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**ANIMAL HISTORY: PATTERNS OF AUTHORITY IN THE MIDDLE AGES**

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**ANIMAL HISTORY: PATTERNS OF AUTHORITY IN THE  
MIDDLE AGES**

by

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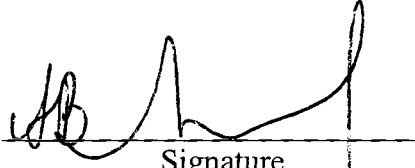
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## INTRODUCTION

When we speak about zoology today, we usually refer to the modern science that deals with animals. Carolus Linnaeus and Charles Darwin are the people who are usually praised as the founders of this science, the former with the introduction of a new methodology for biological classification in the eighteenth century, namely the typologically based one, the latter with the publication of *On the Origin of Species* in 1859, where he formulated his theory of evolution on the basis of natural selection. The works were fundamental and revolutionary indeed, and they gave zoology the shape it has today; its development from then on has mostly been seen as absolutely positive and progressive. In this context the study of animals in antiquity and in the Middle Ages is often looked down on and used as a further argument for the enormous progress that zoology made from the eighteenth century onwards. From the historical point of view, however, the shift to an utterly new and essentially different methodology and attitude led to the loss of the natural system our ancestors referred to when describing an animal. Recently attempts have been made to recover it.

The historical study of animals is multidisciplinary research that goes far beyond mere biology. Some disciplines which share an interest in this activity are archaeozoology, art history, symbology, literary studies, and palaeography. Even though each of these has its own field of research and its own methodology, I believe that an attempt at an interdisciplinary approach should be encouraged. A cross examination of diverse data will definitely benefit the reconstruction and understanding of medieval animal lore in its entirety.

The aim of this work is to observe the transformations that the encyclopedic texts on animals went through during the Middle Ages, and also to highlight the

strong tradition which survived despite changes in the genre. For this purpose I chose to compare Isidore of Seville's Book XII *De Animalibus* of his *Etymologiae* with a late medieval text, Jakob Meydenbach's *Hortus Sanitatis*, the *Tractatus de Animalibus* and *de Avibus* in particular. The works frame the *Medium Aevum Latinum* both geographically (Isidore lived and worked in Seville, Spain, and Jakob Meydenbach in Mainz, Germany) as well as temporally (the *Etymologiae* was created in the seventh century and the *Hortus Sanitatis* at the turn of the fifteenth century). By analysis of the quotations in the *Hortus Sanitatis* taken from Isidore's treatise I will demonstrate the purely textual interaction between the texts on one hand, and also how the understanding of the latter can benefit from data taken from collateral sciences on the other. In its essence the research will be philological, and the quotations will be assessed on the following criteria: frequency, accuracy, and consistency. However, I will search for corroboration of my inferences by means of references to art history, zoology, and symbology.

The comparative nature of the study naturally led to a dichotomising tendency which is manifested in the structure of the chapters. The main dichotomies are "the Middle Ages" and "antiquity," "theory" and "practice", "general" and "specific", and "science" and "fiction". I conscientiously created this structure and intentionally looked for it during the research, since I believe that it highlights the differences and similarities between the two texts and illustrates the process of change natural history went through.

## Ancient and medieval scientific thought<sup>1</sup>

Ancient scientific thought, in the form that Isidore of Seville found it, combined the controversies of long centuries. In ancient Greece it had survived as a strictly secular, experimental, observational enterprise which resulted in serious scientific achievements. As such it was also absorbed by the Romans, but in their urge to follow the example set for them by the Greeks they approached its statements and accepted them without much criticism, thus creating a strong authoritative tendency. Centuries of active scientific thought in Greece resulted in an enormous collection of specialised treatises devoted to a particular topic or a group of phenomena,<sup>2</sup> where the object was closely observed, analysed in detail, and an attempt at its logical explanation was made. The results of this process did not develop further on Roman ground: they were just quoted, their origin being enough proof for their veracity. The same tendency occurred in the literary field.

The poetic and prosaic works of the Greek cultural domain were regarded as examples for the developing Roman literature and most attempts of the latter were mere paraphrases and adaptations of earlier originals. Speaking theoretically, this attempt to copy Greek works and the ambition not to fall below their standards resulted in a vast number of institutional, analytical, and descriptive scientific works on language, poetry, prose, and rhetoric. As a result of this vigorous theoretical activity the authoritative value that literary works of ancient Greece had as a standard

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<sup>1</sup> From historical perspective, "science" has a relative meaning. It is with this notion that the term has been used -- and should be accepted by the reader -- throughout this paper. An extensive study of the development of science is: Lynn Thorndike, *A History of Magic and Experimental Science*, vols. 1-8 (New York: Columbia University Press, 1929-1958). On ancient science see: Roger French, *Ancient Natural History: Histories of Nature* (London: Routledge, 1994), Ernest Brehaut, *An Encyclopedist of the Dark Ages: Isidore of Seville* (New York: Columbia University Press, 1912), particularly chapter II: Isidore's Relation to Previous Culture. On medieval science: David C. Lindberg, ed., *Science in the Middle Ages* (Chicago: Chicago University Press, 1978); Edward Grant, "Medieval Science and Philosophy," in *Medieval Studies: An Introduction*, ed. James M. Powell (Syracuse N. Y.: Syracuse University Press, 1992).

for imitation for the Romans in pure technical terms soon transmitted itself to fiction as such. Thus, formal exemplarity was gradually transformed into exemplarity of content and the messages brought by a poem or a novel could be accepted as authoritative without much criticism.

This tendency grew stronger with time, and it led to two main results. Firstly, given the flourishing development of most literary and non-literary written genres in Rome it was soon possible for the Roman intellectual elite to create authorities from among its own citizens. The works of Cicero, Pliny, Ovid, and Virgil, stood together with the Hellenic archetypes as a measuring stick of talent and authenticity and thus marked a significant step of “authoritativeness” as it was now sought on Rome’s own grounds. Secondly, such a paradigmatic approach demanded an extremely broad knowledge of the tradition in a certain field and this was often demonstrated by an author in an explicit way by naming his sources. Logically, an author would naturally aim to offer to the reader as many authors or topics as possible and this led to a strong epitomising and therefore generalising tendency which opposed Roman thought diametrically to its Greek example.

Christianity was essentially different from this merged Mediterranean culture and offered a far greater challenge to the intellectual mind contemporary to the time of its appearance. Being a monotheistic religion, it also promoted a construction of the world that consisted of the material, the moral, and the spiritual sphere of existence.<sup>3</sup> The three were hierarchically dependent on each other: the material world stood at the base and the spiritual one was on the top. As materiality was seen as just an expression of spirituality, of the Word of God, its main purpose was to serve as a

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<sup>2</sup> The works of Aristotle, for example: *Physics*, *History of the Animals*, *Politics*, *Poetics*, etc.

<sup>3</sup> Cf. Brehaut, *An Encyclopedist*, 65-66.



mere illustration and it was of no interest in itself. Secondly, the projection of God over the material world made any attempt at secular, experimental explanation of the latter seem unnecessary. Nature, as a part of the material world, ceased to be an object of observation in itself.

Nevertheless, Christianity absorbed something from the civilisation in which it was born. This was due to several reasons. Firstly, as was noted above, by the time the new religious system came into being, the authoritative tendency among intellectuals in Rome had already grown strong and was set on a sound base in all fields of thought. Thus, it could influence a mind both explicitly as well as implicitly. To put it in another way, even though the old contents, the “filling material,” were rejected and transformed, the structural train of thought was preserved and transformed, and fought over for a far longer period. Secondly, from a merely practical point of view Christian doctrine needed not only to survive in a hostile environment, but also to strengthen its position and attract more followers as soon as possible. For this purpose it sought parallels among the most revered systems of thought in antiquity, the philosophical schools, and adapted some of their teachings to its own doctrine.<sup>4</sup> Among the most influential ones were the Neoplatonists and the Stoics.<sup>5</sup>

Neoplatonism had a general influence on the development of Christian thought and took part in its structuring. The Stoics, on the other hand, made a more focused contribution in terms of the development of natural history. One of the most eminent

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<sup>4</sup> In the introduction of *Ancient Natural History* (xviii), Roger French states that most of the surviving texts from antiquity have been preserved due to their compatibility with later religions and cultural systems. It is with this presumption that ancient authors are being discussed in the following passages.

<sup>5</sup> See Brehaut, *An Encyclopedist*, chapter I of the introduction. The first principle of Neoplatonism was “the suprarational, that which lies beyond reason and beyond reality” 15, footnote 2. A principle that might have sounded unsatisfactory to the empirics of earlier times, but which suited perfectly the doctrine of Christianity.

Stoic philosophy was brought to the Christians by the Romans in an assimilated form adapted to their viewpoint. French, *Ancient Natural History*: “Roman Stoics did not seek to understand causes in the

Stoics in Rome, Seneca the Younger, wrote a whole work, *Naturales Questiones*, which was devoted to natural matters and which played an important role in the formation of the Christians' approach to the problem. In the first place, he imposed the leading principles of Stoicism: gods do not exist, but rather the world is divine in itself and divinity is expressed as a whole-uniting principle of everything that keeps it running. With such a "down-to-earth" topic he created a pattern for studying nature which was at least acceptable for Christians. Furthermore, Seneca's particular approach to philosophy was to bring the doctrine of Stoicism together with doctrines *ex alienis hortulis*<sup>6</sup> in order to reach a fuller understanding of the world and its moral system. Thus he enhanced the further development of the mere study of nature not as a goal in itself but rather as an instrument for revealing the higher sphere of morals that gave sense to the material. Finally, Seneca's lifetime<sup>7</sup> coincided with the birth of Christianity, and the immense influence he had among intellectuals – to a certain extent this was due to Nero's favourism to the philosopher – was inevitably seen as a further advantage for adopting his teaching by the Christians.

To summarise, the attitude of Christianity to nature and its interest in it was undoubtedly constructed by its own leading principles, but in the process of its early development the Christians tended to compromise. Borrowing ideas and explanations of the world from earlier thinkers was a common practice and moulding these according to the Christians' own beliefs in order to reach a comprehensible and widely popular doctrine did not appear heretical or out-of-place. Such interaction between the new monotheistic religion and the earlier polytheistic ones was achieved

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natures of things nor did they look for an imposed teleology, but sought to accept and live with what was natural." 161.

<sup>6</sup> "...from the gardens of others", Seneca, *Epistulae Morales ad Lucilium*, IV, 10. The author refers to the other philosophical schools, on this occasion, the Epicurean one.

<sup>7</sup> 4 BC-65 AD.

on several levels: various pagan concepts contributed both to the strictly structural and merely formal developments of Christian thought as well as to the particular, more specific and detailed treatments of a topic or a field of knowledge. In the latter case, many stories, legends or even whole works from the tradition of antiquity were embodied in Christian doctrine, the stress they received modulated according to Christianity's demands and needs. One such case is the "history of the animals," to borrow Aristotle's definition.

## CHAPTER I: HISTORIAE ANIMALIUM

### Antiquity

The study of animals, or the “history of animals,” shares the same features in its development as the general works described above. Once again, the Greeks set a highly detailed empirical study of the problem, whereas the Romans merely struggled to keep pace and follow earlier examples. Undoubtedly, the most influential examples for a history of animals were Aristotle’s works, *Historia animalium*, *De partibus animalium* and the *De Generatione Animalium*. In them the Philosopher remains faithful to his philosophy and gives a detailed treatment of the animal species as well as of the anatomy and the members of the body of the animal in accordance with the four natural principles he established: form, matter, cause, and goal. To approach an object from this point of view inevitably implies a presumption that it is constructed individually, namely, has its own form, matter, cause, and goal. Thus, every object – in this particular case an animal – has a nature of its own. When Aristotle talks about nature what he has in mind is not a universal uniting principle, but individual combinations of the four elements, which keep the object functioning. In order to get to the essence of his examination, Aristotle not only observed animals, but also carried out dissections and provided his encyclopedia with diagrams on anatomy and structure of the body.<sup>8</sup>

The existence of treatises so detailed and empirical and also written by such an authority as Aristotle soon became rendered any later attempts at a repetition in the

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<sup>8</sup> There is a separate treatise on anatomy written by Aristotle, but unfortunately it did not survive. However, in the *Historia animalium* he refers to this text and its diagrams. (see Roger French, *Ancient Natural History*, 40)

same manner vain and worthless. On the other hand, it provided scholars in Rome with material for quotations which, according to their criteria, was of highest quality.

Seneca and his influence on the development of scientific thought in general was noted above. Seneca, however, was too Roman a stoic to treat animals. His attempt to explain nature in the *Naturales Quaestiones* depended on the effect it had on mankind. He kept a record solely of the elemental nature, because it was the one that creates the circumstances for mankind and it could inflict danger upon the lives of men; according to the Stoics, it was these circumstances that were of interest. Animals were rather objects of the same circumstances than part of them and therefore remained undescribed by Seneca. However, another contemporary of his, also a follower of Stoicism, took the enterprise to create a work that encompassed all things very seriously.

