Surgical history

Acta chir belg, 2007, **107**, 343-354

Philip Verheyen (1648-1710) and his *Corporis Humani Anatomiae*

R. Suy

Em. Professor Catholic University of Leuven.

My interest in Philip Verheyen ([1]) was first aroused when I discovered his statue (Fig. 1) amongst the 141 adorning the town hall of Leuven. A quick browse on the internet revealed one promising article ([2]) that made me pursue my search for more information on this 17th century Professor in surgery and anatomy at the University of Leuven.

Some scientists, such as Fransiscus Vanden Zype (Zypeaus), Professor at the University of Leuven, thought that the 17th century was specifically marked by swift progress being made in science. In 1683, he stated :

> 'We are witnessing joyous times : all lethargy has been banned from the universities ; chemists are relentlessly active, physiologists are constantly giving lectures, all are persistently busy. Incessant research is done in many fields, as if everyone has sworn to reveal nature's secrets in a few short years ([3]).

Zypaeus' optimistic statements were related to the recent scientific revolution induced by the introduction of the mechanistic approach to physics according to the philosophy of Descartes ([4]). Regrettably, the economic situation within the Southern part of the Low Countries was, at that time, rather grim. The religious Eighty Years' War (1568-1648) had just ended, but the bloody raids by the all-conquering king of France, Louis XIV, were still to come ([5]). During these catastrophic years of the 17th century, the town of Leuven found itself on the crossroads of mercenary troops and highwaymen, and the often ransacked university buildings had rapidly fallen into disrepair ([6]). During the Nine Years War (1688-1697), the army of the anti-French coalition was stationed in Leuven, and the looting continued ceaselessly. A university report addressed to the Government of Brabant (1698) declares a low number of students, and poverty of both town and University as a result ([7]). It was during these troubled times that Philippe Verheyen, a former farm labourer became Professor at the Faculty of Medicine ; and Rector Magnificus of Leuven University. His career and scientific work are a true reflection of the condition of life and of the state of medical science in the Southern Low Countries at the end of the 17th century.

The Life of Philip Verheyen

Verheyen's' biography is based upon his *Compendium Vitæ* (CV), as recorded in the posthumous second edition of his *Corporis Humani Anatomiæ* ([8]), upon a few statements by Verheyen himself, upon the works of 18th century medical historians such as Goelicke ([9]), Manget ([10]) and Portal ([11]), and also upon accounts made by local historians from Verheyen's native region.

Philip was born on 23 April 1648 in Verrebroek, a small village of 250 inhabitants in the region of Waas, situated on the left bank of the River Scheldt ([12]). He was the third child of a family of seven, of which only three are known to have reached adulthood. His father, Thomas, was a subsistence farmer who grew flax and hemp on half an acre of land, a piece of reclaimed salt marsh near the estuary of the Scheldt, on which he was due to pay taxes. He died laden with debt when Philip was ten years of age ([13]). Philip was then hired as a farm hand on a 50 acre estate, property of the noble family Carena from Antwerp ([14]). It is presumed that Philip had

(1) There is some confusion concerning the correct spelling of the name. Should it be 'Verheyen' (as spelt in his books), or 'Verheijen' (the spelling of his autograph) ?

(2) http://en.wikipedia.org/wiki/Philip_Verheyen (15-03-2007).

(3) Zypaeus. p. 1.

(4) Vanpaemel (1986), pp. 36-53.

(5) At the time of death of Philip IV, King of Spain, Louis XIV, married to Philip's daughter, claimed the Spanish Netherlands, and started the war of Devolution (1687-88). Eventually, at the end of the Spanish Succession war, (1702-1713) a small part of Flanders became French territory.

(6) Schillings A, Introduction, p. x.

(7) van der Essen, p. 121.

(8) Verheyen (1710), CV.

(9) Goelicke, pp. 344-355.

(10) Manget, pp. 494-500.

(11) Portal, T IV, pp. 150-162.

(12) Kok, p. 212. Verrebroek had 1.300 inhabitants at the beginning of the Eighty Years' War.

(13) Van Raemdonck (1870), pp. 377-340.

(14) Moorthamers & Smet, pp. 107-111.



Fig. 1
The statue of Philippe Verheyen adorning the town hall of Leuven.

by then already received an elementary schooling from the local verger. In 1670, at the age of twenty two, his remarkable memory and intelligence were brought to the attention of the pastor Johannes Jaspars, who tutored him in Latin for two winters, no doubt to prepare him for the priesthood. In 1672, Philip was sent with a bursary to the *Collegium Sanctissimae Trinitatis* ([15]) in Leuven, to continue his college education. He finished within three years, instead of six, as the *primus* of his class.

In the second semester of the year 1675, Verheyen enrolled as 'a poor student' ([16]), together with 352 other students at the Artes Faculty (AF), which is equivalent to the modern day faculty of philosophy. A total number of around a thousand students ([17]) were housed in the four colleges of the AF all around Leuven, a city of approximately 10,000 inhabitants. Two years of studies at the AF was mandatory in order to be enrolled in one of the four higher faculties (Theology, Civil Law, Canon Law and Medicine). The curriculum of the AF in the 17th century was very broad, and was based upon the *Corpus Aristotelicum* including logic, physics and metaphysics, whose most significant tractate, *de anima*, had the whole of nature as its subject ([18]) The innovative ideas of Descartes on mechanics, explaining natural phenomena only with the aid of mechanical principles, were introduced a few decades previously by Professor Gerard van Gutschoven, Descartes' former secretary. However, at the time of Verheyen's arrival at the university, Descartes principles were officially in decline under the all-oppressive eye of the ecclesiastical authorities ([19]). In 1677, Philip finished the difficult preparatory studies at the AF as *Primus in Philosophia*, outshining his 700 fellow students. As was customary, he was received with great honour in his native region. The ceremonial festivities of welcoming Philip, in Sint-Niklaas, the major city of the *Land van Waas*, as *Primus in Philosophia*, exceed all imagination ([20]) ; however, Philip, given his humble origins and difficult childhood, truly deserved this moment of glory. Due to his exceptional results, he also received a scholarship from the Verrebroek community, whereby the main share was donated by the Commission of the Poor, which would cover the rest of his university studies ([21]). At the end of 1677, Philip continued his studies at the Faculty of Theology at the *Collegium Sancti Spiritus* (Holy Spirit College). He did better than his local pastor could have hoped for, until bad luck befell him. A lifethreatening infection necessitated the amputation of a lower limb, but any further information on this affliction or on the operation has not been found. It is highly improbable, as stated in the Wikipedia text, that Philip, a poor student at the Faculty of Theology, went to Leyden to have his leg amputated. According to persistent rumours. Philip would, much later, have dissected his own well-preserved amputated leg (Fig. 2). This myth must go far back in time, as no one seems to recall when it originated. Anyway, his handicap terminated Verheyen's aspirations to become a clergyman. In May 1678. recovered from the operation, he enrolled, with five other students, at the Faculty of Medicine ([22]).

(15) The actual *Heilige Drievuldigheidscollege*, founded in 1654, prepared the students for the Faculty of Artes at the University.

(16) Schillings A., p. 380. At enrolment, students were classified according to their social status.

(17) Van Buyten, p. 31.

(18) Vanpaemel (1986), pp. 39-43.

(19) Aubert, p. 128.

