less fortunate among sixteenth century society.
These conclusions should underline the fact that not only in surgical science but also in the practice of the profession, a true Renaissance occurred in our regions.

VI. Notes

1. Of the 2 Middle Dutch manuscripts of de Chauliac at least one,according to Daan de Moulin, originates from the Southern Netherlands (de Moulin p. 358 footnote 74).
2. The first edition of the Chirurgia Magna in Dutch was published in Antwerpen by Henryc Eckert Van Hombergh in 1507.
3. Wickersheimer p. 353.
4. First used in the 4th book of the Canon of Avicenna.
5. Two complimentary chapters covered on the one hand anatomy and on the other hand an Antidotarium, that is a compendium of medicines.
6. Cf. the surgical work of Fabricius di Acquapendente, that was entitiled "Pentateuchos chirurgicum".
7. For discussion of the work of de Chauliac, use has been made of the French edition of Falcon dated 1520, as well as de Moulin's critical commentary of 1988.
8. These are discussed in other chapters of de Chauliac's work!
9. It may be assumed that Franco was already aware of Falloppio's findings.
10. Peter Haschaert or Hassart, born in Armentières in the beginning of the 16th century, travelled through most of Europe, before establishing himself consecutively in Rijsel (Lille), Leuven, Brussels and Liege. He published several monographs including one about syphilis, one about the treatment of the plague, as well as translations and commentaries on Hippocrates, Paracelsus and Hessus. (Cf. the publications of Leon Elaut with respect to the works of Haschaert).
11. Haschaert: Edition 1634, p. 54.
12. Under the title "Dat chyrurgylick werk", that alongside the "Practica in arte chirurgica copiosa", also contained the translation of a shortened version, the "Compendiosa".
13. Jacques Guillemeau was a student and disciple of Ambroise Paré, who had "La chirurgie françoise...." published in 1594.
14. Guillemeau (translation Baten) p. 6 r°.

15. Also reproduced in the commentary of Carel Baten in his "*Hantboeck der Chirurgijen*", pp. 327-328.
16. Baten p. 216 in the Amsterdam edition of 1614.
17. Use was made here of a text edition published by J. Pot in 1931.
18. Pot p. 1140.
19. Pot p. 1146.
20. Pot p. 1141.
21. Pot p. 1146.
22. Van Hee (2000) pp. 219-220.
23. Guillemeau (translation Baten) p.19 v°.
24. Here I refer to the many monographs, theses and articles that are dedicated to this subject and that not only provide information concerning the Northern Netherlands, but also frequently about the Flemish regions, incorporated in the United Provinces. In particular the publications of van Andel, Boesman and more recently van Lieburg, Van Herwaarden and de Moulin should be mentioned. Finally in the recent thesis of Huizenga a long chapter is devoted to this particular subject (Huizenga pp. 221-273).
25. Including K. Van Puymbroeck and M. Van Roy.
26. For the Southern Netherlands cf. Brans, for Antwerpen cf. de Mets, for Ghent cf. Daem.
27. Including: Pauli and Van Hee (Fijens), Van Schevensteen (Van Mauden) and others.
28. Van Andel p. 29.
29. Daem pp. 27 & 41.
30. Van Andel p. 25.
31. Namely in 1302 (Wittop-Koning p. 9); cf. also De Meyer p.78.
32. Namely in Paris on 25/02/1255 and definitely confirmed there in 1379 (Cf. respectively Boisson p. 205 and p. 200). For the Low Countries cf. also Brans pp. 344-347 and de Moulin pp. 66-67.
33. According to Van Puymbroeck this can be explained by the fact that paper only came into general use from the 16th century onwards (Van Puymbroeck p. 20).
34. Daem pp. 15-18 and footnote 9 (Middle Dutch original text pp. 20-23).
35. Archives of Mechelen, Vol. VIII, p. 66 (Boisson p. 488 & Van Doorslaer p. 20). For later decrees and Guild letters cf. Huizenga p. 272, footnote 342.
36. Namely in Bruges in 1427 (cf. Van Puymbroeck p. 20).
37. As explained in the work of Carlos Wyffels, p. 143.
38. Daem pp. 32-35.
39. For a short biography of Yperman see the chapter of Tricot in R. Van Hee (Editor): *"Heelkunde in Vlaanderen door de eeuwen heen"* pp. 78-81.

40. For a table demonstrating this development (p. 205) see the chapter of Van Hee in R. Van Hee (Editor): *"Ziek of gezond ten tijde van Keizer Karel"* pp. 197 - 226.
41. In England it appears that in the barbers' trade, which already existed in 1308, there were, right from the beginning, barbers who were busy with "regular" activities as well as barbers who were involved in surgery. In 1493 they joined together with the surgeons in one trade. (cf. the work of Dobson and Walker 1979).
There were similar developments in the Netherlands and Germany albeit later (Mc Laughlin pp. 391-93).
42. Boisson p. 314.
43. Boisson p. 314.
44. But this seemed much less clear in Ghent, considering that barbers and beard makers of this town were also involved in minor operations. (Daem p. 35).
45. Stipulated according to a decree of 28 July 1434 in Utrecht (Boesman p. 3).
46. The decree was issued in Leiden (Boesman p. 6).
47. Van Andel pp. 29-30.
48. Daem p. 30.
49. Boisson pp. 243-244.
50. For the text of this decree, cf. Boisson pp. 243-244.
51. In the bishopric of Liege one had to wait until 3 June 1526, before Prince-bishop Erard de la Marck issued a similar charter, that irrevocably established and issued the statutes for the surgical Confrèrie of St. Cosmas and Damian in the Prince-bishopric (Boisson pp. 454–455).
52. Daem pp. 36-37.
53. Daem p. 31.
54. As appears from a letter from the headman of the Gorkum's trade to its members 1465. This states in art. 1 the financial admission conditions for the trade (i.e. the deposit of 2 golden Rhine florins for everyone from outside Gorinchem, a ½ golden Rhine florin for a porter's son from inside Gorinchem), as well as in art. 14 the contribution to the trade for each treatment of a wounded person (i.e.. one pound), further the regular "ordinary" payment of the members (a half a white stiver for each Rhine florin earned) and finally the fines, e.g.. when the member concerned had dared to "shave, bind or help clients of another member"! (van Andel pp. 26-27).
55. Town Archives of Ghent 166/11. bundle 9 (Daem p. 122 and footnote 5 p. 138).

