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Articoli/*Articles*

THE ORIGIN OF THE *CORPUS HIPPOCRATICUM* FROM ANCESTORS TO *CODICES ANTIQUI*: THE *CODEX VATICANUS GRAECUS 276*

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SUMMARY

THE ORIGIN OF CORPUS HIPPOCRATICUM. THE *CODEX VAT. GR.* 276

The Corpus Hippocraticum (C.H.) *was originated by the collection of writings of late Greek medicine, mainly of Hippocratic School. The original works have been transmitted through rolls of papyrus or parchments as single treatise or small group of treatises until the IX-X century A.D., when in Byzantium were active* scriptoria *devoted to collect classical works of both religious and profane argument. Under the auspices of Emperor Constantine Porphyrogenete (tenth century), the tendency to encyclopedism of that period induces large collections of thematic works, i.e. about classical philosophy, astronomy, mathematics or medicine, as may be argued by the content of the Encyclopedia* Σουίδας Λεξικόν *(X century).*

Vetusti codices, *such as* Vindobonensis med. IV *(Θ),* Parisinus *2253 (A),* Laureantianus *74.7 (B),* Marcianus Venetus gr. *269 (M) and* Vaticanus gr. *276 (V) represent witnessing of the formation of the* C.H.*: codicological analysis suggests that these manuscripts have been handwrited in* scriptoria *of Byzantium's area, then carried in Western Europe. Since the first testimony of* V *is at the royal Court in Palermo, the Norman Kings played a relevant role in traying codices from Byzantium to Sicily, as well as Cardinal Bessarion to Rome and Venice.*

Parole chiave/*Key words:* Corpus Hippocraticum - codicology - scriptoria - Codex Vaticanus gr. 276

The analysis of the sequence of works collected in the codices M *and* V *agrees with the hypothesis of late groups of treatises assembled for argument (e.g. general rules, surgery, gynecology, etc.) and transmitted from antiquity to Middle Ages directly in Greek majuscule or into languages of Middle East, such as Armenian, Georgian, Syriac and then Arabic. Common mistakes of transliteration to minuscule are useful markers to follow the steps of collection of some sixty books, which has been called* C.H.

INTRODUCTION

By the term Corpus Hippocraticum (*C.H.*), or Hippocratic Collection, we mean a collection of around 60 medical treatises, written in ionic dialect and attributed by medieval tradition to the medical school of Cos. Unusual for the heterogeneity of the subjects they present, the extent of formal completeness, and their style, these treatises are also distinguished because of their doctrinal and methodological views and can be chronologically placed, with some exceptions, at the end of the fifth and beginning of the fourth centuries B.C., a period which spans the activity of Hippocrates and his immediate disciples: it is, however, difficult to establish how, when, and from which sources *C.H.* originated, as we know it today. Ilberg maintains that all medieval collections, with some more or less important omissions, go back to ancient collections, e.g. *Collectio Alexandrina*[1], corresponding to the index of the Codex *Vaticanus graecus* 276 (*V* 276): the *Collectio* would be split up at the end of ancient times or in the early centuries of the Middle Ages and would be present only in part in the ensuing codices we know today. This is confirmed by the fact that the index of these codices (as in *V* 276) is more extensive that the actual content of the Codex itself (62 titles in the index vs. 35 transcribed treatises, of which two do not appear in the index).

This simple and suggestive theory has been rejected by almost all scholars because of the lack of evidence that the *Corpus* derived from the activity of Alexandrian grammarians. In fact, the

formation of a *Corpus* was materially possible only with the introduction of the codex, in substitution of the ancient rolls of papyrus or parchments. Hippocratic editions already during the Hadrian age of Artemidoros Capiton and Dioscorides (whose edition was cited by Galen) demonstrated the technical possibility of combining knowledge, even if from different sources, including information originating from treatises attributed to Hippocrates, either generically or based on testimony given by lexicographers, such as Herotianos, and commentaries, such as those by Galen[2].

It was not until the tenth century that a compendium of Hippocratic texts appeared under the title "*Hippocrates*" in the Σουίδας Λεξικόν: the *Corpus* is defined as an ἑξηκοντάβιβλος i.e. a collection of 60 books[3]. A list of Hippocratic works, corresponding numerically to the sixty books cited in Σουίδας Λεξικόν, is reported in some manuscripts, such as in *Marcianus Venetus graecus* 269 (*M* 269) and in the index of *Vaticanus graecus* 276 (fol. 1r) as well as in some more recent ones (*recentiores*) such as *Parisinus graecus* 2142 and *Parisinus graecus* 2146 (Index). The titles listed in the index of *V* 276 are the most extensive: in fact, 62 works (fol. 1r) are named. The list, nevertheless, is based on distinction by individual work and not by book (i.e. in *M* 269 are reported treatises about *Diseases* I to IV or *Regimen* I to III, whereas *V* 276-Index has a single book about *Diseases* or *Regimen*).

Thus, the two great medieval *corpora* are *M* 269, which can be attributed to the middle of the tenth century, and *V* 276, which dates back to the second half of the 12th century. We are aware of three other ancient manuscripts, *Laurentianus* 74, 7 (the most ancient, which dates back to the first half or beginning of the tenth century A.D., commonly referred to by *B*), *Vindobonensis med. gr. IV* (second half of the 11th century, referred to by Θ), and *Parisinus gr. 2253* (end of 11th century to beginning of 12th century, referred to by letter *A*). Only *M*, *V* and partially *A* (11 treatises), on the basis of content, can be defined as *Corpus*. Since their content is not completely superimposable,

the problem presents itself as to their origin, undoubtedly not from a single more extensive work, but from partial collections. In fact, the order is not the same, and in *V* 276 a treatise appears copied two times (*De superfoetatione*: fol. 119r e fol. 194v), an error which would certainly not have been repeated if copied from one Codex to an other. It is thus very likely that, at the origin of the great Codices, there are partial collections of medical writings, collections which definitely made their passage through the Alexandrian Library, but which were transcribed into a single *Corpus* only toward the 10th century, when at the height of the Byzantine Renaissance, a tendency toward creating encyclopedic works was evidenced, promoted by the Emperor Constantine Porphyrogenete (905-959 A.D.).

An example of this tendency is the Σουίδας λεξικόν (Ἡ Σουίδας λεξικόν or Ἡ Σοῦδα or Τὸ Σ. λεξικόν), a treatise so-called "encyclopedic" by its presumed Byzantine author. As can be seen from the heterogeneity in both its style and content, it was compiled by several unknown authors and embodied material from earlier lexicons and commentaries regarding biography, literature, history, geography, natural sciences, philosophy, and medicine.

During these centuries, therefore, the tendency grew to create vast collections of works, and in order to understand their relationship to the original works, it is important to compare them.

In addition to the general points already mentioned (index corresponding to the quantitative dimension cited in Σουίδας λεξικόν and which is more comprehensive than the actual contents in the Codex, different contents and order in the two main Codices), it is helpful to reconstruct the general course followed by these manuscripts, particularly *V* 276, in regard to the *scriptorium* from which they originated, the date of their transcription, and the mode used in their formation.

ORIGIN OF CODEX *V* 276

Historical, paleographic, and codicological elements can help to clarify the characteristics and origin of the Codex.

The earliest known information, as we shall later see, takes us back to the court of the Norman kings at Palermo and to Anjou, who took the throne after the victory of Benevento (1266 A.D.).

Thus, did the Codex originate in southern Italy or did it get there after being transcribed at Byzantium, the cultural center of the age? A summary analysis of the Codex already provides some indications: a lack of correspondence between index and content is immediately evident, as previously mentioned; there are 62 titles and 35 treatises, respectively. After the first four titles, parallelism does not reappear until the last four treatises, among which, nevertheless, *Decretum Atheniensium* is inserted in the third next to the last place relative to the index but whose title does not actually appear in the index as does neither *De diaeta acutorum*.

Furthermore, in regard to the group of works appearing at the end of *V* 276, the last two correspond to the index of *V* 276, while the last three works correspond to *M* 269, the fourth penultimate of *V* 276 to the fifth penultimate of *M* 269. A very interesting observation is that in *V* 276, the six preceding treatises (*De medico, De crisibus, De corde, De carnibus, De glandulis, De anatomia*) are not found in other preceding manuscripts or in those of the epoch but appear later in the same order in the *Holkhamensis* manuscript 282 (of which treatises 1-14 correspond in *V* 276; subsequently, treatise 15 corresponds to 21 in *V* 276, treatises 16-21 correspond to 26-31 of *V* 276, 23 corresponds to 20 of *V* 276, while 24-25-26 correspond to 22-23-25 of *V* 276 and again, recall that treatise 24 of *V* 276, *De superfoetatione*, is copied twice in *V* 276). This anomaly certainly leads one to presume a divergence of V into two parts, which we shall see in more detail. The two parts, each containing this same treatise, are referred to as *Va* and *Vb*, while the index of *V* is referred to as *Vi*.

If, in some cases, it is easier to assume the derivation of one manuscript from another, in most cases, there is evidence of a collection, with few certain points (e.g., beginning of manuscripts *M*, θ, *Va* and *Vi* with *Jusjurandum*) showing a composite character, as pointed out by Lienau[4].

The index, according to Ilberg[5], reflects that an ancient collection or canon was available at that time, with a subdivision which is based, not on the book, but on the comprehensive work (for example, *Epidemiae-De morbis vulgaribus* is indicated at position No. 10 as a complete work, although it is formed by 7 books). In this regard, *V* 276 differs from *M* 269, in which the writings are copied distinctly by each individual book (in this manner, *De morbis* is divided into four books, *De morbis mulierum* into two books, etc.).

Because *M* was certainly taken from Constantinople, the similitude in content between *Va* and *M* leads to the idea that *Va* may have been copied in the Orient, probably in Constantinople in the second half of the 12th century, on which we will go into further detail later. During that time, ties between Byzantium and southern Italy were strong[6]. As stated earlier, the Codex entered to become part of a group of manuscripts of the Greek Library, first belonging to the Norman kings and later inherited by the Swabians. In 1158, on the occasion of a diplomatic mission in Constantinople, Henry Aristippus, Archdeacon of Catania and prominent man of politics[7], received a codex containing Ptolemy's *Almagest* from the Byzantine emperor, Manuel Comnemus, as a gift for William I, king of Sicily and son of Roger II the Norman. At the Court of the Norman Kings, in fact, there was deep interest for classical scientific works, as demonstrated by the active role of the author, Aristippus, toward the middle of the 12th century, which were Latin translations from Greek not only of philosophical works (such as Plato's *Phaedo* and *Meno*) but also of scientific writings by Euclid, Ptolemy, Theon (author of a commentary on Almagest: *Laurentianus* 28, 18 and No. 624), Pappus (author of a Collection of treatises on mathematics: *Codex Vaticanus gr.* 218).

Enricus (Henry) *Aristippus* was testimony to the presence of scientific works in the Sicilian libraries of the 12th century. In the preface of the Latin translation from Greek of *Phaedo*, he wrote to an English friend, who was leaving Sicily, and cited scientific and philosophical works by Greek authors:

> *inc.: Enricus Aristippus Cathinensis Archidiaconus roborato fortune salutem dicit...*
>
> *Habes Eronis philosophi mechanica pre manibus... Habes Euclidis optica... Habes de scientiarum principiis Aristotelis apodicticen, in qua supra naturam et sensum de axiomatis a natura et sensu sumptis disceptat. Philosophica Anaxagorae, Aristotelis, Themistii, Plutachi ceterorumque magni nominis philosophorum in manibus tuis sunt: at fortassis horum summam nactus es, dum saltem medicinae studio efficacem adhibuisti operam*[8].