(20) Schillings L., pp. 8-11.

(21) Hoorick, van. p. 346.

(22) Bruneel & Moreau p. 55.



Fig. 2
Philip Verheyen dissecting his amputated left leg. Anonymous artist. Collection Pieter DeHeyde ©Sheshta/Rit Premnath, 2005.

He was immediately designated Dean by his fellow students, which entailed the organisation of weekly scientific events. From 1679 on, he was already performing vivisection and dissection on animals, looking for the pathway of recently described ovarian follicles ([23]). Being an extraordinarily gifted student, Verheyen would finish his studies within 30 months, instead of the required 36 full-time months. On the first of February 1681, he obtained the licentiate degree, allowing him to practice the medical profession. We may presume that he started as soon as possible to make some money, as in 1683, he paid for the construction of a better and more comfortable house for his by then re-married mother, Joanna Goemans.

In March 1682, Philip left Leuven to acquire a further qualification at the University of Leyden ([24]) where he attended the anatomy classes of Professor Drelincurtius from Leyden and of Prof Ruysch ([25]) from Amsterdam who became his tutor and friend. Verheyen must have been a remarkable student, since Drelincurtius asked him to give anatomical demonstrations ([26]). He also probably met with Antoon Nuck ([27]), Govert Bidloo ([28]), Steven Blankaart ([29]) and Antoni van Leeuwenhoek ([30]). In some biographies, it is mentioned that he was offered a striking salary ([31]) or even a chair at the University of Leyden ([32]). The University of Leyden was indeed looking for eminent tutors, but any official appointment of Verheyen at the protestant University of Leyden would have been unlikely because of his philosophical opinions. Anyway, no record of such a proposition could be found in the in the archives of the University of Leyden.

In 1683, back in Leuven, Philip married Anna Fransisca Vanden Zype, sister of the aforementioned Professor of Anatomy, and also presented his doctoral thesis successfully, but further information on this thesis is not to hand since all manuscripts from this period had been lost during the arson of the Library of Leuven University in 1914. The official proclamation and handing over of the certificate was, for various undetermined reasons, indefinitely postponed. Perhaps Philip could not muster the necessary funds to pay for the accompanying festivities for a minimum of 300 guests. Or maybe he considered the exorbitant expense unnecessary, as the title of *Medicinæ Doctor* was not a prerequisite in order to be appointed as Professor at the University of Leuven.

In 1684, Fransiscus Vanden Zype, his brother-in-law and Professor of anatomy and surgery (the so-called summer course), died. At that moment, the Government of Brabant had advised on a supplementary chair in chemistry. In the opinion of the faculty, Verheyen was the perfect candidate for both the position of Professor of anatomy and of chemistry. Nonetheless, it was Adriaan Regnault who was nominated Professor of chemistry in 1687 ([33]), while within one year, the three candidates for the chair of anatomy, of whom Philip Verheyen was one, had to master the art of embalming.

(23) Verheyen (1711), pp. 653-661 (Suppl. V, III).

(24) Archives of the University of Leyden ASP 12, p. 176. Philip Verheyen was registered at the University of Leiden on March 3, 1682. In those days Leyden was a very prosperous industrial town with 70.000 inhabitants, and a University of 6.600 students. Medical science, as it was taught at Leyden, must have been a true revelation to the young and freshly graduated physician from the southern part of the Lower Countries. In Holland, the national victory in the war of independence had lead to a general flourishing of medical and other sciences and the numbers of innovative *medicinae doctores* were vast, whereas in the year 1680, the Southern part of the Lower countries, still under Spanish rule, had no-one.

(25) Ruysch Frederik (1638-1731), surgeon of Amsterdam. Developed the technique to prepare and conserve organs, limbs and even entire corpses.

(26) Verheyen (1711), p. 712 (Suppl. V, XII). Philip demonstrated the afterbirth of a cow, including the Allantois.

(27) Anton Nuck (1650-1692) surgeon, anatomist and physiologist. Professor of anatomy at the University of Leiden from 1683 to 1692.

(28) Govert Bidlloo (1649-1713), Professor of Anatomy at the University of Leyden from 1692 to 1713.

(29) Steven Blankaart of Amsterdam (1650-1702), anatomist and surgeon.

(30) Antoni van Leeuwenhoek of Delft (1635-1723) the most famous microscopist of the 18th century.

(31) Bax, p. 952.

(32) Elaut (1933), p. 463.

(33) Felix, pp. 240-242.

Of all three candidates, after performing a test to prove their proficiency, Verheyen was chosen by the Government of Brabant. However, another five years passed before he was officially granted the title of Royal Professor of Anatomy by King Charles II of Spain.

On August 31 1689, Professor Verheyen was elected by the University Council as *Rector Magnificus*. The Rector had to be an unmarried fellow, and in 1689 the Faculty of Medicine had in Verheyen a valuable candidate, since his wife had died earlier that year.

The mandate of the Rector was limited to six months, but his position was one of great importance since he was charged with jurisdiction and presiding over all attendants of the University community, including its clergy, the students, the alumni (if they were still residing in the town of Leuven), the professors, its servants such as maids, valets and beadles and even the printers within the city ([34]). For unknown reasons, the University Council didn't give PV a new term of office, but we know for certain that he made a good impression as Rector, since many years later at his funeral, the students remembered him as a father ([35]).

In 1693, Verheyen was re-married to Philippina van Goedenhuyzen, sister of a Professor at the Faculty of Law. They were to have seven children, of whom only two would reach adulthood ([36]). In 1695, Verheyen finally spent the necessary funds in order to hold the title of *Medicinæ Doctor* officially, an exceptional event in those days : The next would be Hendrik-Josef Rega in 1718 ([37]). No longer a rector, Verheyen was now able to concentrate on his duties as professor. 1690 saw the death of Jacobus Herregouts, Professor of anatomy in charge of dissections during the winter term. As his successor, the faculty favoured Adriaan Regnault, who was, as *Medicinæ Doctor*, an executive member of the Faculty College. Only when Regnault had died in August 1693, was the winter chair of anatomy given to Verheyen.

In 1693 Verheyen was also nominated Professor of surgery. However, he does not mention one single surgical intervention that he would have performed himself. As *medicinae doctor* and Professor in surgery, he merely advised surgeons how to avoid operative complications ([38]).

Verheyen's working conditions

In those days in Leuven, the working conditions for a Professor of anatomy and surgery at the University of Leuven were far from ideal. As already mentioned in his CV, Philip, as a student, had already done research on animals in a farm in the vicinity of Leuven. He continued to do such experiments, looking for the function of the spleen and the diaphragm ([39]). We may presume that accommodation at the farm, which he called his '*villa*', was not very comfortable, since he took a recently mated cow to his house to study her genital organs ([40]). Furthermore, we know for certain that, in Leuven, facilities for anatomical dissections of human corpses were inadequate, since only a small room near the great classroom of the medical faculty in the University Hall was available for this purpose. Obviously, the picture on the frontispiece of the Old Dutch translation by A. Sassenus ([41]) of Verheyen's *Corporis Humani Anatomiae* (Fig. 3) does not refer to the actual situation since the first anatomical theatre in Leuven was built by Rega in 1744. Moreover, the university offered little opportunity for dissections, since corpses were not provided by the hospice, whereas such practice was customary in Holland. In Leuven, the lack of human corpses for dissection was somewhat compensated by the presence of five embalmed corpses purchased by the University in 1664 ([42]). For dissections, corpses of executed criminals were much sought after, but were a rare commodity, since most executioners were reluctant to inform the University of planned executions ([43]). In his handbook on anatomy, Verheyen complains that his research on the anatomy of coronary arteries, which he called 'pipelines', is hindered, as "the strangled individual was an unusable specimen because the dead body had already been exposed for several days on the scaffold, and consequently the small pipelines were obstructed" ([44]). Nevertheless, there is no evidence of bribing executioners or body-snatching during Verheyen's term as Professor of anatomy, in which he was often forced to perform demonstrations on organs of freshly slaughtered animals. Most remarkable is his

(34) Van Buyten, p. 23. In 1689 there were about 1000 attendants named *suppositi*.