56. Boisson p. 382.
57. Town Archives of Ghent 166/11. bundle 5. (Daem p. 123 and footnote 6 p. 138).
58. Daem p. 123.
59. Boisson p. 442.
60. Daem pp. 36-37.
61. Daem pp. 38-39 (Cf. also Huizenga p. 248).
62. Huizenga pp. 260-272.
63. Huizenga p. 249.
64. This surgeon is also mentioned by Peter Haschaert, who in 1528 described a trephination by Gabriël Bijl, in the presence of this Lieven van het Senneken (Haschaert p. 14). (See also Boisson p. 396).
65. Boisson p. 396.
66. Boisson p. 314.
67. Boisson p. 314.
68. Boisson p. 316.
69. Also in the guild books of 1550 out of northerly Leeuwarden there is no longer a distinction made between the two trades (van Andel p. 32).
70. It was to be several decennia before the majority of cities, including Brussels, arrived at a progressive separation of barbers and surgeons. (Boisson p. 400).
71. Huizenga p. 269.
72. Van Herwaarden pp. 370-372. (Cf. Huizenga p. 269).
73. Platow p. 24.
74. Platow p. 27.
75. Platow p. 24.
76. Brabant p. 58.
77. Erasmus: Colloquia, Book 1.
78. Boisson p. 383.
79. General State Archive Brussels. Nr. 49. Ambachten. Chirurgijns. Keuren en Ordonnanties 1517 – 1760 (Boisson p. 384).
80. Boisson p.368.
81. Boisson pp. 366–367.
82. Boisson p. 337.
83. Boisson p. 471.
84. Boisson p. 368.
85. Boisson pp. 366–367.
86. Haschaert: Edition 1634, p. 47.
87. Van Lieburg p. 177.

88. *"Maximilian and Charles, ..., wish to give notice, that we have received a humble request from the dean, doctors, masters and students of the medical faculty of the university of our city of Leuven in which they inform us that daily large irregularities and abuses are occuring in the afore mentioned city and university both by foreigners and those who wander from one country to another, calling themselves physicians and qualified doctors and whereby they, by their recklessness and illiteracy, give rise to many irregularities and dangers and whereby some people become both physically and mentally ill and some unexpectedly die without confession or administration of the sacrements of the Church and it is to be expected that this confusion and these irregularities will be repeated more and more, and seeing that the afore mentioned requesters will forecome this for the well being and health of the inhabitants of our afore mentioned city, ...".* General State Archive Brussels. Series of decrees of the Netherlands, 2nd series, vol. I, pp. 141-142 (Boisson p. 478).
89. Boisson pp. 245 & 396. See also Broeckx pp. 58-59.
90. Boisson pp. 245 & 396.
91. Van Schevensteen p. 990.
92. Van Schevensteen p. 990.
93. Faidherbe p. 79.
94. Faidherbe p. 59.
95. There were, here and there, exceptions to this, e.g. in Mechelen, where in 1526, in addition to the two surgeons and two doctors a third city doctor was appointed, specially for the treatment of "contagious illnesses"; but also to carry out blood letting and bandaging. Archives of Mechelen: Ordonnanties van de Magistraat. S.V. Nr 1, f° 32 (Cf. Van Doorslaer p. 8 onwards).
96. In Utrecht, for example, similar appointments have been registered from 1461 onwards (Huizenga p. 236 – Hut 1971, 147-149).
97. Van Andel p. 13.
98. Van Andel p. 13.
99. Van Andel p. 13.
100. General State Archive Brussels. Spaans Privaat Bestuur. Carton Nr. 1354. As copy, taken over by the aldermen of Ghent in their opposition to the recognition of the Statutes of the Collegium Medicum of Ghent in 1665 (Boisson p. 442).
101. Boisson p. 470.
102. Van Andel p. 13.
103. Van Andel pp. 13-14.
104. A decree issued in Gorkum (van Andel p. 14).
105. De Backer pp. 183 – 209.

