

LATIN AS A LANGUAGE OF SCIENTIFIC PROGRESS: MEDICINE OF THE 16th-17th CENTURIES

O.M. Bieliaieva, Yu.V. Lysanets, M.P. Melaschenko

*Department of Foreign Languages with Latin Language and Medical Terminology,
Ukrainian Medical Stomatological Academy, Poltava, Ukraine.*

No sector of organized social activity can exist and develop without an appropriate system of objective knowledge, vital for this area – the science which exists *de facto* and is embodied in the language. Studies of modern communication processes in the field of science, and particularly in medicine, are impossible without the awareness of the unique role played by Latin in the accumulation, preservation and transfer of expertise, being the international language and actually the language of scientific progress.

The unique status of Latin has been substantiated and explained by Y. Tronskyi who stated that mastering the Latin language, both active and passive, has survived from ancient times as a continuous tradition. While many ancient languages are forgotten, and texts written in these languages have become the collections of obscure writings that modern science “decrypts” with more or less success and restores their previous meaning and sound, the Latin language developed differently. It has not only marked the beginning of the formation of the Romance, or “New Latin” languages, but after the termination of its existence as a means of communication in general, it continued to exist as a language of science, literature and official acts of the Catholic Church. In these limited functions, it went far beyond the territory occupied by its speakers in ancient times [7]. Therefore, it is logical that Latin became the fundamental principle of the scientific style, as evidenced by the countless works written in classical Latin, and those belonging to the “new Latin literature” and which served as the basis of modern scientific oral and written discourse.

Despite the fact that the researchers [1; 4; 6; 8; 12] attribute the emergence of the scientific style as a specific area of professional verbal creativity, designed to capture and reflect scientific knowledge to the 15th-18th centuries, the proposed study presents the most significant, especially in terms of the history of medicine, professional Latin-language works that date from the 16th-17th centuries.

The choice of the 16th century as a starting point for this research is not only due to the fact that during this century a qualitative change of book and manuscript writing has occurred, which contributed to unprecedented development and dissemination of scientific knowledge in general and of biomedical area in particular, but also because of the fundamental changes

in attitude towards the representatives of medical professions, since “in a wide range of diverse interests and expertise of prominent figures of the Renaissance, medicine occupied a place of honour” [5, p. 114]. Besides, the 16th century embraces the life and work of such prominent figures in the history of medicine, as Andreas Vesalius, Gabriele Fallopius, Bartolomeo Eustachi, and Girolamo Fracastoro. The 17th century, which is called the century of “scientific revolution”, left not less honourable names in the history of medicine – William Harvey, Marcello Malpighi, Thomas Willis, Jean Pecquet, Francis Glisson, Thomas Sydenham. In the context of our study, these prominent figures are also interesting due to the fact that their works were written in Latin and, as well as the work of predecessors, constitute the prototypes of modern scientific style, in particular of such genres as thesis, monograph, scientific article, scientific report, polemic presentation, textbook.

The 16th century gave birth to the first atlas of topographic anatomy “*Tabulae externarum et internarum humani corporis partium*” (“Tables of internal and external parts of the human body”, 1572) and “*De ossibus foetus abortivi et infantis dimidium anni nati*” (“On the bones of a miscarriage and a six-months-aged infant”, 1569) by a Dutchman W. Koiter; treatises by a Spaniard L. Mercado: “*De essentiā, causis, signis et curatiōne febris malignae*” (“On the nature, causes, symptoms and treatment of malignant fever”, 1574), “*De mulierum affectionibus libri quatuor*” (“Four books on women's diseases”, 1579), “*De morborum internorum libri quatuor*” (“Four books on internal medicine”, 1594); works by William Harvey's predecessors – Andrea Cesalpino [9, p. 62] – “*Peripateticorum quaestionum libri V*” (“Five books on peripatetics study”, 1571) and “*De re anatomica*” (“On the anatomical issue”) by Realdo Colombo, who provided the description of pulmonary circulation [2, p. 97].