(35) Verheyen (1710), Introduction, elogy of the medical students : "Et quem Magnificum Rectorem Academia legit ac fuit ut verum devenerata patrem".

(36) Moorthamers & Smet, p. 104.

(37) Bax, p. 959.

(38) Verheyen (1711), pp. 182, 174 (CHA, II, XX).

(39) Verheyen (1711), pp. 142-143 & 252 (CHA, II, XVI & CHA, III, IV).

(40) Verheyen (1711), p. 656 (Suppl. V, III).

(41) Broeckx, p. 50. Translation by Sassenus, pharmacist and in 1707 student at the Faculty of Medicine. Sassenus became later Professor of chemistry at the University of Leuven.

(42) Aubert, p. 104. As recommended by Professor Gerard van Gutschoven, Louis de Bils, a skilled Dutch prosector had been paid 20.000 gulden by the Spanish governor of Brabant for five embalmed corpses and the attached secret directions for embalming. 20.000 gulden was a lot of money : in 1679, the Cloth-Hall (the actual main building of the University) had been purchased by the University for 23.000 gulden (van Even, p. 161).

(43) Aubert, p. 101-102.

(44) Verheyen (1711), p. 286 (CHA, III, IX).

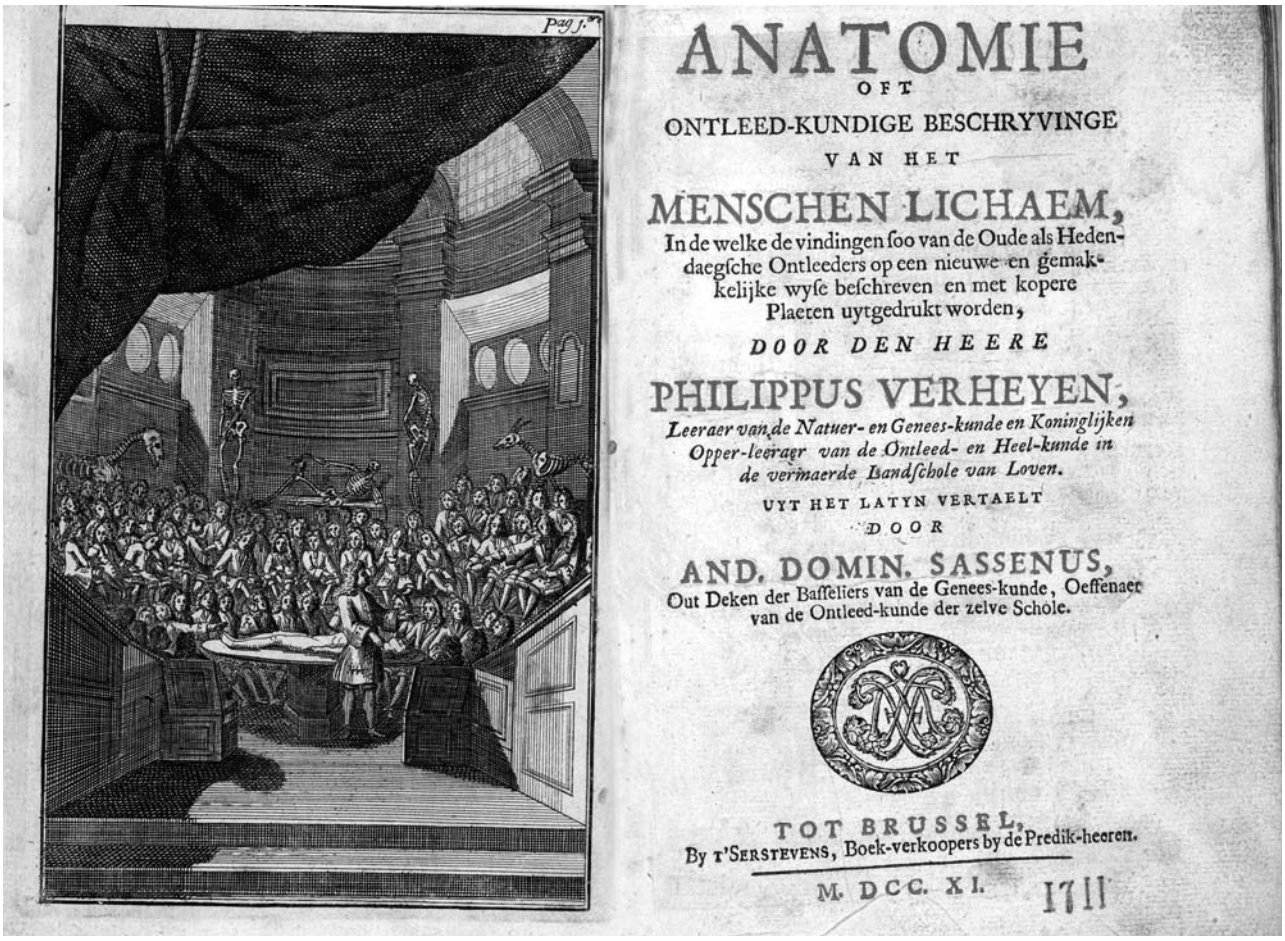


Fig. 3
Frontispiece of the Dutch translation of the CHA

statement on the use of remains of soldiers from nearby battlefields for research ([45]). We may presume that most research, such as his on the maxillary sinuses ([46]) (Fig. 4), was done at the Professor's home. Finally, there is archival evidence that Verheyen was also commissioned to perform judicial autopsies ([47]), but these events were most likely not public, and by their nature, less appropriate for anatomical demonstrations.

Verheyen's last years and death

In his fifties, Verheyen was already forced to stay at home for health reasons ([48]). Meanwhile, he finished a treatise on the sustenance of good health (*de Valetudine tuenda*) which was never edited, and also one on a miraculous cure for profuse spontaneous bleeding from the nose, ears, mouth and eyes (*Historia Vera*). According to his widow, he had an infirmity precluding long life ([49]). Nonetheless, his death on January 28, 1710 was unexpected, as he was fully committed to the writing of a new handbook on medicine (*Praxis medica*). He died from high fever, presumably caused by a highly contagious disease (typhoid ?), as on the day of his funeral, his three year old daughter Maria also expired. As a former rector, Professor Verheyen had the right to be buried within the church building. The epitaph, written by himself, refers to his last will *not* to be interred there, as he did not wish to "desecrate God's temple or soil it with evil fumes". Maybe he opted for a simple service as, on his death, he had no personal properties or funds : all of his assets and earnings had been spent on teaching and research ([50]). His last will was not fully

(45) Verheyen (1710), Introductio.
(46) Verheyen (1711), p. 419 (CHA, IV, XVI).
(47) Elaut (1933), pp. 466-467.
(48) Verheyen (1708), Praefatio pp. 1-2.
(49) Verheyen (1710), Letter from his widow and children to the Government of Brabant.
(50) Manget, p. 495. Portal, p. 151.

