

# Medical teaching at the Universidade de Coimbra in the sixteenth century

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Abstract

The article addresses the teaching of medicine at the Universidade de Coimbra in the sixteenth century, framing it within the Portuguese and European context and highlighting the contributions of the institution's key professors – Enrique de Cuellar, Tomás Veiga, Alfonso de Guevara, and João Bravo Chamisso – along with their main works. Following a historical overview, the study analyzes the reforms of Dom Manuel I and Dom João III, the role of anatomy in the renewal of medical studies, the relation with the Discoveries, the obstacles raised by the Inquisition, medical practice at hospitals, and, lastly, the decline of medical teaching. Although they did not teach at Coimbra, reference is made to the two greatest names in sixteenth-century Portuguese medicine: Amato Lusitano and Garcia da Orta.

Keywords: teaching of medicine; sixteenth century; Universidade de Coimbra; Discoveries; Inquisition.

**B**ased on a review of the key literature, this article presents an overview of the evolution of medical teaching at the University of Coimbra during the sixteenth century. We highlight the leading figures who played a role in this teaching and single out their major works, many of which are available in digital format (see bibliography), mostly through the University of Coimbra's Alma Mater – Biblioteca Digital de Fundo Antigo.

To better understand the circumstances of the Portuguese university and especially of the teaching of medicine during this century, we begin by situating the institution within the political, socioeconomic, and religious context of the era.

In the early sixteenth century, the only Portuguese university was located not in Coimbra but in Lisbon. The capital of the kingdom was already a busy, cosmopolitan city by then. It had become an important trade center, where the ambitious sought fame and fortune above all. Lisbon was a city of sharp contrasts, where people lived amidst wealth and poverty, extravagance and debauchery, and where the native born mingled with foreigners from all corners of Europe and the world, in some cases having come to replace those who had left in the frenzy of the Discoveries (Mea, 2002; Azevedo, 1984). Portuguese expansion, initiated the previous century, had reached its apex when Vasco da Gama landed in India in 1498 and Pedro Álvares Cabral in Brazil in 1500.

The origin of the era of the Discoveries was not linked to scientific or teaching activities at the University of Lisbon but rather to the desire to expand trade and spread religion. Only gradually did the Discoveries come to contribute to the modernization of university teaching. Moreover, in their heyday, the Discoveries relied more on empirical developments acquired through practice than scientific knowledge taught at a school (the “school of Sagres” being no more than a myth).

In contrast with the vitality and vivacity of daily life in Portugal, the country's university was experiencing a period of distinct dormancy in the early sixteenth century. Founded in Lisbon in 1290 by King Dom Dinis, the university was only definitively moved to Coimbra in 1537 – after two previous temporary transfers there – by order of Dom João III (who reigned from 1521 to 1557). In contrast with the intense student life in Lisbon, where they could spend their time at parties and in gambling establishments, paying little heed to compliance with the rules laid out in the school's statutes (Polónia, 1995), in Coimbra the students' day-to-day routine was duller and was also packed with university activities. Besides regular processions through the streets, attended by all members of the Academy, bugles would sound throughout the town on the eve of academic exams so everyone would be duly advised of the ceremony to come (Ramalho, 1982).

### **Medical teaching in Portugal before the sixteenth century**

For many centuries during the Middle Ages, in Portugal as in other European countries, clerics were responsible for teaching the medical arts, since this teaching had begun and been instituted primarily at twelfth-century convents. So even prior to the existence of the university in Portugal, medicine was studied at the Santa Cruz monastery in Coimbra, run by the Order of Saint Augustine, though medical studies were secondary to studies of grammar, canon law, and theology. There were as yet no courses that were cohesively organized around

a body of knowledge or by discipline (Ferreira, 1990). Under the reign of Dom Sancho I (from 1185 to 1221), some monks from the monastery were sent to study theology in Paris, home to a university since 1170. One of these monks, Mendo Dias – whose biography is cloaked in darkness – also studied medicine and later taught it at Santa Cruz; today he is recognized as the first Portuguese professor of medicine (his effigy is sculpted above the western entrance to the Coimbra Faculty of Medicine [Faculdade de Medicina de Coimbra], a project of the Estado Novo). Another major name in medieval Portuguese medicine was Pedro Julião Rebelo, better known as Pedro Hispano (1215?-1277). Born in Lisbon, he studied or served as a physician in Lisbon (at São Vicente de Fora), Paris (according to some, at Montpellier), and Sienna (Costa, 2010). He was also pope for a short time (1276-1277), under the name John XXI (the only Portuguese pope, he too is represented on the same entrance of the Coimbra Faculty of Medicine). Of the various works attributed to him (the authorship of the majority being uncertain), the most notable is “Liber de oculo” (Hispano, n.d.; Smith, Cardoso, 2008), an ophthalmological treatise presenting a prescription said to have been used by the Italian Renaissance painter Michelangelo, and *Thesaurus pauperum*, a book that includes information on contraception (Hispano, 1576; Cruz Pontes, 1972; Pereira, 1973). However, it was only after Dom Dinis ordered the foundation of the Portuguese university, on March 1, 1290, that Portugal saw the introduction of properly organized medical studies (Costa, 1986; Albuquerque, 1984). From the beginning, the arts, canon law, civil law, and medicine were taught. From then until the Renaissance, there is no record of any major changes in the methodology of medical teaching.

The first university on the Iberian Peninsula was the University of Salamanca, established in 1218. Owing to its proximity to the University of Coimbra and to its prestige as well, it drew many Portuguese students at the height of its renown, mainly those who lived closer to this Spanish city. After the 1496 edict by Dom Manuel I that forced Jews to either convert or leave the country, the steady drain of young Jewish talent (Lemos, 1991) first to Spain and then to the rest of Europe eventually, if not immediately, left an atmosphere of intellectual suffocation that hindered a level of academic development commensurate with the scholarly advances typical of the early Renaissance. The situation was exacerbated by the 1536 inauguration of the Inquisition under the reign of Dom João III (Pinho, 1997; Ramos, 1997; Leitão, 1986). It became increasingly difficult for Portuguese Jews to remain in the country.