Just as important was the admiral *Eugenius* (Eugene) of Palermo, who translated Ptolemy's *De optica* from Arabic into Latin and who also contributed his translations of works from Greek[9]. The presence at the Norman Court of numerous scholars, although their names remain unknown to us, witnessed an intellectual turmoil led by the most learned men of the time, as evidenced by the Preface written by an anonymous student of the School of Salerno, a translator of Ptolemy's *Almagest* from Greek into Latin[10]:

> *Hos autem cum Salerni medicinae insudassem audiens quendam ex nuncils regis Siciliae quos ipse Constantinopolim miserat agnomine Aristipum largitione susceptos imperatoria panormum transvexisse, rei diu multumque desiderate spe succensus, Scilleos latratus non exhorrui, Caribdim permeavi, ignea Ethnae Fluenta circuivi, eum queritans a quo mei finem sperabam deriderii...*
>
> *Dehinc vero Prefatum Ptolomei aggressus opus, expositorem propicium divina mihi gratia providente Eugenium, virum tam grece quam aribice lingue peritissum, latine quoque non ignarum, illud contra viri discoli voluntatem latine dedi oratione...*

In the second half of the 12th century at the Norman Court in Sicily, it was thus possible to find various classical works of a scientific nature, which had been consulted and translated. Sometimes the translators worked directly off of Greek manuscripts, some of which were of Italiot tradition, while others, perhaps the majority, came from the Orient as gifts from the Byzantine emperors to the Norman sovereignty in Sicily. A strong tie existed between these two empires due to the preceding Byzantine occupation and also because of political relationships of the Court with the Oriental empire.

The new culture at the Norman court was clearly directed toward scientific thinking: basic texts on astronomy, mathematics, medicine from the classical age, directly from the original Greek, reached the Latin world. While the Moslem culture dominated the Orient and the Occident, Sicily under Norman rule became, at the center of the Mediterranean, both a gathering point and a melting point for the three great civilizations: Byzantine, Arab, and Latin.

As stated previously, it is said that *Eugenius* knew Greek, Arabic, and Latin very well, almost as if emphasizing the link uniting these three cultures, a tie which is expressed in the School of Salerno.

The Arabian tradition had the peculiarity of presenting its works, such as Hippocratic works, not only as such, but also under form of questions and comment: this was the method to divulge, and popularize the translations from Greek into Syrian and Arabian made by many translator, such as Hunayn ibn-Hishâq (9th century), to whose school the Arabs attributed the transmission of *C.H.*[11]. This method of interpreting the medicine led to the appeal for a formative curriculum for doctors which would also include philosophy and logics. The commentary integrates practical training with discussions on theory, which were guided by writings of renowned Masters: it can be said that this method was introduced in the Occidental medical school preparation at Salernum (from which it was extended to Paris and Montpellier) by Constantine the African, Cofone, and Maurus[12].

The introduction of a theoretical part enriched the doctor's training with philosophical and naturalistic contents: and, in this way, the *medicus*, or doctor, become known as *physicus*, from the Greek term φυσικός, an investigator of nature, almost as if to suggest the necessity for solid and rational training, a basic or biological preparation, as we would say today. The term *physicus* became in the Middle Ages the current name for a doctor and has survived in the Anglo-Saxon word (physician) through today[13].

In the 12th century, the School of Salerno took on a fundamental role in the development of Western medical thinking: the Arabian "didactic" influence coming from Constantine grafted the aptitude for reasoning into the surviving Greek-Latin medical culture, referring back to Galen, who had assimilated a great part of Aristotelian naturalistic philosophy.

This cultural innovation created conditions in all of Europe for establishing a unitary didactic method, propagated by Salerno and based on criticism and on the contribution to medicine of other sciences, such as philosophy and logics: *physicus*, a learned doctor, was to be distinguished from *medicus*, a skilled practitioner.

This distinction ended up mostly affecting surgery, which became a minor art until the 18th century (and it was necessary to wait until the beginning of the 19th century for the reform of the system to overcome, once and for all, the distinction between *physicus-medicus*).

Like medicine, classical science became transmitted to the Western world through some codices of magnificent Constantinopolitan production of the IX and X centuries, which dated back to the scientific and philosophical Byzantine Renaissance.

The most representative figure in this scientific movement was Leon the philosopher, illustrious not only in the field of mathematics but also in medicine, astronomy, and astrology, as demonstrated by the numerous references made to him[14].

During this same period on the other side of the Mediterranean, the Arabs, with whom Byzantines had deep and lasting

contacts, also gave life to an analogous cultural movement directed toward the same works in the realm of an extensive revival of classical culture of which the Arabs would be the greatest popularizers in Latin Occident from the XI to XII centuries.

Scientific manuscripts from the Byzantine Renaissance are numerous: six of these go back to the 9th century, seven are from the 10th century and two date back between the end of the 9th to the beginning of the 10th century. It should also be added that the adoption of the minuscule, at the beginning of the 9th century, with the consequent transliteration of the majuscule by scholars of these centuries, permitted the conservation of texts and thus avoided the interruption in continuity of direct material tradition from texts between antiquity and our present culture.

Of the two main Hippocratic Codices (*M* and *V*), an *ex libris* indicates that *Marcianus* was acquired around the 14th century by a Syrian doctor named Γεωργός (George) and later became part of the library of Cardinal Bessarion, an extraordinary and learned personality interested in classics[15].

The first documented trace of *V* was found, as stated previously, in the Greek library of the Sicilian kings. When Frederick II took the throne, he inherited this Library, composed of around thirty scientific writings; subsequently, after the battle of Benevento (1266) in which Manfred was defeated by Charles of Anjou, the entire Greek library was donated to Pope Clement IV (1265-1268) by Charles of Anjou. So, in the library inventory conducted in 1295 on the orders of Pope Boniface VIII (*Recensio Bonifatiana*), a total of 446 codices were found, 27 of which were Greek. In the subsequent inventory taken in 1311, ordered by Pope Clement V in Perugia, where the Pontifical Library had been transferred, the Greek codices totaled 33, perhaps because the inventory had been conducted more accurately since it also provided valuable indications as to the source of many codices[16].

The description of nineteen of these codices contains the indication *and* (*andegavense*), thus revealing their source from a group of Anjevin Greek Codices[17] from the library of Norman and Swabian kings[18].

Further evidence of *V* comes from the fact that it was used by Bartholomaeus of Messina for the Latin translation of *De natura pueri*[19] and probably for that of *De natura hominis*. Bartholomaeus was the official translator of the Court of Palermo between 1259 and 1266 and therefore, the use of *V* 276 is attributed to this period, suggesting that at that time the Codex had to have been in the Court library[20].

CODICOLOGICAL DESCRIPTION OF CODEX *V* 276

If the earliest known information leads to Palermo, it must be wondered if there are codicological elements which suggest either a Southern Italy or Byzantine origin.

V 276 is a parchment codex of large size (277 × 385 mm), today consisting of 209 *folia*.

At fol. 209r, fragments of other books appear, which were glued in probably at the time of bookbinding, which occurred in the 17th century, as indicated by the *insigna* of Pope Paul *V* and by Scipio Borghese, Cardinal librarian.

The binding has characteristics of classical Roman leather binding, with simple tooling of borders which form the frame constituted by a rectangle divided into lozenges. Tooling shows vegetable and animal motifs with stylized foliage and birds. Signs of angular clasps are still evident.

At the center of the panels, the gilded coat-of-arms of Paul V: the same tooling can be found on the front cover.

The parchment is rather thick and rigid, most likely originating from adult animals: the tonality of the color is, in fact, yellowish, suggesting the presence of highly polymerized (typical in adult animals) collagenic fibers and the fur side has, of course, yellowed more than the skin side.

The Codex must have been intended for daily use, rather than one destined to attract attention as a de luxe edition. The Codex, rather than being highly attractive, is resistent and shows some defects of the parchment[21].

In the analysis of a Codex, it is important to determine its general characteristics, which are indicative of the epoch and scriptorium of origin.

Dimensions and relationships between height and width of codices differ depending on the century: small sizes predominated up to the 4th century, followed by large forms starting in the 4th century, with the length to width ratio initially tending to be 1:1 (square shaped, with dimensions less than 20 cm) and, later on, forms appeared with dimension ratios of 7:8 and 6:7. Subsequently, the proportions in size tended to be between 5:7 and 2:3, generally 5:7.5 (from the 10th century onward).

In the case of *V* 276, which can be definitely classified among manuscripts of large size (277 × 395 mm), the ratio is 5:7.13, intermediate between these last values, indicating, on this basis, its belonging to an era following the 10th or 11th century.

V 276 is essentially formed by quaternions, each of which are composed of two skins folded into four: this system allows that the fur and skin sides are in juxtaposition. In the generality of the manuscripts, the beginning is constituted by the skin side, except in some cases regarding manuscripts written before the 13th century and, according to Leroy, originating from southern Italy or Corfu[21].

In *V* 276, after *fol.* 1r, which appears yellowed due to air exposure much more than the subsequent *folia*, 1v and 2r appear yellowed and 2v-3r are whitish, indicating the typical succession of the skin side for 1r, fur side for 1v-2r, skin side for 2v-3r, and so on.

This succession is typical of Byzantine codices, compared to those from Occidental scriptoria, where there was, as stated, also the custom of starting with the fur side[22].

By examining the bound booklets, it can be seen that they are, for the most part, quaternions, with insertions of two ternions and one binion at the end of the work.

The exact sequence is as follows:

booklets 1-12	quaternions (fol. 1-96)
booklet 13	ternion (fol. 97-102)
booklets 14-19	quaternions (fol. 103-150)
booklet 20	quaternion with fol. 4r/v cut off (fol. 151-157)
booklets 21-23	quaternions (fol. 158-181)
booklet 24	ternion (fol. 182-187)
booklets 25-26	quaternions (fol. 188-203)
booklet 27	binion (fol. 204-207)

There are two types of signatures, one in Greek letters at the lower inside corner of the last page of the booklet and one in Arabic ciphers and Greek at the upper outside corner relative to the folia.

The latter type of signature was written with different ink compared to that used in the writing and it was likely written in a epoch following the writing.

The signature of the booklets in Greek letters, written with the same ink as in the writing (and thus can be considered as written during the epoch of the Codex) uses the classical succession of signatures in majuscule Greek letters, pointed out by a hyphen (i.e., α').

The system of signature is:

α	β	γ	δ	ε	ϛ	ζ	η	θ	ι
ια	ιβ	ιγ*	ιδ	ιε	ις	ιζ	ιη	...	κ
κα	κβ	κγ	κδ*	κε	κς	κz°			

* = ternion ° = binion ... = signature absent
κ = quaternion with the 4th folio cut off at inside edge

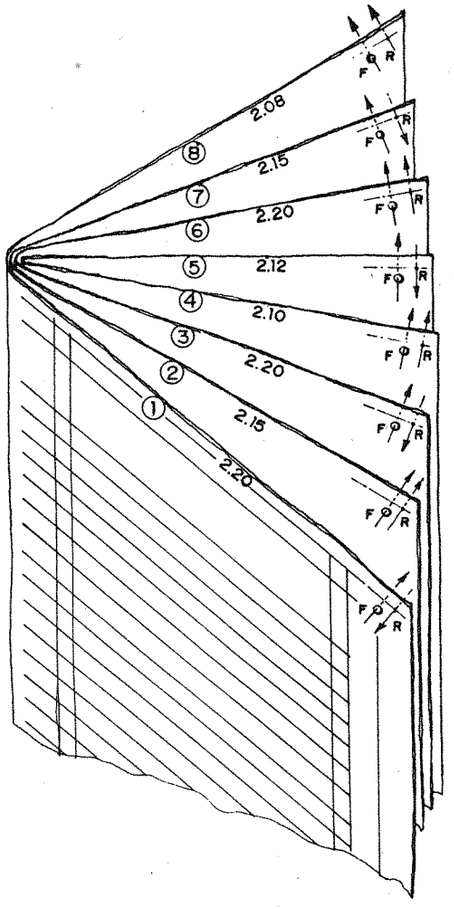


Fig. 1 - Perforation and ruling of *folia* of parchment of the Codex ***V*** 276.

Legends: F (*foramina*) = holes; R (*regula*) = rules, lines.