Pliny the Elder (23-79 AD) is said to have written several works,<sup>9</sup> but his *opus vivendi* is the *Naturalis Historia*. The work is divided into thirty-seven books and gives explanation for all things in the world according to their relation to man. In the preface Pliny announced his object of investigation: “...*rerum natura, hoc est vita*”<sup>10</sup> (and what he referred to as “nature” was a universal principle uniting all). Then he clearly stated that the aim of the work was to bring together earlier “scientific” works on various topics in an encyclopaedic manner. Once again, the strong authoritative tendencies in early imperial Rome influenced his approach and in the first chapter he explicitly listed an impressive number of sources which he based his investigation on. Animals are discussed in books VII to XI, mostly on the basis of Aristotle’s work; here, however, the direction in which animal history was going is clearly discernible

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<sup>9</sup> None apart from the *Naturalis Historia* survived to modern times.

<sup>10</sup> “...The nature of things, that is, life.” Pliny, *Naturalis Historia*, praef. 13.

in several points: the respect for authority; Pliny's epitomising and anthologising method of compilation; the mixture of oral tradition and fictional motifs with the serious scientific works of earlier times. Thanks to the popularity of the *Naturalis Historia*, this latter feature played an important role in the further development of animal history by the merging of "fiction" and "science."

Morals played an important role in this merging. The importance it had for the Stoics<sup>11</sup> as a unifying joint of their world was noted above, but it was important for Christians as well. In their world, the animals, as everything else, were a direct creation of God, and this was the explicit answer to any questions about their origin and aim of existence. Since they were positioned in an anthropocentric world, Christianity asked and tolerated rather "of what aid they could be to mankind?" than "what is their individual value?" An effective and educational way of answering this question was the allegory. This literary narrative was first used by the Stoics but soon became a favourite Christian way of expression. As a tool for interpretation of the Scriptures it found its way to them through the mediation of Philo, a Hellenised Jew who lived at the turn of the first century AD. In his copious writing he used this form to interpret books 2 and 3 of Genesis, but did not touch upon animal lore. However, his achievement did not remain hidden for long, and soon one of the most influential works on animals was created: the *Physiologus*.

Despite its wide popularity, little is known of the exact dating of the work and the author who is hidden behind the name *Physiologus*.<sup>12</sup> Scholars have attributed the collection to St. Basil or to St. Epiphanius, that is to say, the fifth century AD, but

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<sup>11</sup> Pliny also shared this attitude.

<sup>12</sup> For a brief overview of the work see French, *Ancient Natural History*, 276 ff. and Ana Stojkova, *Fiziologat v južnoslavjanskite literaturi* (The *Physiologus* in the South Slavic Literatures) (Sofia: BAN, 1994): Introduction.

evidence suggests that the text is at least two centuries older.<sup>13</sup> It consists of forty-eight sections or stories in Greek devoted to an animal, a plant or a stone in which some feature of the appearance of the object or of its behaviour is described and a Biblical morale is attached to it. Thus, the work not only rose in the tradition of Christian interpretative literature, but thanks to its early dissemination in Christian lands and numerous translations into Arabic, Syriac, Armenian and Latin (around the fourth century AD), it set the framework of the naturalist's work and bound together the threefold format<sup>14</sup> in which it existed throughout the Middle Ages.

### **The Middle Ages**

In the Middle Ages, development of science generally and of natural philosophy in particular took place most significantly in the second half of the period. At the beginning of the period there were some attempts at doing science, but to a great extent they were confined to the liberal arts.<sup>15</sup> Even though they did not survive under this name in the Middle Ages, the centuries-long conception that they were central to education had its effect upon medieval scholars as well. Yet, most Greek texts were not available for the Latin West or, if they were, their language rendered them unreadable. Among the early attempts to transmit Greek knowledge to the West one should mark the translation of the *Physiologus*, as well as Boethius' translations of philosophical and scientific texts at the threshold of the period. Apart from these attempts, the only contact that early medieval authors could have had with Aristotle's natural treatises, for example, were through their assimilated epitomised variation in

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<sup>13</sup> See: Bestiary. *Encyclopedia Britannica*. Retrieved May 8, 2004, from Encyclopedia Britannica online. <<http://search.eb.com/eb/article?eu=81080>>.

<sup>14</sup> Namely, sections on plants, on animals and on stones, respectively *herbarius*, *bestiarius* and *lapidarius*.

late Classical authors such as Pliny's *Naturalis Historia* and Solinus's *Collectanea rerum memorabilium*. With the decline of the Roman Empire and the vigorous attempts of the Church to secure its position in Europe by stressing theology rather than anything else, the study of nature was left in the shadows for several centuries.

Its revival came only in the twelfth and thirteenth centuries, when a strong increase in education and consequently in an interest in science took place. This process is marked by the foundation of universities all across Europe. By the time the Church had secured its position and therefore it lessened its control over secular scientific activity, even though it was kept under its strict supervision. The existing "scientific" paraphrases and compilations made by Latin-speaking authors no longer sufficed for the academic demand, and as a result a very active process of translation of Greek texts from their Arabic version into Latin took place.<sup>16</sup> Such a sudden introduction of a great number of texts on purely scientific and philosophical topics provoked scholarly interest, and a more balanced educational system was created, where theology and the liberal arts lost their centrality and were harnessed to the understanding of philosophy. The latter had three main sections:<sup>17</sup> metaphysics, natural philosophy, and moral philosophy, out of which only the first two were regarded as sciences.

The study of animals was undoubtedly based mostly on the scientific texts on zoology. But the rise of interest in them, roughly speaking, from the twelfth century onwards had its reasons in other written sources on animals as well. The Latin version

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<sup>15</sup> That is to say, the *trivium*: grammar, rhetoric and dialectic, and the *quadrivium*: arithmetic, geometry, astronomy, and music, that formed the core of education in antiquity.

<sup>16</sup> The Arabic world grew active interest in classical Greek philosophical works, translated them and commented them intensively from the early Middle Ages onwards. Through their contacts with the West, they became the main "bridge" between medieval Latinity and classical Greek textuality.

<sup>17</sup> See Edward Grant, "Medieval Science and Philosophy," in *Medieval Studies: An Introduction*, ed. James M. Powell (Syracuse, N. Y.: Syracuse University Press, 1992), 357.



of the *Physiologus* had been circulating across Europe from early times and its great popularity inspired the creation of numerous literary works in many genres that had animals as protagonists. The animal fable, the beast epic and the bestiary<sup>18</sup> were all the results of mankind's innate interest towards its surroundings, the influence of literary traditions dating back to antiquity and the *Physiologus* itself. The crystalisation of these as strictly literary genres also took place after AD 1000, and it reflects the state of natural philosophy during the early Middle Ages, where "science" and "fiction" coexisted in an indivisible amalgam.

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<sup>18</sup> Among others: the fables of Marie of France (twelfth century); the epic cycle of Reynard the Fox (tenth century) and numerous bestiaries: for example, the Aberdeen Bestiary (Aberdeen University Library, Univ. Lib. MS 24), Brunetto Latini's *Li Livres dou Tresor* (Morgan Library, MS M. 814), and the Ashmole Bestiary (Bodleian library, MS Ashmole 1511).

## CHAPTER II: FROM ISIDOR TO THE *HORTUS SANITATIS*

### SUBCHAPTER I: BETWEEN SCIENCE AND FICTION: ISIDORE OF SEVILLE

One of the most important examples of early medieval “science” as well as a highly influential source for later authors is Isidore of Seville’s *Etymologiae*. Created at the turn of the sixth century, it was a direct result of the various traditions and influences that scholars of the time had to address and contend with in their activities. It represents these in an expressive yet subtle way. In order to understand the factors that influenced Isidore’s mind and penetrated his works, it is necessary to give an overview of the circumstances that he lived and worked in.

Isidore was born c. 536 in Seville.<sup>19</sup> In this time Spain still remained strongly Roman in appearance. The reasons for this must be sought in its geographical position. *Provincia Hispania* was the utmost western province of the Empire and since it occupied a peninsula, it remained untouched by the barbarian attacks on the rest of the Empire. This secured an undisturbed cultural tradition from antiquity to the Middle Ages, which peacefully blended with Christianity. The new religion itself was successfully developing in the region due to the very same isolated location it had.

Apart from the popularity of his works, little is known about the life of Isidore. His surviving biographies<sup>20</sup> follow the hagiographical tradition of their time: they are full of fables and doubtful descriptions and should be, therefore, dealt with with caution. What we know for sure is that Isidore’s family came from Cartagena, it was

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<sup>19</sup> Concerning Isidore, see: Jacques Fontaine, *Tradition et Actualité chez Isidore de Séville* (London: Variorum Reprints, 1988), and Brehaut, *An Encyclopedist*.

wealthy and powerful and strongly supported the Church. Isidore had two brothers and like him they were bishops of Sevilla at some time in their lives. Isidore inherited the position of bishop from his brother Leander around AD 600 and devoted himself to his writings. In them he demonstrated his erudition; given the background of his family, it is highly probable that he had a clerical and strictly dogmatic education. This inference puts an even stronger emphasis on the significance of his works, in which he successfully managed to compromise between the strict doctrine of the Christian Church and the relatively secular approach of the naturalists of antiquity.<sup>21</sup>

Finally, a last remark on Isidore's environment. If one bears in mind the strong position Roman culture had in Spain and the character of Roman natural philosophy, discussed in the introduction, an inference can be made that in his works Isidore relied upon his Latin sources, as far as Greek texts were concerned,<sup>22</sup> and had hardly consulted any of them in their original. This fact is of great importance as it sheds light on the character of his works.

Isidore's rule as a bishop was contrastingly different from his brother's agile campaigning against heresy, Arianism in particular. Isidore occupied his position peacefully and dedicated himself to books and writing rather than to political activities. Braulio gives a list of Isidore's works<sup>23</sup> in his biographical study on him;

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<sup>20</sup> For example, by Lucas Tudensis and Roderius Cerratensis (both are from the thirteenth century). See Brehaut, *An Encyclopedist*, 11, footnote 13.

<sup>21</sup> Isidore's "secular" works will be listed below; just for comparison, the works of his contemporary fellow bishops were: St. Braulio, bishop of Saragossa: *Vita Sancti Aemiliani* and *Epistulae*; St. Ildephonsus, bishop of Toledo: *De virginitate perpetuâ sanctae Mariae adversus tres infideles*, *Epistulae*, hymns, masses and sermons. In both occasions we see strictly dogmatic collections with some historical influences; no attempt whatsoever at secular "scientific" writing.

<sup>22</sup> See Brehaut, *An Encyclopedist*, 20 ff. Brehaut states that Isidore did not know any Greek and corroborates this statement by quoting some passages where he incorrectly derives words from Greek. These examples sound convincing, but it should not be omitted that the *Etymologiae* in particular were largely transcribed in the span of the Middle Ages and the text duly suffered the consequences of such vivid transcription. Nevertheless, even the inference that the scribes are to blame for such mistakes is a confirmation of the claim that the knowledge of Greek in the West was poor.

<sup>23</sup> The English translation of this list is available in Brehaut, *An Encyclopedist*, 24-25.

among the theological, clerical and historical writings are the secular: *Differentiarum libri duo*, a philological study of words and the things they designate; *De Natura Rerum* and *De Ordine creaturarum*, Isidore's natural philosophy treatises, and the *Allegoriae*, an exegetical work on the most frequent allegories made in the reading of the Bible. The natural philosophy works are intriguing illustrations of the author's amalgamatic approach: the combination of dogmatism and "science" resulted in a description of natural phenomena in the order of the creation of the world according to the Bible. The *Allegoriae* is significant because it demonstrates Isidore's deep knowledge and interest in allegorical interpretation. Yet, in his most significant work, the *Etymologiae*, and especially in the book *On Animals*, which is the object of investigation in this research, he restrained himself from giving allegorical interpretations of the stories he was telling and stuck to the "scientific" truth.

The *Etymologiae* were Isidore's last work and, as the centuries to follow proved, the most significant of all in terms of the encyclopedic tradition. In it the author combined features of his previous works to create a general knowledge encyclopedia which would encompass the whole known world. Thus from the *Differentiae* he adopted the methodology of analysis, namely, his starting point is the word; his other works shared the objects which he treated. In his account, Braulio states that it was upon his request that Isidore wrote the work and that it was left unfinished; originally it was not divided apart from a thematic division into chapters, but he divided it into twenty books as follows:

#### LIST OF THE BOOKS OF ISIDORE'S *ETYMOLOGIAE*<sup>24</sup>

##### I. *De Grammatica* [On Grammar].

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<sup>24</sup> A complete list of the books with the chapters they include can be found in: Isidori Hispalensis Episcopi *Etymologiarum sive Originum Libri XX*, ed. W. M. Lindsay, vol. 1 (New York: OUP, 1911), 12-21.