### **The reform under Dom Manuel I**

Despite these gloomy circumstances, in the early sixteenth century the Faculty of Medicine was included on the curriculum of the Portuguese university, then still located in Lisbon along with the Faculty of Theology (the most important school at a university that from its birth had deep ties to the Church), the Faculty of Canon Law, and the Faculty of Civil Law. In 1503, King Dom Manuel I, who was well aware that Portuguese university life was in a crisis for the reasons mentioned earlier, attempted to enhance the quality of medical teaching and make it more efficacious; he reorganized the course under new statutes so Portugal could compete with international universities in this sphere, especially the nearest one, that is, the University of Salamanca (Mesquita, 1983; Pinho, 1997). However, as to be expected under

the described circumstances, this failed to result in any substantial improvement in the training of physicians. Despite the well-meaning royal intervention, the state of university teaching thus remained weakened (Ferreira, 1990). The statutes enacted by Dom Manuel I – the third since the university had been created – provide interesting insights into the king's absolute power over the fate of higher education in Portugal. The university had been created under the official seal of royal power, and the monarch continued to wield authority there. One fine example of the restrictions on university autonomy is Dom Manuel I's 1499 request to the teaching body that a vacant chair in medicine be given to his physicist general, Afonso Madeira (physicist was the term then used for physicians, just as physics was the term for medicine); his will was done.

In the statutes handed down by Dom Manuel I in 1503, medicine offered two chairs in that specialty (the second had been introduced by King Dom João II in 1493 to complement the main chair) and one in natural philosophy. A bachelor's degree in medicine was obtained by attending medical classes for five years, with the prerequisite of first earning a diploma in the arts. Before receiving his license to practice (*licenciatura*), the candidate had to present theses and arguments regarding points found in the doctrines of the Greek Galen and the Persian Avicenna, who formed the cornerstones of medieval medicine. Before the title of 'doctor' was bestowed, the graduate presented a brief lesson and short argument. The teaching system was rudimentary, as each chair served five courses simultaneously, with students from diverse courses listening at the same time to the same lessons read by the masters, thereby hampering their needed specialization (Lemos, 1991). There was no order or methodical distribution of disciplines, unlike today. All university students basically followed the same path, although they started out from different points and had different goals.

### **The reform under Dom João III**

Things only changed in 1527, when King Dom João III, who succeeded Dom Manuel I, visited Coimbra and was pleasantly surprised to find the study of the arts and languages flourishing at the Santa Cruz monastery under the direction of Friar Brás de Braga. Whether it was for this motive or to distance scholars from the lively life in the capital, the truth of the matter is that one decade later, in 1537, the monarch definitively transferred the university from Lisbon to Coimbra and also implemented a reform of the university institution (Dias, 1969). The course in medicine witnessed its first real reformulation since the introduction of university studies to Portugal. The number of medical chairs was increased and the distribution of subjects that were taught was tailored more to the goals of the course and the pedagogical experiences at the day's top European centers.

After these changes, the medical course took five years to complete and concluded with a diploma known as a *bacharelato*; the course included mandatory attendance of three initial years, encompassing one year of logic and two years of natural philosophy. The candidate would, however, only receive his license to practice (*licenciatura*) after six years of study, since an additional year of apprenticeship and clinical practice was required. Final exams included the defense of theses and lessons that were discussed with the instructors. From one lesson per day during the early years of university life in Portugal, and then two lessons

a day under the reforms introduced by Dom João II and Dom Manuel I, medical teaching moved to cover four lessons under the reform implemented by Dom João III. The names of these classes corresponded to the time of day when they were taught. Two *catedrilhas* – or “minor chairs” – were also established; these were deemed of lesser import and therefore no set lesson time was defined. The first of the four main chairs, known as the *prima*, was held at six in the morning and the second, or *noa*, at three in the afternoon; both were based essentially on Galen. The third, or *véspera*, which was held at six in the evening, addressed the aphorisms of Hippocrates. The last, known as the *terça*, took place at nine at night and was based on the books of Avicenna. The unscheduled minor chairs in crises and method explored the works of Galen too (Ricou, 1991; Ferreira, 1990; Dias, 1969).

Since classes were basically theoretical and drawn directly from the classic authors, their texts were read in translation from Greek and Arabic; their Portuguese versions had undergone several centuries of revisions and were thus at quite a remove from the cultural context in which they had been written. Students were expected to capture the text literally and then repeat and defend it in academic meetings or discussions. It would be up to the students to perpetuate the transmission of this knowledge, so that medical tradition would prevail over any attempt at innovation.

The modifications stipulated in Dom João III's reform were implemented gradually over the course of two decades; classes were added when an appropriate instructor was found. Due to the scarcity of duly trained Portuguese professors, it was sometimes necessary to bring in foreign instructors (Leitão, 1986; Dias, 1969). In 1537, the Spaniard Enrique de Cuellar (1480-1544), who had studied medicine at the Université de Paris, became the first foreigner appointed teacher of the *prima* chair in Coimbra, a position normally assigned to the school's most qualified physician (Ricou, 1991). However, only six students were at his inaugural class, given on June 4 of that year at the Casa do Reitor (Home of the President), evincing the low level of university attendance at that time. Cuellar taught the chair until the end of his life, which was not long, since he passed away just seven years after his appointment. He left a book of commentaries on Hippocrates' *Prognostics*, published in Coimbra – *Ad libros tres predictionum Hippocrates* – which illustrated the heightened influence of the medical teachings of this classic Greek scholar during the era (Cuellar, 1543) (Figure 1). It was through the presence of Cuellar and other teachers from abroad, along with some Portuguese physicians, who were progressively more knowledgeable and specialized, that the Portuguese Faculty of Medicine slowly joined the general movement of renewal that we associate with the Renaissance. Oddly enough, from 1538 through 1544 medical classes were taught at the Santa Cruz monastery, where medical teaching had medieval traditions, as noted earlier (Rodrigues, 2005).