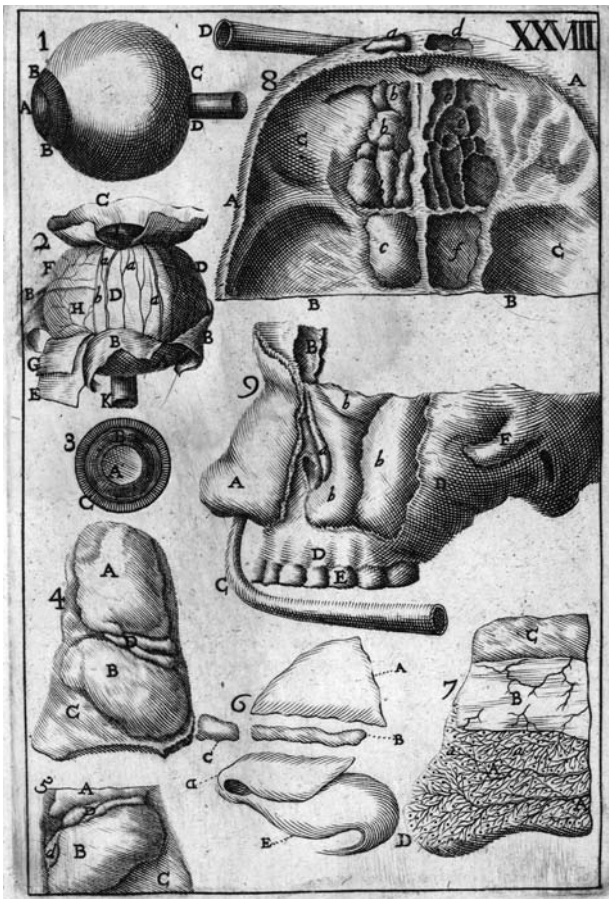


Fig. 4
Plate XXVIII from the 1710 CHA illustrating Verheyen's research on the connections between the maxillary sinuses.

executed as, having received a pauper's burial at the parish church of St. Michael, his final epitaph honoured him as "royal professor of anatomy and surgery, famous throughout Europe for his publications and oeuvre on anatomy". It appears from the eulogies, added to the posthumously edited CHA, that Verheyen was respected and beloved by his colleagues and students. Thus ends, as stated by Portal ([51]), "the life of a renowned man, who was, in his lifetime, the jewel in the crown of Leuven University, and was deserving of the highest rank in the history of Anatomy". The aforementioned medical historians of the 18th century did recognise the significance of Verheyen, but the city and University of Leuven have somewhat ignored honouring his memory. In 1778, the dilapidated church of St. Michael was demolished, and the cemetery disposed of. Verheyen's mortal remains and tombstone were thereby lost forever. But his memory is still alive amongst anatomists, and also amongst the inhabitants of Verrebroek ; who to this day bear the nickname of *Flippen*, and who, in the past, would often have celebrated him with grandeur ([52, 53]), including the inauguration of a bust on their marketplace in 1862.

Scientific Works of Verheyen

The scientific works of Verheyen consist of five books and several letters (*epistolæ*), treatises and discourses (*animadversiones* et *contraversiones*). With this oeuvre he easily surpasses his mentors, but compared to the Dutch anatomists and surgeons that he had met and with whom he maintained correspondence, he was not a prolific writer. He was, however, very knowledgeable, and from his frequent references to earlier and especially 17th century publications on anatomy, he clearly had access to a vast library. Although a great scientist, Verheyen's thinking remained conditioned by the Catholic faith. For Philip Verheyen, biblical annotations had evidential value. The sacrosanct position he took cannot be denied in the *Vera Historia*, his last work, but it also remains a constant influence in all his writings. Furthermore, in the case of delicate matters such as the meaning and the presence of virginhood ([54]), conception and gestation ([55]), Verheyen loses the plot by giving theological explanations to anatomical facts in which he becomes somewhat naive. Moreover, he can become lyrical, such as at the beginning of the chapter on virginhood or hymen which sounds as follows : "Virginhood is small in circumference, but great in esteem, of which the poet declares : it's an honour and precious treasure, that once lost, is never to be regained by art" ([56]). Reading such a redundant statement, a modern scientist might be perplexed by the poetry, but he or she would certainly recognise the method at work. This poetic interlude is indeed merely an introduction, and is followed by an exceptional discourse on the hymen, which starts with a theoretical consideration about the real virginhood or the presence of a narrow entry to the vagina, and about formal virginhood being the state of virginity. This leads to a discussion on the opinion of famous predecessors such as Soranos, Fallopius and De Graaf, and finally to the description of the author's personal findings at an anatomical dissection of a young virgin (Fig. 5).

(51) Portal, p. 151.
(52) Hoornaert, pp. 17-32.
(53) Moorthamers & Smet, pp. 89-103.
(54) Verheyen (1711), p. 232 (CHA, II, XXXII).
(55) *Ibidem*, p. 641 (Suppl, V,V11).
(56) *Ibidem*, p. 225 (CHA, II, XXXVII)
"Den Maegdom is wel kleyn van omtrek, maer groot in achting, waer van den Poëet segt :
"Den Maegdom is een eer en treffelijken schat,
die eens verloren, noyt word door de konst hervat".

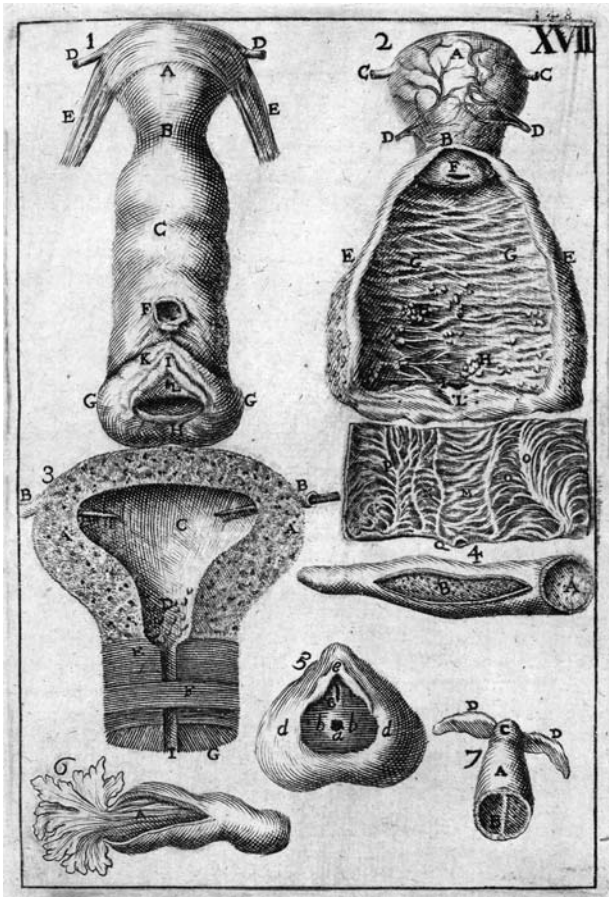


Fig. 5
Plate XVII from the 1710 CHA representing the uterus, the vagina and the external genital organs of a young virgin.