Latin was the language of the “Titan of Anatomy” Andreas Vesalius (1514-1564) – a prominent reformer who freed medicine from the 1300 years long authority of Claudius Galen. Andreas Vesalius systematized, expanded and refined the centuries-old researches of the predecessors, corrected and, what is extremely important, explained the nature of many errors, and provided brilliant descriptions of major systems of the human body in the revolutionary work “*De humani corporis fabrica libri septem*” (“Seven books on the structure of the human body”, 1543) [2; 3; 5; 10]. It can be said without exaggeration that “*De humani corporis fabrica libri septem*” contributed to the fact that anatomy became a separate academic subject.

As is known, at that time the scientific community negatively perceived the writings by Vesalius, who stated that Galen had described the structure of the monkey's body instead of human. This statement led to the fact that Vesalius's teacher – the prominent French

anatomist Jacques Dubois (Jacob Sylvius), who was Galen's adherent, called his brilliant disciple, innovator of anatomy, "Vesanus" – from Latin "crazy" or "mad". In 1551, a pamphlet by Sylvius was published: "*Vesani cuiusdam calumniae in Hippocrätis et Galeni rem anatomıcam depulsio*", more accurate original name with preserved contemporary spelling is "*Vaesani cuiusdam calumniarum in Hippocrätis Galenique rem anatomicam depulsio per Jacobum Sylviu*m" ("Protection of anatomical works by Hippocrates and Galen from the Mad one's defamation") [10]. The uncompromising struggle of science retrogrades against Vesalius led to the fact that the ideas of this great reformer of anatomy were perceived by the European scientific community only in the 17th century.

Vesalius's student – Gabriele Fallopius (circa 1523-1562) – also wrote his research in Latin, and, according to P. Karuzin, "surpassed his great teacher by accuracy of his descriptions" [3, p. 255]. The research results were presented in the work "*Observationes anatomıcae*" ("Anatomical observations", 1561).

Equally important contribution to the world medicine and anatomy in particular was made by Bartolomeo Eustachius (1510-1574). Unfortunately, only 38 tables survived from his work "*Romanae archetypae tabulae anatomıcae*" ("Anatomical tables of the Romanesque archetype"); they were found and published by another Italian doctor – J. Lancisi, under the title "*Tabulae anatomıcae B. Eustachii, quas e tenebris tandem vindicatas praefatione notisque illustravit ac publice iuris fecit J. M. Lancisi*" ("Anatomical tables of B. Eustachius that were finally freed from darkness, accompanied with a preface and notes and presented to the public by J.M. Lancisi") [3].

The treatise on syphilis "*Syphilis, sive morbus Gallicus*" was also written in Latin. The authentic name of this treatise is "*Syphilidis sive de morbo Gallico libri tres*" ("Syphilis, or the French disease" – "Three books on syphilis or Gallic disease", 1550) by the Italian doctor, poet, astronomer Girolamo (Jerome) Fracastoro, which stood at the origins of scientific epidemiology and first expressed the revolutionary idea of that time about the role of microorganisms in disease development. His work – "*De contagiōne et contagiōsis morbis et eorū curatiōne libri tres*" ("Three books on the contagium, contagious diseases and their treatment", 1546) was also in Latin. In this writing, the author accurately differentiated between such diseases as *pestis* (plague) and *typhus* (typhus), which had been previously united in one form - *febris pestıca* (plague fever). Moreover, the difference between *lepra graecorū* (elephantiasis) and *lepra arabıcum* (leprosy) was found [5, p. 133]. Furthermore, the idea of infectiousness of tuberculosis was expressed for the first time [2, p. 103].

Latin was also the language of writings by one of the most famous Italian anatomists and surgeons of the 16th century, Professor of Anatomy University of Bologna, Julius Caesar

Aranzi (circa 1529 / 1530-1589) – *“De humāno foetu liber”* (“Book about the human embryo”, 1564), *“De tumoribus”* (“On the tumors”, 1571), *“Observationes anatomicae”* (“Anatomical observations”, 1579), *“In Hippocrātes librum de vulneribus capitis commentarius brevis”* (“A brief commentary on the book by Hippocrates on wounds of the head”, 1580), *“Anatomicarum observationes liber”* (“Book of anatomical observations”, 1587) [3].