In 1538, Tomás Rodrigues da Veiga (1513-1579), descended from a line of physicians (as was often the case), was appointed instructor of the *véspera* chair; he later took over the *prima*. Veiga was born in Évora into the heart of a Jewish family. Contrary to what might be expected of a physician of Jewish heritage, he was not barred from teaching at the university. Nor did he suffer any type of persecution for religious reasons. This lenience may have been because some of his relatives had served the king and thus enjoyed his protection. Veiga was only 25 when he began teaching medicine at Coimbra, after studying at Salamanca. He was a

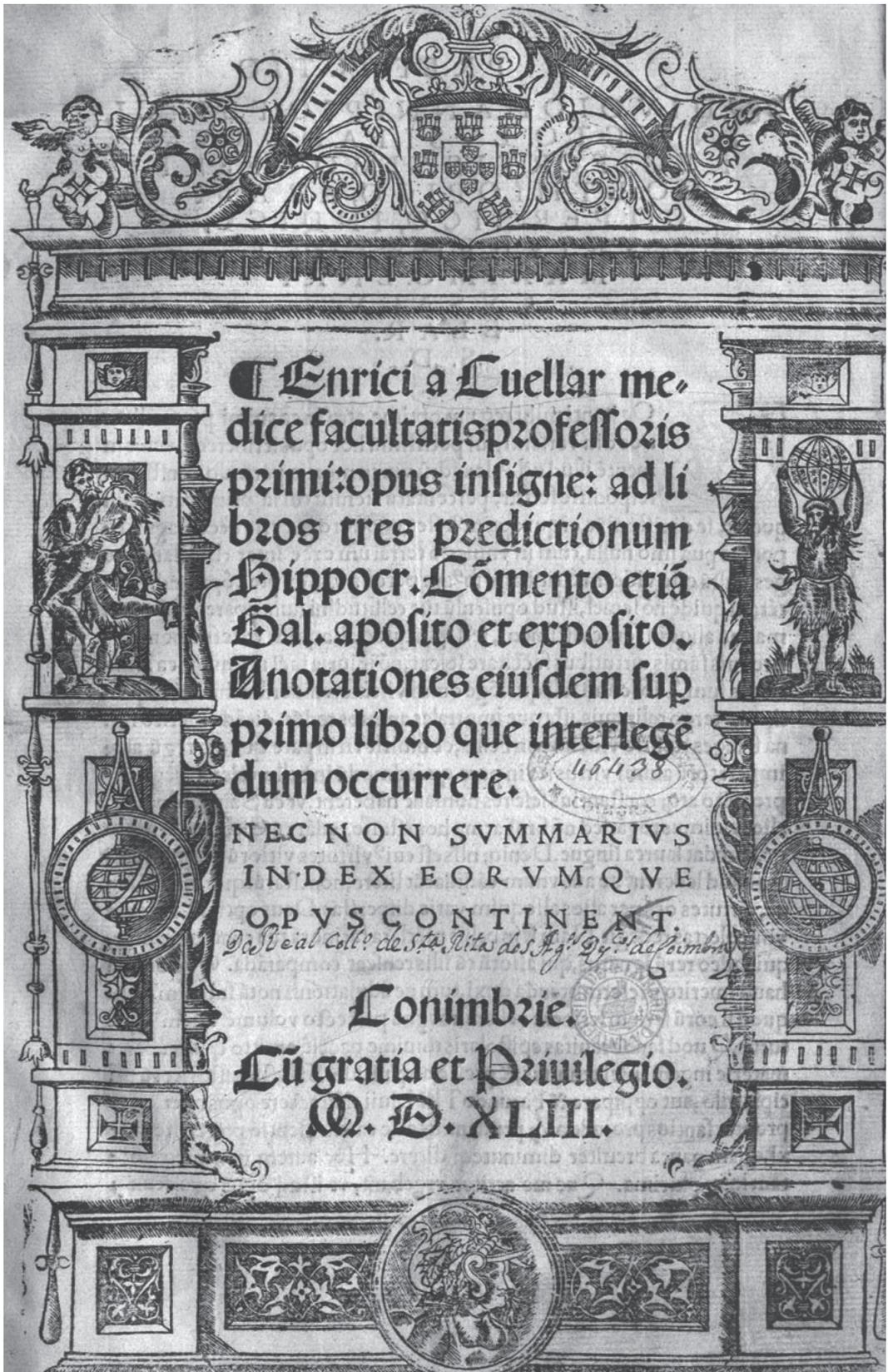


Figure 1: Frontispiece of the book *Ad libros tres predictionum Hippocratis*, by Cuellar, 1543 (Biblioteca Digital Alma Mater, Universidade de Coimbra)

highly regarded professor, as we can ascertain in countless excerpts of works later published by his disciples. For example, in a paper on medical deontology entitled *Retrato del perfecto medico* (Portrait of the perfect physician), published in Salamanca (Henriques, 1595) and written by another Jewish doctor, Henrique Jorge Henriques (1545?-1622), born in Guarda, Veiga is described as “admirable, and a perfect Physician, such as it has not been found since the Gentiles unto the present day.” The university’s *Compêndio histórico*, published in 1771, prior to Pombal’s reforms, portrayed him as displaying “a subtle genius and rare erudition” (Junta..., 1771, 2008) and transcribed the words of the influential Portuguese physician Zacuto Lusitano (1557-1642), who received his training at the universities of Salamanca, Coimbra, and Sigüenza (Guadalajara) and was forced into exile in Amsterdam, who called Veiga “doutor eminentíssimo”. Throughout his career, Veiga always conjoined his practice as a doctor with his work as a university professor. He left many writings behind, mostly commentaries on Galen, such as *Opera omnia in Galeni libros edita et commentariis in partes novem distinctis*, published posthumously in Lyon (Veiga, 1587); his great respect and admiration for the classic authors is patent, most especially for Galen (Figure 2). Veiga complemented this classic component with the innovative mark of the Renaissance, citing a number of physicians who were his contemporaries, like Andreas Vesalius (1514-1564) – the Belgian doctor who founded modern anatomy with his book *De humani corporis fabrica*, published in Basel (Vesálio, 1543) – and Jean François Fernel (1497-1558), the French physician who introduced the terms physiology and pathology and author as well of *Universa medicina*, published in Lyon (Fernel, 1567; Rodrigues, 2005). Both books can still be found at the University of Coimbra’s Biblioteca Joanina, although the second of them is only available in its 1581 edition.

### **The role of autonomy**

The medical course underwent further refinement in 1556, again by order of Dom João III, with the introduction of the chair of anatomy; it followed the *terça* lesson and was taught by Alfonso Rodriguez de Guevara (?-1587). Spanish like Cuellar, Guevara earned his medical degree at the University of Sigüenza and then pursued further studies in Bologna, Italy, at Europe’s oldest university. Before going to Portugal, he taught anatomy at Valladolid, where there was a medieval university founded in the thirteenth century, like Coimbra (Grande, 1986).