- II. *De Rhetorica et Dialectica* [On Rhetoric and Dialectics].
- III. *De Quattuor Disciplinis Mathematicis: Arithmetica, Musica, Geometrica et Astronomia* [On the Four Disciplines of Mathematics: Arithmetic, Music, Geometry, and Astronomy].
- IV. *De Medicina*. [On Medicine]
- V. *De Legibus et de Temporibus* [On Laws and Time].
- VI. *De Libris et Officiis Ecclesiasticis* [On the Ecclesiastical Books and Offices].
- VII. *De Deo et Angelis et Fidelium Ordinibus* [On God, the Angels and the Believers' Orders].
- VIII. *De Ecclesia et Sectis Diversis* [On the Church and the different Sects].
- IX. *De Linguis, Gentibus, Regnis, Militia, Civibus, Affinitatibus* [On Languages, Tribes, Kingdoms, Warfare, Citizens, and Relatives].
- X. *Vocum Certarum Alphabetum* [The Alphabet with some Words].
- XI. *De Homine et Portentis* [On Man and the Portents].
- XII. ***De Animalibus*** [On Animals].
- XIII. *De Mundo et Partibus* [On the World and Its Parts].
- XIV. *De Terra et Partibus* [On the Earth and Its Parts].
- XV. *De Aedificiis et Agris* [On Buildings and Fields].
- XVI. *De Lapidibus et Metallis* [On Rocks and Metals].
- XVII. *De Rebus Rusticis* [On Rural Activities].
- XVIII. *De Bello et Ludis* [On War and Games].
- XIX. *De Navibus, Aedificiis et Vestibus* [On Ships, Buildings and Clothes].
- XX. *De Penibus et Instrumentis Domesticis et Rusticis* [On Food and Domestic and Agricultural Tools].

As the name of the work indicates, Isidore's intention was to explore the derivation of words from all known spheres. He undertook this enterprise under the influence of a centuries-old conviction that each word had an original, true meaning and if one were to discover it after removing the layers of misunderstandings created by the poets, the literary use of the word and the daily clumsiness of the spoken language, it would also unveil the true meaning of its object. This was a widely spread *topos* in ancient Greek and Roman literature, dating back to Plato's *Cratylus*, where Socrates, *Cratylus*, and *Hermogenes* dispute the truthfulness of words. This idea was later embraced by the Stoics and then transmitted to Christianity as well.

Isidore's decision to set foot on this "verbal" path to the universal truth has a detailed explanation. It was already discussed that the Romans had a very literary approach to science and to the material world. They measured it by means of the ruler provided by literary and scientific works written earlier. This tendency created a strong dependence of the Roman intellectual -- be it from the Republic, the Empire or post-imperial Spain -- on language and words. This dependence projected itself over

the successors of this culture in two ways. Firstly, they saw an explicit profession of the omnipotency of words (in Plato or Varro, for example)<sup>25</sup>; and secondly, it was implicitly present in the strongly literary nature of the culture they were drawing their sources from. Secondly, this view conveniently coincided with the Christian conviction that everything in this world was the result of the Word of God; in this case an enterprise that would reveal the true meaning of words would undoubtedly take its performer closer to that original Word that explained everything.

Isidore's focus on the word as a unifying unit of the world mirrors another, more practical, feature of the science of the early Middle Ages as well as of the Latin of the time. The Romans' contact with Greek culture was enhanced by their knowledge of the language on an average basis; what an author hesitated to translate, would be cited in the original Greek form. This both solved the author's perplexity and made it appear comprehensible to the reader at the same time. However, in later times, especially in the West, Greek grew less and less popular, which led to a situation where a scholar had the will to explore but lacked the lexical skills to do so.<sup>26</sup> This was a problem of utter significance and was overcome only in the twelfth and thirteenth century, when the massive translations from Greek and Arabic compelled translators to supply the scientific Latin vocabulary with new words. This was achieved in three major ways: i) a well-known word was given a specific meaning in a specific field of knowledge; ii) a neologism was developed in response to the necessity of a science; and iii) loanwords from foreign languages were introduced into Latin. General examples of these mechanisms will not be given here

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<sup>25</sup> Plato, *Cratylus*, and Varro, *De Lingua Latina*.

<sup>26</sup> In fact, looking at it from another angle, one can assume that the secondariness of Greek constitutes a factor for the rudimentary state of science in the early Middle Ages.

because this topic will be discussed in detail with reference specifically to animals further on in the study.<sup>27</sup>

Even though Isidore followed his methodology somewhat hastily and in the manner of his time often jumped to a conclusion without checking or arguing its veracity, his enterprise had its virtues. It was the first work to break the Church's rigid restrictions on secular writings; it was the first general-knowledge encyclopedia of its time and contained the wisdom of many centuries.<sup>28</sup> Its appearance should be marked as the first systematic, generalising medieval attempt at explaining the world by putting the secular and the religious, the material and the spiritual, the organic and the inorganic aspects together.

The effect of the work was enormous: there are records that still in Isidore's time parts of it were approved as textbooks and thus served as a bridge for the transmission of the ideas of antiquity to the Middle Ages. Even after the introduction of the Aristotelean corpus to the West, the *Etymologiae* were still regarded as an authority together with the authors it used as the basis of its information: it was an all-inclusive, valuable source for scholars writing either on a specific topic (as is the case with Jakob Meydenbach and his *Hortus Sanitatis*) or generalising in the same encyclopedic manner (e.g., Vincent de Beauvais' *Speculum Maius*). The work was widely copied during the Middle Ages; there are over 1000 extant manuscripts, and parts of it or the whole twenty books were edited from the very appearance of early printing.<sup>29</sup> The modern critical editions of the *Etymologiae* are that in the *Patrologia*

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<sup>27</sup> For an account of the problems of medieval "scientific" Latin see Faith Wallis, "Science: Introduction", in *Medieval Latin*, ed. K. P. Harrington (Chicago: University of Chicago Press, 1997).

<sup>28</sup> Authors that he consulted: Jerome, Ambrose, Augustine, Orosius, Cassiodorus, Suetonius, Pliny, Solinus, Hyginus, Sallust etc. See Brehaut, *An Encyclopedist*, 47.

<sup>29</sup> Isidore's early editions: 1) de la Bigne's, Paris, 1580; 2) Grial's, Madrid, 1599; 3) du Breul's, Paris, 1601; 4) Arevalus's, Rome, 1796 (cf. Brehaut, *An Encyclopedist*, 17).

*Latina* (LXXXI-LXXXIV) and Lindsay's.<sup>30</sup> The latter is the most recent, but it has its drawbacks; in the process of editing Lindsay consulted thirty-six manuscripts; as was noted above, there are over one thousand extant manuscripts; on the occasions when the comparison of Lindsay's text with that in the *Hortus Sanitatis* led to ambiguous results, I consult the text of the *Patrologia* as well.

## SUBCHAPTER II: AUTHORITY AND PRACTICE IN THE *HORTUS SANITATIS*

Jakob Meydenbach's *Hortus Sanitatis* belongs to the tradition of late medieval encyclopedic works, more specifically that of natural historical encyclopaedias, and reflects the merging of genres that took place in this period. Its first treatise, On Herbs, was written in the tradition of the herbal (*herbarius*). The following three treatises, "On Animals," "On Birds," and "On Fish," combine characteristics from various animal genres. As only the latter have been discussed in detail throughout this study, in the following I will offer a short account of the development of the herbal.<sup>31</sup>

The herbal, that is to say, a collection of accounts on plants with regard to their medical virtues, dates back to antiquity and the Hippocratic text. Its crystallisation as a separate genre started in the fourth century BC with Theophrast's *Historia Plantarum*,<sup>32</sup> where the author offered a combination of scientific empirical descriptions and practical data for pharmacologists. The first separate treatise to be identified essentially as a herbal, was the work of the Athenian Diokles of Karystos.

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<sup>30</sup> Isidorus Hispalensis Episcopus, *Etymologiarum sive Originum libri XX*, ed. W. M. Lindsay (Oxford: OUP, 1962).

<sup>31</sup> For an overview of the development of the genre, see: Charles Singer, "The Herbal in Antiquity and Its Transmission to Later Ages," *Journal of Hellenic Studies* 47, no. 1, (1925): 1-52; for the Middle Ages in particular, Jerry Stannard, "Natural History", in *Science in the Middle Ages*, ed. David Lindberg, (Chicago: University of Chicago Press, 1978), 443-449, and James Long, "Botany", in *Medieval Latin*, ed. K. P. Harrington, (Chicago: Chicago University Press, 1962), 401-405.



From the uninterrupted succession of Greek authors throughout antiquity I will name but a few. After the Alexandrian period a significant step for the production of herbals was made in Pontus during the rule of Mithridates VI Eupator (120-63 BC), when Krateuas, a herbalist from the ruler's court, compiled his two works, a written herbal and an appendix to it that contained detailed illustrations and thus laid the foundations for the illustrated manual. Next comes Dioskurides, who lived in the first century AD and created a massive work that remained influential in both the Greek and Latin cultural domains up to the Middle Ages. His *De Materia Medica* contains descriptions of five hundred plants and the names he put on many of them are still in use in European languages. Galen (second century AD) drew largely upon Dioskurides's work in his *De Simplicibus* and is the last Greek author of interest with regard to the genre's transmission to the Middle Ages.

The Roman perception of nature strongly leaned on the Greek discoveries. This is particularly so in the case of the herbal. Both Cato Censor in his *De Re rustica* and Pliny in the *Naturalis Historia* relied on Greek stereotypes.

The transmission to the Middle Ages, especially in the Latin West, in fact occurred not through the Roman reception, but directly from the Latin translations of Dioskurides' text.<sup>33</sup> From the original Latin texts only Apuleius Platonius'<sup>34</sup> *Herbarium* work is the only exception, as from an early stage it was associated and bound together with the Latin *Dioscurides Vulgaris* and some other texts, and thus had a certain influence. The decline in science in the early centuries of the period is less severely sensed as far as herbals were concerned. As a genre they belonged to medicine, which was one of the few really practical sciences. The physicians' "daily

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<sup>32</sup> On Theophrast see French, *Ancient Natural History*, chapter 2.

<sup>33</sup> Singer, "The Herbal...", 34-37.

<sup>34</sup> Not to be mistaken with Apuleius Madaurensis, author of *The Golden Ass*.

need” of their manuals secured the survival of the herbal. However, to the greatest extent it was preserved as part of the general encyclopedias of the time, namely Isidore’s and Hrabanus Maurus’, and shed its practical orientation. The production of specialised theoretical scientific texts, for example Albert the Great’s *De Vegetabilibus*, started again only after the upsurge of science after AD 1000. The spread of monasticism and monastic medicine benefited the other branch of botanical literature -- the practical manuals, -- since monks referred to them for the cultivation of their monastic gardens and the application of herbal remedies.

The Latin *Hortus Sanitatis*<sup>35</sup> can be positioned in the middle between these two extremes. Its prototype is a German herbal collection by a Johann von Cube, printed for the first time by Peter Schöffer in Mainz in 1485.<sup>36</sup> The book grew extremely popular as is confirmed by the successive re-editions and translations in the following years. In modern times it is usually referred to as the German *Hortus Sanitatis*, but in its colophon the only name mentioned is *Herbarius zu Teutsch*. The main emphasis of the work is put on herbs, but it contains also sections on animals, birds, fish, and minerals. Six years after the publication of the German text, in 1491, another printer from Mainz, Jakob Meydenbach, published a Latin version, the *Hortus Sanitatis*, which was considerably larger than the German *Herbarius*. In the epilogue to the work the editor claims that he himself has prepared the compilation.<sup>37</sup> It consists of the following treatises:

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<sup>35</sup> A consistent study of the work is: Christel Meier-Staubach, “Der “Hortus Sanitatis” als Enzyklopädisches Buch,” in *Alles was Recht war: Festschrift für Ruth Schmidt-Wiegand zum 70. Geburtstag*, ed. Hans Höfinghoff et al., (Essen: Item-Verlag, 1996) 191-200.

<sup>36</sup> See: Denis Hüe, “Le *Jardin de Santé* de Jean de Cuba: Une Encyclopédie Médiévale Tardive et Sa Réception,” in *Discours et Savoir: Encyclopédies Médiévales*, Cahier Diderot n. 10, ed. Bernard Baillaud, Jérôme de Gramont, and Denis Hüe (Rennes: Presses Universitaires de Rennes, 1998) 173-199; Gundolf Keil, “Hortus Sanitatis, Gart der Gesundheit, Gaerde der Sunthede,” in *Medieval Gardens*, (Washington: Dumbarton Oaks Research Library and Collection, 1986) 57-68.

<sup>37</sup> Concerning the identity of the printer and editor, see: Joseph H. Payne, “On the *Herbarius* and *Hortus Sanitatis*,” *The Transactions of the Bibliographical Society* VI (1900-1901), 63-126.

- I. De Herbis et Plantis [On Herbs and Plants] – 530 chapters
- II. De Animalibus [On Animals] – 164 ch.
- III. De Avibus [On Birds] – 122 ch.
- IV. De Piscibus [On Fish] – 106 ch.
- V. De Lapidibus [On Rocks] – 144 ch.
- VI. De Urinis [On Bodily Fluids]
- VII. Tabula medicinalis cum directorio generali per omnes tractatus [A Medical table with general index for all the treatises]

As a product of a centuries-long tradition, it combines in itself several existing types of texts. The treatise on plants strictly follows the rules set for the herbal. The animal chapters – on animals, birds, and fish – have their prototype in the encyclopedias, the bestiary, and in animal literary genres generally. Stones were also a widely discussed topic in medieval literature. The *operationes* drew their information from ancient and contemporary practical medical treatises.