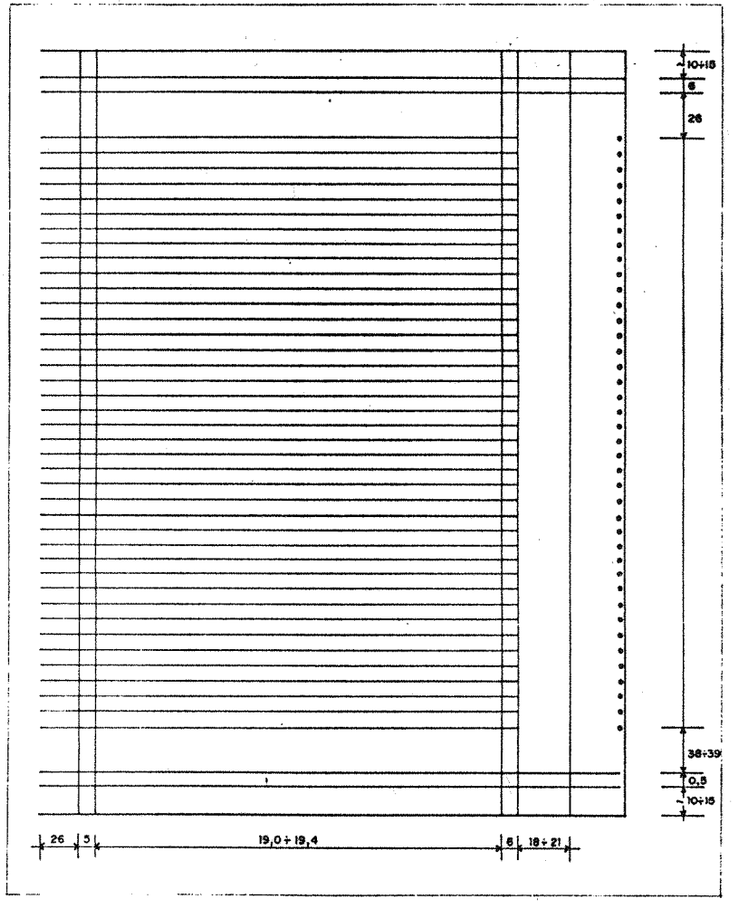


Fig. 2 - Ruling in Codex ***V*** 276.

Thus, the Codex is largely constituted by quaternions: this limits the area regarding the problem of how the perforation was made and what type of ruling was used.

The small reference holes are consistently found on the external side, at around 1.2 cm from the edge, as used typically in Byzantine codices.

In regard to these holes, there can be eight types of perforations, according to Jones[22]. Three of these are the most common:

Jones 1: *folia* already in booklet form and perforations from I to VIII; in this case, the holes are the same every 8 *folia*, with the open margin in the direction first *folio*-last *folio* of *fol.*r/*fol.* v;
Jones 7: superimposed *folia* but not in booklet form; in this case, symmetry appears in *folia* 1-4 and, separately, in *folia* 5- 8, with open holes directed for *folia* 1-4 from the first to the last and in the opposite direction for *folia* 5-8;

Jones 8: *folia* already in booklet form, but the four outside *folia* are detaching from the four inside ones due to the perforation; in this case, the direction of the holes is still first-last, but the symmetry runs separately for *folia* 1-2-7-8 and for *folia* 3-4-5-6.

In the case of *V* 276, the perforation appears to be that described by *Jones 1*: in fact, holes are directed for all *folia* I-VIII from the first to the last. Also, the symmetry of the perforation follows the entire quaternion (Fig. 1).

This indicates that the perforation was done in a single process, using efficient tools. And this method was very common in the scriptoria of Byzantium.

In regard to ruling, the system, technique, and type of ruling should be evidenced[23].

In the case of *V* 276, which, as will be explained later on, was due to two different hands (*Va*: *fol.* 1-149; *Vb* 150-209), the system of ruling can certainly be described as simple in both *Va* and *Vb*.

The technique was produced by the way the bifolia were placed under the instrument. Indicative elements are noted in the perforation and ruling and in their comparison.

The perforation, as can be recalled, has the holes consistently directed from the first to the eighth folio.

Small differences in the distance between the lines can also be noted. For example, in the second quaternion (*fol.* 9-16), the vertical lines of justification and the corresponding vertical margin line (from *folio* 9 to *folio* 16) distance from each other by 22, 21.5, 22, 21.2, 22, 21.4, 20.8, and 21.2 mm., respectively, as also indicated above in the example in Fig. 2.

An analogous variability can be found in the *folia* of *Vb*.

Ruling can be noted in *folia* 1r, 2v, 3r, 4v, 5r, 6v, 7r, 8v (Fig. 1) and so on. Here, the ruling appears directly on each folio on the fur side. It is worth noting that there is no evidence of tracing over with pencil or ink, as occurred in the XI-XII centuries in Calabro-Sicilian manuscripts (handwritings of Reggio and Rossano). The technique used was thus dry, so-called by *Leroy 1*, and typical in that period of Byzantine scriptoria.

The type of ruling is defined *34C1* by the catalogue of Leroy[23] based on the number of lines:

i. vertical lines: total lines minus inside lines of justification, i.e. 5 - 2 = *3*;
ii. horizontal lines: sum of upper and lower lines, i.e. *4*;
iii. extension of straight lines: from the left margin to the right line of justification, i.e. *C*;
iv. presentation of writing, i.e. on full page: *1*.

The scheme followed by for ruling the folia is reported in Fig. 2.

In conclusion, all the codicological elements of *V* 276 are typical of 12th century Byzantine scriptoria, while they differ notably from the characteristics present in the Calabro-Sicilian manuscripts of the epoch.

PALEOGRAPHICAL ANALYSIS OF CODEX *V* 276

In considering the Codex to have originated in Byzantium, one must still exclude, through paleographic analysis, its possible origin from the Calabro-Sicilian area. In the south of Calabria and in the northeastern part of Sicily in the 12th century, scriptoria were in full use, as indicated by numerous subscriptions. The codices here were typically written in the so- called handwriting of Reggio (fig. 3): in this handwriting, a roundish tendency prevails, while the upper and lower strokes are of regular or shorter length. Typically, wider letters are alternated with narrower letters (so-called contrast of module) and some letters are deliberately enlarged (Devresse, cit., 1955, p. 40).

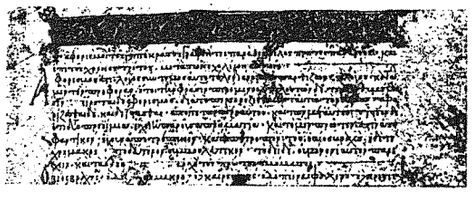


Fig. 3 - Handwriting of Reggio (*Urbin. gr.* 64, f. 1r, X-XI century)

The manuscript of parchment, presently at the Vatican Library, is a medical collection of Classical works (*Aphorismi Hippocratis fol.* 1r, *Excerpta ex Hippocrate fol.* 48r, *Prognosticon fol.* 96r, *Epistolae fol.* 104r, *Decretum Atheniensium fol.* 113r, *Thessali legati oratio fol.* 113r and finally a treatise on healing herbs *fol.* 116v-118).

The parchment used for these codices was very elaborated and Byzantine flowered type ornamentation was used, but had the appearance of having been produced as a negative picture.

None of these characteristics of southern-Italy's *scriptoria* are present in *V* 276: neither the calligraphy (even though this is not very significant because cursive writing was used in *V* 276) nor characteristics related to calligraphy (length of strokes) nor those related to ornamentation are present (fig. 4).

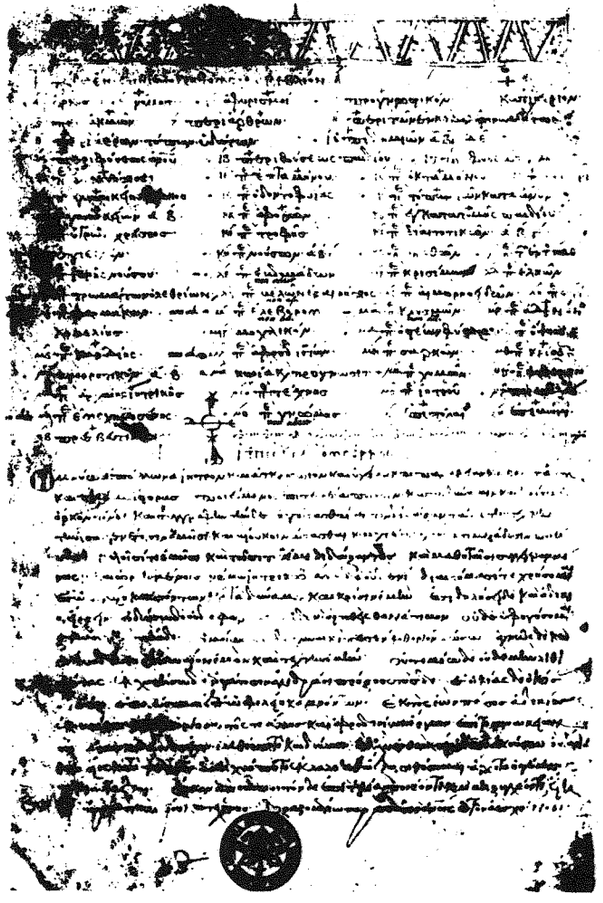


Fig. 4 - *Folium* 1r of Codex ***V*** 276, with the Index and the Monogram of the copyst.

In the upper part is reported ***and*** (= ***andegavense***), revealing the source from a group of Anjevin Greek Codices (from the Palermo's Court).

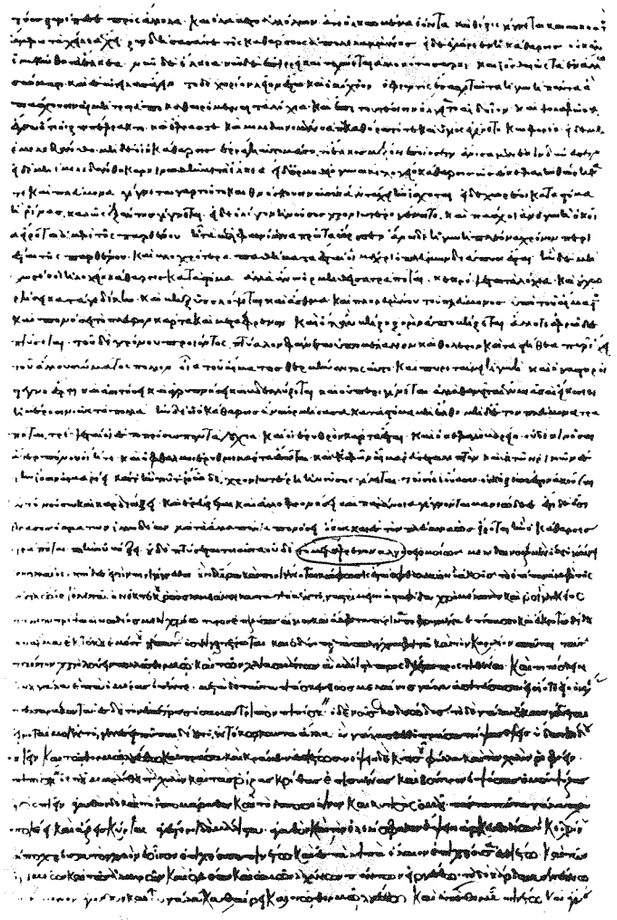
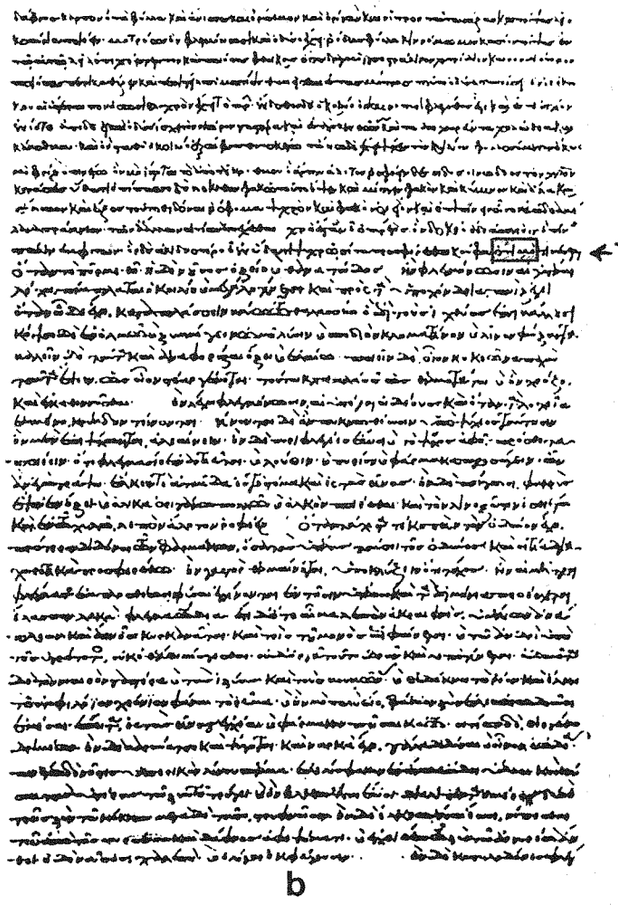


Fig. 5 - Handwriting of Codex ***V*** 276 (***Va*** and ***Vb***).
a. end of ***Va*** (*fol.* 149r line 25: *μετάφρενον* - see the arrow)
b. beginning of ***Vb*** (*fol.* 150r line 12: *ὅτι μή* - see the arrow)



Again, under this light, with the exclusion of the possibility of an origin other than Byzantine, greater attention shifts to the differences within the Codex.