The study of the anatomy of human cadavers was key to the renewal of medical studies during the Renaissance, since this practice had been subject to stringent restrictions during both Antiquity and the Middle Ages for reasons of religious or other bias. Yet despite royal authorization permitting the teaching of anatomy and allowing the magistrate of the administrative region to cede corpses to the class instructor, this practical component was rarely taught in Portugal during the sixteenth century. Dissections were performed on animals, such as sheep and swine, in accordance with the dissection protocol designed by Mondino De’ Luzzi (also known as Mundinus), who was a professor at Bologna in the thirteenth and fourteenth centuries. The only known published work by Guevara has a long title: *Alfonsi Rod. de Guevara, granatensis, in Academia Conimbricensis rei medicale professoris et Inclytæ*

THOMÆ  
**R O D E R I C I**  
 A V E I G A E B O R E N S I S  
 D O C T O R I S M E D I C I  
 E T G R A V I S S I M I P H I L O S O P H I .

Opera omnia in Galeni libros edita, & commentarijs in partes novem distinctis, expressa, quibus nodi difficultatum in Medicina frequentes, soluntur, classicorumque medicorum controuersia, veritatis lima expenduntur.

*Prae superioribus editionibus eliminata, & exacta qua potuit fieri correctione, typis exarata.*

Annectus est insuper Rerum & Verborum sese occurrentium, I N D E X vberimus, quo cuius legentium in eorum indagacione, ad Alphabeticos gradus recurrens, potest subleuari.

*Elenchum librorum, medium sequentis pagina suggerit.*



L V G D V N I  
 A P V D P E T R V M L A N D R Y .  
 M . D . X C I I I .

Figure 2: Frontispiece of the book *Opera omnia in Galeni libros edita et commentarijs in partes novem distinctis*, by Veiga, 1587 (Biblioteca Digital Gallica, Biblioteca Nacional da França)

*Reginae medici physici, in pluribus ex ejs quibus Galenus impugnatur ab Andrea Vesálio Bruxelensi in constructione et usu partium corporis humani defensio* (Guevara, 1559) (Figure 3). In this book, the author fiercely defends Galen and contests the opinions of Vesalius – who is referenced in the title – regarding anatomy and human physiology (Ferreira, 1990; Carvalho, 1915). One of the most gripping questions for sixteenth-century physicians was which side should be bled in cases of pleurisy. In this book, Guevara referred not only to the works of Vesalius but also to those of Amato Lusitano on the valves of the azygos vein and the ‘insufflation’ of veins. Swayed by the more conservative ideas of the school of Paris, Guevara failed to understand the innovative content of Vesalius’ work, which had the ultimate effect of significantly compromising the spread of this pioneering author’s ideas in Portugal. The book’s drawings do not portray human anatomy but rather a quadrumonous on an anatomical table. Guevara also makes mention of only two dissections, neither performed at the University of Coimbra. Another important step in the development of medical studies in Portugal was the 1557 establishment of a chair in surgery, linked to the anatomy class, both of which were taught by Guevara. However, the university did not reap full benefits from the existence of the two chairs since Guevara was quite lax in fulfilling his schedule at Coimbra. His teaching was affected by frequent absences, due to constant trips to Lisbon and some to Spain as well. Still, when he was actually in Coimbra, Guevara managed to train a solid group of fine collaborators. It was one of these Portuguese disciples, João Bravo Chamisso (?-1636), who succeeded him as instructor of the chairs of anatomy and surgery. Chamisso, who was born in Serpa, was the author of *De medendis corporis malis per manuaem operationem*, published in Coimbra (Chamisso, 1605); in it, he cites Vesalius and mentions an anatomical theater, most likely located at Coimbra’s Hospital da Conceição (Figure 4). In 1561, Guevara moved permanently from Coimbra to Lisbon to serve as physician to Dona Catarina, widow of Dom João III, and to work as professor of anatomy at the Hospital Real de Todos os Santos in Rossio, which was the most prominent Portuguese center for the study of anatomy and surgery in the sixteenth century (the building was destroyed in the great earthquake of 1755). Guevara was doctor to Dom Sebastião as well, whom he accompanied into the Battle of Alcácer Quibir<sup>1</sup>, and likewise of Cardinal Dom Henrique. He was eventually accused of taking advantage of the generous welcome he had received in Portugal, since he decided to start wholeheartedly serving the interests of Philip II of Spain, who was named Philip I of Portugal following the 1580 unification of the two Iberian crowns (Ferreira, 1990; Carvalho, 1915).

The introduction of the chairs in anatomy and surgery concluded the reform of the Faculty of Medicine initiated when Dom João III transferred the university from Lisbon to Coimbra.

During this long period of change, despite some delays and hesitations, the university did manage to rise to a place of recognition within Europe’s Renaissance movement and to reach the apex of its evolution until that point in time, although it did not keep firm pace with the major medical feats of the day. There were numerous physicians, as well as mathematicians and philosophers, teaching a steadily growing number of students. There was also a growing number of fellows supported by the Crown who were training abroad to be future professors. The larger schools were still the same, but at all of them there was a substantial increase in chairs (Grande, 1986; Serrano, 1892). The Portuguese curriculum came to resemble that of universities in northern and central Europe, while differing