All the six treatises shared the same principle of organisation. In its essence the work is a mere compilation of excerpts from the recognised authorities in its field of interest. Its formal division into a theoretical and a practical part (respectively, the *capitulum* and the *operationes*) distinguishes it as a work of compromise between the strictly theoretical, authoritative approach to science dating back to antiquity and the practical one of the herbal. In any case, similarly to Isidore's *Etymologiae*, authority had played a definitive role in its preparation.

### CHAPTER III: ISIDORE, THE *HORTUS SANITATIS* AND THE ANIMALS

Even though the book of Isidore's *Etymologiae* as well as the treatise from the *Hortus Sanitatis* share the same name, they are essentially different in their appearance and in the system that they follow. The overview of both systems is provided below.

#### SUBCHAPTER I: LIBER XII *ETYMOLOGIARUM*

Isidore has often been referred to as “the last Roman author” as in his *opus* he followed the tradition of antiquity. His work is very systematic; it is organised into twenty thematic units, the twenty books,<sup>38</sup> that encompass all the known world. Further on, in each book the chapters follow the same thematic division on a deductive basis. Objects of description that belong to the same sphere, but share some specific features are put together in one chapter.

*De Animalibus* follows the same principle. Here, as elsewhere in the *Etymologiae*, the linking unit between the most general “animal” and the single species described is the chapter. The book consists of eight chapters:

- I. On Cattle and Livestock [*De pecoribus et iumentis*]
- II. On Beasts [*De bestiis*]
- III. On Small Living Creatures [*De minutis animantibus*]
- IV. On Reptiles [*De serpentibus*]
- V. On Worms [*De vermibus*]
- VI. On Fish [*De piscibus*]
- VII. On Birds [*De avibus*]
- VIII. On Small Flying Animals [*De minutis volatilibus*]

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<sup>38</sup> See footnote 23.

For Isidore, “animals” was an all-inclusive category for all creatures that are *mobile*: *Latine autem animalia sive animantia dicta quod animentur vita et moveantur spiritu*,<sup>39</sup> and within this category he proceeded with the deductive distinction on several levels.<sup>40</sup> The criterion for the first level is *habitat*; here Isidore followed the four universal elements<sup>41</sup> in ascending order, namely, earth, water, air (in the fourth sphere, fire, there was no natural life). In chapters 1-5 he described terrestrial animals (within this group he differentiated between animals living above the ground (the first three chapters) and animals living on or in the ground (chapters 4 and 5). Chapter 6 bears the name *de piscibus*, but includes aquatic animals in general; chapters 7 and 8 consist of descriptions of aerial animals. The criterion within the larger distinction made on the basis of habitat is *size*: dichotomies of large- and small-bodied animals are introduced in terrestrial animals (chapters 1 and 2 compared to chapter 3; and chapter 4 compared to chapter 5) and aerial creatures (chapter 7 and chapter 8). On

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<sup>39</sup> “In Latin the name is “animalia”, or “animated”, since they are animated with life and are moved by spirit.” Isidori *Etymologiarum lib. XII*, 1, 4.

<sup>40</sup> See fig. 1.

<sup>41</sup> The theory of the four elements which constituted the Universe and every single body in it played an important role in medieval thought and was based upon ancient philosophical concepts on one hand and Genesis on the other. The theory implies that all four constitute every single body and it is their proportion that determines the body’s qualities. In his other works (*De Natura Rerum* and *De Ordine Creaturarum* in particular) Isidore also uses this scheme as an organising principle of his description. See Brehaut, *An Encyclopedist*, chapter III.

chapter level the division finishes with *behaviour*; this criterion is only applied to large animals that live above the ground; in this category the author distinguishes “flocks and herds” and “beasts,” where the former are harmless and even helpful to humans and the latter can bring harm to them.<sup>42</sup>

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<sup>42</sup> “*Proprie autem pecorum nomen his animalibus adcommodari solet quae sunt aut ad vescendum apta, ut oves et sues; aut in usu hominum commoda, ut equi et boves.*” (“Usually the name ‘*pecus*’ is properly applied to these animals that are apt for food, as sheep and swine; or are useful for the needs of men, as the horse and the ox.”) Isidori *Etymologiarum lib. XII*, 1, 5; *Bestiae* “...*quae vel ore vel unguibus saeviunt, exceptis serpentibus.*” (the beasts are the ones “that can bring harm with their teeth or claws.”) *ibid.* 2, 1.

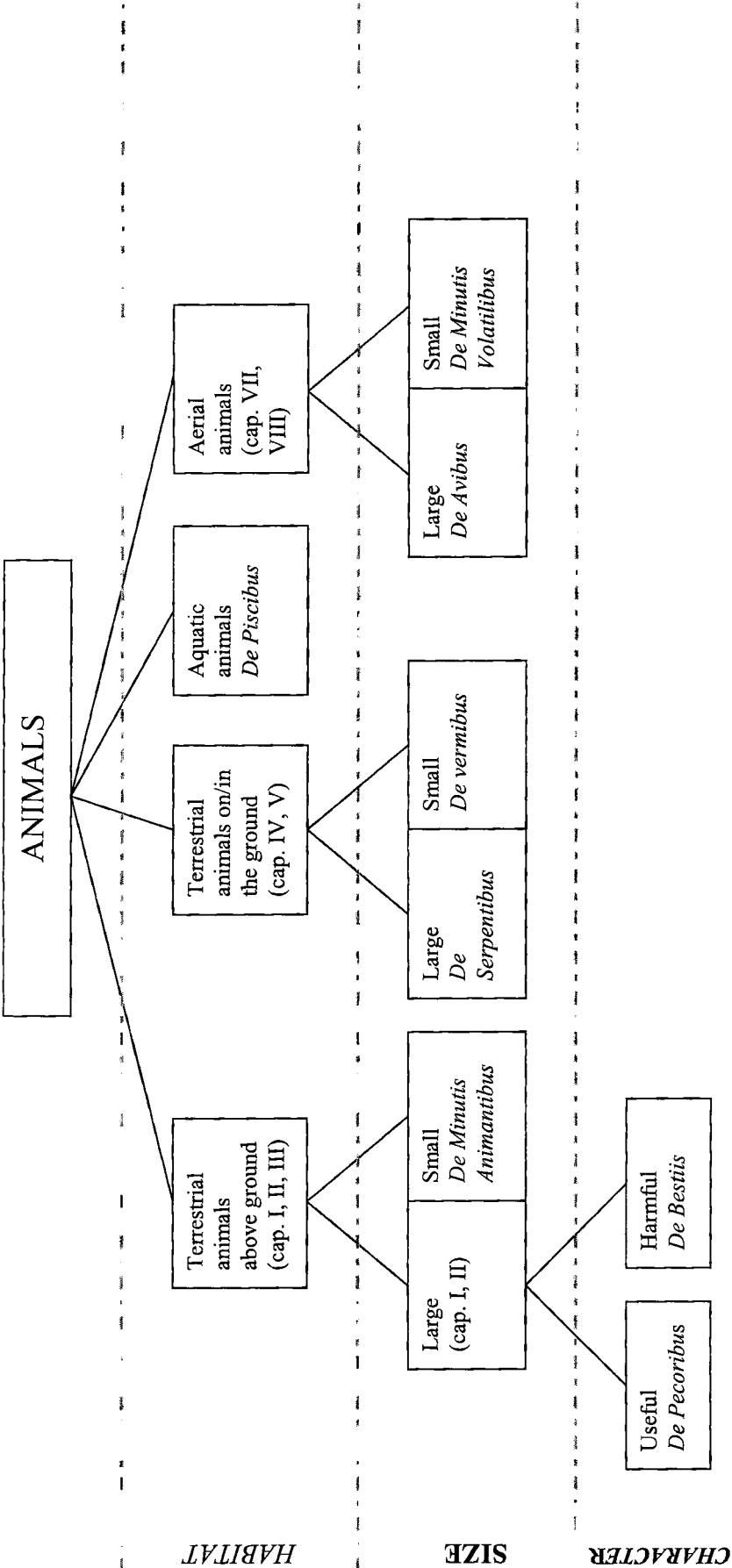


FIG. 1. A diagram of the division of animals in Book XII of the *Etymologiae* down to chapters according to the three criteria, respectively the three levels, used by Isidore.

The criteria listed above continued to exert their effect even within the separate chapters. Thus, one can attribute the distinction between domestic and wild herbivores in chapter 1, “On Flocks and Herds,” to *habitat*. In chapter 6, “On fish,” several aquatic animals which are similar in *size* appear in each other’s vicinity (whale, dolphin, swordfish, crocodile, hippopotamus). The *behaviour* of poisonous snakes from chapter 4, “On serpents,” brings them together in paragraphs 10-20. Furthermore, within the chapters an even finer distinction can be observed. This is based on secondary criteria which are not so consistent and systematic. Therefore, it is arguable whether Isidore employed them as criteria consciously, or whether they just illustrate the associations he made and the stream of thought he followed.<sup>43</sup> Nevertheless, as the purpose of this research is to establish and compare the attitude towards nature that governed man’s response to it in the Middle Ages with no regard for its explicitness or implicitness, I will briefly describe the most frequent and important of them, namely the *outer appearance*. Within the separate chapters we find clusters of animals with some specific shared external feature or a similar, yet not universal appearance. It is a laborious effort -- and to a great extent a subjective one -- to describe all the shades of this “clustering,” but an overall observation of the order in which the animals of a chapter are described<sup>44</sup> inevitably resulted in the registration of a certain dependency. The first animal to be introduced in chapter 2, “On Beasts,” is their king, the lion. After it the whole row of large felines known to the medieval

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<sup>43</sup> In fact, Isidore mentions them in chapter 6: “*Piscium... nomina instituta sunt aut ex similitudine terrestrium animalium, aut ex specie propria sive moribus [seu colore, vel figura, aut sexu]*.” “The names of fish are formed either due to similarity to terrestrial animals, or due to their own appearance or their habits [or by the colour, by the shape or by the sex].” Ibid. 6, 4. His methodology, namely the construction of his work on the basis of such criteria, was also obvious to his earliest transcribers: the interpolation in the citation occurs in three manuscripts, from the eighth, ninth and tenth centuries



scholar (rather through ancient texts than through direct observation) follow: all of them share an obvious similarity in shape and appearance. The rhinoceros and the unicorn also form a pair due to a shared feature – the horn. In chapter 7 the observer can find the crane, the stork, the swan, the ostrich, and the heron together<sup>45</sup>: all five of them are long-necked, and, with the exception of the swan, long-legged too. These examples are among the most conspicuous. There are more to be found upon a closer examination, but it should be once again repeated that subjectivity plays a role in the process.

The reader of today is undoubtedly facilitated – but sometimes misled as well – in the search for such common features by the knowledge modern zoology and taxonomy have given him. The problem of modern biological classification is a complex one, and here is not the place to discuss it; what is important for the present study is that however correct Isidore’s “clusters” might appear from a scientific point of view, he undoubtedly had no notion of the terms “family,” “genus” or “species” as we use them today. Above it was demonstrated that he brought together animals that are members of the same modern family with the same ease as ones coming from totally different branches of the modern classification. The detailed observation of external features and the empirical analysis of internal similarities which form the core of modern zoological methodology were of no interest to Isidore; yet, in respect to practicality, he demonstrates a perfect notion of a particular distinctive feature of animals from the same species, namely, their reproducibility. To him, however, the fact that *vervex* is the male of the *ovis*, or the *leo* of *leaena* is of pure practical importance and hardly bears any “zoological” meaning.

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respectively (Toletanus Matritensis (Tol. 15. 8), Escorialensis Primus (T. II. 24), and Sangallensis Quartus (237).

<sup>44</sup> See the tables in the appendix to this study.

To summarise, the chapter is the medium, a linking unit between an amorphous multitude of living things and the singular animals with their individual features. At the same time it is the focusing point of a descending deductive sequence as well as the peak of an ascending inductive one. Its centrality as a unit and the criteria on which every single chapter is synthesised lead back to the anthropocentric tradition which dominated the naturalists' perception of the world from pagan antiquity to Christianity and the Middle Ages.<sup>45</sup> This is clearly visible in fig. 1, where the criteria chosen for the distinction are themselves in direct connection to man, and the particularisation on the different levels strongly depends on the relevance the level has to man. Thus fish, which live in another kingdom of planet Earth, almost totally inaccessible and impenetrable to the naturalist in Isidore's time, are left with no further specification on the most general level. The aerial creatures, even though closely inspected in earlier times (the augurial practices), also dwell in an area which is not the human's natural one; still, they can be examined visually and therefore compared to man in size. And finally, the terrestrial dwellers, living closest to humans, display the most detailed classification on all levels. Here, as well as in the other sections, factors of various origin play a role. Symbolism, mythology and economic are closely entangled in the formation of men's attitude towards an animal, and it is sometimes hard to measure the proportions in which they participate in the process.

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<sup>45</sup> Isidori *Etymologiarum lib. XII*, 7, 14-21

<sup>46</sup> See the introduction to this study.