106. As for example stated in 1514 in a decree from Rijsel (Lille) (Boisson p. 471).
107. Boisson p. 490.
108. Town Archives of Ghent: Register M.M. Political decrees 1558 – 1563, f° 19 v° (Daem p. 99 and footnote 11 p. 109).
109. De Backer pp. 189-190.
110. Huizenga p. 236 (& footnotes 99 & 100).
111. So the master surgeons Gregorius Roelpot en Nicolaas Vanden Leene were remunerated in 1551 by the city of Bruges for looking after Frans Van den Zichelen's little finger after he had been sentenced, as a punishment, to the amputation of a digit (Mattelaer p. 140).
112. *"In the same way Mr Aelbert has cared for Nijsgen of the Leech Wey (who had been accused of witchcraft) as she was miserably tortured with the hot iron by Mr Van den Bossche resulting in four large holes in the buttocks and thighs; it took him three weeks to heal these .....10 L."*. (Utrecht bill from 1526). (Huizenga pp. 236-237 + footnote 101). Cf. also Mattelaer & van Andel.
113. Bruges – State Archive – Verzameling van het Vrije N° 280. Rekening 1540 – 1541. Folio 141 v°.
114. *" (the same Mr. Claeys Vanden Leene en Gregorius Roelpot) came to the town hall with the legislators and under oath declared to have performed an autopsy on the body of one Hercules Kaerle executed by Jacob Block"*. (reference: see preceding footnote).
115. Bruges – State Archive - Verluyt Bouck 1490 – 1537, folio 72 v°.
116. Lamberts & Roegiers p. 82.
117. Lamberts & Roegiers p. 79.
118. Nutton p. 78, referring to R.J. Durling: "A chronological census of Renaissance editions and translations of Galen". Journ. Warburg and Courtauld Inst. XXIV (1961).
119. For a more extensive study of the contribution made by Thomas Linacre on 16th-century medicine see Richard Durling's contribution in the "Linacre Studies.....", published by Francis Maddison, Margaret Pelling and Charles Webster in 1977.
120. Nutton p. 78.
121. Nutton p. 79.
122. Nutton p. 79.
123. The 14th century Latin incunable editions of Avicenna's "Canon" can be found in Klebs (Nrs. 131, 1–14), whilst Nancy Siraisi has divided the 16th-century editions of Avicenna into 6 categories, which she studied in detail. (Siraisi p. 18).

124. De Nave en De Schepper p. 77.
125. Gysel p. 41.
126. This was in no way different at other universities, e.g. that of Padua or Bologna (French p. 49).
127. De Nave & De Schepper p. 191.
128. De Nave & De Schepper p. 333.
129. De Nave & De Schepper p. 139.
130. Cf. among others the father of Reinaert de Vos (cf. van Andel), the father of Belle in "De Spinrocke" (cf. Callewaert), and many other papers where there is mention of the Flemish doctor, trained in "Mompelier"!.
131. For an excellent overview see the appropriate paragraph in de Moulin's standard work on the history of surgery (de Moulin pp. 76-90).
132. Van Hee (2000) pp. 42-50.
133. De Moulin p. 75.
134. See here the collection of bundled texts brought together in 1984 by the "Kommission fuer Humanismusforschung", namely Rudolf Schmitz and Gundolf Keil, under the title "Humanismus und Medizin", in particular the contribution of Gerhard Baader: "Die Antikerezeption in der Entwicklung der medizinischen Wissenschaft während der Renaissance". (Schmitz and Keil pp. 51-66).
135. R. Van Hee (1990) pp. 87-125.
136. Boesman p. 4.
137. A decree issued in Leiden. (van Andel p. 30).
138. The decree was ussued in Leiden (Boesman p. 6).
139. Coulon p. 36 and pp. 243–247.
140. Boesman p. 8.
141. The latter was later clearly stipulated namely in Deventer, in the Guild letter of 1513:" *In the same way, if anyone ever wanted to become one of our brothers (members) he would need to be able to make his ointments and drinks as any good master should"* (Boesman p. 11).
142. Archives of Mechelen. Ordonnanties van de Magistraat. S.V. Nr. 1, f° 120. (Van Doorslaer p. 35).
143. A guild roll from Leeuwarden (Boesman p. 13).
144. Decree isuued in Alkmaar (Boesman p. 14).
145. Decree isuued in Amsterdam (Cf. Boesman pp. 15-18).
146. In other words, the classic Pentateuch, as mentioned by university doctors such as Guy de Chauliac.
147. Boesman pp. 16-18.
148. Boesman p. 18.
149. Boesman p. 19.

150. Boesman pp. 22-23.
151. Boesman p. 24.
152. Boesman pp. 25-26.
153. Boesman p. 26.
154. Boesman p. 18.
155. Boesman p. 29.

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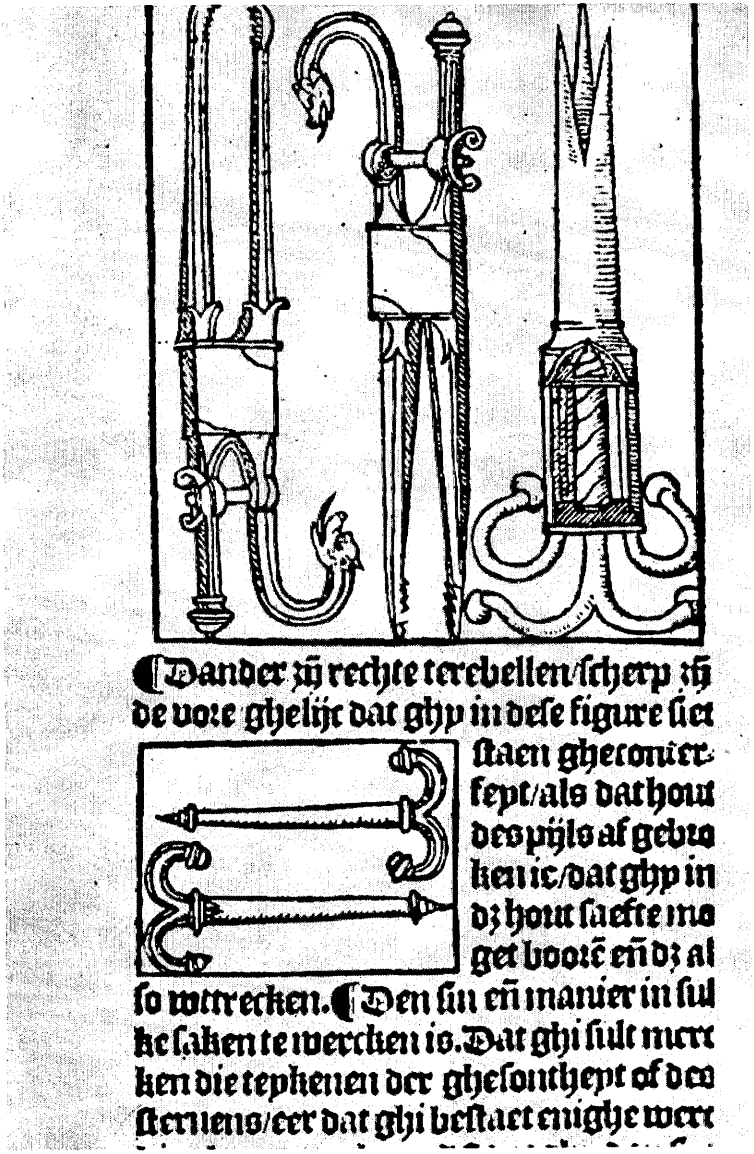