The *Compendii Theoriæ Practicæ*

In 1683, freshly graduated, Verheyen published the first part of his *Compendii Theoriæ Practicæ*. This edition was dedicated to Professors Laurentius Peters and Adrianus Wolfs, his tutors at the faculty of medicine, whom he thanked wholeheartedly for their paternal care. Probably, Verheyen was hoping to make some money from this publication, as it is in fact a textbook for medical students. It had been reprinted five times between 1683 and 1717. It gives a short description of the major diseases of the head and chest, with mention of their cause, significance and remedies. The chapter on the head even includes the most common mental diseases such as delirium, mania and melancholia. The anticipated second part was never published.

The Dissertatio de De Febribus

1692 brought the publication of Verheyen's "Treatise on Fevers", a sizeable book in two parts 314 pages long on fever, a phenomenon considered in the 17th century not to be merely a symptom, but a disease in itself. The entire text, therefore, describes a matter with no link to the essential relation of cause and effect. The first part holds descriptions of an entirely philosophical and metaphysical nature concerning fever in general. The second part handles the best-known types of fever, their character, distinction and appropriate treatment such as blood-letting. Great attention is given to the plague, which is, according to Verheyen, an "ordeal of God to punish us for our sins. It is therefore very common for the medical profession to revert to divine aid and to God, who is, not only for the plague, but for any other disease, the ultimate healer" ([57]). Today such thinking is considered naive, but the Christian faith has always proclaimed the idea of *Christus Medicus*, especially for diseases against which one found oneself to be defenceless.

The *Corporis Humani Anatomiæ* (CHA)

The first edition of the CHA, Verheyen's most renowned book, was edited in 1693. It is a substantial assessment of the then current knowledge of anatomy, illustrated with 29 plates showing countless anatomical figures. Unfortunately, most illustrations are of inferior quality, especially when compared to those used in the 17th century anatomical atlases. However, these atlases have been written for anatomists and not for students. The illustrations of lesser quality in the CHA were probably drawn by Verheyen himself, others were made by a craftsman and are clearly more representative ([58]). Verheyen also included some illustrations from contemporary anatomists, always giving clear references to the author. Despite their poor quality, some of Verheyen's illustrations were re-used by Blankaart ([59]), by Nieuwentijt from Amsterdam, by Jan Palfijn from Ghent ([60]), and by Johan Kulmus from Danzig ([61]).

(57) Verheyen (1692), p. 257.

(58) The engraving is from Philip Calaber, a local craftsman.

(59) Some of the illustrations were copied without appropriate references by Blankaart in his Anatomia Reformata (New reformed Anatomy) edited in 1695. Verheyen's answer to this plagiarism was a striking animadversion attached to the later editions of his CHA and in which he also reveals Blankaart's profound ignorance of anatomy.

(60) Palfijn (1718). All anatomical plates of the CHA are copied by Palfijn in his *Ontleeding van menschelijk Lichaam*.

(61) Sakula, p. 584. The *Tabulæ Anatomicæ* of Johannes Adam Kulm (1689-1745) from Danzig include illustrations from Vesalius, Bidloo and Verheyen. In 1774, the Dutch translation was edited in Japanese as *Kaitai Sinsho* (A new Work on Anatomy). The *Kaitai Shinsho* became the standard Japanese work on anatomy and overthrew traditional Chinese concepts.

The full title ([62]) and extended preface justify why and how it was written : Verheyen, aware of his responsibility as a professor of anatomy, embraced his duty to teach not only his own students, but also any other person, in the most comprehensible language possible. It was his intention to bring out a handbook at low cost so that "rich and poor could equally enjoy his work". He notes that one must endure the criticism of others with indifferent audacity. However, he was certainly not indifferent to critique : in a letter dated May 27 1697 to Ruysch ([63]), he refutes all criticism regarding eventual errors. Interesting is his argument on the quality of his illustrations of the aorta, which he claims to have measured branch to branch with a compass to avoid the errors made by his famous predecessors such as Vesalius, Valverde and Bartholinus. Verheyen was well aware of the limitations of his CHA, as he advises the reader in the preface to use the handbook until such time as he or any other person could make better information available. The anticipated, enlarged and improved CHA, comprising 2 books, was posthumously edited in 1710. This was done at the request of Verheyen's penniless widow and children, and financed by the board of the Government of Brabant.

The *Liber Primus* starts with the already mentioned request of Verheyen's widow to the Government of Brabant, followed by the *Compendium Vitæ* of the author and a series of eulogies and poems by colleagues and students dedicated to their deceased beloved Professor and former Rector. It also holds 11 additional anatomic plates, and findings of about sixty anatomists are reviewed, taking into account their experience in specific fields, such as Vieussens ([64]) and Lower ([65]) for the heart, De Graaf ([66]) for the reproductive organs, Willis ([67]) for the nervous system and Ruysch for the inner structure of organs. Ruysch maintained that some organs such as liver, spleen, brain and kidneys consist solely of blood vessels, with which Verheyen did not agree, adding that his humble opinion under no circumstances undermined the eminence of his friend, "the very distinguished anatomist of Amsterdam" ([68]).

The first book of the second edition is the CHA is

> "a clear, methodical, complete and yet concise treatise on all the then-known facts concerning the anatomy of the human body. It is highly original : all statements are tested by his own ideas, and measured by personal experience and study. Revolutionary discoveries are not made, but accurate descriptions and correct insights can be found in abundance. It is interspersed with wise annotations which are the result of a sharp mind, gifted with a more than extraordinary sense of observation" ([69]).

Exceptionally interesting are indeed the many physiological annotations added to the descriptive anatomy. At the time of writing, many essentials continued to be inexact. Nevertheless, Verheyen persisted to offer explanations based on multiple and contradictory theories from colleagues without, as said in the preface, "adding evidence and details of method, as many issues of this matter remain uncertain". It is true that Verheyen was not responsible for great innovations or revolutionary discoveries, but his book is a sequence of additions and corrections on contemporary anatomy which had already been discussed in length in 1770 ([70]). Verheyen also introduced the term 'Chorda Achillis' for the tendon of the sural muscles and his name became very soon an eponym for the sternocostal muscles and for the star-like veins on the surface of kidneys (Fig. 6).

The *Liber Secundus* or *Supplementum anatomicum*, illustrated with six plates, is a textbook on physiology. In the introduction, Verheyen stresses the importance of this matter ; as "any physician who does not know the composition and function of the body, only gradually, and at great cost to the patient, learns about diseases and their treatment" ([71]). Obviously, Verheyen enjoys physiology very much, since he states in the preface of this book that he would have preferred to limit his studies solely to this field ([72]). The *Supplementum anatomicum* is divided into four parts : a treatise upon the elements of the body, a treatise on the 'animal spirit', a treatise and on the senses, a dissertation on 'generation', and finally as an attachment, a controversy on foetal bloodflow and function of the foramen ovale. The first three parts are without a doubt based upon the curriculum of the Artes faculty.