## SUBCHAPTER II: TRACTATUS DE ANIMALIBUS AND DE AVIBUS HORTI SANITATIS

The organisation of the *Tractatus de Animalibus* and *de Avibus* in the *Hortus Sanitatis* is very different from the organisation of the *Etymologiae*. In the discussion of the developments of natural philosophy above it was highlighted that tradition was gradually transformed, and general knowledge collections of the type of the *Etymologiae* gave way to more specialised treatises on specific topics. The naturalists' area of interest became more circumscribed and concentrated mostly on the living world. This may be seen as a result of the centuries-long blending together of various literary forms, exegetic and allegorical works and encyclopedic texts on animals and plants,<sup>47</sup> which eventually resulted in a self-sufficient consistent concept of nature rather than the epitomised general attitude of Isidore in the seventh century.

What was preserved, though, was the anthropocentric tendency, which is well demonstrated in the organisation of the *Tractatus de Animalibus* and the *Tractatus de Avibus*. In both cases, as well as in the other treatises of the *Hortus Sanitatis*, the division of the book is made on the basis of the individual specimen of investigation: an animal or a bird in this case. Three parts comprise it: a chapter (*capitulum*), an illustration, and a practical medical part (*operationes*).

The illustration, even though – in today's standards – of poor quality and lacking details,<sup>48</sup> represents the animal described. On most occasions the depiction is of the animal itself, but due to the influence of anthropocentrism and fiction, some

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<sup>47</sup> See Introduction: the Middle Ages, and I. II: the Herbal.

<sup>48</sup> From the point of view of modern zoology.

animals have a more vivid illustration and are represented in their interaction with humans or performing some typical activity attributed to them by literary sources.

The “chapter” is in fact a collection of excerpts on the animal in question from previous authorities.<sup>49</sup> These vary both in length and selection for the particular animal. In editing his work Jakob Meydenbach put together small excerpts and thus formed a mosaic of borrowings that started in antiquity (Aristotle and Pliny) and ended with writers close to his time (Albertus Magnus). For this reason, the information that the chapter contains is very diverse, and it covers different aspects of the animal in question.<sup>50</sup> It reveals a love for authority that had not changed much since Isidore. As with his *De animalibus*, stories about the physical and biological habits of a creature are to be found together with legends, superstitions, and fables about it.

What is new and essentially different from Isidore’s approach is the third section of the treatise, the *operationes*. Systematically, it is bound together with the “chapter” and as the very name of the work – *Hortus Sanitatis*, the “Garden of Health” – suggests, the texts in this section give a medical evaluation of the animal and practical advice on the medical usage of its parts and products. This was derived mostly from the herbals, the first practically aimed medieval genre dealing with nature. Starting from the same archetype – the *Physiologus*, the herbal and the bestiary developed in contrastingly different direction only to come together in works such as the *Hortus Sanitatis*. The *operationes* are present after most of the “chapters”, but there are occasions when they are totally absent. This is due to two reasons: firstly, Jakob Meydenbach drew the information for the chapters from a great number

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<sup>49</sup> Please refer to the tables.

<sup>50</sup> Jakob Meydenbach’s preference and the frequency of use of the authors can be seen in the tables; see also chapter III: Authorities.

of authors who had followed the same technique of copying in their work; some of the animals described here found their way into the encyclopedia through oral narratives, travel accounts and general descriptions of far-away lands. The author shared Isidore's ambition to provide descriptions for all these animals and saw this as a *sine qua non* for a complete encyclopedic zoological work. Thus, the final product contains a collection of fantastic, exotic and unknown animals which were not accessible to physicians that the author used as sources for the *operationes*. Secondly, some of the animals had no practical medical value, they were of no interest to physicians and consequently were excluded from their manuals. As the author was extensively authoritative in the composition of the *operationes*, too, on such occasions he was compelled to ignore the third section of the treatise.

Another distinction of the *Hortus Sanitatis* is the alphabetical order. Looking back to Isidore, ancient philosophical influence is clearly discernible in his sophisticated system of division where he made an attempt to induce nature in the universal structure of all things, the center of which was man. In the *Hortus Sanitatis*, however, this system is notably reduced to the spheres of habitat only. Within the domains of land, water, and air all inhabitants are listed alphabetically without any further distinction. On one hand this demonstrates the independence that natural history had acquired from philosophy had developed during these eight centuries and its relative autonomy within its topics. On the other hand, in purely practical terms an alphabetical order made an encyclopedia far more practical and far easier to handle. This facilitated the more focused activity of the fifteenth-century recipients. Moreover, the invention of the printing press in mid-fifteenth century increased enormously the number of potential readers. The de-specialisation of the audience called for a neat, consistent and yet accessible system in an encyclopedia. The final

feature that shows the practicality of Meydenbach's work is the illustrations. Far from elaborated manuscript illuminations, it was nevertheless far more closely linked to the text and yielded further information on an animal for the reader.

## CHAPTER IV: A COMPARATIVE ANALYSIS

To be able to recognise to what extent the interest in animals had changed from Isidore's time to the end of the fifteenth century, it is necessary to conduct a comparative analysis of the two texts. For the purposes of this research I have prepared comparative tables which reflect the "authoritativeness" of the quotations and show frequencies, accuracy, and specificity. The tables are placed in the appendix to this studies and constitute an essential part of the research and a point of reference.

### Authority

As I have highlighted on many occasions up to this point, authority played an important role in the construction of both texts. During the eight-hundred-years span between Isidore and the *Hortus Sanitatis*, however, the concept of authority changed. One can see this in the range of the authors quoted:

#### LIST OF THE AUTHORS QUOTED BY ISIDORE

Author	Frequency
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#### AUTHORS QUOTED IN THE *HORTUS SANITATIS* MORE THAN TEN TIMES

##### DE ANIMALIBUS

Author	Frequency
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##### DE AVIBUS

Author	Frequency
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Lucan <sup>51</sup>	16	Isidore	112 times	Liber de naturis rerum	100 times
Pliny	7	Liber de naturis rerum	99 times	Isidore	66 times
Martial	6	Aristotle	56 times	Aristotle	39 times
The Bible	4	Pliny	53 times	Pliny	37 times
Cicero	4	Actor	31 times	Actor	33 times
Ovid	3	Solinus	22 times	Albert the Great	20 times
Virgil	3	Albert the Great	20 times	Ambrose	13 times
Afranius	2	The Physiolog	20 times	Gloss	13 times
Aemilius	1	Avicenna	15 times	The Physiolog	13 times
Dracontius	1	Ambrose	13 times		
Horace	1	Gloss	11 times		
Juvenal	1				
Macer	1				
Lucretius	1				
Naevius	1				
Persius	1				
Plautus	1				
Sedulius	1				
Suetonius	1				

Isidore was writing not long after the fall of the Western Roman Empire; the solidity of its position in Spain was explained before. On literary grounds, this resulted in the detailed notion of Roman literature and partaking of its values still in the time of Isidore. Such a process was strengthened even more by the political aspiration to declare one's connection with the Empire which was now an idolised model for the barbarians who had destroyed it. It is of no wonder, then, that in book XII of the *Etymologiae* Isidore used Roman works – both literary and nature studies – extensively. This is clearly visible in the list above. Bearing in mind the explanation about Lucan, it should be highlighted that, regardless of the diversity, Pliny, the encyclopedic and naturalist authority, is quoted the most: seven times. The rest of the authors confirm Isidore's familiarity with Roman culture: they form an anthology of Roman textuality, encompassing the whole chronological span of its development (starting from Naevius (third century BC), and ending as late as Dracontius (the fifth

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<sup>51</sup> Lucan's predominance in this list is due to the fact that all his quotations (which are all on snakes) with the exception of one, are taken from a geographical qualitative description of Libya, a non-Roman



century AD) and its genre opulence (from the prosaic works of Pliny and Cicero to the masterpieces of different poetic genres: poems, epic, tragedy and comedy). The rarity of quotations from the Bible is also significant: it expresses Isidore's determination to obey strictly the canons of ancient natural philosophy and to resist contemporary allegoric trends.

In comparison with the list of the *Hortus Sanitatis*, Isidore's named sources are of a trifling number. This can be explained by structural differences in the explicit quotations in the two works. Even though in its core the *Etymologiae* is also a compilation, Isidore uses direct citations of other authors' works to break the sometimes-monotonous line of "etymologising" and to add, so to speak, colour to his work. What he was after in terms of authority was the canon of encyclopedism, not the particular author that participated in its creation. That is why he propped his work on some of the most respected encyclopedias of antiquity, even though he does not name his sources.<sup>52</sup>

Jakob Meydenbach, on the contrary, listed all his sources explicitly. There are several reasons for this. The practical orientation of this work as opposed to the *Etymologiae*, together with the specialisation of natural history which took place from the eleventh and twelfth century onwards, resulted in a broad selection of sources most of which were strictly devoted to animal history. By the time the book was published, most of the authors were already known to the potential reader, so their explicit listing was a confirmation of the verity of the book. For the same reason, such an impressive bulk of recognised naturalists as a basis for a natural history treatise

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land, in song IX of his *Pharsalia*. In order to strengthen the impression of hostility, he describes the abundance of chthonic animals there with verbosity which is characteristic for the Roman epic.

<sup>52</sup> To name a few, Varro, Suetonius, Verrius Flaccus. See: Brehaut, *An Encyclopedist*, 16, 48.

was certainly a cunning economic move.<sup>53</sup> A third reason is the transformation that authority had undergone in its transmission to the fifteenth century. In this case the *operationes* play a decisive role, but the expectation towards authority is projected over the *capitula*, too. Opposing the canonic nature of the *Etymologiae*, Jakob Meydenbach had to meet the needs of a reader whose concept of authority had obviously developed and changed. Practicality demanded that empiricism be involved in the writings of physicians, and such a demand designated the shift of authority from a social phenomenon, which served as a foundation of the values of a culture, to personal, individually acquired proficiency in a certain field. This shift justifies the low frequency of quotations from the Bible: the only ones quoted above ten times in both treatises are the glosses, which are not really religious.<sup>54</sup>

### Quotations

Generally speaking, the quotation rate in both *Tractatus de Animalibus* and *de Avibus* is an average of about 2.5 quotations per animal. A tendency of higher numbers of quoted authors for the well known animals (lion - 13, dragon - 11, dog - 9, bull - 7, eagle - 7, bee - 6, pigeon - 5) and lower numbers it for “obscure” creatures (worms, insects, etc.) can be seen.

Despite all the typological controversies between the texts, Jakob Meydenbach still regards Isidore as one of the leading authorities eight centuries after the completion of the latter’s work. Isidore is one of the most frequently quoted authors in

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<sup>53</sup> Cf. George Sarton, “The Scientific Literature Transmitted through the Incunabula,” *Osiris* Vol. 5 (1938): “The early printers... did not publish book, it should be remembered, for their health or for pleasure, but for profit,” 65. With the exception of Ambrose, *Liber de Natura Rerum* and the “Actor”, the rest of the authors are included in the list of the most popular incunabula authors: *ibid.* 183-185.

<sup>54</sup> Since this list was meant to show the representative authors, I chose to narrow it up to those authors who exceeded ten quotations per treatise. A full list with all the quotations in the *De Animalibus* and *de Avibus* is available in the appendix.

the *Hortus Sanitatis*. The comparative analysis of the quotations and Isidore's original text is mirrored in the tables in the appendix. As for a thorough analysis of the frequency, accuracy and preference of Isidore's quotations by Jakob Meydenbach, comparative research on the quotations of other authors should also be carried out; in my study, these can just be given for further reference and are only described generally.

The quotations are diverse, as can be seen in the tables in the appendix. I chose several basic definitions with which to characterise the type of quotation. "*Literal quotation*" refers to the most accurate quotations. They are not completely accurate, however: the differences are either orthographical or misspelling of a word and they do not alter the meaning in any way. "*Almost literal quotation*" describes occasions when words are missing, added or changed. There, the general meaning does not alter due to the change (the most frequent ones are omission of forms of *esse*, interchanging of forms from *vocatus*, *dictus*, *nominatus*, introduction of *eo* before *quod*).

I also indicated whether a *whole paragraph* has been taken over into the *Hortus Sanitatis* or the quotation is just *partial*. In the former case the paragraph usually preserves the original order of its sentences; on the occasions where it was changed, this is additionally noted (for example, *cathalepa*, *damula* and *upupa*). The same is valid for the partial quotations. As often the quotations used explicitly by Isidore are used only secondarily in the *Hortus Sanitatis*, these are also commented on.

## The Naming of the Animals<sup>55</sup>

In chapter one of Book XII of his *Etymologiae* Isidore refers to this problem: “In the beginning Adam gave names to the living things.”<sup>56</sup> But when between the observer and the text -- as well as between the two compared texts in this particular case -- there is a gap of over several centuries, this idyllic picture begins to fade away before a confusion on the scale of Babel. In discussing the names of things one inevitably slips into discussion of the things themselves and this ironically justifies Isidore’s conviction of the link between the two.

Let me first observe the confusion between the two texts in question. The *Tractatus de Animalibus* of the *Hortus Sanitatis* contains descriptions of 214 animals. Due to the more general divisive criteria which Meydenbach applied to his collection, these include animals from chapters 1-5 in Isidore’s book XII. The total of animals in the latter is 142; the comparison showed that 131 of the animals appear in both texts. The birds (that is to say, Isidore’s chapters 7 and 8) are 164 in the *Tractatus de Avibus* of the *Hortus Sanitatis*, and 82 in book XII. Thus, there is a great discrepancy of numbers. In order to get closer to the possible reasons for this discrepancy, I shall consider several factors of diverse nature.