In fact, the Codex shows more than one *ductus* of copying. Is it a single hand with modifications of form, or has the codex been the work of two or three copying hands?

Changes of style can be clearly observed before and after *folio* 150r line 13 and an intermediate style may also be found from *folio* 149r line 25 up to the above change (fig. 5 a-b).

The interest in this analysis stems from the fact that it can reveal elements leading toward a single source or to several codices, whether transliterated or not, of *V* 276 and thus, of the work we call *Corpus Hippocraticum*.

Tschiedel had already proposed the hypothesis that a first hand stopped writing at *fol.* 100r line 7, the point where, according to this Author, the transcription and work of a second hand began and continued until the end[24].

In 1894 Ilberg, in turn, maintained that at folio 149r line 25, a slight modulation of the *ductus* of a single copying hand could be detected.

A more careful examination of the work leads to different conclusions. Lienau, for example, retains that the Codex has a composite origin and even hypothesizes the presence of three hands[25]:

1st hand: fol. 1r - fol. 149r line 25 (μετάφρενον)
2nd hand: fol. 149r line 25 - fol. 150r line 12 (ὅτι μή)
3rd hand: fol. 150r line 12 - end of codex.

More recently, Hanson carefully analyzed the different opinions, comparing style and type of ink used.

In *Va*, which is the first half of the Codex, she points out that titles of treatises are written in red ink, whereas the ink used for the text is brownish. The red script of the succession of titles for each treatise stopped at *folio* 149, which may be assumed

as the shift from the first to the second hand. In the second half of the codex (*Vb*), treatises are separated by a fancy undulated line, which is drawn in the same dark-brown ink used in the text. The so-called "intermediate style" (second hand of Lienau) may be only the attempts of the successor to imitate his predecessor, gradually giving up the attempt. Thus, Hanson concludes, the evidence makes it necessary to distinguish two hands and two copyists.

In my opinion, the reiteration of the treatise *De superfoetatione* supports, in any case, the hypothesis of at least two copyists. In regard to this treatise, it should also be pointed out that the reiteration is not a simple repetition but reflects the transcription from different original works, as will be explained later. *Vaticanus graecus* 276 is therefore composed of two parts (without considering the brief intermediate part), to which reference is now made as *Vaticanus a* (*Va*) and *Vaticanus b* (*Vb*) on the basis of some specific differences.

These differences involve:
a) ornamentation
b) ductus
c) morphology of handwriting and lexicon.

Deciphering the monogram, designed in the center of the first page under the index, leads to the supposition that the copyist could have been a certain Theodoros the Monk. In fact, the monogram shows a Greek cross with a minuscule ϑ at the center and an ϵ on the right side, an ο on the upper side, δ on the left side and ω on the lower side, on which there also appear α and ϰ, an abbreviation of monk, that is or μοναχός (fig. 6).

The Codex could thus have originated from a monastic scriptorium, destined, not so much for the private collection of a wealthy purchaser, but for common use. The parchment, thick and wear-resistant, as well as the details of the handwriting and ornamentation, in fact, lead to the idea that the Codex was intended for everyday use in a scriptorium or in an easily accessible library.

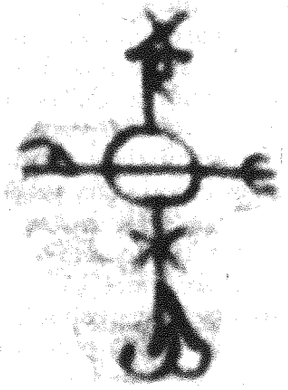


Fig. 6 - Monogram of Theodoros Monakos, copyist of ***Va***.

Indications as to the singleness of the origin of a Codex can be obtained by examining different graphical elements.

a) *ornamentation*[26]

There is a clear difference between *Va* and *Vb*. In *Va*, there is monochromatic ornamentation definitely made by the same copyist as that of the Codex. The titles of the treatises are designed in red, a distinctive yet common color, with the name of the author (Ἱπποκράτους, which is "of Hippokrates") often preceding the title, written with the initial letters slightly larger than the others and embellished with fine ornamental strokes.

The signatures which conclude each treatise, the ornamental majuscule letters, and the frames which separate the different treatises are also the same color; so, in regard to fol. 1r/v, two frames are designed, with geometric motifs in *fol.* 1r and with simple floreal motifs (garland-like) in *fol.* 1v.

In *Vb*, the use of color disappears: titles, signatures, letters and frames are outlined in black ink in an even simpler manner compared to *Va*.

Finally, the ink used in *Va* is lighter than in *Vb*.

Analysis of the handwriting reveals notable characteristics reflecting a single origin of the two parts of the Codex: for a long time, this led to the belief that the Codex was the work of a single hand. In fact, the handwriting in both *Va* and *Vb* is cursive, without showing any attempt for stylization. Writing the Codex in cursive may have been decided upon because of its destination for use (which, as previously stated, was to be strictly practical). It can also be seen that at the end of the 11th century and continuing into the 12th century, a progressive loss occurred in the unity of the handwriting in the book, and under the influence of the current writing, the single calligraphic model was partly abandoned or took on characteristics of cursive writing in the attempt to create new stylizations which are partially cursive. Some differences between the two parts can still be noted in regard to both the ductus and morphology.

b) *ductus*

In *Va*, the *ductus* is more sedate, regular, more archaic: Lienau attributes this to the more mature age of the copyist.

Compared to *Vb*, pagination appears more orderly, consistent, and contained. In confirmation of this is the length of the text of *De superfetatione*, which in *Va* consists of 240 lines and in *Vb* 260 lines, leading to the assumption that *Vb*, the longer treatise, could have been due to the graphical tendency of a younger copyist.

c) *morphology*[27]

In the entire Codex, the use of majuscule forms within words written in minuscule (Δ, E, T, Θ) appears to a great extent. In addition, some peculiarities appear: the upper stroke in Τ is horizontal and undulated (τ).

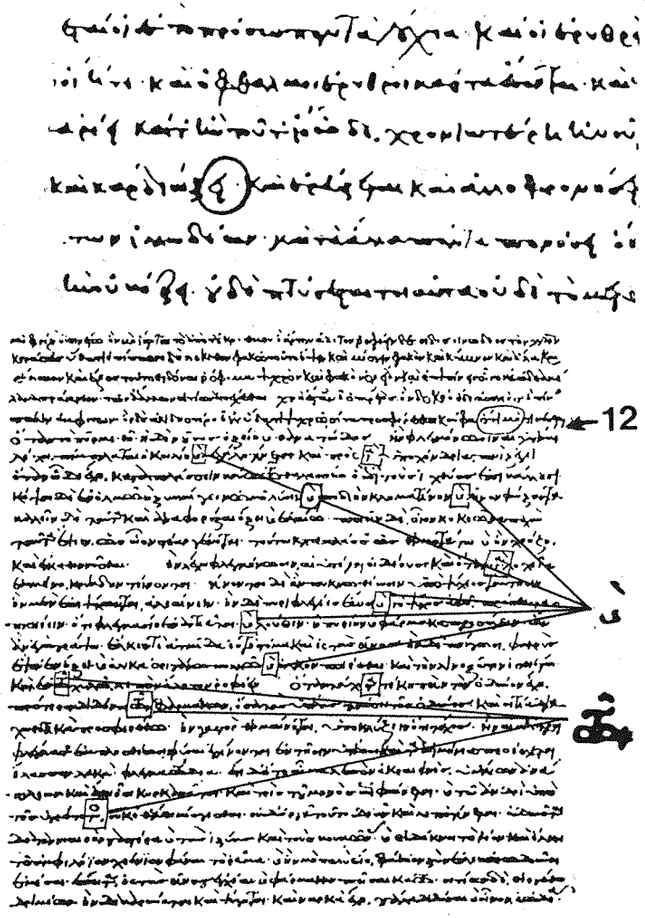


Fig. 7 - Handwriting's differences between ***Va*** and ***Vb***.

a. ligature ε-ι in ***Va*** (absent in ***Vb***)
b. contracted καί very frequent in ***Vb***, as in *fol.* 150r line 16 (absent in ***Va***).
c. *suprascriptiones*, very frequent in ***Vb***, as seen in *fol.* 150r (*τόν* and *τό*, respectively): arrow points line 12, which represents the change of handriting (circled: *ὅτι μή*).

Some morphological differences between the two parts can also be noted in the graphical characteristics of some letters.

In *Va*, ε is used in majuscule form even when written joined with ι (which is joined at the bottom), while in *Vb*, this type of legature does not appear.

In *Vb*, α and λ have precise and constant features. These letters appear in a typically triangular form (closed in α and open in λ) with an unusually wide upper stroke. In addition, the accents in *Vb* are rather elongated.

In *Vb*, there is the tendency of the copyist to use contractions: terminations and abbreviations are written as superscripts, such as τὸ-τόν, which in *Va* is transcribed in full. In this manner, the conjunction καὶ in *Vb* is often abbreviated as (fig. 7). It can now be wondered if the two parts of the Codex had been transcribed by different hands by chance, or if the work initially was supposed to have had less content. Lienau[28] is more inclin-

Fig. 8 - Cardinal Bessarion.

ed toward the second hypothesis: he retains that the Codex initially ended at folio 150, beyond which there is no numbering in the quaternion (which would be ι-ϑ corresponding to folia 151-158) and, in particular, *folio* 4 r/v is cut out. Now, does this constitute any proof? Or should we believe that an accident in writing occurred, in which the copyist, in order to avoid transcribing six pages again, cut out the folio? Other than the change of hand, the end of a treatise does not correspond, however, half of a treatise does (*De morbis mulierum*). All of this leads to the assumption that one cannot consider as proven the hypothesis of the two juxtaposed codices, as Lienau tends to believe, also because the four initial treatises and the two final ones of the Index and Codex correspond. It is likely, therefore, that two hands and two copyists are involved.

With *V* 276's being clearly attributed to two different copyists, the problem presents as to its sources of derivation.

This raises the question as to the formation of the *Corpus Hippocraticum*.

FORMATION OF THE *CORPUS HIPPOCRATICUM*

In order to understand how *C.H.* was finally formed, a comparison of *Codices vetusti* may be useful:

Works by *Marcianus venetus* 269 (M)
Index of *V* 276
Works of *Va* 276
Works of *Vb* 276

Two other codices of the 10th century, as cited previously, are *Vindobonensis med.* IV (Θ) and *Laurentianus* 74,7 (*B*) and consist of 13 and 4 treatises, respectively; the contents of the former concentrate on writings on general pathology and the latter on surgery. These are not here considered, however, a true *Corpus* due to the small volume of writings included. An other

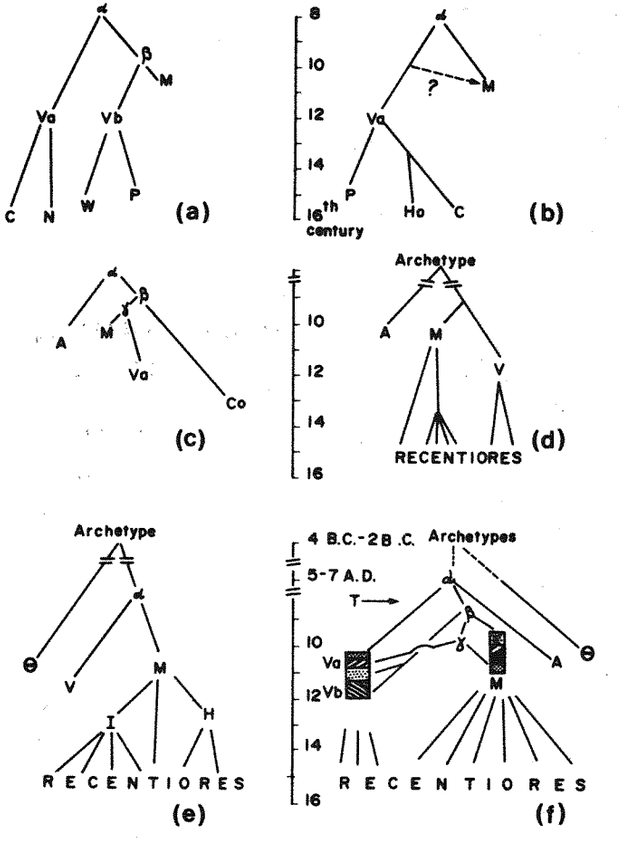


Fig. 9 - *Stemma codicum* of various Hippocratic Treatises.

a: *De superfoetatione*; b: *De octimestri partu-De septimestri partu*; c: *De natura hominis*; d: **De morbis-De affectionibus-De internis affectionibus**; e = *De diaeta acutorum*; f: general hypothesis (T=transliteration from uncial to minuscule, 9th century).