1972

Figure, demonstrating instruments, used for the extraction of bullets, taken from the Dutch translation of the so-called "Pseudo-Brunschwig", which is an early version of the "Hantwerck ....." written by Hans von Gersdorff. [Amsterdam: University Library, Collection of the "Nederlandse Artsenvereniging"].


CHIRVRGIE
Van
GVIDO DE CAVLIACO
nootſakelijck allen Chirurginen.
Van nieus uyten Latine in nederduytſch
ouergheſett.
Door Iodocum Sterthemium Medicum
Chirurgicæ Licentiatum.
BIBLIA
TE GHENDT,
By Jan van Salenſon, vvonende op de Hooch-

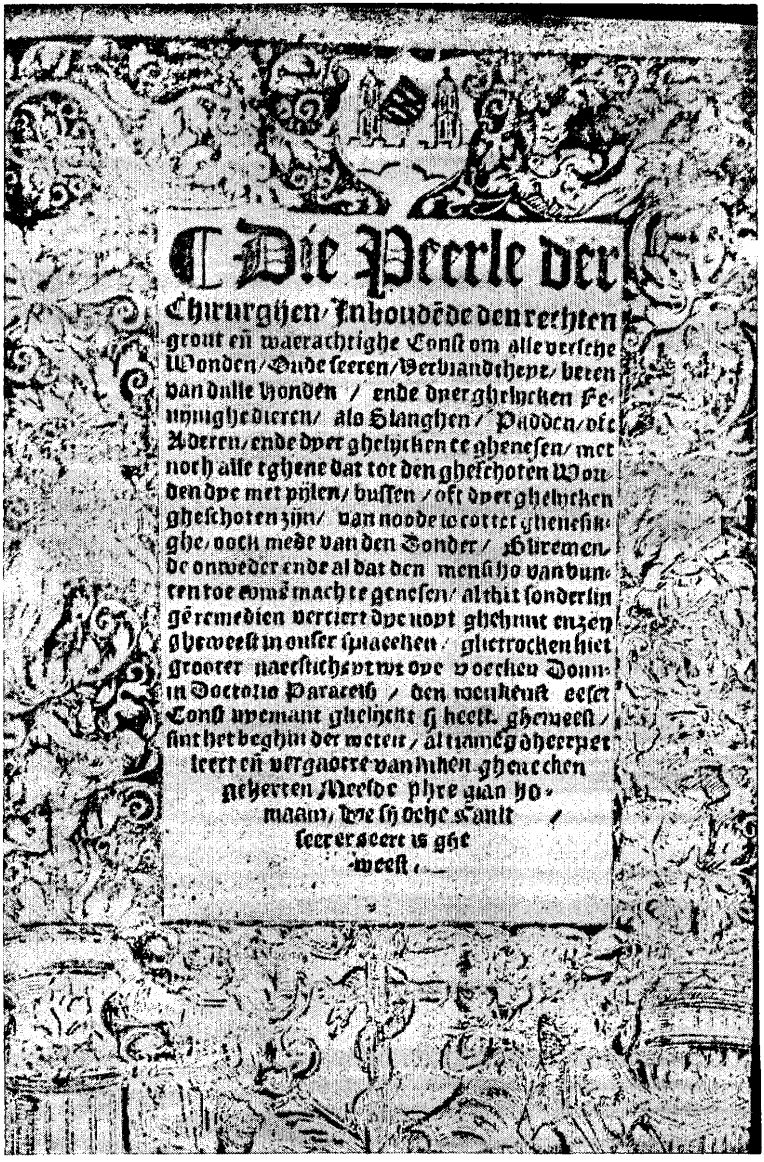
1978

Title page of the Dutch translation by the Ghent surgeon Jodocus van Sterthem of "La grande chirurgie" by Guy de Chauliac, edited in Ghent by Jan van Salenson in 1566. [Ghent: University Library].


Vanden Pocken. Vanden Pocken.

Hier beghint een boeck vanden Pocken.

4186
Illustrated page from the "Fundament der Medicinen ende Chirurgien" by Peter Sylvius with a depiction "vande Pocken", e.g. syphilitic disease, edited in Antwerp in 1530.



5072

Title page of "Die Peerle der Chirurgijen", a translation by Filip Hermann of Paracelsus' "Die Grosse Wundartzney". (second edition of 1556). [Antwerpen: Museum Plantijn-Moretus].