Firstly, space played a certain role. Isidore lived in Spain, where the landscape and climate vary significantly from Germany. Consequently, despite the strongly literary type of Isidore’s encyclopedia, an inference can be made that there he saw animals which Meydenbach could not have possibly seen in his life. A closer examination of the tables reveals, for example, that for one entry under “*simia*,” “monkey,” in the *Hortus Sanitatis* there are six types of primates described in

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<sup>55</sup> See also: Wilma George, Brunsdon Yapp, *The Naming of the Beast: Natural History in the Medieval Bestiary* (London: Duckworth, 1991), Introduction.

<sup>56</sup> “*Omnibus animantibus Adam primum vocabula indidit...*”, Isidori *Etymologiarum* lib. XII, 1, 1.

Isidore's text. The same scenario certainly applies to the *Hortus Sanitatis*. There one can find a number of animals which are not present in the *Etymologiae* and which belong to the continental and alpine climate zones. Among these are the herbivores *bonnacon*, *bison*, *damma*, and the small carnivore mustelids: *gala*, *falena*, *ermineus*, *daxus*. Of course, I refer to space as a biological factor conditionally. It may also be argued that the location of the authors determined their cultural background and within its network they perceived a certain mythic, symbolic, but also practical notion of the animal. In the case of Isidore and Meydenbach, these cultural domains were the Moorish-influenced ancient Mediterranean one and the Germanic-Saxon Christian one respectively.

The second factor is time. In this case, the cultural aspect is definitely stronger. Eight centuries are a long period from the historical point of view, but from the evolutionary point of view it is an insignificant stretch. Still, even though an animal species cannot evolve visibly within that time, other ecological changes may cause changes in man's environment. Extinction of species, shifting of habitat due to human activities, or climate changes might have brought before Meydenbach's eyes animals that were not seen in Europe before, or caused others, which were a common sight for Isidore, to become distinct or migrate. The cultural transformations that took place from Isidore's time to the fifteenth century created different environments for the two authors and gave them a different look at things. With regard to animals two significant points, both connected with the development of textual sources, should be highlighted here.

The first is the development of the travelogue.<sup>57</sup> The popularity of this genre increased noticeably in the late Middle Ages, stimulated by the travel accounts of Marco Polo, the fictional stories of Sir John de Mandeville and many others. Logically they differed essentially from the ancient prototypes: the values and the routes had changed. Sometimes the story included descriptions of exotic animals which the traveller reportedly saw in far-away lands. As these often had no name in Latin or in the native tongue of the observer, the latter was compelled to memorise their local name or to refer to it by a name of a familiar animal it resembled. A multitude of travellers' accounts – both written and oral, no matter whether the author saw the animal in person or not – were transmitted across Europe in many languages. Thus, it soon became difficult to trace all the variations of the names down to a particular animal.

The second problem was of the same nature; it resulted from the vigorous translation of scientific texts, including the Aristotelean corpus, from Arabic,<sup>58</sup> which had taken place in the twelfth and thirteenth centuries. In this case names had to be readjusted according to the recipients' language phonetics. As the texts had previously been translated from Greek, this was a secondary transliteration.

This brings us to the second gap to be overcome, namely, that between the modern scholar and the medieval naturalist. For the purposes of the supplementary tables I needed to provide the English names of the animals described. After some futile attempts when I faced the problems described here, I decided to stay at the level of the scientific *Genus* in most cases. The confusion comes from the fact noted above

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<sup>57</sup> For a brief description of the genre see: C. W. R. D. Moseley, introduction to *The Travels of Sir John Mandeville*, tr. C. W. R. D. Moseley (Harmondsworth: Penguin Books, 1983).

<sup>58</sup> This process is wonderfully though compactly treated by Faith Wallis, "Science: Introduction," especially for the ways to designate unfamiliar objects: "Jargon is formed in various ways, for example

that neither Isidore nor Jakob Meydenbach (even though the latter was not so far from it) had the notion of species distinction of modern-day zoology. In a universe like that of Isidore, where man stayed in the centre of the world, everything was subject to a centripetal force whose purpose was to measure it up to human standards. From such a perspective differentiating between similar species lost its necessity. The final result of that process was the generalisation of specific terms. For example, in the group of herbivores noted above, *bonnacon*, *taurus*, *bubalus*, *orassus*, any name might refer to any large bovine; *aquila*, *accipiter*, *girfalco* refer to any large day bird of prey in the same manner as *bubo*, *ulula* and *noctua* designated an owl generally.

The features that mattered for the distinction of an animal in the Middle Ages were: 1) perceptibility: that included size, shape, color, character, etc.; 2) practical value: whether the animal was good for food or other secondary materials (hide, horn, bones). Perceptibility did not necessarily lead to generalisations. The names of the mammals identified as canine-like in the *Hortus Sanitatis* (*chama*, *cirotrochea*, *genetha*, *lupus*, *papro*, *vulpis*, *zilio*) really designated animals varying according to such criteria of perceptibility, and were not mere linguistic variations. Since archaeozoological evidence shows that during the Middle Ages in Europe there were only three canine species: the wolf, the fox and the jackal, and they varied in size, color and even habits, an inference can be made that these names referred to one or two species only. Of course, this minute case study is entirely hypothetical and many other factors should be made before drawing any serious conclusion. The aim, however, is to show how different disciplines that in one way or another deal with

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by according a specialised or esoteric meaning to a word with a more commonplace primary meaning , by inventing nonce words, or by naturalizing words from other languages,” 344.

medieval animals can be of use to each other. The same approach can be applied to the poisonous snakes, for example.<sup>59</sup>

The second case, practical value, is simpler. To put it roughly, if an animal could be of use, it automatically came closer to humans and was therefore known in more detail. Had it had no practical value as a source of raw materials or as a working force, it disappeared into obscurity. One may compare book XII of the *Etymologiae* and the text of the *Hortus Sanitatis*. The literary and strictly theoretical character of the former was widely discussed, and it might seem paradoxical at first that examples of the influence of practicality are found here and not in the *Hortus Sanitatis*. On several occasions when he described domestic animals, Isidore slipped into great detail which is not paired in the description of any wild beast. In the paragraphs on the sheep, *ovis*,<sup>60</sup> he listed all the terms connected with it: *vervex*, “wether,” *aries*, “ram,” *agnus*, “lamb.” A similar list follows for the goat, the swine, the cow and the ass,<sup>61</sup> thereafter the various hybrids are treated. The dog is also described extensively, both in terms of different breeds and of general qualities. The next to come is the horse,<sup>62</sup> whose description is the largest in the whole book. Isidore gives a detailed account of its general qualities as well as of the different breeds, for example, the distinctive colour, posture and stature for a breed and what is it good for. This detailed description is very exciting with regard to the previous discussion on names and their cultural dependence on the author. Spain has been known for its horses for centuries and they played an important role in the culture of the region from very early times. This explains Isidore’s detailed knowledge. Especially the description of the colours gives an example how strongly terminology was bound with the region: several times

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<sup>59</sup> See Isidori *Etymologiarum* lib. XII, 4.

<sup>60</sup> Isidori *Etymologiarum* lib. XII, 1, 9-12.

<sup>61</sup> Please refer to the tables for the places in the text.



he refers to a vernacular form<sup>63</sup> for the colour of the horse. As a consequence, Jakob Meydenbach obviously chose not to quote Isidore in his chapter on the horse: for him these names meant nothing.

Isidore's verbosity on domestic animals can be used in comparison to highlight once again the nature of the two works. On the one hand, it was generated by the type of encyclopedia the *Etymologiae* is. A general knowledge encyclopedia of the volume and the nature of Isidore's work permitted the author some diversion from the main principle of the work and a change of discourse that would relax the reader in the same way as the literary quotations do. Jakob Meydenbach, on the other hand, does not aim at entertainment. In his medical collection he balances between the theory of the *capitulum* and the practice of the *operationes*. With the burden of authorities of such diverse background as the ones in the *Hortus Sanitatis* it is sometimes difficult to follow the right track. However, apart from such small digressions, and given the complexity of the influential factors, both works manage to keep their consistency in their attitude towards animals.

The question certainly arises whether the animals of the *Hortus Sanitatis* are different from those in the *Etymologiae*. The examples that were given display three main tendencies. First, that there are a number of animals described in the *Etymologiae* do not appear in the *Hortus Sanitatis* and vice versa. Second, apart from these, the majority of animals in the books coincide. Third, the two are essentially different, and yet sometimes characteristics do overlap. Thus, was there any shift in animal population of Europe or in its perception? I think the proper question here is: Would medieval man, even the naturalist, notice such a shift? In the Middle Ages

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<sup>62</sup> Isidori *Etymologiae* lib. XII, 1, 41-60.

<sup>63</sup> *Spadix*, "purple," *guaranen*, "reddish," *aeranen*, "copper-coloured," *dosina*, "grey."

animal lore was left to be; it occupied the marginalia of the human world and was worthy of notice only when it came into direct interference with man in one form or another. Not too much attention was given to details. Thus the aurochs, distinct in Europe long before the Middle Ages, still dwelled in its dark forests; bisons, bulls and buffaloes were identified as it and kept its niche in man's imagination. For a society which had no notion of typological classification, this system worked so well that soon the names of animals inherited the characteristics of their *designata*. In the gradual process of the disintegration of the Latin West the animal often stayed, but the name attached to it was being changed in the same manner as the different animals had crawled into the same name ages before. This does not mean, however, that an early and a late medieval treatise on animals would look alike. It simply designates the period's resemblance in the perception of its bordering times. No matter how differently, one shared one common feature: one's eyes were fixed on humanity, and not on what squeaked and roared in the woods.

## CONCLUSIONS

This comparative analysis of book XII *De Animalibus* of Isidore's *Etymologiae* and the *Tractatus de Animalibus* and *de Avibus* of the *Hortus Sanitatis* aims at highlighting the specifics, the development, and the changes, and the patterns that influenced authority in natural history in the Middle Ages. These works set the framework for the topic in both time and space. Their huge popularity in their own times and afterwards renders them representative for their topic, and due to their authors' ambition to respond to the chief trends of thought in their time, they illustrate the patterns of authority in details in an explicit way.

The study is divided into two parts. Its comparative nature demanded that the setting of the examined works be analysed. In the first part of the thesis this has been done individually for each work and in their correlation with each other. In order to highlight the results of the comparison, I imposed a dichotomised structure on several levels. Thus the following dichotomies were distinguished: "the Middle Ages" and "antiquity," "theory" and "practice," "general" and "specific," and "science" and "fiction." The analysis of these is based on an interdisciplinary approach and includes archaeozoology, art history, palaeography, and literary studies as its tools.

The second part consists of a comparative analysis of the text of book XII and the *Tractatus de Animalibus* and *de Avibus* in more detail. The basis for this are the quotations of Isidore's text in the *Hortus Sanitatis*. I have prepared analytical tables where the relation of the two texts is displayed and the quotations are assessed for their frequency of appearance, their accuracy and consistency, and thus the patterns they follow are displayed. The problem is put from the philological point of view, but methodologies and data from the disciplines noted above are borrowed. The attitude

towards an animal is inspected with regard not only to its biological qualities, but also considering the cultural value it had in the Middle Ages.

My reference literature is also divided into two main groups, namely specialised studies on Isidore and the *Hortus Sanitatis* and more general works on science and animals. For the latter case I consulted works that adopted various viewpoints and treated their subject in the manner of one of the disciplines noted above. Thus, the heterogeneity of factors that moulded science and animal history has been examined in its entirety and from all aspects that appeared relevant to my study.

The research demonstrates the main tendencies in the development of science, and of animal history in particular. Whereas at first sight the dichotomy “theory” and “practice” blurs the visibility of authority in the *Hortus Sanitatis*, the highlighting of the factors shaping thought in the period and the analysis of the text and its author’s writing techniques resulted in the conclusion that authority changed shape rather than disappeared. Authority had a formalising, theoreticising, and generalising effect on Isidore. For the eight centuries that separated him from Meydenbach it shifted to a specificised practical authority, which was in line with ideas that became the foundations of the modern notion of science.

Another aim of the research is to demonstrate the relevance of interdisciplinarity to the topic. The reasoning for processes or particular cases, taken from various fields of knowledge, comes together to constitute a thorough study where findings of various types are explained and supplemented by a combination of methodologies and approaches. Thus the interdisciplinary approach is affirmed as successful in the field and its positive contribution justifies its adoption in future projects.

Lastly, the study posed many questions whose answers are still to be sought. The analysis of authority in the *Hortus Sanitatis* through the quotations of Isidore is a case study in a larger framework. Now that the methodology is set and the paths of research are clear, there is room for this study to be expanded over the entirety of authorities used by Meydenbach, which can lead to a more determinate and consistent definition of the *Hortus Sanitatis* and authorities in the late Middle Ages in general.