Codices: **A**: *Parisinus gr.* 2253; **H**: *Parisinus gr.* 2142; **I**: *Parisinus gr.* 2140; **C**: *Parisinus gr.* 2146; **e**: *Vindobonensis medicus gr.* 4; **M**: *Marcianus venetus gr.* 269; **V**: *Vaticanus gr.* 276; **P**: *Vaticanus palatinus gr.* 192; **W**: *Vaticanus gr.* 278; **Ho**: *Holkhamensis gr.* 282; **S**:*Ambrosianus* C 85 sup. 187; **R** (*recentiores*): about twenty manuscripts considered.

codex, *Parisinus gr.* 2253 (*A*, late 11th century), consists of 11 treatises of various arguments: it may be used for comparison with *M* and *V*.

Thus, morphological and lexicographic studies have been carefully conducted on the single treatises in order to gain an understanding on their derivation, particularly for the treatises in *V* and *M*, if they are from the same archetypes or if those of *V* are from those in *M*, or even if derived in part. In addition, the different Authors have logically turned their attention to a careful analysis of the single works.

The case of *De superfoetatione* is particularly interesting, because with it a comparison can be made not only between *V* and *M* but also between *Va* and *Vb*.

Analysis of the single aspects sometimes leads, in fact, to different conclusions, pointed out as follows:

1. Lienau C.D. (28): *De superfoetatione*: the case of *Va* contains typical errors in transliteration from the Codex in majuscule, the case of *Vb* comes from a lost Codex in minuscule (called β), in turn, transliterated from the same archetype in majuscule and has characteristics analogous to those in *M* (fig. 9a).

2. Grensemann H., cit., 1968, examines the different order in parts of *De octomestri partu* and of *De septimestri partu*; in regard to the transliteration, *M* and *V* can be considered to originate from the same single archetype, but the original order has been kept for internal logical coherence in the text, from *V* (fig. 9b); this order, among other things, corresponds to the Syriac-Arabic transmission.

3. Jouanna J., cit., 1979, believes that for *De natura hominis*, there are two distinct systems of transmission, one constituted by *A* (*Parisinus gr.* 2253) and the other by *V-M* (fig. 9c); the separation of the two groups dates back at least to the epoch of the transliteration, since they can be found in *A*, on one hand, and in *M-V*, on the other hand, differences due to errors in reading the uncial (cit., 1979, p. 66).

4. Potter P. (29): for the treatises *De morbis*, *De affectionibus* and *De internis affectionibus*, common to *Vindobonensis* (Θ), to *M*, and to the index of *V*, it should be considered that *M* and Θ, while originating from the same archetype, became differentiated right at the time of transliteration from majuscule to minuscule (Fig. 9d); for *De diaeta acutorum*, instead, the hypothesis proposes the derivation of *M* and *V* from the same Codex in minuscule after the transliteration from an archetype (Fig. 9e).

While considering only these more recent Authors, it is easy to state the difficulty in formulating the global derivation of the two ancient Codices defined as *Corpus* (writings in *M* and the index and writings in *V* 276, as reported in Table Ia-b and II: the differences in the order reported for treatises in *V* are due to the Vatican Library catalog — Tab. 1b — and international classification — Tab. II/III).

Agreement in the series of treatises in the lists can be noted as well as reversed orders (the numbers of order are *M*, index of *V*, and writings of *V*, respectively) and repeated treatises. For example, *De superfoetatione*, as reported in *codices antiqui*, is derived from two majuscule ancestors, the first dealing with pediatrics and neonatology and the second with gynecology, including pregnancy.

In the *Holkhamensis* Codex 282, treatises 1-14 correspond to treatises 3-16 of *V* 276 with the absence of the first two. Also omitted, before *De septimestri partu*, is *De superfoetatione*, which is not transcribed even later with the series of gynecological treatises reported at the end of the Codex (24-26), but are in reverse order compared to *Vb*. Therefore, for *De superfetatione* in *Va*, it could have belonged to an uncial Codex as a single treatise, while the copyist of *Vb* could have gotten it from a single transliterated Codex.

Grensemann believes that a majuscule ancestor of *V* existed in two exemplars, corresponding to the change of hands. His opinion is unclear regarding the ending of the first edition with *De sterilibus*.

It is likely that majuscule ancestors had a content which may be argued from the content of Codices, including their Index, e.g., the index of *V* 276.

Agreement may be found as follows (progressive order of treatises of *M*, *V* index, and *V*):

a) at beginning, deontology: *Jusjurandum* and *Lex*: 1,2; 1,2; 1,2;
b) next, practice of medicine: *De arte, De prisca medicina, Praeceptiones, De decenti ornatu*: 3-6; 54-58; —;
c) nature and generation of man: *De natura hominis, De genitura, De natura pueri*: 7-9; 11-13; 11-14;
d) fundaments of current practice of medicine: *Aphorismi, Prognosticon*: 27-28; 3-4; 3-4; may be also *De diaeta acutorum*;
e) general pathology and internal medicine: *De morbo sacro, De morbis, De affectionibus, De internis affectionibus*: 14-20; 28-31: —;
f) general principles of therapeutics, including behaviour: *De victus ratione* or *Regimen, De insomnis*: 21-14; 18-19; 26;
g) pregnancy, neonatology, and gynecology of young women: *De superfoetatione, De septimestri partu, De octomestri partu, De morbis virginum, De natura muliebri*: 39-43, 14-18, 15-19;
h) gynecological treatises: *De morbis mulierum, De sterilibus, De superfoetatione* (reiterated), and may be *De exsectione fetus* 35-39; 21-23; 22-25;
i) common diseases: *Epidemiae-De morbis vulgaribus* (*De m. popularibus*): 20; 10; 11;
j) ending treatises: *Epistolae, Decretum Atheniensium, Oratio ad aram, Thessali legati Oratio* or *Presbeutikós*: 47-50; 60-62; 32-35.

Agreement with some variations (omission of a treatise or reversal of order) can be found in *De morbis, Regimen-De insomniis, De fracturis-De officina medici* (Table III).

Agreement and reversed order respect to the *Codices vetusti* also regard important Codices *recentiores*, which may be generally distinguished as "*M* type" or "*V* type".

It can be seen that an analysis of the derivation of single treatises or of a collection of a few treatises cannot apply to the derivation of the entire *Corpus Hippocraticum*. Jean Irigoin[30] attempted to make a comprehensive evaluation, utilizing his finding of single treatises in the codices (Θ, B, M, D, E, *Va, Vb*, etc.) as a comparative criterium.

This is a very elementary criterium which draws even Irigoin to the conclusion that editors of single Hippocratic texts must take into consideration the derivation of each of the other treatises.

The attempt can be made to introduce some other element of general analysis, other than that of the "simple coincidence" used by Irigoin. For example, the sequence in which the treatises appear in the different codices or indexes of the codices can be evaluated: an analysis of this type for some codices is shown in figure 9 and table III.

It would be interesting to evaluate philologically the correspondence of the derivation suggested by this analysis with a "complex coincidence".

Some characteristics are revealed:

— the index of *Va* corresponds somewhat with *M*, while the transcribed work enumerates only six treatises corresponding to the first part of *M*;

— some reversals of order clearly indicate a lack of homogeneity, at least if in reference to the comprehensive works present in the scriptorium; these reversals, nevertheless, could indicate the habit of combining the treatises, a habit which transferred the writings from *rotoli* to codices;

— *M* and *Vb* are definitely interrelated, perhaps not as such, but rather through common archetypes.

Again, it can be seen that sometimes a codex corresponds to an other with some deletions. Such is the case, as already mentioned, in Codex *Holkhamensis* 282, which does not start with the two treatises on deontology (*Jusjurandum*, *Lex*), but begins directly from the third treatise (*Aphorismi*).

Without going any further in the analysis, it seems logical to hypothesize a derivation of the works which gave rise to the so-called *C.H.*, *M* and *V*, from intermediate codices containg from 2 to 6 treatises, often dealing with homogeneous subjects such as deontology, gynecology, surgery, internal diseases, more common diseases (today called infectious diseases).

These intermediate codices had sometimes already been transliterated, like those corresponding to *Vb*, sometimes, instead they were in majuscule, like those corresponding to *Va*. According to philological and lexicographic studies and on the basis of the combination of treatises in the transmission, a *stemma codicum* may be hypothesized for groups of treatises.

When the transcription into more complex codices occurred under the stimulus of encyclopedism of the Byzantine Renaissance, the scriptoria which were most noted for their wealth of library matter dedicated themselves to collecting medical writings following a logical order, i.e. as if we were to write a treatise on the study program required for obtaining a university degree today. There was probably already present some degree of homogeneity in subject matter in the intermediate codices in uncial.

We may search a confirmation of this system of transmission of Classical medical handwritings, particularly through the direct Syriac-Arabic pathway. In fact, recent studies demonstrate a wide interest of the Middle Ages Arabic world on the Hippocratic works[31]. Is it a direct interest or to Galen's works related?

The analysis of transmission-translation into *vetusti* Arabic manuscripts is helpful to confirm a "package-transmission" of

three-four treatises of similar argument. These Arabic manuscripts dated IX-X century, before the older Greek medical manuscripts; they have been recently reviewed by Ullman[32]. We have two main series, a ten-books Canon and a twelve one, containing or not surgical treatises (tab. IV). Because the transmission, mainly due to the School of Hunain ibn Ishâq, is very faithful a comparison of both order and content between Greek and Arabic manuscripts is the testimony of the system of transmission (single treatise or a series of treatises). A significant relationship of content may be observed between Arabic manuscripts and ancient Greek codices: *Aphorismi* and *Prognosticon*, *De aëre*, *Epidemiae*, Surgical treatises and women- children's disesases, and finally the Oath are reported in a manner similar to the hypothesis of transmission considered about Greek manuscripts (tab. V). It is worth noting that the Syriac- Arabic transmission of the Hippocratic works (Hippocratic Canon) largerly concerns books for which there is a Commentary by Galen (*De natura hominis*, *De articulis*, *De humoribus*, *De alimento*, *Aphorismi*, *De diaeta acutorum*, *De officina medici*): largerly, but not absolutely, suggesting that there are both Galen-dependence and authonomy of the Arabic Hippocrates, the dependence in the selection of works and main elaboration into Arabic medicine, the authonomy in the sources: to the authonomy of sources corresponds a relative authonomy of the thought, anyway more than generally suggested, says Ursula Weisser[33].

Thus, the list of the works of the Arabic Hippocrates is derived from ancestors, following a package-transmission, which seems similar to the direct transmission in the original language. In fact, by this direct way the ancient Hippocratic writings are joined in the Middle-ages manuscripts. Thus, the books attributed to the School of Cos welcomed all medical knowledge including deontology and professional decorum, in a system of learning which was supposed to appear extraordinarily rich.

And it is perhaps to this wealth that reference is implicitly made, almost in astonishment, in Σουίδας λεξικόν to the some sixty books, which, starting from the 10th century, went on to constitute the *Corpus Hippocraticum*.

Table I - Hippocratic works:

a) in the Codex *Vaticanus gr.* 276 (according to the official *Bybliothecae Vaticanae Codices Graeci* Catalog)

b) in the Codex *Marcianus Venetus gr.* 269, Venice, Biblioteca Nazionale Marciana

(r = *recto*, v = *verso*; 1-461 *folia*).