In the 17th century, Latin as a language of science was used by European scientists not less than in the previous century. In particular, the “revolutionary” work of William Harvey (1578-1657) was written in Latin – *“Exercitatio anatomica de motu cordis et sanguinis in animalibus”* (“Anatomical study on the movement of the heart and blood in animals”, 1628). This study, first published in Frankfurt, summarized the long-term observations of the scientist. It is commonly known that before Harvey, a misconception from Galen – that blood enters the heart from one half to another through small openings – was widespread and generally accepted in medical community. Instead, Harvey proved that the heart is a pump that circulates blood.

According to the scientific sources [9, p. 66], Harvey’s discoveries had many enemies – even the leading European universities refused to recognize his findings or treated them with undisguised scepticism. According to C. Crignon, whose work is devoted to understanding of the essence of Harvey’s discoveries by his contemporaries – both physicians and philosophers – Bernard Fontenelle (1657-1757) among them, in particular, asserts that “the strong presence of Galen’s humoral model and temperaments in medical discourse until the end of the 18th century was a sign of failure of medical knowledge to break the link to old models” [11, p. 7].

The degree of rejection of Harvey’s theory was eloquently proclaimed by his critics’ thesis: *“Mallem cum Galeno errāre, quam cum Harveo circulāre”* (“We prefer better to be wrong with Galen than to recognize blood circulation with Harvey”) [2, p. 98]. One of Harvey’s responses to the attacks from his Parisian opponent – Jean-Riolan, Jr. – was entitled *“Exercitationes duae anatomicae de circulatiōne sanguinis ad J. Riolanum, filium”* (“To Jean-Riolan, Jr.: Two anatomical studies on the blood flow”, 1649).

At the same time, a group of progressive scientists and thinkers of that time supported Harvey’s ideas. As C. Crignon states, Rene Descartes was one of the first to recognize the significance of his discoveries. The prominent English statesman and philosopher Thomas Hobbes (1588-1679) was also among the supporters of Harvey. In his letter *“De Corpore”* (“On the body”, 1665), written in Latin, Thomas Hobbes put the discovery of circulatory system in the same row with the discoveries in astronomy made by Copernicus and Galileo.

Another prominent figure of that time – Henry Moore (1614-1687) dedicated a poem to this breakthrough and also placed Harvey next to Copernicus and Galileo [11, p. 8].

Noteworthy is the fact that Fontenelle in “New dialogues of the dead” (“Nouveaux Dialogues des Morts”, 1683), which describes an imaginary meeting between Harvey, the representative of modern medicine, and Erasistratus, the representative of the ancient (Alexandria) medical school, put into Harvey’s mouth the idea that he made so many experiments that no one even guesses. C. Crignon’s idea that the main emphasis in this text is not on the novelty of discovery, but on its experimental nature, that is Harvey was able to provide conclusive evidence for his theory of blood circulation [11, p. 11], serves as a proof that for Harvey’s contemporaries one’s own empirical research was much more valuable than its theoretical justification.

According to P. Karuzin [3], there is no field of anatomy, which would not have been influenced by the important discoveries of Marcello Malpighi (1628-1694) – a prominent Italian histologist and biologist, the founder of microscopic anatomy, who first succeeded to use the lenses with magnification by 180-times. Malpighi provided a description of his scientific achievements in the following works: *“De viscērum structurā exercitatio anatomicā”* (“Anatomical studies of the structure of entrails”), consisting of five chapters: *“De hepāte”* (“On the liver”), *“De cerebri cortice”* (“The cerebral cortex”), *“De renibus”* (“On the kidneys”), *“De liēne”* (“On the spleen”), *“De polypo cordis”* (“On the heart polyp”); *“De pulmonibus observatiōnes anatomicae”* (“Anatomical observation of the lungs”, 1661), *“Dissertatio epistolica de bombyce”* (“Studies on the silkworm”, 1669), *“Anatomia plantarum”* (“Anatomy of plants”, 1675-1679), *“De formatiōne pilli in ovo”* (“On the formations of hair-covering in the egg”, 1673), *“De ovo incubāto”* (“On the artificially derived eggs”, 1675). It was Malpighi who accomplished what Harvey had not managed: in 1661, while studying the lungs of a frog under the microscope, he discovered the finest blood vessels, called capillaries (*vasa capillaria*), connecting veins and arteries.