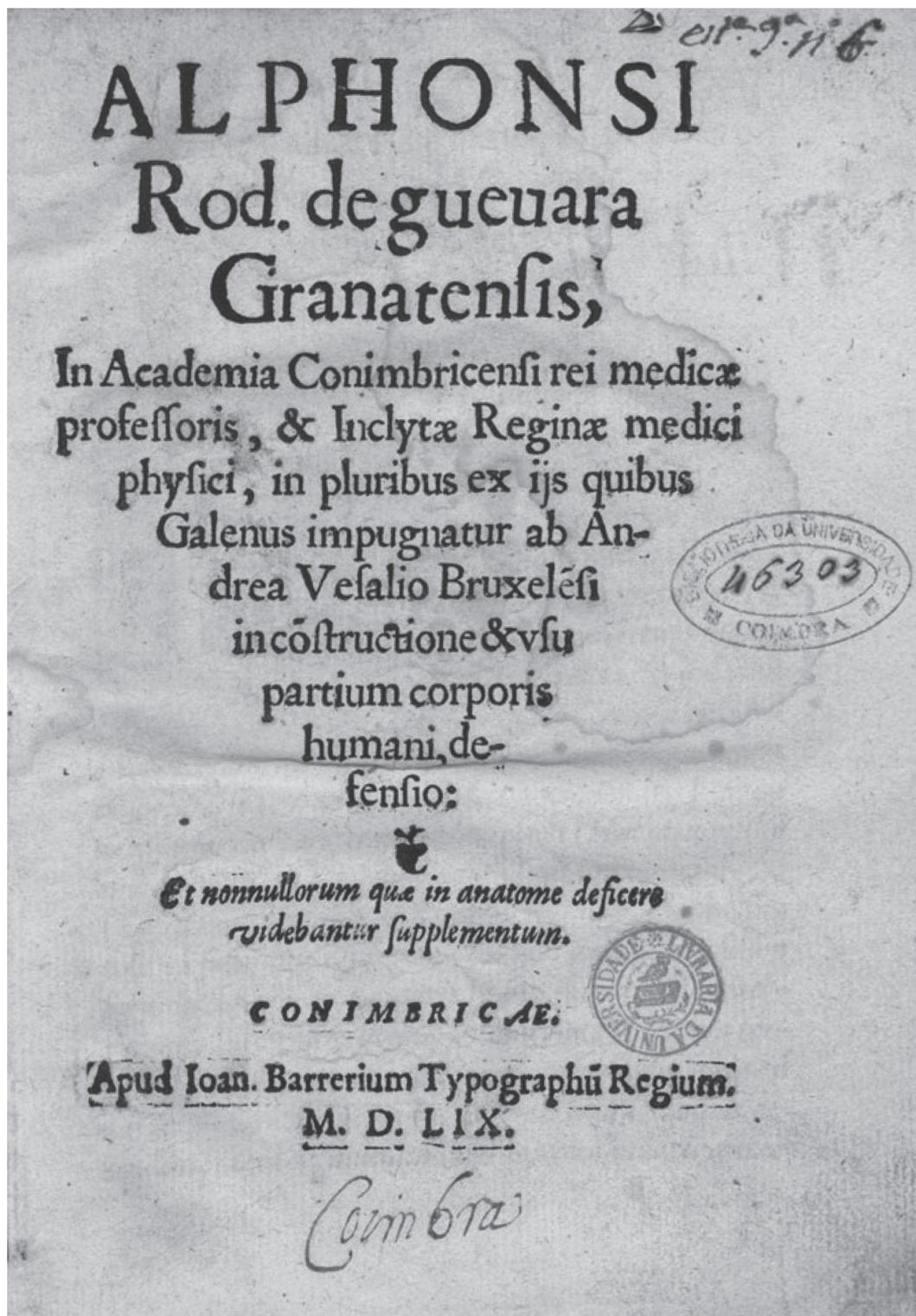


Figure 3: Frontispiece of the book *Galenus impugnatur ab Andrea Vesalio Bruxelensi in constructione et usu partium corporis humani defensio*, by Guevara, 1559 (Biblioteca Digital Alma Mater, Universidade de Coimbra)

IOANNIS BRAVO  
CHAMISSO D.  
MEDICI, MEDICINAE,  
ET ANATOMIAE

IN CONIMBRICENSI ACADEMIA

PROFESSORIS.

De medendis corporis malis per manulem operationem.

TOMVS PRIMVS.

*Ad Illustrissimum Dominum Alfonsum Furtado de Mendocça Conimbricensis  
Academiae olim Rectorem meritissimum, nunc vero in Supremo Sacrae  
PHILIPPI Maiestatis Senatu Consiliarium.*



CONIMBRICÆ,

Typis Emmanuelis de Araujo Regij Vniuersitatis Architypographi  
excussum. Anno Domini 1605.

Cum licentia, & facultate Supremi Sanctæ Inquisitionis Senatus:  
& Ordinarij.

Figure 4: Frontispiece of the book *De medendis corporis malis per manulem operationem*, by Chamisso, 1605 (Biblioteca Digital Alma Mater, Universidade de Coimbra)

from that of Italian universities. As at European universities in general, the ties between medicine and the arts were strong in Portugal. However, to judge from the royal regulations of 1559, we can infer that the Portuguese university was closer to the Nordic model, where a complete education in the area of the arts was a prerequisite to the complete study of medicine. In contrast, the arts and medicine had been studied in conjunction from the very beginning in Italy. The arts curriculum in Coimbra was based chiefly on Aristotle's logic and natural philosophy, with less emphasis placed on astronomy and mathematics. Students were required to attain a solid mastery of Latin and to undergo intense training in formal discussion or debate. So it is no surprise that sixteenth-century medical writers reflected a brand of medical education heavily influenced by the arts and philosophy. The ties between philosophy and medicine do indeed have deep historical roots and can be detected in various ways in all the major authorities in medicine, including the Greeks Hippocrates, Aristotle, and Galen and the Persian Avicenna and the Arabian-Spanish Averroes, who continued the Hellenic tradition (Ferreira, 1990; Lemos, 1991).

During the sixteenth century, a gamut of scientific questions were brought up for discussion in the main centers of knowledge, for example, whether the heart or the brain was the organ that truly ruled the body. The dissection of cadavers afforded an opportunity to gain knowledge of the functioning of the heart and of blood circulation, helping to clarify this matter (Rodrigues, 2005). Other types of knowledge inherited from the classics, like natural philosophy and astrology, were also associated with medical training at the University of Coimbra. While natural philosophy provided essentially theoretical scientific foundations, astrology seems to have been more tightly bound up with the practical aspects of medicine. The influence of the stars was likewise taken into consideration, in both prognostics and therapeutics. The human body was still seen as a mirror of the heavens, during an era when new developments in the studies of anatomy and astronomy were moving the fields farther and farther apart, although both were based on careful observation (it is a curious coincidence that 1543, the year that brought publication of Vesalius' *De humani corporis fabrica* and of Cuellar's book in Coimbra, was also the year that Copernicus' *De revolutionibus orbium coelestium* was released). Astrology's influence on medicine is apparent in the works of various Portuguese doctors from the Renaissance, such as Jewish physician Abraham Guedelha (Ferreira, 1990; Lemos, 1991), and it would last through the first half of the seventeenth century. We should remember that physician Pedro Nunes (1502-1578), a graduate of Salamanca and professor at the University of Lisbon and later at the University of Coimbra, disputed the "vain and now practically rejected belief that passes judgment over life and fortune" (Lemos, 1991). On this note, we should also observe that the influence of astrology was likewise accepted by professionals from other fields and was relevant to crucial facets of Portuguese history, like its maritime voyages. Published in Leiria (Zacuto, 1496) by the Jewish astronomer and physician Abraham Zacuto (an ancestor of Zacuto Lusitano) and translated to the Spanish by José Vizinho, another physician and astronomer, the *Almanach perpetuum* contained astrological information. The very last book to come out of Valentim Fernandes' print shop in Lisbon, *Reportório dos tempos*, was the editor's modified translation of the Spanish edition by Andrés de Li (Li, Fernandes, 1518) of an almanac that enjoyed broad circulation and was widely used by navigators. It featured calendars that described navigation techniques, astronomic

data, information on agriculture and astrology, and even a section on astrological medicine (Rodrigues, 2005; Rasteiro, 2000).