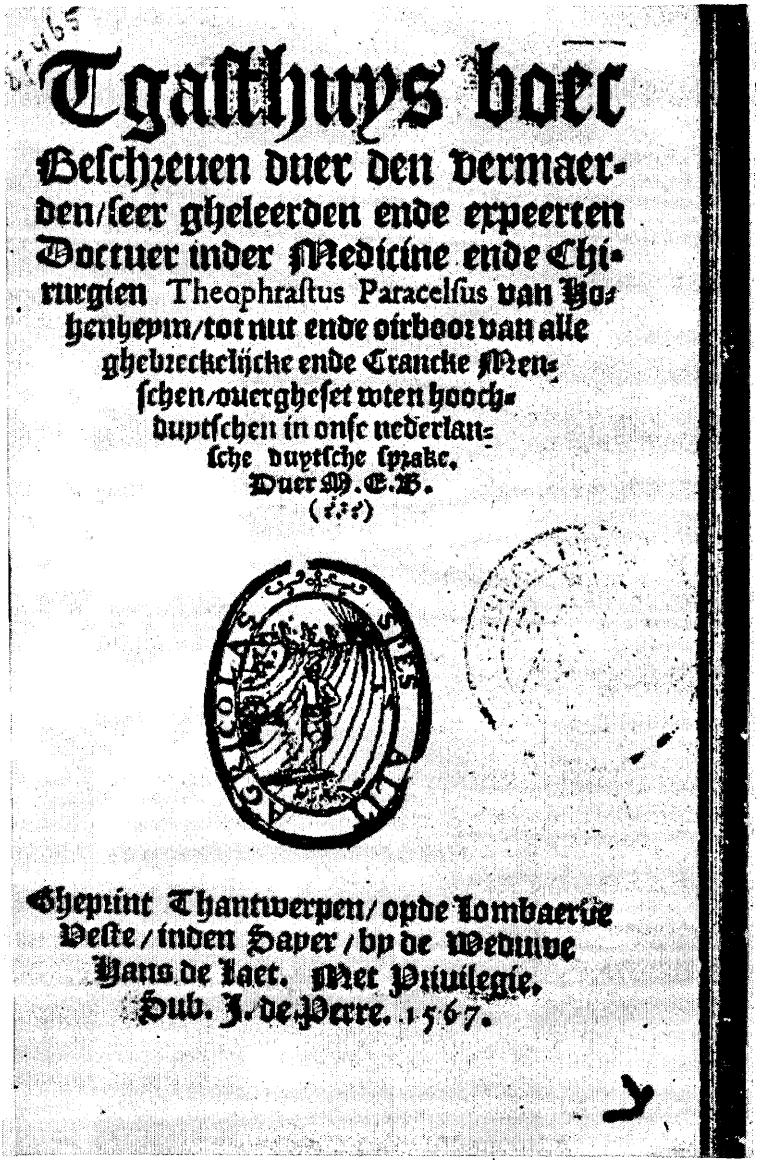
5074

Title page of "Van die Wonden int Hooft", the Dutch version of Hippocrates' work by Peter Haschaert, edited for the first time in Antwerp by Willem Sylvius in 1565. [Antwerpen: Museum Plantijn-Moretus].

DE
Chirurgie,
ende alle de OPERA, ofte
Wercken van Mr. Ambrosius Paré, Raedt / ende opperste
Chirurgijn van vier Koninghen in Vranckrijcke.
Nu eerst uyt de Françoysche, in onse ghemeyne Nederlandsche
sprake, ende uyt de vierde Editie, ghetrouwelick overghesett: Door
D. Carolum Battum, Medicijn ordinaris der stadt Dordrecht.
Ende in desen laetsten druck, van veel fauten verbetert.
Verdeylt in xxviij. Boecken.
Met alle de figuren / soo wel der Anatomien als van de instrumenten
der Chirurgien / ende van vele diversche Monsters / etc.

Tot Haerlem, Gedruckt by Harman Kranepoel.

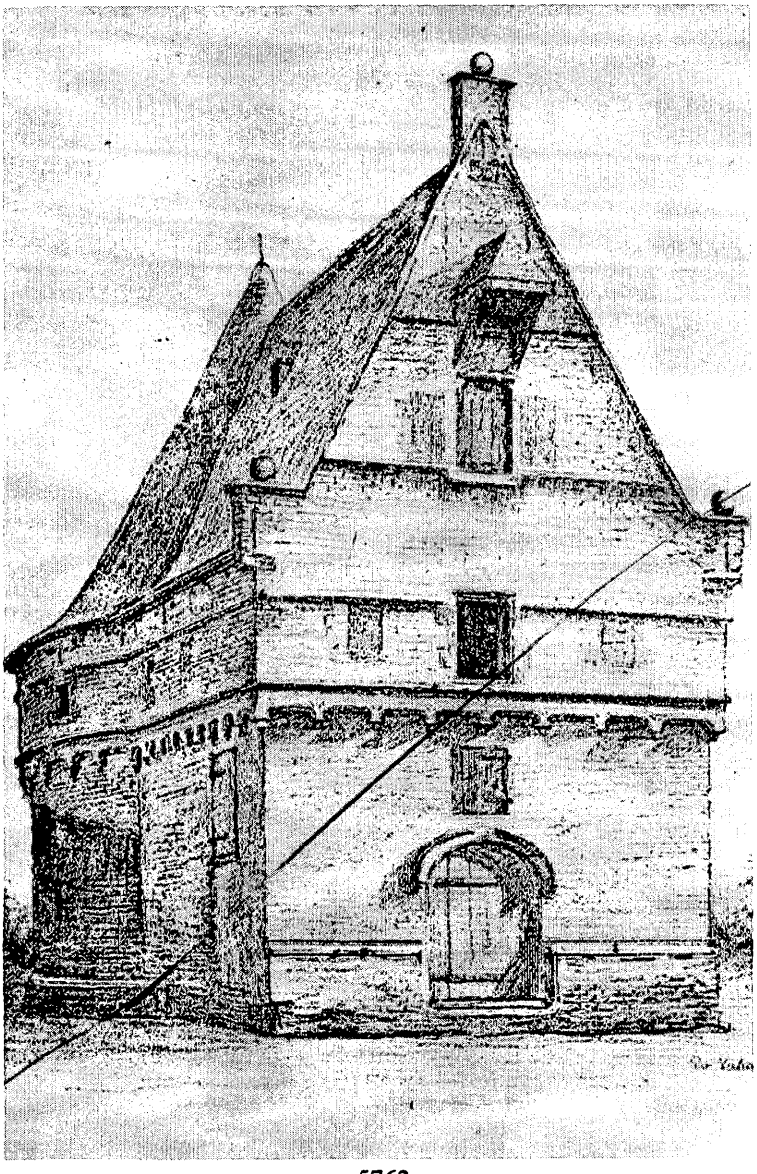
5466
Title page of the Dutch translation by Carel Baten of the Collected Works of Ambroise Paré. (the 1627 version, edited in Amsterdam).