Malpighi’s contemporary – Thomas Willis (1621-1675) – the prominent English physician, anatomist and physiologist, who also wrote in Latin. He went down in the world history of medicine primarily as the author of fundamental work on the anatomical structure of the central nervous system and brain activity – *“Cerebri anatome cui accessit nervōrum descriptio et usus”* (“Anatomy of the brain with the description and the function of nerves”, 1664). Willis’s works such as *“Pathologiae cerebri et nervōsi genēris specimen”* (“Visual proof of types of abnormalities of the brain and nervous system”, 1667) and *“De anīma brutōrum quae homīnis vitālis ac sensitiva est: exercitatiōnes duae”* (“Two experiments on mentally ill people”, 1672) made a valuable contribution to neuroscience and psychiatry. The

range of Willis's scientific interest also included other issues, described in *“Dissertationes duae medicae de veneno pestilenti”* (“Two medical researches on plague poison”, 1671) and *“Diatribae duae medico-philosophicae de fermentatione et febribus”* (“Medical and philosophical research on fermentation and fever in two volumes”, 1659).

Thomas Willis is also known as the author of *“Pharmaceutice rationālis, sive diatriba de medicamentorum operationibus in humano corpore”* (“The art of reasonable treatment, or two volumes on the effects of medications on the human body”, 1674-1675). Considering the fact that numerous clinical examples from the author's practice are followed by treatment regimens, excerpts from case histories, and post-mortem findings, Willis can be considered as one of the founders of such modern pharmaceutical industry as pharmacotherapy [2; 3; 5].

“Dissertatio anatomica de circulatione sanguinis et chyli motu” (“Anatomical studies of blood flow and movement of milky juice”, 1651) by the French anatomist Jean Pecquet (1622-1674) was also written in Latin. Pecquet's numerous vivisections proved the fallacy of Galen's thought as to the fact that the liver is the organ of blood formation.

The first medical case history, as well as complete clinical and anatomicopathological description of rickets, was provided by the English physician Francis Glisson (1597-1677) in his treatise *“De rachitide, sive morbo puerili, qui vulgo the Rickets dicitur”* (“On rickets, a childhood disease which is everywhere called the English disease”, 1650). Glisson also conducted a detailed study of the liver, stomach and intestine in *“Anatomia hepatis”* (1659) and *“Tractatus de ventriculo et intestinis”* (1677). He also wrote the physicophilosophical treatise *“De natura substantiae energetica seu de vita naturae, ejusque tribus facultatibus naturalibus”* (“On the nature of energy substances, or on the nature with its three natural essences”, 1672).

Up to this time there is no textbook on pathology and therapy, which would not have mentioned the name of Thomas Sydenham (1624-1689) – one of the founders of clinical medicine [9, p. 69], whom the contemporaries called “the English Hippocrates”, “Shakespeare of medicine” [9; 13], and Hermann Boerhaave later called “communis Europae praeceptor” (“the teacher across the entire Europe”). Among Sydenham's numerous works, one should mention the following: *“Observationes medicae”* (“Medical surveillance”, 1676), *“De variolis et morbo hysterico et hypochondriaco”* (“On smallpox, hysteria and hypochondria”, 1682), *“Tractatus de podagra et hydrōpe”* (“On gout and dropsy”, 1663) which were written in Latin – the scientific language of that time.

Numerous epidemics, including plague and smallpox, which raged in London from 1661 to 1675, and clinical follow-up of their course, allowed Sydenham to differentiate between such diseases as *variola* (smallpox), *rubeola* (rubella), *scarlatina* (scarlet fever). The

work “*Methodus curandi febres, propriis observationibus superstructa*” (“Method of treating fever, based on one’s own observations”, 1666) allows us to name Sydenham the most prominent epidemiologist of the 17th century [13].