## The Discoveries

The role that physicians played in the Discoveries deserves at least brief mention. The preeminence of Pedro Nunes, for example, cannot be ignored (Fiolhais, Martins, 2010). This ‘cosmographer-in-chief of the Kingdom’, who made valuable contributions to world science and especially the art of navigation, had trained as a doctor although he only rarely practiced the profession. One of the era’s most famous physicians was his friend and

colleague Garcia da Orta (1501?-1568), who, like Pedro Nunes, came from a family of new Christians. But Orta did not follow Nunes on his move to Coimbra, as the former had set sail for India in 1534, where he passed away. In Goa, he published *Colóquios dos simples, e drogas he cousas medicinais da Índia* in Portuguese (Orta, 1563; 1983), in which he refers to Vesalius (Rodrigues, 2005; Rasteiro, 1999). Thirty years later, the book was translated into Latin (Orta, 1593) and thus gained a world audience (Figure 5). It is interesting to note that the Coimbra library holds the Latin translation but not the original, published at the ends of the Empire.

In relation to Brazil, a noteworthy letter was sent to Lisbon in 1500 by a certain Master João, who was probably João Faras, physician and surgeon to Dom Manuel I. Master João, a scientifically qualified member of Pedro Álvares Cabral’s armada, tried to ascertain the geographic position of Brazil and made a drawing of the constellation of the Southern Cross (Johnson, Silva, 1992). As these voyages became more frequent and the Portuguese moved progressively farther into Brazilian lands, physicians began rendering medical care on board caravels and also to settlers. For example, physicians and surgeons came to Brazil

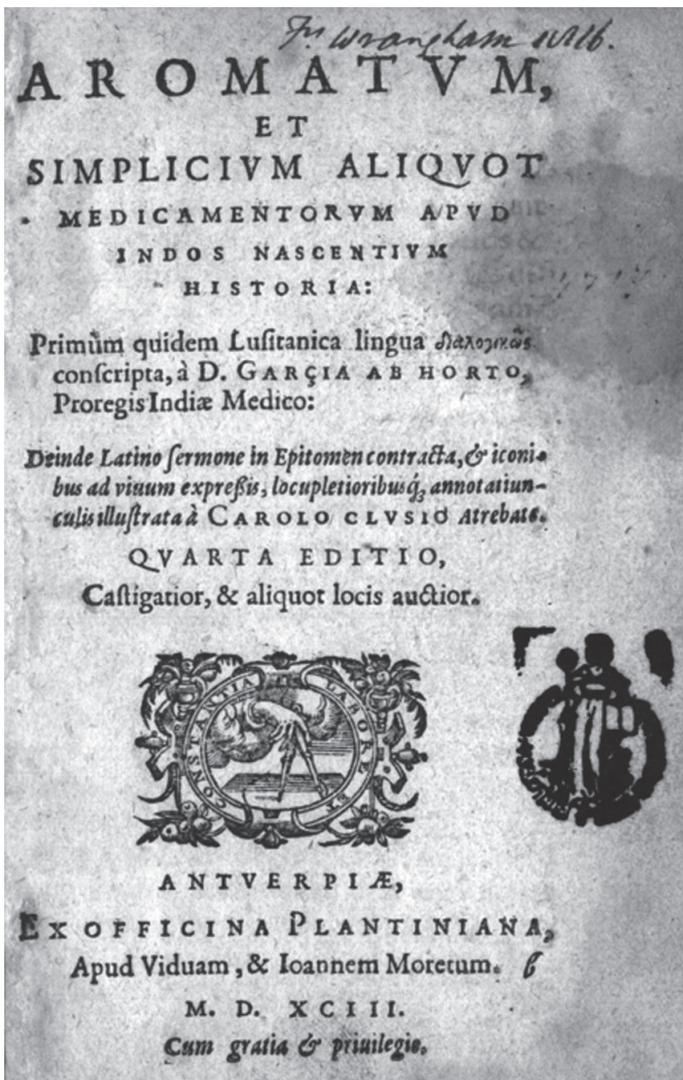


Figure 5: Frontispiece of the book *Aromatum, et simplicium aliquot medicamentorum apud Indos nascentium historia...*, by Garcia de Orta, 1593 (Biblioteca Digital Alma Mater, Universidade de Coimbra)

on several expeditions, especially the major one led by Martim Afonso de Souza in 1530, and helped with the growth of trading posts. In 1553 the Portuguese Crown appointed a physician to Brazil, Jorge Fernandes, who was accompanied by a master surgeon. There they were to find people relying on indigenous medicine (Johnson, Silva, 1992).

## The Inquisition

The introduction of the Inquisition to Portugal squelched the flourishing of Portuguese medicine in the sixteenth century. In the Spanish *Indexes* from this period, a third of censored scientific books were on medicine, for a total of 250, and the same was true in Portugal. Jewish physicians were hardest hit. For one thing, they were doctors and thus members of a profession that was under strict surveillance. For another, they were Jewish, or new Christians, and therefore likewise the target of rejection or at least of serious mistrust for religious reasons. Driven by the Inquisition, the persecution of new Christians or of those with whom they had contact spawned an atmosphere of distrust that could only hamper the discussion of new ideas and knowledge (Rodrigues, 2005). In 1564, Cardinal Dom Henrique, Inquisitor-General (*Inquisidor-Mor*) and then at the front of the government of Dom Sebastião, banned students of Jewish origin from the University of Coimbra's São Pedro College (Colégio de São Pedro). The early seventeenth century was a time of intense persecution of Jews by the Inquisition in Lisbon, Évora, Coimbra – where it reached extreme methods, including *autos de fé* conducted in front of the Santa Cruz monastery, as well as the persecution of physicians, like João Bravo – and even stretching its tentacles to Goa, where Garcia da Orta was the victim of an *auto de fé post-mortem*. It is thus no surprise that in 1534, the same year that Garcia da Orta left the country, another great Portuguese physician of Jewish origin fled as well: Amato Lusitano (1511-1568), the famous author of *Index dioscoridis*, published in Antwerp (Amato, 1558) (Figure 6), and also of *Curationium centuriae septem* (Amato, 1620, 1980) or *Centúrias*, which was released as a complete set of volumes for the first time in Lyon in 1580 (Amato, 1980; Orta, 1563, 1593). Lusitano took up residence first in Antwerp, Belgium; then in Ferrara, Ancona, and Pesaro, Italy; and next in Dubrovnik, in present-day Croatia, forced into a peripatetic life that ended in Thessaloniki, in what is now Greece. In Ferrara in 1547, based on dissections performed in collaboration with the Italian João Baptista Canano, Amato recognized 'ostioles' or 'operculs', that is, valves of the azygos vein, but in his anatomy book Guevara stated that he "had not found the mentioned valves in the conditions described by Amato" (Guevara was wrong) (Rodrigues, 2005, p.100). Amato's name can be found on lists of banned books in 1581. A total of 32 copies of his *Centúrias* appear among the books at Portuguese inquisitional trials (Rodrigues, 2005). The fate of a life in exile was likewise to befall Zacuto Lusitano nearly one century later, in 1625; he left Lisbon first for Spain and then for Amsterdam, Holland (Rodrigues, 2005; Pinto, 2002; Catz, 1994; Tavares, 1982).