Tgasthuys boec
Beschreuen duer den vermaerden/seer gheleerden ende expeerten Doctuer inder Medicine ende Chirurgien Theophrastus Paracelsus van Hohenheym/tot nut ende oirboor van alle ghebrecklijcke ende Cranche Menschen/overgheset uten hoochduytschen in onse nederlantsche duytsche sprake. Duer M.E.B.
(1567)
Ghedruct Thantwerpen/opde Lombaerde Veste/inden Saver/by de Weduwe Hans de Laet. Met Priuilegie. Hub. J. de Pecre. 1567.

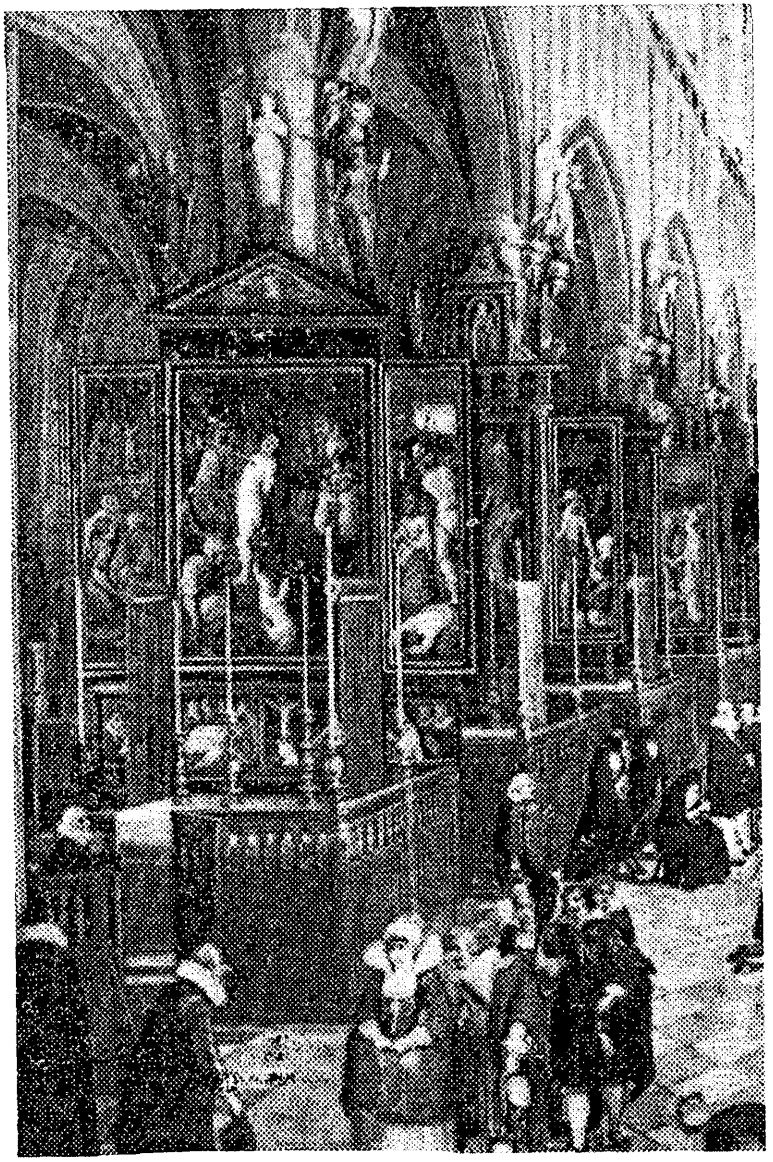
5472

Title page of "'t Gasthuys-Boec", a translation by Maarten Everaert of the work by Paracelcus, edited in 1567. [Antwerpen: Town Library].