Thus, the analyzed factual material showed that Latin for centuries acted as a full-fledged language with a clearly focused international communicative status, particularly in the biomedical sector. Serving as one of basic tools in scientific knowledge, Latin not only performed the epistemological function which was the priority for the development of medicine, but also served as a means of accumulation, reception, transmission and popularization of achievements in various areas of medical science.

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SUMMARY

LATIN AS A LANGUAGE OF SCIENTIFIC PROGRESS: MEDICINE OF THE 16th-17th CENTURIES

O.M. Bieliaieva, Yu.V. Lysanets, M.P. Melaschenko

Department of Foreign Languages with Latin Language and Medical Terminology, Ukrainian Medical Stomatological Academy, Poltava, Ukraine

The research paper is of interdisciplinary nature, written at the crossroads of the history of medicine, functional stylistics and terminology science. The choice of the 16th century as a starting point of the study is due to the fact that quality changes in book and manuscript writing that took place during this period led to unprecedented development and dissemination of scientific knowledge, including biomedical. The 16th century embraces the life and work of such prominent figures in the history of medicine, as Andreas Vesalius, Gabriele Fallopius, Bartolomeo Eustachius, and Girolamo Fracastoro. The 17th century, which is called the century of “scientific revolution”, left not less honourable names in the history of medicine – William Harvey, Marcello Malpighi, Thomas Willis, Jean Pecquet, Francis Glisson, Thomas Sydenham. In the context of this study, these prominent figures are interesting due to the fact that their works were written in Latin and constitute the prototypes of modern scientific style, in particular of such genres as thesis, monograph, scientific article, scientific report, polemic presentation, textbook. On the basis of extensive factual material, it has been demonstrated that during 16th-17th centuries, Latin acted as a fully developed language with a clearly oriented international status. As one of basic tools in scientific knowledge, Latin not only performed the epistemological function which was the priority for the development of medicine, but also served as a means of accumulation, reception, transmission and popularization of achievements in various areas of medical science.

Keywords: Latin in medicine, communicative status, epistemological function, cumulative function.

PE3IOME

ЛАТИНСКИЙ ЯЗЫК КАК ЯЗЫК НАУЧНОГО ПРОГРЕССА: МЕДИЦИНА XVI–XVII ВВ.

Беляева Е.Н., Лисанец Ю.В., Мелашенко М.П.

Кафедра иностранных языков с латинским языком и медицинской терминологией, Украинская медицинская стоматологическая академия, г. Полтава, Украина.

Работа имеет междисциплинарный характер, написана на стыке истории медицины, функциональной стилистики и терминоведения. Выбор XVI века в качестве отправной точки исследования обусловлен тем, что происшедшие в этом веке качественные изменения книжного и рукописного письма способствовали невиданному ранее развитию и расширению научных знаний, особенно медико-биологических. XVI век охватывает жизнь и творчество таких выдающихся деятелей в истории медицины, как Андреас Везалий, Габриеле Фаллопий, Бартоломео Эустахио и Джироламо Фракасторо. XVII век, который называют веком «научной революции», оставил не менее значительные имена в истории медицины – Уильям Гарвей, Марчелло Мальпиги, Томас Уиллис, Жан Пике, Фрэнсис Глиссон, Томас Сиденгам. В контексте данного исследования, эти выдающиеся деятели представляют интерес, так как их произведения написаны на латыни и могут рассматриваться как прототипы современного научного стиля, в частности таких жанров как тезисы, монография, научная статья, научный доклад, полемическое произведение, учебник. На основе анализа значительного фактического материала авторами продемонстрировано, что на протяжении XVI–XVII вв. латинский язык выступал полноценным языком с четко ориентированным международным коммуникативным статусом. Будучи одним из основных инструментов научного познания, латинский язык не только выполнял гносеологическую функцию, но и служил средством кумуляции, рецепции, трансляции и популяризации достижений различных отраслей медицины.

Ключевые слова: латинский язык в медицине, коммуникативный статус, гносеологическая функция, кумулятивная функция.