## Medical teaching in Portuguese hospitals

Beyond the walls of universities, other institutions contributed to medical teaching and studies in Portugal. Medical teaching actually took place in hospitals too, since, as cited

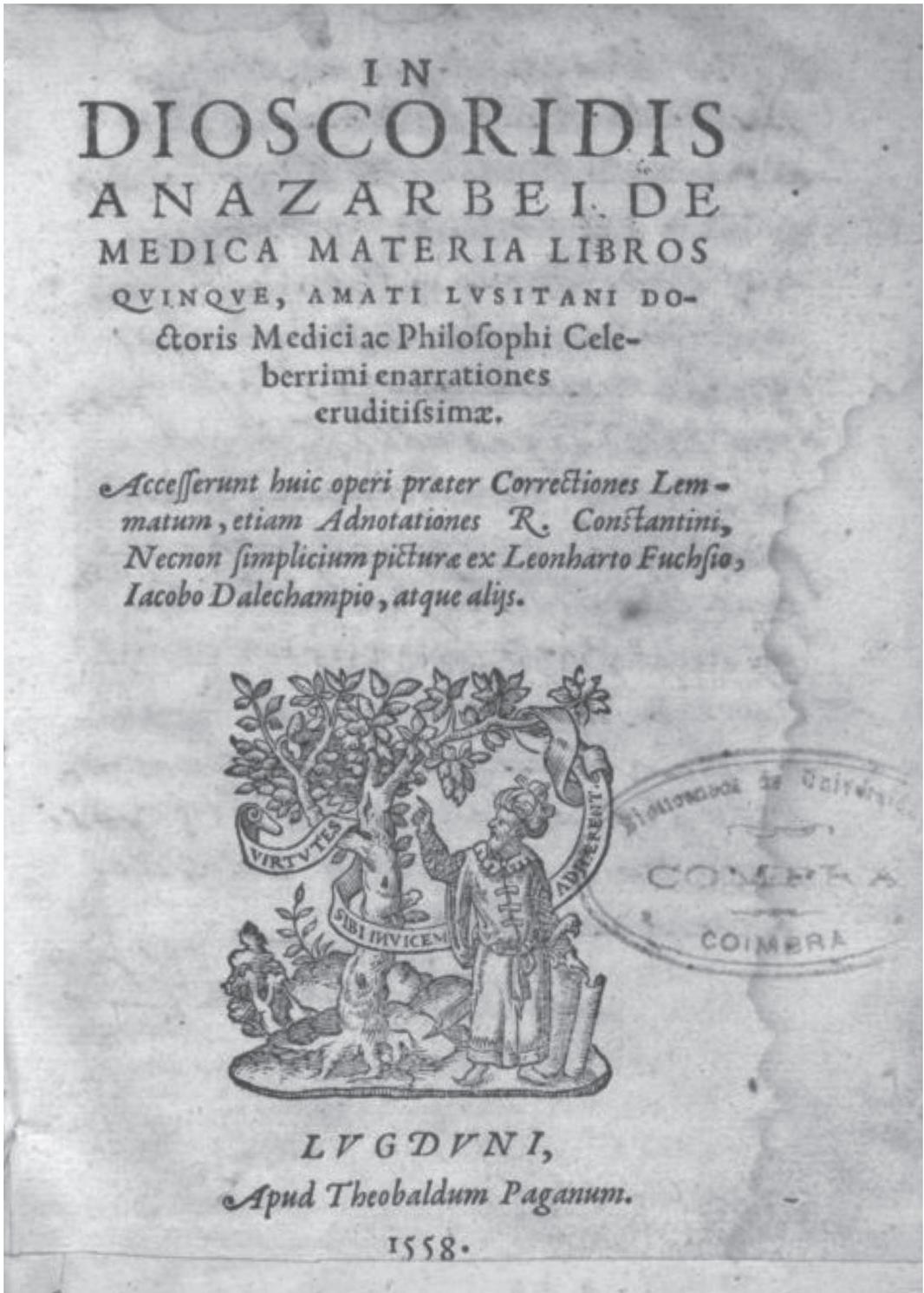


Figure 6: Frontispiece of the book *In dioscoridis anazarbei de medica materia libros quinque...*, by Amato Lusitano, 1558 (Biblioteca Digital Alma Mater, Universidade de Coimbra)

earlier, university instructors were transferred to hospital institutions. At least brief mention should be made of Lisbon's Hospital de Todos os Santos, cited earlier, as well as the singular case of the Portuguese charity institutions known as *misericórdias*, which sprang up all over the country and in overseas territories.<sup>2</sup>

The Hospital de Todos os Santos, founded by Dom João II in 1492 (its first statutes date to 1504), was a grand establishment, deemed one of the best in Europe by Spanish physician Ruy Díaz d'Isla (1493-1542?), who worked at the hospital and was known for his research on syphilis (Isla, 1539). In addition to its general infirmaries, the hospital had a church, a unit for the demented, and surgery units, where dissections were performed in hopes of clearing up doubts about a variety of diseases; it had special infirmaries as well (one for women and another for syphilis sufferers). It had an ambulatory service, a shelter for foundlings, and a pensioners unit too. Since this hospital was in Lisbon and the number of anatomical dissections performed in Coimbra was almost zero, some professors, like Guevara, moved to Lisbon, where they did valuable work in their area (Bellini, 2007; Pina, 1939). The hospital had the services of a physicist and a surgeon, and medical students visited patients there – in other words, it was the main surgery school in the kingdom. Founded in Coimbra before 1508 (the date of its statutes) in a building located in what is now called Praça Velha, the Hospital da Conceição (also known as the Hospital Novo and as the Hospital Real de dom Manuel) can be considered a small facility compared to the Hospital de Todos os Santos, although the former did have a physician and a surgeon and was visited by university students. Medical teaching had thus incorporated mandatory practice at hospitals as a component by this time.