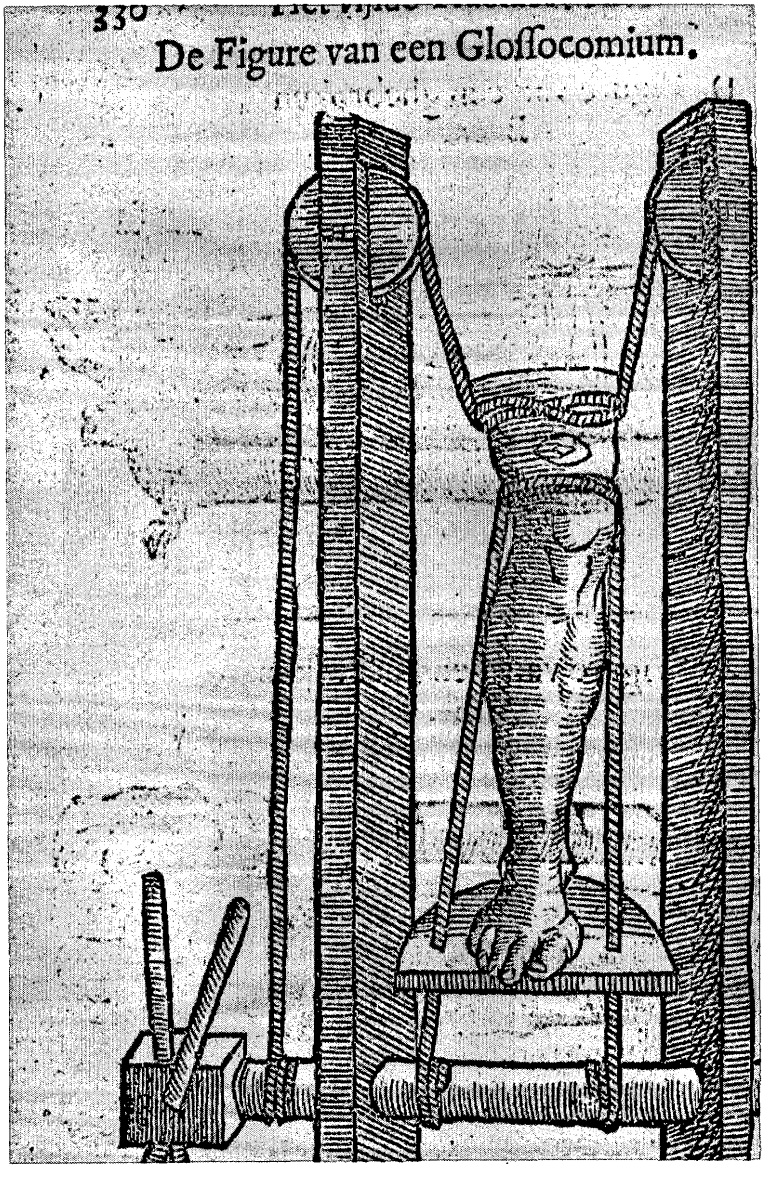
5762

Etching by Piet Verhaert, representing "The Blue Tower", a building erected in 1313 where anatomical lessons were given for the barbersurgeons (from 1540?) onwards) up till 1611. The tower was demolished in the 19th century. [Reprint from the Liber Memorialis of the Medical Association of Antwerp, 1970].



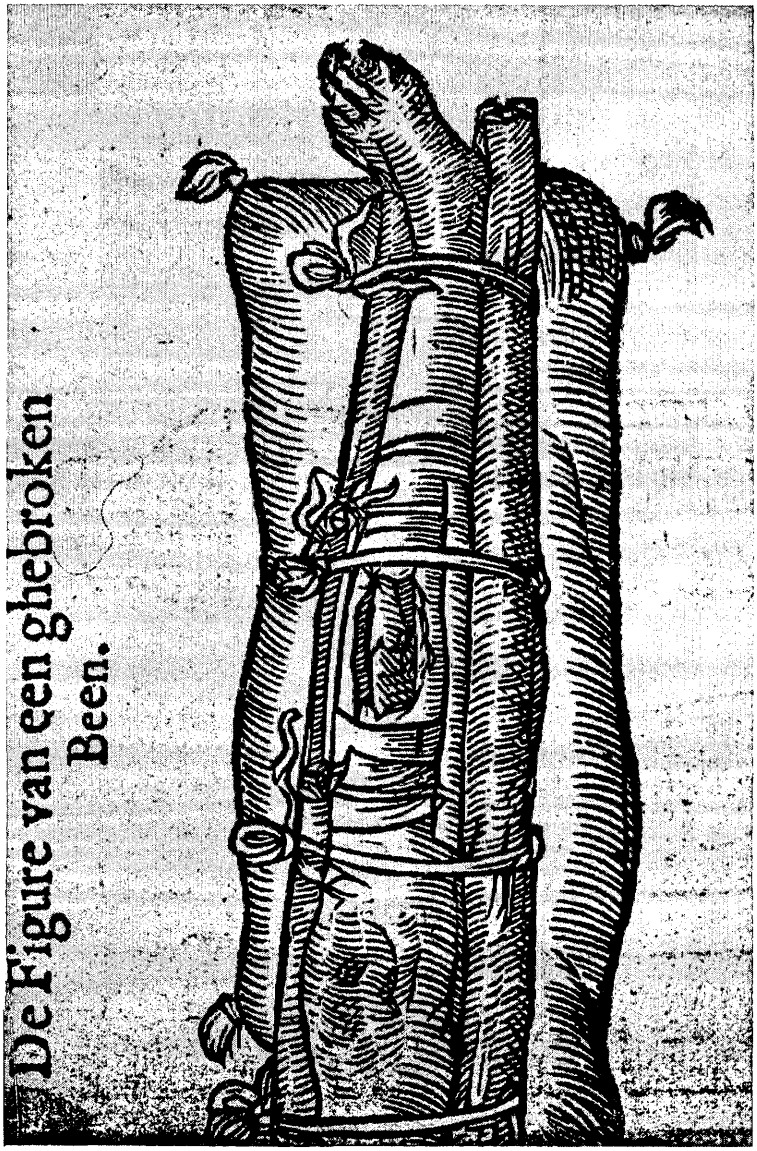
5764

The former altar of Saints Cosmas and Damian in the Cathedral of Antwerp, detail of a painting by an unknown artist. (Localisation unknown). [Reprint from the Liber Memorialis of the Medical Association of Antwerp, 1970].