At the beginning of the first treatise upon the elements of the body, Verheyen avoids all disputes on the prevailing theories of the mechanical (according to Descartes) or chemical functioning of the organism, as "both systems have their uses and lead to the explanation of arising difficulties", adding that "regardless of their choice, students will find equally learned advocates and

(62) On the Anatomy of the Human Body, containing the findings of ancient and contemporary anatomists, reporting on a new and easy way, and illustrated with engraved copper plates.

(63) This *'epistola'* to Ruysch is attached to all the reprints of the 1693 CHA.

(64) Raymond Vieussens (1641-1715) French anatomist, Professor at the University of Montpellier.

(65) Richard Lower (1631-1691) of London, published in 1669 the *Tractatus de Corde ; item de motu et colore sanguinis*.

(66) Reinier De Graaf (1641-1674), Dutch embryologist and physiologist. Discovered the follicles in the ovaries.

(67) Thomas Willis (1621-1675), English physician and anatomist.

(68) Verheyen (1711), pp. 34-39 (CHA, I. VIII).

(69) Elaut (1933), p. 422.

(70) Portal, pp. 152-159.

(71) Verheyen (1710), Suppl. p. vi.

(72) *Ibidem*, p. vii.

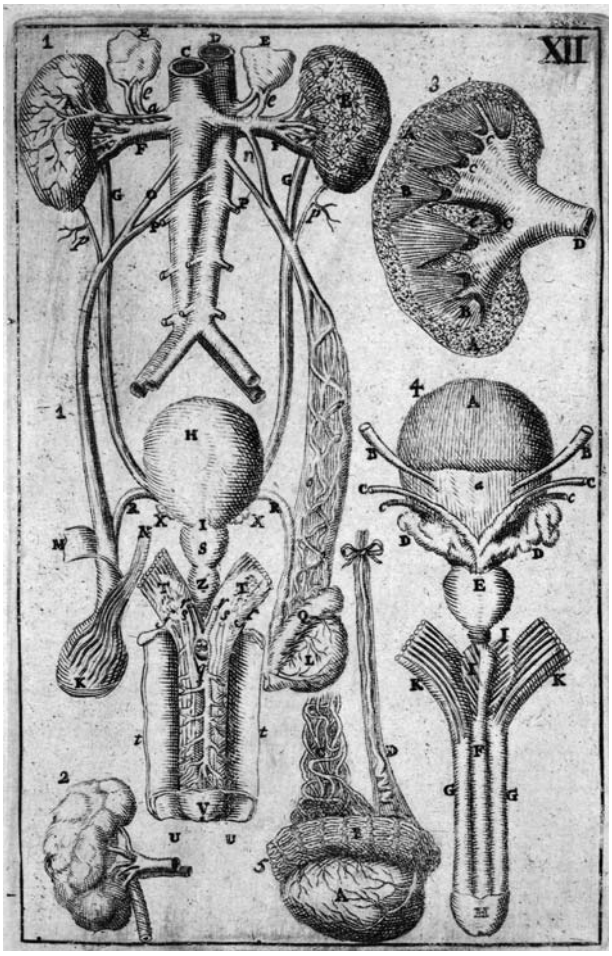


Fig. 6
Plate XII from the CHA representing the male urogenital system. Notice the star-like veins on the cortex of the left kidney, the aberrant position of the adrenals, and the poor configuration of the spermatic vessels.

colleagues on both sides" ([73]). From the multiple well described chemical tests, demonstrating amongst others, that saliva contains a ferment ([74]), it is easy to understand why in 1684, the faculty was keen to appoint Verheyen as professor in chemistry. He discusses in length the composition and function of all already known solid and fluid substances of the human body. All elements were weighed, burned to examine the ashes, and tested for relative acidity and alkalinity (actual pH). The fluids were also examined under the microscope, compared with the fluids of mammals, fish and birds, and to the findings of other authors. Most elaborate attention is given to the composition of semen ([75]), in which Verheyen acknowledges the existence of small animals ([76]), but he finds it irreconcilable that *animalcules* could be responsible for generation of the human race. For Verheyen, it is unacceptable that all humans, but for Adam and Eve, originate from animals.

The treatise on the animal spirit (*de Motu animali*) addresses all systems which, according to the thinking of the time, were under direct control of it (called "pneuma" by the Greek philosophers), such as motion, respiration, sensory perception, and even emotions.

Most interesting is the treatise on generation discussing the role of male and female semen, the conception, the development of the embryo, the contribution of the rational soul to the creation of a human being, and birth. It is a synopsis of all written material to the end of the 17th century, from Hippocrates and Aristoteles onwards. Verheyen supports Aristotle's single semen theory which assumes that the man is, through the soul of his semen, the active maker, and that the woman contributes to the formation of the embryo and the foetus by supplying its nourishment ([77]). This treatise on generation includes a dispute with Govert Bidloo, the Professor in anatomy at the University of Leyden. In 1685, Bidloo had depicted a human afterbirth, including the allantois, in his magnificent anatomic atlas ([78]), but Verheyen claimed that Bidloo had depicted a bovine afterbirth. Already in 1693 ([79]), Verheyen defied Bidloo to demonstrate publicly the presence of an allantois in the human afterbirth, but such a humiliating demonstration was dismissed by Bidloo with childish and rude remarks. Verheyen's irritation of Bidloo was possibly strengthened by the former's great admiration for Ruysch, his tutor and friend, who called Bidloo a 'mere windbag' ([80]). Anyway, Verheyen was right, since the allantois, a membranous, fluid filled sac that develops from the hindgut in the embryos of reptiles, birds and most mammals (Fig. 7), is, in the human foetus merely a rudimentary non-functional part of the urachus within the umbilical cord.

The *Supplementum Anatomicum* concludes with *Controversia de Foramine Ovale inter Authorem et D. Mery*, wherein Verheyen explores the theories of Jean Mery ([81]) concerning foetal circulation. Mery had stated that in the foetus, the lung circulation is more important than the body circulation, as most of the foetal blood flows from the left atrium to the right atrium through the foramen ovale. Verheyen's reaction to this insane theory

(73) *Ibidem*, p. 5 (I. I).
(74) *Ibidem*, p. 113 (I. XXV).
(75) *Ibidem*, pp. 58-70 (I. XIV-XV).
(76) Leeuwenhoek, pp. 1040-3.
(77) Verheyen (1711), pp. 641-798 (Suppl V, I-XXIII).
(78) Bidloo, Table 61, Fig. 1 & 2.
(79) Verheyen (1693), pp. 113-114.
(80) Kooijmans, pp. 96 (*een zotte klapper, een praatjesmaker*).
(81) Jean Mery, *'Premier chirurgien de l'Hôtel-Dieu de Paris'* published his ideas on the foetal circulation in the 'Mémoires de 1'Acadimie Royale de Sciences' from 1692 to 1697.