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## APPENDIX

**TABLE I. ANIMALS DESCRIBED BY ISIDORE IN BOOK XII OF HIS  
ETYMOLOGIAE WITH REFERENCE TO THEIR APPEARANCE IN THE  
HORTUS SANITATIS**

- I. De pecoribus et iumentis (On flocks and herds and beasts of burden).
- II. De bestiis (On wild beasts).
- III. De minutis animantibus (On small creatures).
- IV. De serpentibus (On serpents).
- V. De vermibus (On worms).
- VI. [De piscibus (On fish).]<sup>64</sup>
- VII. De avibus (On birds).
- VIII. De minutis volatilibus (On small flying creatures).

Animals	Name in English/ type of animal	Chapter and paragraph in Isidore's liber XII <i>Etymologiae</i>	Authors quoted by Isidore	Chapter of <i>De animalibus</i> or of <i>De Avibus</i> in <i>Hortus sanitatis</i> <sup>65</sup>	Details of the quotation if there is such
<b>I. De pecoribus et iumentis</b>					
Ovis	Sheep	I, 9		No	-
Vervex	Ram	I, 10		DA, CLI	Almost literal quotation; whole paragraph; cf. <i>aries</i>
Aries	Ram	I, 11	<i>Sedulius, 1, 15</i>	DA, III	Sentences are not in the same order
Agnus	Lamb	I, 12		DA, II	Name mentioned, but not a literal quotation
Haedus	Goat	I, 13		Edus DA, LIX	Literal quotation; whole paragraph
Hircus	He-goat	I, 14	Suetonius, <i>prat.</i> 171	DA, LXXIII	Literal quotation; whole paragraph; differences in Suetonius' quotation
Caper, capra (crepa)	Goats	I, 15		DA, XXII	Almost literal quotation; partial
Caprea	Roe deer	I, 16		DA, XX(X)III	Almost literal quotation; partial
Ibex	Capricorn	I, 16-17		Ybex DA, (CLV) CLX	No quotation
Cervus	Deer	I, 18-19		DA, XXXIII	No quotation
Tragelaphus	Herbivore	I, 20		DA, CXLIII	Almost literal quotation; whole paragraph
Hinnulus	Fawn	I, 21		Hynnulus DA, LXXV	Quotation does not match

<sup>64</sup> Animals included in this chapter are shown only on the occasions when they are included either in *De Animalibus* or in *De Avibus* of the *Hortus Sanitatis*, which are the subject of this study.

<sup>65</sup> *De Animalibus* is designated by DA, *De Avibus* – by Dav.

Animals	Name in English/ type of animal	Chapter and paragraph in Isidore's liber XII <i>Etymologiarum</i>	Authors quoted by Isidore	Chapter of <i>De animalibus</i> or of <i>De Avibus</i> in <i>Hortus sanitatis</i> <sup>66</sup>	Details of the quotation if there is such
Dammula	Roe deer	I, 22	Martial 13, 94	DA, LII	Almost literal quotation; partial
Lepus	Rabbit	I, 23		DA, LXXXIII	Literal quotation; partial
Cuniculus	Rabbit	I, 24		DA, XLV	Almost literal quotation; whole paragraph
Sus	Swine	I, 25-26	Horace, <i>Epist.</i> 1, 2, 26	No	-
Verres	Hog	I, 25-26		No	-
Porcus	Pig	I, 25-26		No	-
Aper	Wild boar	I, 27		DA, IV	Almost literal quotation; whole paragraph
Iuvenus	Young bull	I, 28		DA, CLIII	Almost literal quotation; whole paragraph
Taurus	Bull	I, 29		Thaurus DA, CXL	No quotation
Taurus Indicus	Indian bull	I, 29		No	-
Bos (trio)	Bull	I, 30	Naevius, <i>trag.</i> 62	DA, XIII	Almost literal quotation; whole paragraph; missing reference to Naevius
Vacca	Cow	I, 31		DA, CL	No quotation
Vitulus	Calf	I, 32		DA, CLIII	Literal quotation; whole paragraph
Bubalus	Buffalo	I, 33		DA, XVIII	Almost literal quotation; whole paragraph
Urus	European bison	I, 34		Urro DA, CLVI	Literal quotation; whole paragraph; mixed order
Camelus	Camel	I, 35		DA, XXVII	No quotation
Dromeda	Camel	I, 36-37		DA, LII	Almost literal quotation; partial
Asinus	Ass	I, 38		Azinus DA, V	No quotation
Onager	Onager	I, 39		DA, CV	Literal quotation; partial
Asinus Arcadicus		I, 40		No	-
Equus (caballus, cabo, sonipes)	Horse	I, 41-60		DA, LIII	No quotation
Mulus	Mule	I, 60		DA, XCVIII	No quotation
Burdo	Herbivorous hybrid	I, 60		No	-
Hybrida	Herbivorous hybrid	I, 60		No	-

<sup>66</sup> *De Animalibus* is designated by DA, *De Avibus* – by Dav.

Animals	Name in English/ type of animal	Chapter and paragraph in Isidore's liber XII <i>Etymologiarum</i>	Authors quoted by Isidore	Chapter of <i>De animalibus</i> or of <i>De Avibus</i> in <i>Hortus sanitatis</i> <sup>67</sup>	Details of the quotation if there is such
Tityrus	Herbivorous hybrid	I, 60		No	-
Musmo	Herbivorous hybrid	I, 60		No	-
<b>II. De bestiis</b>					
Leo	Lion	II, 3-6	Lucretius, 5, 1035	DA, LXXX	Literal quotation; partial
Tigris	Tiger	II, 7		DA, CXLVII	Almost literal quotation; whole paragraph
Panther	Panther	II, 8-9	Pliny, <i>Nat. Hist.</i> 8, 43	Panthera DA, CIX	Literal quotation; partial
Pardus	Feline	II, 10		DA, CXII	Almost literal quotation; partial
Leopardus	Leopard	II, 11	Pliny, <i>Nat. Hist.</i> 8, 42	DA, LXXXI	No quotation
Rhinoceros	Rhinoceros	II, 12		Rinoceron DA, CXXVI	Almost literal quotation; whole paragraph
Monoceros	Unicorn	II, 12-13		DA, XCVI DA, CLV	Quotation does not match Quotation does not match
Elephantus, (barro, bos Luca)	Elephant	II, 14-17		DA, LV	Literal quotation; partial
Gryps	Griffin	II, 17		No	-
Chamaeleon	Chameleon	II, 18		Cameleon DA, XXVIII	Almost literal quotation; whole paragraph
Camelopardus	Giraffe?	II, 19		DA, XXIX	Literal quotation; whole paragraph
Lyncis	Lynx	II, 20	Pliny, <i>Nat. Hist.</i> 8, 43	Linx DA, LXXXVI	Literal quotation; partial
Castor (fiber, canis Ponticus)	Beaver	II, 21	Cicero, pro Scaur. 2, 7; Juvenal, 12, 34	DA, XXXI; fiber DA, LXII	No quotation
Ursus	Bear	II, 22	<i>poeta incertus</i>	DA, CLVII	Almost literal quotation; partial
Lupus	Wolf	II, 23-24		DA, LXXXVIII	Literal quotation; partial
Canis	Dog	II, 25-26		DA, XXIV	Almost literal quotation; partial
Catulus	Small animal	II, 27		No	-
Lyciscus	Canid hybrid	II, 28	Pliny, <i>Nat. Hist.</i> 8, 148	Lintiscus DA, XCI	Literal quotation; whole paragraph
Vulpes	Fox	II, 29		Vulpis DA, CLIX	Quotation does not match
Simia	Monkey	II, 30-33		Symia DA, CXXXV	Literal quotation; partial

<sup>67</sup> *De Animalibus* is designated by DA, *De Avibus* – by Dav.

Animals	Name in English/ type of animal	Chapter and paragraph in Isidore's liber XII <i>Etymologiarum</i>	Authors quoted by Isidore	Chapter of <i>De animalibus</i> or of <i>De Avibus</i> in <i>Hortus sanitatis</i> <sup>68</sup>	Details of the quotation if there is such
Cercopithecus	Monkey	II, 30-33		No	-
Clura	Monkey	II, 30-33		No	-
Sphinga	Monkey	II, 30-33		No	-
Cynocephalus	Monkey	II, 30-33		No	-
Satyrus	Monkey	II, 30-33		No	-
Callitriches	Monkey	II, 30-33		No	-
Leontophonos	?	II, 34		DA, LXXXII	Literal quotation; whole paragraph
Histrix	Porcupine	II, 35		DA, LXXIII	No quotation
Enhydros	?	II, 36		Enidros DA, LVII	Almost literal quotation; whole paragraph; next paragraph on <i>ichneumon</i> included
Ichneumon (suillus)	Mongoose ?	II, 37	Dracontius <i>Laud, I, 515</i>	Ychneumon DA, CLXI	Almost literal quotation; whole paragraph
Musio (cattus)	Cat	II, 38		DA, CI DA, XXV	Almost literal quotation; whole paragraph Almost literal quotation; whole paragraph; mixed order of sentences
Furo	(?)	II, 39		DA, LXV	Literal quotation; whole paragraph
Melo	(?)	II, 40		DA, XCVI	Almost literal quotation; whole paragraph
<b>III. De minutis animantibus</b>					
Mus	Mouse	III, 1		DA, XCIX	No quotation
Sorex	Shrew	III, 2		DA, CXXIV	Almost literal quotation; partial
Mustela	Weasel	III, 3		DA, XCIII	No quotation
Mus araneum	(?)	III, 4		No	-
Solifuga	(?)	III, 4		DA, CXXXVII	Quotation does not match
Talpa	Mole	III, 5		DA, CXXXIX	Almost literal quotation; whole paragraph
Glis	Dormouse	III, 6		No	-
Ericium	Hedgehog	III, 7		Erinacius DA, LVIII Hericius DA, LX[X]I	Mixed order; partial No quotation
Gryllus	Cricket	III, 8		DA, LXX	Literal quotation; whole paragraph

<sup>68</sup> *De Animalibus* is designated by DA, *De Avibus* – by Dav.

Animals	Name in English/ type of animal	Chapter and paragraph in Isidore's liber XII <i>Etymologiarum</i>	Authors quoted by Isidore	Chapter of <i>De animalibus</i> or of <i>De Avibus</i> in <i>Hortus sanitatis</i> <sup>69</sup>	Details of the quotation if there is such
Formica	Ant	III, 9		DA, LXIII	Literal quotation; partial
Formicoleon	Mravkolav	III, 10		No	-
IV. De serpentibus					
Coluber	Snake	IV, 2		DA, XLIII	Literal quotation; whole paragraph
Draco	Dragon	IV, 4-5		DA, XLVIII	Literal quotation; partial
Basiliscus (regulus, sibilus)	Basilisc	IV, 6-9		No Regulus DA, CXXV	Almost literal quotation; partial; mixed order
Vipera	Viper	IV, 10-11	Lucan, 6, 490	DA, CLIII	No quotation
Aspis	Asp	IV, 12		DA, X	Almost literal quotation; partial
Dipsas (situla)	Asp	IV, 13		Dypsa DA, LI  Situla DA, CXXXIII	Literal quotation; whole paragraph No quotation
Hypnalis	Asp	IV, 14		Ipnalis DA, LXXVI	Quotation does not match
Haemorrhoids	Asp	IV, 15		Emorrois DA, LX	Almost literal quotation; partial
Prester	Asp	IV, 16	Lucan, 9, 722	DA, CXXI	Almost literal quotation; whole paragraph
Seps	Asp	IV, 17		DA, CXXXIII	Literal quotation; whole paragraph
Cerastes	Snake	IV, 18		DA, XXXVII	No quotation
Scytale	Snake	IV, 19	Lucan, 9, 717	Scitalis DA, CXXXIII	Almost literal quotation; whole paragraph
Amphisbaena	Snake	IV, 20	Lucan, 9, 719	Anfibena DA, IX	Literal quotation; whole paragraph
Enhydri	Water snake	IV, 21		No	-
Hydros	Water snake	IV, 22		Ydros DA, CLXII	Almost literal quotation; whole paragraph
Hydra	Hydra	IV, 23		Ydra DA, CLXII	Not literal quotation; whole paragraph
Chelydros (chersydros)	Amphibian snake	IV, 24	Lucan, 9, 711; Macer, 8	Celidros DA, XXXVI	Literal quotation; whole paragraph; differences in the quotations
Natrix	Water snake	IV, 25	Lucan, 9, 720	Gnatrix DA, LXIX	Literal quotation; whole paragraph; differences in the quotations

<sup>69</sup> *De Animalibus* is designated by DA, *De Avibus* – by Dav.