***V* 276**		
01. Oath	Jusjurandum	1r
02. Law	Lex	1v
03. Aphorisms	Aphorismi	1v
04. Prognosticon	Prognosticon	9v
05. Regimen in acute diseases	De victu in m. acutis	14v
06. Surgery	De officina medici	26r
07. Fractures	De fracturis	27v
08. Articulations	De articulis	37v
09. Wounds in the Head	De vulneribus capitis	57r
10. Airs, waters and places	De aëre, aquis et locis	63v
11. Epidemics I-VII	Epidemiae I-VII	67v
12. Nature of man	De natura hominis	107r
13. Regimen	De diaeta salubri	110r
15. Generation	De genitura	117v
16. Superfoetation	De superfoetatione	119r
17. Seventh Month's Child I	De septimestri partu	122r
18. Eighth Month's Child	De octomestri partu	122v
19. Seventh Month's Child II	De septimestri patu	123r
20. Diseases of girls	De morbis virginum	124r
21. Nature of Women	De natura muliebri	124v
22. Dentition	De dentitione	133v
23. Places in man	De locis in homine	134r
24. Diseases of the Women I	De morbis mulierum I	141v
Diseases of the Women II	De morbis mulierum II	161r
25. Barrenness	De sterilibus	178v
26. Superfoetation	De superfoetatione	184v
27. Excision of the Foetus	De exsectione foetus	187v
28. Physician	De medico	188r
29. Crises	De iudicationibus	189v
30. Heart	De corde	191r
31. Fleshes	De carnibus	192r
32. Glands	De glandulis	195r
33. Anatomy	De anatomia	196v
34. Letters	Epistulae una et viginti	197r
35. Decree of Athenians	Decretum Atheniensium	205v
36. Speech of the Altar	Oratio ad aram	205v
35. Speech of the Envoy	Oratio Thessali legati	205v-209v

Tab. Ia

***M* 269**		
01. Oath	Jusjurandum	12r
02. Law	Lex	12r-12v
03. The Art	De arte	12v-16v
04. Ancient Medicine	De prisca medicina	16v-23v
05. Precepts	Praeceptiones	24r-26r
06. Decorum	De decenti ornatu	26r-28r
07. Nature of man	De natura hominis	28r-35r
08. Generation	De genitura	35v-37v
09. Nature of the child	De natura pueri	38r-47r
10. Articulations	De articulis	47r-74r
11. Humours	De humoribus	74r-77v
12. Nutriment	De alimento	77v-79v
13. Sores	De ulceribus	79v-84v
14. Sacred Disease	De morbo sacro	84v-91r
15. Diseases book I	De morbis liber I	91r-102r
16. Diseases book II	De morbis liber II	102r-121r
17. Diseases book III	De morbis liber III	121r-129r
18. Diseases book IV	De morbis liber IV	129r-142v
19. Affections	De affectionibus	142v-154r
20. Internal Affections	De internis affectionibus	154r-179r
21. Regimen book I	De victus ratione liber I	179r-189r
22. Regimen book II	De victus ratione liber II	189v-199v
23. Regimen book III	De victus ratione liber III	199v-207v
24. Dreams	De insomniis	208r-211r
25. Sight	De visu	211v-212v
26. Critical Days	De diebus judicatoriis	212v-214v
27. Aphorisms	Aphorismi	215r-228r
28. Prognosticon	Prognosticon	228r-236v
29. Regimen in acute diseases	De victu in morbis acutis	237r-247r
Appendix	Nota	247r-256v
30. Breaths	De flatibus	257r-261v
31. Instruments of reduction	Vectiarius	261v-270r
32. Nature of Bones	De natura ossium	270r-275v
33. Fractures	De fracturis	275v-293 bis v
34. Surgery	De officina medici	293 bis v-297r
35. Excision of the Foetus	De exsectione foetus	297r-298r
36. Diseases of the Women I	De morbis mulierum I	298r-336v
37. Diseases of the Women II	De morbis mulierum II	336v-368v
38. Barrenness	De sterilibus	368v-379r
39. Superfoetation	De superfoetatione	379v-385r
40. Seventh Month's Child	De septimestri partu	385r-387v
41. Eighth Month's Child	De octomestri partu	388r-389r
42. Diseases of Girls	De morbis virginum	389r-390r
43. Nature of Women	De natura muliebri	390r-408v
44. Epidemics V	Epidemiae V	409r-416v
45. Epidemics VI	Epidemiae VI	416v-426r
46. Epidemics VII	Epidemiae VII	426r-445r

47. Letters	Epistolae	446r-460r
48. Decree of Athenians	Decretum Atheniensium	460r-460v
49. Speech of the Altar	Oratio ad aram	460v-461r
50. Speech of the Envoy	Oratio Thessali legati	461r-461v

Tab. Ib

Table II - Comparative analysis of the sequence of transcription of Hippocratic works in the *Codices antiqui*.

M		Θ	B	E	D	*Vi*	V
01. Oath	Jusjurandum			1	1		1
02. Law	Lex			2	2		2
03. The Art	De arte			3	55		
04. Ancient Medicine	De prisca medicina			4	54		
05. Precepts	Praeceptiones			5	57		
06. Decorum	De decenti ornatu			6	58		
07. Nature of man	De natura hominis			7	11		12
08. Generation	De genitura			8	13		14
09. Nature of the child	De natura pueri			9	12		13
10. Articulations	De articulis		3	10	7		8
11. Humours	De humoribus			11	51		
12. Nutriment	De alimento			12	25		
13. Sores	De ulceribus			13	34		
14. Sacred Disease	De morbo sacro	3		14	31		
15. Diseases book I	De morbis liber I	4		15	28		
16. Diseases book II	De morbis liber II	6		15	28		
17. Diseases book III	De morbis liber III	5		15	28		
18. Diseases book IV	De morbis liber IV			15	28		
19. Affections	De affectionibus	2		16	29		
20. Internal Affections	De internis affect	1		17	30		
21. Regimen I	De victus ratione I	7		18	26		
22. Regimen II	De victus ratione II	8		18	26		
23. Regimen III	De victus ratione III	9		18	26		
24. Dreams	De insomniis	10		19			
25. Sight	De visu			20	45		
26. Critical Days	De diebus judicatoriis			21	33		
27. Aphorisms	Aphorismi			32	3		3
28. Prognosticon	Prognosticon			33	4		4
29. Regimen in acute diseases	De diaeta acutorum				1		5

30. Breaths	De flatibus			2			
31. Instruments of reduction	Vectiarius			3			
32. Nature of Bones	De natura ossium			4			
33. Fractures	De fracturis		2	5	6		7
34. Surgery	De officina medici		1	6	5		6
35. Excision of the Foetus	De foetus exsectione			15	23		25
36. Diseases of the Women I	De morbis mulierum I	11		8	21		22
37. Diseases of the Women II	De morbis mulier. II	12		8	21		22
38. Barrenness	De sterilibus			9	22		23
39. Superfoetation	De superfoetatione			10	14		15-24
40. Seventh Month's Child	De partu septimestri			11	15		16
41. Eighth Month's Child	De partu octomestri			12	16		17
42. Diseases of Girls	De morbis virginum			13	17		18
43. Nature of Women	De natura mulierum	13		14	18		19
—. Epidemics I-IV	Epidemiae I-IV			20	10		11
44. Epidemics V	Epidemiae V			20	10		11
45. Epidemics VI	Epidemiae VI			20	10		11
46. Epidemics VII	Epidemiae VII			20	10		11
47. Letters	Epistolae			21	60		32
48. Decree of Athenians	Decretum Atheniensium						33
49. Speech of the Altar	Oratio ad aram				61		34
50. Speech of the Envoy	Oratio Thessali legati				62		35
01. Wounds in the Head	De vulneribus capitis		4	34	8		9
02. Physician	De medico			22	56		26
03. Fleshes	De carnibus			23	48		29
04. Dentition	De dentitione			24	19		20
05. Anatomy	De dissectione			25	59		31
06. Heart	De corde			26	46		28
07. Glands	De glandibus			27	42		30
08. Places in man	De locis in homine			28	20		21
09. Airs, waters and places	De aëre, aquis et locis			29	9		10
10. Use of liquids	De usu humidorum			30	24		
11. Crises	De crisibus			31	49		27
12. Embryos' excision	De foetus exectione (sp.)				7		
13. Prorrhetic	Prorrheticum				16	50	
14. Fistulae	De fistulis				17	38	
15. Hemorrhoids	De haemorrhoidibus				18	37	
16. Coan Prenotions	Coanae praecognitiones				19	51	
17. Epidemics I-VII	Epidemiae I-VII				20	10	
18. Regimen in Health	Regimen in valetudine						27
19. Sevens	Hebdomadarium				32		
20. Deadly wounds	De mortiferis vulneribus				35		
21. Withdrawal with missiles	Mochlikón						36
22. Purges	De remediis purgantibus				39		
23. Hellebore	Helleborus				40		
24. Clysters	Alvi ductiones				41		
25. Coition	De coitione				47		
26. Natures	Naturae				53		

Table III - Agreement of the sequence of transcription of Hippocratic works in the *Codices antiqui*.
Legends for Manuscripts as in Table II; *: reversed sequence respect to *M* or *V*; —: reported twice or more.

M = *Marcianus Venetus gr.* 269, XI cent., Venice; Θ = *Vindobonensis*, X cent., Wien; **B** = *Laurentianus* 74.7, XI cent., Florence; **E** = *Parisinus* 2255 and **D** = *Parisinus* 2254, XII cent., Paris; **Vi** = *Vaticanus gr.* 276 index and **V** = *Vaticanus gr.* 276, XII cent., Vatican City. Works 1-50 are reported in the same order of Codex ***M*** 269, works 51-76 without link with a particular Codex.

M	Θ	B	E	D	Vi	V
01. Oath			1		1	1
02. Law			2		2	2
03. The Art			3		55*	
04. Ancient Medicine			4		54*	
05. Precepts			5		57	
06. Decorum			6		58	
07. Nature of man			7		11	12
08. Generation			8		13*	14*
09. Nature of the child			9		12*	13*
14. Sacred Disease	3		14		31	
15. Diseases book I	4		15		28	
16. Diseases book II	6*		15		28	
17. Diseases book III	5*		15		28	
18. Diseases book IV			15		28	
19. Affections	2*		16		29	
20. Internal Affections	1*		17		30	
21. Regimen I	7		18		26	
22. Regimen II	8		18		26	
23. Regimen III	9		18		26	
24. Dreams	10		19		—	
27. Aphorisms			32		3	3
28. Prognosticon			33		4	4
29. Regimen in acute diseases				1		5
34. Surgery		1*		6	5*	6*
33. Fractures		2*		5	6*	7*

10. Articulations		3*	10		7*	8*
—. Wounds in the Head		4*	34		8	9
35. Excision of the Foetus —				15	23*	25*
36. Diseases of the Women I		11		8	21	22
37. Diseases of the Women II	12			8	21	22
38. Barrenness				9	22	23
39. Superfoetation —				10	14*	24
35. Excision of the Foetus —				15	23*	25*
39. Superfoetation —				10	14	15
40. Seventh Month's Child				11	15	16
41. Eighth Month's Child				12	16	17
42. Diseases of Girls				13	17	18
43. Nature of Women	13			14	18	19
35. Excision of the Foetus —				15*	23*	25*
—. Epidemics I-IV				20	10	11
44-46. Epidemics V-VII				20	10	11
47. Letters				21	60	32
48. Decree of Athenians					—	33
49. Speech of the Altar					61	34
50. Speech of the Envoy					62	35
05. Anatomy			25		59	31
06. Heart			26		46	28
07. Glands			27		42	30
08. Places in man			28		20	21
09. Airs, waters and places			29		9	10
14. Fistulae				17*	38	
15. Hemorrhoids				18*	37	

Tab. IV - Canons of Hippocratic treatises in Arabic manuscripts (IX-X centuries)

Canons of Zehner of ten treatises (with/without treatises of surgery or treatises of pediatrics and obstetrics): IN=Ibn an-Nadîm, IG=Ibn Gulgul, Y=al-Yaqûbi
Canon of Zwölfer of twelve treatises: IAU=Ibn Abî Usaibia
IR=Ibn Ridwân

C.H.	Arabic title	Canons of Zehner			Zwölfer's can.	
		IN	IG	Y	IAU	IR
Aphorisms	al-Fusûl	+	+	+	+	+
Prognosticon	Taqdimat al-marifa	+	+	+	+	+
De aëre	al-Buldân wa-l-miyâh wa-l-ahwiya	+	+	+	+	+
Acutis	al-Amrâd al-hâdda	+	+	+	+	+
Epid. I, II, III, VI	Abîdîmiyâ	+	+	+	+	+
De natura hom.	Tabiat al-insân	+	+	+	+	+
De humoribus	al-Ahlât	+	+		+	+
Vectiarius	Girâhât ar-ras	+	+		(+)	+
De officina medici	Qatîtrîyûn od. Hanût at-tabîb	+			+	+
De fracturis	al-Kasr	+			+	+
De articulis	al-Gabr		+		(+)	+
De ulceribus	al-Qurûh		+		(+)	+
De alimento	al-Gidâ			+	+	+
De genitura/ De natura pueri	al-Aginna od. al-Ganin			+	+	+
De morbis mulierum	Augâ an-nisâ			+	+	
Hebdomadarium	al-Asâbî			+	(+)	+
Jusjurandum	al-Ahd	(+)			(+)	+

Table V - Comparative analysis of the sequence of transcription of Hippocratic works in the Greek *Codices antiqui* and Arabic manuscripts.