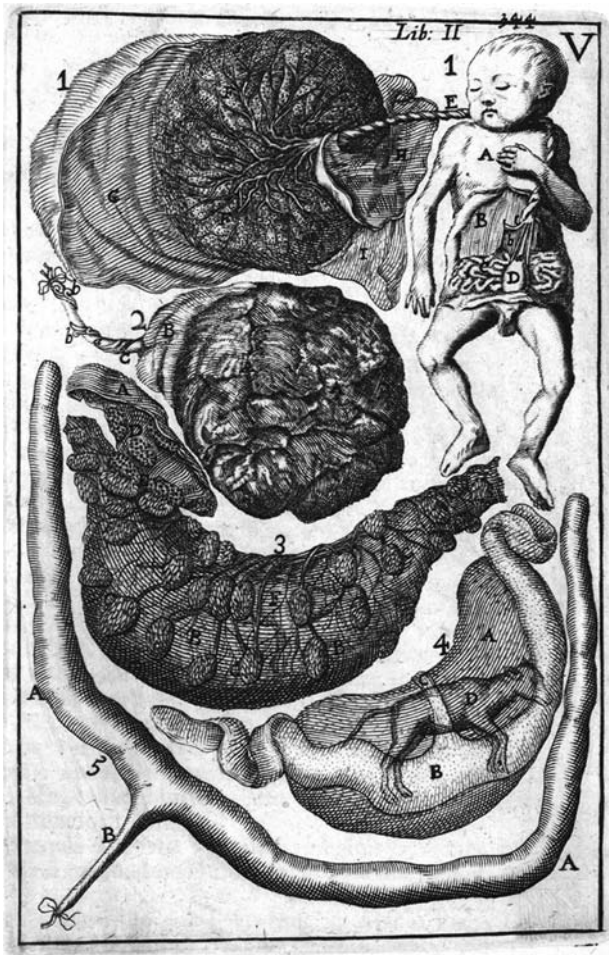


Fig. 7
Figure 7 Plate V of the *Supplementum Anatomicum*, showing a full-term baby, a rear and a front view of a human placenta, the placenta of a bovine animal and a bovine foetus with his Allantois.

was written down in two letters to his friend Jan Palfijn, the famous Flemish surgeon and obstetrician, who made sure they were translated into French, and published as early as 1698 ([82]). In 1700, Mery responded with a treatise ([83]) whereby he tried to make a fool of Verheyen, whose ultimate response came in the *Supplementum Anatomicum*, supported by deeply substantiated arguments. Verheyen's account of the foetal cardiovascular system and circulation are exceptionally comprehensive, and forms a striking testimony to the general soundness of his judgment, whereas Mery, who never really capitulated, was even on his deathbed still convinced of the absolute correctness of his ideas ([84]).

The CHA remained a work of reference until the middle of the 18th century since it has been printed at least 21 times between from 1693 to 1739 ([85]). According to the most famous anatomist and physiologist Albrecht von Haller, the handbook written by the 'cripple professor from Leuven' had all but overruled the works of Bartholinus ([86]) Anatomy according to Verheyen was commonly taught at the Italian and German universities, as revealed in a letter from the German publisher Fritsch to his colleague in Brussels ([87]), and in the preface of Laurenz Heister's *Compendium anatomicum* (1727), wherein the author states that " the most commonly used handbook at most universities at this time is the book written by the famous Verheyen" ([88]). This success may explain why both Heister ([89]) and Johannes Baptista Morgagni ([90]), discussed elaborately the errors and shortcomings of the Verheyen's work in their keenness to promote their own anatomical works. The second half of the 18th century saw the replacement of Verheyen's handbook by Winslow's *Exposition Anatomique de la structure du Corps Humain*, which was soon translated into Italian, German and English. Winslow's manual, which no longer includes lyrical descriptions, theological theories or references to former anatomists, signalled the dawn of a new era in the teaching of descriptive anatomy.

The *Vera Historia*

This review of Verheyen's oeuvre would not be complete without mentioning his final work, the *Vera Historia*, edited in 1708, which has also been translated into both French and Spanish. This book cannot not be considered to be of any scientific value, as it mentions at great

(82) Palfijn, addendum p. 50 (Palfijn noted by mistake that the letters were edited in 1699).

(83) Mery, p. 103-151.

(84) Franklin, p. 222.

(85) Raemdonck. van (1862) p. 53. The 1693-edition was reprinted in 1697, 1699, 1704 (German translation), 1705, 1706 and 1708 (German translation). The 1710 edition, including the two books, was reprinted in 1712 (Köln and Lyon), 1717 (Naples), 1726 (Brussels), 1731 (Amsterdam) and in 1734 (Naples) The first book of the 1710 edition was reprinted in 1711 (Brussels, Dutch translation), 1714 (Leipzig, German translation), 1718 (Leipzig), 1722 (Leipzig, German translation), and in 1739 (Köningsberg, German translation). Furthermore, in 1712 (Naples) the Supplementum was edited attached to the CHA of 1693 (a so called pirate edition). According to van Raemdonck, there were a few other reprints which cannot be traced.

(86) Haller, p. 755.

(87) Verheyen (1710), CV.

(88) Heister, Praefatio p. IV.

(89) Heister, Praefatio p. XXIII : Heister's veracious arguments against the CHA end as follows : "It (the CHA of Verheyen) teems with errors which have already been corrected and pointed out by recent authors ; furthermore, new discoveries are missing... therefore, I believe that, because of the many shortcomings in Verheyen's work, nobody will dare to denounce our work, written for the benefit of everybody".

(90) Morgagni, Index Rerum. p. XXIX. Morgagni has reported 101 errors from Verheyen.

length the improbable story of Father Onraets, who suffered from profuse bleeding from the nose, ear, eyes and mouth, and his subsequent miraculous cure through the mediation of Saint Fransiscus Xaverius. Verheyen brings in all possible arguments in an attempt to prove the cure to be supernatural. The story becomes even more remarkable, as Father Onraets had already been cured from large bladder stones with the aid of the same Saint. The *Vera Historia* ends with a certificate issued by Professors Verheyen, Peeters and Somers. As a consequence, the archbishop of Mechelen affirmed, with great alacrity, the healing as a miraculous one. This procedure can only be explained by the Fransiscus Xaverius devotion at the time, and probably also by the need for funds for the construction of a new church in Mechelen dedicated to the saint ([91]). And so ends Verheyen's work with the proverb according to which he has lived :

"Ad Majorem Dei et S. Xaverii Gloriam".

Conclusion

Verheyen was an independent researcher who, notwithstanding the limited means available to him at the time, produced a handbook on anatomy that would be the one of choice at many universities in Europe for coming generations. Furthermore, it was not merely an anatomical atlas, but also an affordable, concise and clear manual which shows that Verheyen considered the study of anatomy to be an intrinsic part of physiology. From its chapters, it is quite clear that Verheyen was not only a well read man, but also a capable professor who was more than able to impart his considerable knowledge to his students. This clearly explains the success of his work, but also the inappropriate criticism given by some, who may have considered him to be no more than a foolish nobody from the impoverished Southern Lower Countries.

Although today not considered to be one of the great innovators, with his *Corporis Humani Anatomiæ*, Philip Verheyen, the former cowherd, rightfully deserves his place amongst those illustrious Professors who contributed to the overall fame of the Faculty of Medicine at the Ancient University of Leuven ([92]).

Finally, what about that Wikipedia anecdote on the internet ?(2) That story, including the painting of the Verheyen dissecting his own leg, is the product of an artist's imagination, and is too improbable to be true !

References

Anonymous. Compendium Vitæ Clarissimi Authoris. In the Liber primus of the second edition of the Corporis Humani Anatomiæ. 1710-1734.

Aubert R., D'Haenens A., Van Houtte J. A. *et al.* De Universiteit te Leuven, 1425-1975. Leuven. 1975.