The supply of doctors, however, fell far short of the needs of the kingdom's hospital network. Calculations are that at the close of the fifteenth century there were some 411 hospitals in Portugal, averaging roughly one for every four thousand inhabitants. Lisbon then had 61, plus five asylums (*albergarias*), eight *mercearias*<sup>3</sup>, and five leprosariums (*gafarias*). Many trade guilds, like that of tailors, had their own private hospitals. People who had no access to physicists or surgeons relied on apothecaries, barbers, bleeders, and healers (Lemos, 1991; Mesquita, 1983).

It was after the 1492 hospital reform – which did away with small, medieval hospitals – that Dona Leonor, wife of Dom Manuel I, saw to the establishment in 1498 of the *misericórdia* charity institutions that provided free public assistance services, making Portugal the world's pioneer in this field. After the Brotherhood of Nossa Senhora da Misericórdia (Our Lady of Mercy) was founded in Lisbon, an assistance and treatment network for the ill was put in place and then spread to various corners of the country, later taking root in the lands that Portuguese navigators came to occupy. During this period, one of the main concerns about setting up new colonies was medical care. One by one, small hospitals emerged to provide support in the coastal areas steadily being settled by Portugal, with services provided to settlers and natives alike (Ferreira, 1990; Leitão, 1986). By 1524, there were 61 Brotherhoods of Our Lady of Mercy in Portugal. The history of the *misericórdias* is vast and encompasses countless institutions; one outstanding example is the Hospital Real de Goa, in India, which was then one of the largest hospitals in the world. Among religious orders, the Society of Jesus played a leading role in hospital assistance (Paiva, 2003; 2004; 2005; Lopes, 2008; Meneses, 1971, p.19-57; 733-757; Pina, 1935).

## Final considerations

In summary, the foundation was laid for the development of medical teaching in Portugal thanks chiefly to successive university reforms – vitally enhanced by the excellence of professors, sourced mainly from Spain – and to the establishment of the Hospital de Todos os Santos. On the other hand, the expulsion of the Jews in 1496 and the introduction of the Inquisition in 1536 were the two factors that had greatest impact on the late fifteenth-century decline of medical teaching (Brandão, 1969, p.931-961). This downward trend intensified in 1555, when Dom João III, suspecting heresy and under pressure from the queen and infantes, removed leadership of the College of Arts (Colégio das Artes) from its instructors who, being from Bordeaux, had for some years implemented teaching practices that were marked by humanism. The next step would be to hand the school over to the Jesuits (Brandão, 1933), who, in addition to occupying the College of Arts, had created the College of Jesus in 1542. Although the Jesuits have been accused of having a hand in the stagnation of medical teaching in Portugal (Spence, 1984; Findlen, 1990), we see various reasons for calling this notion into question. First of all, the Society of Jesus, created in Paris in 1534 by Saint Ignatius of Loyola, was a robust order that expanded quickly and vigorously in Europe and around the world. Second, countless members of the brotherhood were engaged in intense medical research in South America at that time. Third, the Society stretched its missionary work to such far corners as China, where no other religious order had previously obtained permission to enter; moreover, the Chinese granted this authorization in part because of the Jesuits' reputation as master alchemists. Lastly, it was major naturalists from the Society of Jesus, like Athanasius Kircher, who developed such innovative techniques as microscopy and the camera obscura in the seventeenth century. Indeed, it is hard to justify how such a young, active, and educated intellectual group would stand as an obstacle to teaching. The Jesuits actually dominated teaching in Portugal as of the later sixteenth century and promoted Aristotelian philosophy through their methods and teachings. This trend became entrenched with the publication of "Os conimbricenses" (Conimbricenses, 1592), a set of commentaries on Aristotle, released in Coimbra between the turn of the sixteenth and seventeenth centuries. To help them achieve this, the Jesuits enjoyed the protection and financing of the king. In the first years of their hegemony, with their well-equipped schools and well-qualified teachers, the Jesuits fostered substantial development of university studies, and for these advances they deserve credit. However, their teaching was focused almost solely on the arts. During a time of great change and innovation, this approach had the adverse effect of leaving Portuguese universities impervious to the new physical and mathematical theses then revolutionizing the world of science in Europe (Fonseca, 1997; Barreto, 1983; 1986).

If the surging predominance of the Jesuits and of their professed neo-scholastic Aristotelianism contributed to the lethargy of the Portuguese university, subsequent political events certainly aggravated the situation. The blow to the Portuguese monarchy following the disaster at Alcácer Quibir in northern Africa and the onset of Spanish domination exacerbated the state of frailty in which the sciences found themselves in Portugal at the close of the sixteenth century. As a province of Spain, Portugal no longer merited any special investment by Madrid. As a result, Portugal's academic world fell even farther behind Europe's

best centers in terms of quality. In 1592, Francisco Tomás, doctor at the Hospital de Todos os Santos and surgeon-general, stated in a letter to a Madrid bishop that “the science of medicine has been totally lost in Portugal, and is almost irrecoverable, for neither are there teachers at the university nor can there be good disciples” (Compêndio..., 1772, p.311). In Europe, medicine continued down the road to progress while Portugal would only see better days with the 1772 reform of the University of Coimbra under order of the Marquis of Pombal. This reform brought changes to the Faculty of Medicine, including construction on the premises of the College of Jesus both of an anatomical theater and of a hospital, which took over the services provided by the Hospital da Conceição. A pharmaceutical dispensary was also built. Preparatory studies in mathematics and natural philosophy were modernized, with the introduction of two new schools.

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#### NOTES

<sup>1</sup> King Dom Sebastião went missing in this battle, which cost the Portuguese kingdom its independence and led to the unification of the two crowns.

<sup>2</sup> On the role of the *misericórdias* overseas, see Abreu, 2001.

<sup>3</sup> Derived from the Portuguese term *mercê* (mercy), *mercearia* is no longer used in the sense employed in the text. According to the Houaiss and Villar (2001) dictionary, it refers to a place that gives shelter to the homeless or to those in need of special care. In exchange for shelter, the residents had to fulfill certain spiritual obligations, such as praying for someone’s health, commending a soul to God, and so on.

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