M = *Marcianus Venetus gr.* 269, XI cent., Venice; Θ = *Vindobonensis*, X cent., Wien; **B** = *Laurentianus* 74.7, XI cent., Florence; **E** = *Parisinus* 2255 and **D** = *Parisinus* 2254, XII cent., Paris; **Vi** = *Vaticanus gr.* 276 index and **V** = *Vaticanus gr.* 276, XII cent., Vatican City. Works 1-50 are reported in the same order of Codex **M** 269, works 51-76 without link with a particular Codex.
Arabic manuscripts: IN=Ibn an-Nadîm; IG=Ibn Gulgul; Y=al-Yaqûbi; IAU=Ibn Abî Usaibia

M		e	Θ	E	D	Vi	V	IN	IG	Y	IAU	IR
01. Oath	Jusjurandum			1		1	1	+			+	+
07. Nature of man	De natura hominis			7		11	12	+	+	+	+	+
08. Generation	De genitura			8		13	14			+	+	+
09. Nature of the child	De natura pueri			9		12	13			+	+	+
10. Articulations	De articulis		3	10		7	8		+		(+)	+
11. Humours	De humoribus			11		51		+	+		+	+
12. Nutriment	De alimento			12		25				+	+	+
13. Sores	De ulceribus			13		34			+		(+)	+
27. Aphorisms	Aphorismi			32		3	3	+	+	+	+	+
28. Prognosticon	Prognosticon			33		4	4	+	+	+	+	+
29. Regimen in acute diseases	De diaeta acutorum				1		5	+	+	+	+	+
31. Instruments of reduction	Vectiarius				3			+	+		(+)	+
32. Nature of Bones	De natura ossium				4							
33. Fractures	De fracturis		2		5	6	7	+			+	+
34. Surgery	De officina medici		1		6	5	6	+			+	+
36-37. Diseases of the Women I	De morbis mul. I-II	11			8	21	22			+	+	
—. Epidemics I-IV	Epidemiae I-IV				20	10	11	+	+	+	+	+
45. Epidemics	Epidemiae VI				20	10	11	+	+	+	+	+
09. Airs, waters and places	De aëre, aquis et locis			29		9	10	+	+	+	+	+
19. Sevens	Hebdomadarium					32				+	(+)	+

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Original texts and English translation are in 6 volumes of the LOEB Classical Library, under the supervision of the Department of Classics of Harvard University, Harvard University Press, Cambridge, Ma., as follows:

I. Ancient medicine; Air waters places; Epidemics I and III; The Oath; Precepts; Nutriment;
II. Prognostic; Regimen in acute diseases; The sacred disease; The art; Breaths; Law; Decorum; Physician (ch. I); Dentition;
III. On wounds in the head; In the surgery; On fractures; On joints; Instruments of reduction;
IV. Nature of man; Regimen in health; Humours; Aphorisms; Regimen I-III; Dreams;
V. Affections; Diseases I-II;
VI. Diseases III; Internal affections; Regimen in acute diseases (appendix).

Original texts and French translation are presented in the series of the Société d'édition Les belles lettres, Paris, under the supervision of F. Robert. The critical translations have been made by well known specialists, such as J. Irigoin, R. Joly and J. Jouanna, on this Hippocratic books:

Des vents; De l'art; Du régime; Du régime des maladies aiguës; De l'aliment; De l'usage des liquides; Maladies II; Génération; Nature de l'enfant; Maladies IV; Foetus de huit mois; Des lieux dans l'homme; Du système des glandes; Des fistules; Des hémorroïdes; De la vision; Des chairs; De la dentition.

[1] ILBERG J. and KÜHLEWEIN H., cit., 1894, pp. 28 and 63.

Reference is not always properly made to the *Corpus Hippocraticum*. For example, in referring to *C.H.*, one may intend the whole collection of the single works, as done by HORSTMANSHOFF H.F.J., *The Ancient Physician: Craftsman or Scientist?*, J. Hist. Med. All. Sci. 45:176-197; 1990.

[2] The singleness of the *Corpus* preserved in *rotoli* was produced by the catch line at the end of each treatise to the beginning of the following treatise. In this way, it was possible to collect and transmit very lengthy writings, like Homeric poems and Aristotelian writings, as revealed by JOUANNA J., *Remarques sur les réclames dans la tradition hippocratique. Analyse archéologique du texte des manuscripts*: Ktema 2 (1977) 381-396. The collation of works to be put in order in a single corpus occurred in certain periods of history. In this way, the Justinian *Corpus Juris Civilis* was the response to the need for uniformity in the legal foundation of a vast Empire.

When a *Corpus* was constituted by *rotoli*, the singleness was produced by the technical trick of connecting the texts by means of repetitive references, at the end of a roll to the beginning of the following one (*réclame* in French, *catch line* in English, *frangzeile* in German, *richiami* in Italian). The catch lines become superfluous when one passes from *rotoli* to a single codex, but they do not disappear in all cases. Jouanna believes that their continuance was encouraged by copyists in order to avoid errors and gives eight examples of referring from one treatise to another by means of a catch line (JOUANNA J., cit., 1977, p. 396). It should be particularly noted that between the end of one treatise, where the title of the catch line is, and the treatise which actually follows, there is not always consistency. This occurs in V 276 when at the end of *De generatione*, *De natura pueri* is cited in the catch line but instead *De superfoetatione* follows.

The present interest for catch lines is due to the possibility of reconstructing the ancient logical order of *C.H.* when this order was produced by a succession of *rotoli* and not by a single codex. In this way, information can be obtained on the derivation of a Codex from archetypes, from scriptoria, by a method which Jacques Jouanna defines *"archeological analysis of the manuscript"* (JOUANNA J., cit., 1977, p. 396).

[3] *LEXICOGRAPHI GRECI, Suidae Lexicon*, Pars II, Ada Adler ed., Aedibus B.G. Teubneri, 1931, pp. 662-663.

An extensive list of Hippocratic writings is contained in Codex *M* 269, which is, along with Σουίδας λεξικόν, attributed to the 10th century: it may be asked what the relationship may be between the two and which, if any, would be the prototype, taking into consideration that more ancient manuscripts containing a comparable number of works from the Hippocratic school did not reach us. It should be considered more likely that Σουίδας λεξικόν derived from *M* 269 (more properly from an archetype from which the latter derived). *M* 269 contains works which are transcribed in an order that must have followed a certain tradition (for example, beginning with *Iusiurandum* and *Lex Ippocratis*: see *M* 269, index of *V* 276, writings of *V* 276, *Parisini gr.* 2140, 2142, 2143, 2145, 2146, 2255) and had shorter manuscripts available. It is harder to think that the copyist may have had *rotoli* available to him in the same order as that in Σουίδας Λεξικόν.

On this subject, refer to: IRIGOIN J., cit., 1973.

[4] LIENAU C.D., cit., 1973, p. 13.

[5] ILBERG J. and KUEHLEWEIN H., cit., 1894, p. 28.

[6] In 1152, Conrad III died and rumors spread that his death was not due to natural causes, but was instead brought on by Court physicians from the School of Salerno. After the death of Roger II (1154), the new king of Sicily, William I, did his best to break

the alliance between the two empires (Germanic and Oriental) and of Byzantium with Venice. The latter, in fact, became ally to William I: a war broke out with Byzantium, which reacted by destroying Bari. Frederick I Barbarossa (1123-1190) also broke alliances with Byzantium. At this point, Manuel (1143-1188), considering unlikely either a reconciliation with Barbarossa or the reconquering of Italy, made a peace settlement with William I of Sicily in 1158, the conditions of which we did not get but which were clearly founded on the definitive renunciation by Byzantium to reconquer Italy. It represented a good opportunity for cultural exchange. On this subject, refer to: VASILIEV A.A., cit., 1932, pp. 65-66. Vasiliev also points out that Manuel, an expert in astrology, wrote an apology on astronomic science, defending it from ecclesiastic attacks. Thus, besides Almagest, other codices ended up in Sicily from *Manuele's Library in Constantinoples* (pp. 149-150).

[7] Dizionario Bibliografico degli Italiani, cit., 1964, subject *Enrico Aristippo* (edited by E. Franceschini), pp. 201-206.

[8] *Cod. Oxon. Coll. Corpus Christi* 243, Oxford; the letter by Aristippus was published in: *Phaedo interprete Henrico Aristippo*, edited by L. MINIO, *Plato latinus, Londini*, 1950, p. 89-90.

Four exemplars came to us from the Almagest: Parisinus gr. 2389, *Vaticanus gr.* 1594, *Marcianus gr.* 313, *Vaticanus gr.* 180. The one presented by Aristippus was *Marcianus gr.* 313 (initialed *"and"*, translated into Latin by an anonymous student from Salerno).

[9] HASKINS C.H., cit., 1927, pp. 171-177.

[10] HASKINS C.H., cit., 1927, pp. 157-164: The first version of Ptolemy's *Almagest*; pp. 191-193, Preface to the Sicilian *Almagest*.

[11] On the transmission of *C.H.* into Syrian and later into Arabic, especially by the school of Hunayn Ibn-Ihâq, see: HABBI J., *Hunayn ibn Ishaq*, Bagdad, 1974, and the special issue of the Journal *Arabic*, Paris, 1974.

[12] Constantine the African, of Arabian origin, went to Salerno in 1077 where he stayed for two or three years and then went on to the abbey of Montecassino, where he founded a scriptorium for translations of medical writings from Arabic into Latin until his death in 1087. His writing Τέχνη (*Pantegni*), which was probably also translated by disciples as well as himself, was dedicated to Abbot Desiderius.

On this subject, refer to:

DAIN A., *L'encyclopédisme de Constantin Porphyrogénète.* Lettres d'Humanitè 13 (1953) 64-81.

JENKINS R.J.H., Constantine Porphyrogenitus. *De Administrando Impero* (Greek text edited by Gy. Moravcsik). Dumbarton Oaks Center for Byzantine Studies-Trustees for Harvard University, Washington, D.C., 1987.

KIBRE P., *Hippocratic Writings in the Middle Ages*, Bull. History of Medicine 18 (1945) 371-412.

KRISTELLER P.D., *Studi sulla Scuola Medica Salernitana*, Ist. Ital. Studi Filosofici, 1986, Naples (particularly for the Arabian or Greek derivation of Salernum's texts, pp. 32-45).

In regard to Cofon we have a manuscript, *Ars medendi*, written expressly for students (*Ego namque secundum hoc opus de modo medendo a Cofonis ore suique et sociorum scriptis compendiose collegi... Collectio Salern.*, IV, p. 416).

Maurus, who died in 1214, is the author of a Salerno commentary on *Aphorismi* and on Προγνωστικόν by Hippocrates, on *Tegni* by Galen, and on texts introduced by Constantine the African. These commentaries constituted the basic text for the training

of doctors in Salerno and Naples and, immediately afterwards also in Paris; they were printed as a collection of works in the 15th and 16th centuries under the name of *Articella*, influencing the training of doctors from the 12th century for almost 500 years.

See also: DE RENZI S., cit., 1857, pp. 218-227.

KRISTELLER P.O., *The School of Salerno. Its Development and its Contribution to the History of Learning*, Bull. History of Medicine 17 (1945) 138-194.

KRISTELLER P.O., *Bartholomaeus, Musandinus and Maurus of Salerno and other early commentators of the Articella.* Italia Medioevale e Umanistica 19 (1976) 57-87.