Bax J. L., Historiæ Universitatis Lovaniensis. VI : Facultas Medica, professores et doctores 1426-1797.

Bidloo Govert. Anatomia Humani Corporis. Amsterdam, 1685.

Blankaart Steven. Anatomia reformata. Leiden : Boutestein. 1695.

Broeckx C. Notice sur A. D. Sassenus. Bruxelles : Académie Royale de Médecine de Belgique. Bruxelles, 1850.

Bruneel Cl et Cl. Moreau de Gerbehaye. Les gradués de la faculté de médecine de l'ancienne Université de Louvain, XVI-XVIII[e] siècles. Bruxelles : Palais des Académies, 2004.

Elaut L. De "Corporis Humani Anatomia" van Philip Verheyen, alsmede een critisch-historische bijdrage tot de anatomie van het urogenitaal stelsel. Verslagen van de Koninkfijke V1aamsche Academie voor Taal- en Letterkunde (Juni, 1926). Gent : Vander Poorten, 1933, pp. 417-469.

Felix A. Les débuts et les titulaires de la chaire de chimie à la faculté de médicine de l'ancienne Université de Louvain. Revue Belge de Philologie et d'Histoire, 1884 ; 64 : 234-255.

Franklin K. J. Jean Mery (1684-1722) and his ideas on the fœtal circulation. Annals of Science 1945, 5 : 203-228.

Goelicke A. O. Introductio in Historiam Litterariam Anatomes. Frankfurt : Conraad, 1738.

Graaf, Reinier De. De Mulierum organis generationi inservientibus. Haekiana : Leiden, 1672.

Haller, Albert von. Bibliotheca anatomica. Voluma I : Ad Annum MDCC. Orell : Tiguri 1774.

Heister D.C. Compendium Anatomicum. Altdorf & Nurenberg, 1727.

Hoornaert L. Philip Verheyen's Verheerlijking. Beschrijving der feestelijkheden. Buitengewone Uitgave van de Oudheidkundige Kring van het land van Waes. 1683, nr. 2.

Hoorick, van W. Van polders en landlieden. De plattelandsgemeente Verrebroek in het land van Waes tijdens de 17de en de 18de eeuw. Leuven, Belgisch centrum voor Landelijke Geschiedenis. Nr. 120, 1999.

Kok Th. B. W. Dekenaat in de steigers. Kerkefijk opbouwwerk in het Gentse dekenaat Hulst, 1596-1648. Bijdrage (deel XXII) tot de Geschiedenis van het Zuiden van Nederland. Tilburg : St. Brabants Historisch Contact, 1971.

Kooijmans L. De doodskunstenaar. De anatomische lessen van Frederik Ruysch. Amsterdam : Bakker, 2004.

Kulmus J. A. Ontleedkundige tafelen (vertaling Gerardus Dicten). Amsterdam : Jansson van Waesberge, 1734.

Leeuwenhoek, Antoni van. 'Observationes D. Anthonii Lewenhoeck, de natis é semine genitali animalcules' ; Philosophical Transactions, 12 ; 1678.

Manget J. J. Bibliotheca Scriptorum Medicorum veterum et recentionum. Geneve, 1731.

Mery J. Réponses aux principales objections de messieurs Tauvry et Verheyen. In : Nouveau système de la circulation du sang. Paris : Jean Boudlot, 1700.

Morgagni J. B. Adversaria anatomica omnia. Leyden : Langerak, 1741.

Nieuwentijt B. Regte gebruik des Wereldbeschouwing. Wolters : Amsterdam, 1716.

Portal A. Histoire de l'Anatomie et de la Chirurgie. Paris, 1770-73.

Palfijn J. Ontleeding van menschen lichaem. Leyden : Vander Deyster, 1718.

Sakula A. Kaitai Shinsho : the historic Japanese translation of Dutch anatomical text. J R Soc Med, 1958, 78 : 582-587.

Schillings A. Matricules de l'Universite de Louvain Tome VI. Fin février 1651-fin aout 1683. Bruxelles : Palais des Académies, 1963.

Schillings L. Beroemde mannen uit het Waasland. Filip Verheyen. Antwerpen : Opdebeek, 1928.

(91) The actual St. Pieter and Paul Church on the *Veemarkt*.

(92) Gemma Frisius (1508-1555), Vopiscus Plempius (1601-1671) and Hendrik Jozef Rega (1690-1754), three other *medicinae doctores* of the Ancient University of Leuven, have their statues on the walls of the city hall of Leuven.

Van Buyten L. De Leuvense universiteitsmatrikels (16°-18° eeuw). Kritische beschouwingen. Arca Lovaniensis 1974, III, pp. 9-35.

Van Even E. Louvain monumental ou description historique et artistique de tous les édifices civils et religieux de la dite ville. Louvain : Fonteyn, 1860.

Van der Essen L. Les tribulations de l'Université de Louvain pendant les guerres de Louis XIV en Belgique (1684-1713). In : l'Université de Louvain à travers cinq siècles. Bruxelles : A. Lesigne, 1927.

van Gutschoven G. (1615-1668). Description de cinq corps embaûmez et anatomisez, par le sr Louis de Bils, et montrez à son Excellence le Marquis de Caracene à Bruxelles au mois d'Octobre 1662. Bruxelles : Scheybels, 1662.

Vanpaemel G. Echo's van een wetenschappelijke revolutie. De mechanistische natuurwetenschap aan de Leuvense Artesfaculteit (1650-1797). Verhandelingen van de Koninkfijke Academie voor Wetenschappen, Letteren, en Schone Kunsten. België. 1986 ; 48 : nr. 173.

Vanpaemel G. Filip Verheyen (1648-1710) en de geneeskunde te Leuven op het einde van de zeventiende eeuw. Periodiek, 1989, 44 : 77-85.

van Raemdonck J. Levensbeschrijving van Philip Verheyen. Buitengewone uitgaven van de Oudheidskundige Kring van het Land van Waes. 1862.

van Raemdonck J. Philip Verheyen. Annalen van de Oudheidskundige kring van het land van Waes. 1870 ; 4 : 1.

Verheyen P. Dissertatio de De Febribus. Leuven : Denique, 1692.

Verheyen P. Corporis humani anatomiae. Leuven : Denique, 1693.

Verheyen P. Lettre touchant l'usage du trou ovulaire dans le foetus. In : Progres de la médecine. 1698.

Verheyen P. Vera historia de horrendo sanguinis fluxu ex oculis naribus auribus et oris. Leuven : Zangrium, 1708.

Verheyen P. Corporis Humani Anatomia. Two parts : *Liber primus* and *Supplementum anatomicum*. Brussel : 't Sterstevens, 1710.

Verheyen P. Anatomie oft ontleeed-kundige beschrijvinge van het Menschen Lichaem. Brussel : 't Sterstevens, 1711.

Vieussens R. Nouvelles Découvertes sur le Cœur. Paris : D'Houry, 1705.

Willis Th. The anatomy of the brain and nerves. London : Roycroft, 1664.

Winslow J.-B. Exposition Anatomique de la Structure du Corps Humain. Paris : Desprez & Desessartz, 1732.

Zypaeus F. Fudamenta medicinæ reformatæ physico-anatomica. Brussel : 't Serstevens, 1657.