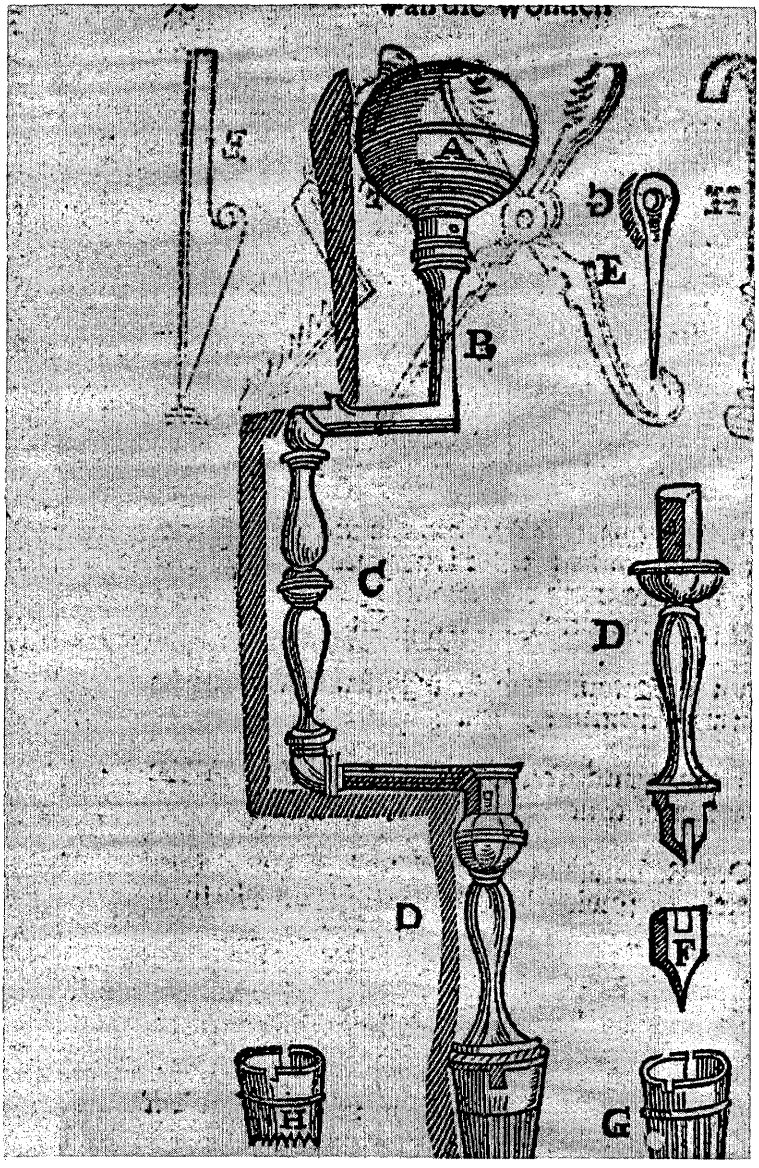
5769

Depiction of a glossocomium, an apparatus to treat luxations or fractures of the extremities, taken from the 1634 version of the "Hantboeck der Chirurgijen" by Carel Baten. [Antwerpen: Private Collection].



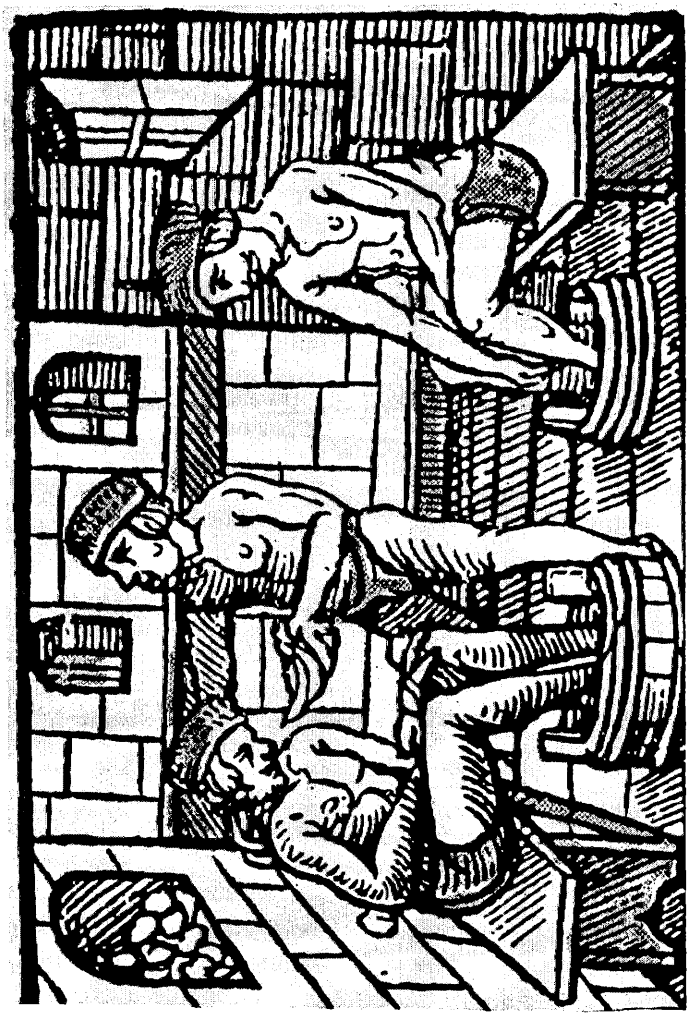
5772

Picture of an open leg fracture, treated with a fenestrated splint. From the "Hantboeck der Chirurgijen" by Carel Baten, edited in Amsterdam in 1634. [Antwerpen: private collection].



5774

Trephine, depicted by Peter Haschaert in his translation "Van die Wonden int Hooft", a commentary on the work of Hippocrates. (edition Amsterdam, 1634). [Antwerpen: private collection].



5776

Patients taking a foot bath while treated with cups. Picture taken from an Egenolph edition in Frankfurt am Main 1520-1542.