[13] Τό φυσικόν is a term which definitely owes its extensive diffusion to Aristotle's *Physica*, a treatise on philosophy and natural sciences, a central work in the way of thinking of the Stagirite.

The components in the system of reasoning were: φιλοσοφία, θεωρία, ἐπιστήμη, προτάσεις, all of which were summarized in ἡ φυσική. Thales, as natural philosopher, is ὁ φυσικώτατος (Lucian 79, 4).

In addition, the influence of stoicism should not be underevaluated: the three branches of stoic philosophy are τό φυσικόν, τό ἠθικόν, τό λογικόν (Plutarch, *Moralia* 97.395).

The term *physicus* is used to indicate a doctor in writings by Rabanus Maurus and Richer of Reims: MACKINNEY P., *Tenth Century Medicine as seen in the Historia of Richer of Reims.* Bull. Inst. History of Medicine 2 (1934) 347-375.

For the terminology used to call physicians and other people working around medicine, see: ANGELETTI L.R., *Views of Classical Medicine. Theurgical and secular rational medicine in the healing-temples of ancient Greece.* Forum-History of Medicine 1.2:1-11, 1991.

[14] In regard to Leon the philosopher, see LEMERLE P., cit, 1971, pp. 148-176.

[15] The *munus* of Cardinal Bessarion to the Doge and Senate of Venice in the public records of May 31, 1468, involved 482 Greek manuscripts, thirty of which were exclusively on medicine (*Marcianus gr.* 269-298), while the others were on various subjects, including medicine (codices 173, 175, 299). The codices were acquired by Bessarion in part from Constantinoples (with the help of the Emperor Joannes Paleologus and his secretary Joannes Aurispa), Crete, and the Aegean Islands. Other codices were acquired directly by the cardinal from Byzantine monasteries in *Magna Grecia*. Lastly, other codices originated from the scriptorium in Bessarion's residence in Rome at the Basilica of SS. Apostoli, frequented by humanists, many of whom were from Asia minor invaded by the Turks. A sign of relations of the Cardinal with Sicily appears in a *codex* from the *Bibliotheca Mediussensis* at the Monastery of St. Maria delle Grazie of Mezzoiuso. Among these, the more recent *Mediussensis* 3 is a sort of encyclopedia which includes iatric philosophy, astrology and astronomy, pseudo- Hippocratic and pseudo-Galenic medical treatises, etc.

The Greek Codex which includes a writing by the Cardinal is now at the City Library in Palermo (*Panormitanus* A 77). It includes rhetorical writings, among which is one by Bessarion to Michael the Apostle and one to the Cardinal (f 55v: *Bessarion Cardinalis, Epistola ad Michaelem Apostolium. Inc.* 'Αφίκετο ὡς ἡμᾶς τῇ συμβουλῇ f 57: *Michael Apostolius, Epistola ad Bessarionem card. De substantia adversus Platonem. Inc.* Βησαρίωνι. Οἶδα σε, θειότατε Καρδινάλεων, δυοῖν τούτοιν ὄντοιν ἡγεμόναν τῶν λόγων, expl. ποιήσας ὑπήκοον).

Other writings by the Cardinal are found in the Library of Savignano on the river Rubicon.

[16] DERENZINI S., cit. 1976, pp. 96-102; ROME A., *Un manuscript de la bibliothèque de Boniface à la Medicéenne de Florence.* L'antiquité classique 7 (1938) 261-268.
[17] PELZER A., cit., 1938, p. 268-270.
[18] CANART P., cit., 1978, p. 149.
[19] *CLM* 39, Bayerische Staatsbibliotek, Munich:

> *Inc.: Hippocratis de natura pueri, translatus de greco in latino a magistro Bartholomeus de Messina in curia illustrissimi Manfredi regis Sicilie scientie amatoris de mandato suo. Si sperma ab utrisque permanserit in matrice mulieris.....*
>
> *Expl.: si vero infirmum utraque femine fiunt. Et iste sermo sic dictus totus finem habet.*

[20] Bartholomaeus was a very faithful translator (sometimes, at the expense of comprehending the text). He dealt mainly with Aristotelian and pseudo-Aristotelian works. See: Dizionario Biografico degli Italiani, cit., 1964, vol. VI, pp. 729-730, edited by S. Impellizeri.
[21] GILISSEN L., cit., 1972. In regard to the juxtaposition of the fur side with the skin side, the law of Gregory is noted which expresses the constancy of the juxtaposition on the same parchment side. Defects in preparation are found on the fur side such as hairs which were not completely removed (for example, see fol. 24r, 35r, 36r). Irregularities which were not eliminated by trimming the folia can be found at the edges: for example, at fol. 79r, the lower edge is lacking. Tears and holes, as in fol. 80r, in which the outer edge has been resewn, and in fol. 113r and fol. 207, small parts of the folia have deteriorated due to humidity.
At fol. 204r, a word (*karbalus*) can be read in an orthogonal fragment to the text, inserted on a patch on the seam side.
It can definitely be said that the parchment is not of the best quality. On the other hand, we know that already in the 12th century in Constantinople, it was difficult to obtain parchments, especially high quality ones. They were expensive and the quality used depended on the buyer and on its intended use.
Many skins were needed to make a Codex: the usable surface of an adult sized animal skin measured 80x60 cm, equal to 4 folia of large size (40x30 cm) in two bifolia.
[22] GILISSEN L., cit., 1972: cit. Jones.
[23] In regard to ruling, see LEROY J., cit., 1976. The system of ruling can be either simple (the same system for vertical and horizontal lines) or double (vertical and horizontal lines drawn according to different systems).

In some cases, there is a system of retracing with a pencil over the ruling, as in some Calabro-Sicilian codices of the 12th century.

Ruling can appear on the fur side or on the skin side, with either two or four principal rulings per quaternion, on two consecutive sides or on alternating sides.

An analysis of the engraving, if it is well preserved, can give indications on the system of ruling.

In regard to the extension of the straight lines, marked by a majuscule letter (A-G), "A" is used to indicate the type of extension in which the straight lines cross the entire page, "B" indicates the type in which the lines go from the left margin to a line at the right margin, "C" being the type in which the line of justification reaches the line of justification on the right, "D" for when the line goes from the line of justification on the left to that on the right, etc.

The ruling consists of margin lines, justification lines, and straight lines.
In Codex *V* 276, the vertical margin line is 29 mm from the outside margin and 17 mm from the perforation.

Horizontal margin lines are spaced 100-130 mm from the upper margin and 100-150 mm from the lower margin.

The upper inside horizontal line is spaced 6 mm from the upper outside horizontal line, and the lower inside horizontal line is 5 mm from the lower outside horizontal line.

The outer lines of justification are spaced 6 mm from each other and the inner lines of justification are spaced 5 mm from each other and 25-27 mm from the inside margin, corresponding to the fold of the bifolia. The area of writing between the inner lines of justification ranges from 190 to 194 mm.

In addition, the straight lines are spaced out from each other, with slight deviations, covering a total area of 290- 295 mm per 40 lines (about 7.5 mm between lines).
[24] TSCHIEDEL J., cit. from ILBERG J., 1894, cit., p. XV and from MERCATI G. and CAVALIERI P., cit., 1923, p. 364.
Ilberg quotes the opinion of Tschiedel in a footnote:

> *Alteram manum primam excipere fol. 100r vers. visum est Ioanni Tschiedel, qui maximam huius codicis partem Regiae societatis litterarum Saxonicae iussu in usum nostrum accuratissime contulit.*

[25] LIENAU C., C.M.G., cit., 1973, p. 13. Lienau is convinced that actually three hands were involved. In fact, he tends to force the differences between *Va* and *Vb*. For example, the Greek letter, θ, which in his opinion is minuscule in *Va* and in *Vb* is uncial, appears this way in very few cases. Likewise, according to Lienau, *Va* is characterized by the open form of the letter θ while *Vb* has the closed form: this, again, appears only very rarely.
[26] Ornamentation could be of different types:
— severe (black and with decorative elements drawn in the same ink as the text);
— monochrome (in red compared to black used in the writing), polychrome (with more than one color and with more elaborate motifs, drawn by the copyist or by a more specialized artisan).
[27] In paleography, three types of handwriting are differentiated:
a) ordinary cursive writing, used for practical and immediate common writings;
b) chancery writing, purposely artful, used for important public records;
c) book writing, used prevalently, but not exclusively, in the copying of volumes, is clear, legible, and orderly and not lacking in a minimum amount of artistic value (calligraphic).

Book writing revealed a sedate *ductus* and also had some elements of cursive writing. Etching and ruling are not very elaborate. In the passage which occurred in the 9th century from majuscule to minuscule, there was a definite influence on book writing by chancery writing. In the Monastery of Study of Constantinople, which was a protagonist of this passage, Theodoros and later Nicholas were leading supporters, both linked by parentage to Plato, an eminent personality of the Byzantine Chancellery of the 9th century and Patron of the Monastery.

The passage of the majuscule (uncial) to minuscule was necessary for several reasons, related particularly to the fact that the 9th century in Byzantium was a period of great cultural renaissance and spreading after the Dark Ages following the death of Justi-

nianus. A rapid spread of ideas was encouraged and a type of writing which occupied less space was, at that point, essential. This mode of writing, together with the introduction of paper by the Arabians (which they had imported from China), stimulated the revival and spread of culture, with the emerging of distinguished personalities.

Among these personalities was Leon, illustrious philosopher and mathematician, who gave great stimolous to the technical- scientific disciplines such as mathematics and astrology, of which he was professor; he is also noted for an important library (information about it was learned from an expensively purchased codex whose subscription was signed by Leon).

Another famous library was that of Fozius (born in 810), who obtained (or copied) Arabian codices following a diplomatic mission in 876. Fozius also played an active role in the recurrent disputes between the Church of the Orient and that of the Occident. It is important to recall that, in a system of religious beliefs in which all which occurred was under Divine Providence, the medicine of Cos itself could not be considered anything but suspicious, while the prevailing medicine was limited to recording pathological events and was careful not to seek the causes, whether general (recall the follower of Hippocratic doctrine, *De aëre, aquis et locis*) or specific.

The episode is recollected in which a certain physician in the 6th century in Byzantium attributed the high mortality from the plague (although it must have been louse-borne typhus) to the unsanitary conditions of the poor neighborhoods: he was accused of blasphemy for it was not the air nor the poor environmental condition which was the cause of the fatal epidemic, but instead, the will of God which manifested itself in form of the plague.

Medicine had regressed to a pre-Hippocratic stage as theurgic medicine, in which a god is substituted by the patron saint of the disease (in Byzantium, St. Arthemisius and St. Frebonia protected against genital diseases: by spending the night at the Church of St. John, one would be cured by the next morning, just like in the theurgic medicine of the Ασκληπίεια!). In the same context, the logical medicine of Hippocratic teachings had very little room for expression.

In addition, Byzantines were more eager about learning the significance of a scientific phenomenon than about its cause. All of this explains the low interest in medicine *per se*: in fact, it was studied instead as part of other sciences such as philosophy. Instead, philosophy and logics were well represented at the Court of Byzantium, as seen in the library of Fozius; Aristotle was widely studied, while the acceptance of Plato with his division between the world of ideas and that of reality underwent the same aversion that heresy had had of Monophysites or of Nestorius or iconoclasts, who maintained that an icon was the prototype of God and that its veneration did not signify idolatry.

When Psellus in 1100 related again to Platonism, he was quickly accused of abandoning orthodox beliefs in a political-religious system which made religious orthodoxy the articulation of imperial power.

Another important figure in this period was Aretas of Patras, who founded a large scriptorium, although smaller than that of Leon or Fozius, with whom he had ties.

[28] LIENAU C., *C.M.G.*, cit., 1973, p. 14.
[29] POTTER P., *Hippocrates, Loeb Classical Library*, Harvard University Press, Cambridge, Mass., 1988 (see Introduction, pp. IX-XIV).
[30] IRIGOIN J., cit., 1973, p. 6.

[31] WEISSER U., *Das Corpum Hippocraticum in der arabischen Medizin*. Sudhoffs Archiv 27 (1989): 377-408.
[32] ULLMAN M., *Die Medizin im Islam*. Leiden-Köln, Brill E.J. Press, 1970: see pp. 392-393.
[33] WEISSER U., 1989, op. cit. ref. 31, pp. 377-378.
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