Animals	Name in English/ type of animal	Chapter and paragraph in Isidore's liber XII <i>Etymologiae</i>	Authors quoted by Isidore	Chapter of <i>De animalibus</i> or of <i>De Avibus</i> in <i>Hortus sanitatis</i> <sup>70</sup>	Details of the quotation if there is such
Cenchris	Snake	IV, 26	Lucan, 9, 712	Cenchrus DA, XXXVI	Literal quotation; whole paragraph
Parias	Snake	IV, 27	Lucan, 9, 721	DA, CXXI	Literal quotation; whole paragraph
Boas	Snake	IV, 28		No	-
Iaculus	Flying snake	IV, 29	Lucan, 9, 720	DA, LXXVI	Literal quotation; whole paragraph
Sirena	Flying snake	IV, 29		Syrena DA, CXXXIII	Almost literal quotation; whole paragraph
Ophites	Snake	IV, 30	Lucan, 9, 714	Obix DA, CIII	Almost literal quotation; whole paragraph; not accurate quotation from Lucanus
Seps	Snake	IV, 31	Lucan, 9, 723	DA, CXXXIII	Literal quotation; whole paragraph; interpolations
Dipsas	Snake	IV, 32	Lucan, 9, 737	Dypsa DA, LI	Literal quotation; partial
Salpuga	Snake	IV, 33		Salpiga DA, CXXXIII	Literal quotation; whole paragraph
Caecula	Snake	IV, 33		Cecula DA, XXXVI	Literal quotation; whole paragraph
Centupeda	Centipede	IV, 33		No	-
Lacertus	Lizard	IV, 34		DA, LXXVIII	Almost literal quotation; partial; interpolations
Botrax	Lizard	IV, 35		Borax/botracha DA, XVI	No quotation
Salamandra	Lizard	IV, 36		DA, CXXIX	Literal quotation; partial
Saura	Lizard	IV, 37		DA, CXXX	Almost literal quotation; whole paragraph
Stellio	Lizard	IV, 38	Ovid, <i>Metam.</i> 5, 461	DA, CXXX	No quotation
Ammodyta	Snake	IV, 39		No	-
Elephantia	Snake	IV, 39		No	-
Chamaedracon	Snake	IV, 39		No	-
<b>V. De vermibus</b>					
Vermis aranea	(?)	V, 2		No	-
Sanguisuga	Leech	V, 3		DA, CXXXI	No quotation
Scorpio	Scorpion	V, 4		DA, CXXXVI	Almost literal quotation; partial
Cantharida	(?)	V, 5		No	-

<sup>70</sup> *De Animalibus* is designated by DA, *De Avibus* – by Dav.



Animals	Name in English/ type of animal	Chapter and paragraph in Isidore's liber XII <i>Etymologiarum</i>	Authors quoted by Isidore	Chapter of <i>De animalibus</i> or of <i>De Avibus</i> in <i>Hortus sanitatis</i> <sup>71</sup>	Details of the quotation if there is such
Multipes	Multipede	V, 6		DA, CII	Almost literal quotation; whole paragraph
Limax	Snail (?)	V, 7		DA, LXXXV	Almost literal quotation; whole paragraph
Bombyx	Silkworm	V, 8		Bombex DA, XV	Almost literal quotation; whole paragraph
Eruca	Caterpillar	V, 9	Plautus, <i>Cist.</i> 728	DA, LXI	No quotation
Teredo (termis)	Woodworm	V, 10		Terredo DA, CXLIII	No quotation
Tinea (pertinax)	Moth	V, 11		Tynea DA, [CX]LV	No quotation
Hemicranius	Fleshworm	V, 13		No	-
Lumbricus	Fleshworm	V, 13		DA, XC	Almost literal quotation; whole paragraph
Ascarida	Fleshworm	V, 14		No	-
Costus	Fleshworm	V, 14		No	-
Pediculus	Louse	V, 14		DA, CXIX	Literal quotation; whole paragraph
Pulex	Flea	V, 15		DA, CXVIII	No quotation
Lendes	Fleshworm	V, 15		No	-
Tarmus	Fleshworm	V, 15		No	-
Ricinus	Fleshworm	V, 15		No	-
Usia	Fleshworm	V, 16		No	-
Cimex	Fleshworm	V, 17		No	-
<b>VI. De piscibus</b>					
Rana	Frog	VI, 58		DA, CXXII	Literal quotation; partial
Rubeta	Frog	VI, 58		DA, CXXVIII	No quotation
<b>VII. De avibus</b>					
Aquila	Eagle	VII, 10-11		DAv, I	Literal quotation; whole paragraph
Vultur	Vulture	VII, 11-12		DAv, CXIX	Literal quotation; partial; interpolations
Gradipes	(?)	VII, 13		Tarda DAv, CXI	Not accurate quotation; whole paragraph; mixed order
Grus	Crane	VII, 14-15	Lucan, 5, 716	DAv, LIX	Literal quotation; partial; text divided in two parts
Ciconia	Stork	VII, 16-17		DAv, XXVII	Almost literal quotation; partial

<sup>71</sup> *De Animalibus* is designated by DA, *De Avibus* – by Dav.

Animals	Name in English/ type of animal	Chapter and paragraph in Isidore's liber XII <i>Etymologiarum</i>	Authors quoted by Isidore	Chapter of <i>De animalibus</i> or of <i>De Avibus</i> in <i>Hortus sanitatis</i> <sup>72</sup>	Details of the quotation if there is such
Olor (cygnus)	Swam	VII, 18-19	Aemilius, 4	DAv, XXVIII	Almost literal quotation; partial
Struthio	Ostrich	VII, 20		Strutio DAv, CIX	No quotation
Ardea (tantalum)	Heron	VII, 21	Lucan, 5, 554	(Ardeola) DAv, XI	Almost literal quotation; partial: one sentence missing; mistake in Lucanus's quotation
Phoenix	Phoenix	VII, 22		Fenix DAv, XLVIII	Almost literal quotation; whole paragraph
Cinnamolgus	(?)	VII, 23		Cinomulgus DAv, XXIX	Literal quotation; whole paragraph
Psittacus	Parrot	VII, 24	Martial, 14, 73	Psitacus DAv, CII	Literal quotation; whole paragraph
Alcyon	Kingfisher	VII, 25		Altion DAv, VIII	No quotation
Pelicanus	Pelican	VII, 26		Pellicanus DAv, XCVII	Almost literal quotation; whole paragraph
Avis Stymphalida	Mythical bird	VII, 27		No	-
Avis Diomedea	Albatross	VII, 28-29		Diomedas DAv, XLII	Literal quotation; partial
Avis Memnonida	(?)	VII, 30		Menonides DAv, LXXVIII	No quotation
Avis Hercynia	(?)	VII, 31		Ercinia DAv, XLIII	Literal quotation; whole paragraph
Onocrotalon	(?)	VII, 32		Onocroculus DAv, LXXXVI	Almost literal quotation; partial
Ibis	Ibis	VII, 33		DAv, LXIV	No quotation
Merops	Bee-eater	VII, 34		DAv, LXVI	Quotation does not match
Coredulus	(?)	VII, 34		DAv, XXXIII	No quotation
Monedula	Jackdaw	VII, 35	Cicero, Pro Flacc. 76	DAv, LXXX	Almost literal quotation; whole paragraph
Vespertilio	Bat	VII, 36		DAv, CXV	Literal quotation; partial
Luscinia (acredula)	Nightingale	VII, 37	Cicero, Prognost. fr. 6	DAv, LXXII	Not accurate quotation; partial
Ulula	Owl	VII, 38		DAv, CXVII	Literal quotation; partial
Bubo	Owl	VII, 39	Ovid, <i>metam.</i> 5, 549	DAv, XVI	No quotation

<sup>72</sup> *De Animalibus* is designated by DA, *De Avibus* – by DAv.

Animals	Name in English/ type of animal	Chapter and paragraph in Isidore's liber XII <i>Etymologiarum</i>	Authors quoted by Isidore	Chapter of <i>De animalibus</i> or of <i>De Avibus</i> in <i>Hortus sanitatis</i> <sup>73</sup>	Details of the quotation if there is such
Noctua	Owl	VII, 40		DAv, LXXXIII	Not accurate quotation; partial; mixed order
Nycticorax	Night heron	VII, 41		Nocticorax DAv, LXXXIII	Not accurate quotation; partial; mixed order
Strix (amma)	Owl	VII, 42	Lucan, 6, 689	DAv, CVIII	No quotation
Corvus (corax)	Raven	VII, 43		DAv, XXXIV	No quotation
Cornix	Crow	VII, 44	Virgil, Georg. 1, 388	DAv, XXXIII	Literal quotation; whole paragraph
Graculus	Jackdaw	VII, 45		DAv, LV	No quotation
Pica	Magpie	VII, 46	Martial, 14 76	DAv, XCIX	Literal quotation; partial
Picus	Woodpecker	VII, 47		DAv, C	Almost literal quotation; partial
Pavo	Peacock	VII, 48	Martial, 13, 70	DAv, XCIII	No quotation
Phasianus	Pheasant	VII, 49	Martial, 13, 72	Fasianus DAv, XLVI	Literal quotation; partial
Gallus	Cock	VII, 50		DAv, LII	Literal quotation; partial
Ans	Duck	VII, 51		Anas DAv, IX	No quotation
Anser	Goose	VII, 52		DAv, X	Almost literal quotation; partial
Fuliga	Moorhen	VII, 53		Fulica DAv, L	No quotation
Mergus	Merganser	VII, 54		DAv, LXXV	No quotation
Accipiter	Hawk	VII, 55-56		DAv, IIII	No quotation
Capus (falco)	Falcon	VII, 57		Falco DAv, XLV	No quotation
Milvus	Kite	VII, 58		DAv, LXXIX	Almost literal quotation; whole paragraph
Ossifragus	Vulture	VII, 59		DAv, LXXXIX	Almost literal quotation; whole paragraph
Turtur	Turtledove	VII, 60		DAv, CXIII	Almost literal quotation; whole paragraph
Columba	Pigeon	VII, 61		DAv, XXXII	No quotation
Palumbes (titus)	Ringdove	VII, 62		Palumbus DAv, XCIII	Almost literal quotation; partial
Perdix	Partridge	VII, 63		DAv, XCVIII	No quotation
Coturnix	Quail	VII, 64		DAv, XXXV	Almost literal quotation; whole paragraph
Ortygometra	(?)	VII, 65		Origometra DAv, LXXXVIII	Almost literal quotation; partial; reference to chapter XXXV

<sup>73</sup> *De Animalibus* is designated by DA, *De Avibus* – by Dav.

Animals	Name in English/ type of animal	Chapter and paragraph in Isidore's liber XII <i>Etymologiarum</i>	Authors quoted by Isidore	Chapter of <i>De animalibus</i> or of <i>De Avibus</i> in <i>Hortus sanitatis</i> <sup>74</sup>	Details of the quotation if there is such
Upupa	Hoopoe	VII, 66		DAv, CXVIII	Literal quotation; whole paragraph; mixed sentence order
Tucus (ciculus)	(?)	VII, 67		Cuculus DAv, XXXIX	Almost literal quotation; whole paragraph
Passer	Sparrow	VII, 68		DAv, XCII	Literal quotation; whole paragraph
Merula	Blackbird	VII, 69		DAv, LXXIV	Almost literal quotation; whole paragraph
Erundo	Swallow	VII, 70		Hirundo DAv, LXII	No quotation
Turdus	Thrush	VII, 71		Turdo DAv, CXII	Almost literal quotation; partial
Turdela	Thrush	VII, 71		DAv, CXII	Almost literal quotation; partial
Furfurio	(?)	VII, 72		No	-
Ficedula	Flycatcher	VII, 73	<i>Martial, 13, 49</i>	DAv, XLIX	Almost literal quotation; whole paragraph
Carduelus	Thistle-finch	VII, 74		DAv, XXIII	Literal quotation; whole paragraph
Ovum	Egg	VII, 79-81		DAv, XCI	No quotation
<b>VIII. De minutis volatilibus</b>					
Apis	Bee	VIII, 1		DAv, XII	No quotation
Costrus	Bee	VIII, 2		Costro DAv, XXXI	Almost literal quotation; whole paragraph
Fugus	Drone	VIII, 3	<i>Virgil, Georg. 4, 168</i>	Fucus DAv, LI	Almost literal quotation; whole paragraph; NB! quoted from Bartholomaeus
Vespa	Wasp	VIII, 4		DAv, CXVI	No quotation
Scabro	Bug	VIII, 4		DAv, CV	Almost literal quotation; whole paragraph
Scarabeus	Scarab	VIII, 4		DAv, CVI	Literal quotation; whole paragraph
Taurus (scarabeus terrestris)	Bug	VIII, 5		No	-
Buprestis	Bug	VIII, 5		DA, XX	Literal quotation; whole paragraph
Cicindela	Bug	VIII, 6		Cicendula DAv, XXXI	Literal quotation; whole paragraph

<sup>74</sup> *De Animalibus* is designated by DA, *De Avibus* – by Dav.

Animals	Name in English/ type of animal	Chapter and paragraph in Isidore's liber XII <i>Etymologiarum</i>	Authors quoted by Isidore	Chapter of <i>De animalibus</i> or of <i>De Avibus</i> in <i>Hortus sanitatis</i> <sup>75</sup>	Details of the quotation if there is such
Blatta	Cockroach	VIII, 7		Blata DA, XXI; Blata DAv, XVIII	Differences; partial Literal quotation; partial; one sentence missing
Papilio	Butterfly	VIII, 8		DAv, XCVI	Almost literal quotation; whole paragraph
Locusta	Locust	VIII, 9		DA, LXXXVII	No quotation
Cicada	Cicada	VIII, 10		Cicade DAv, XXVI	No quotation
Musca	Fly	VIII, 11		DAv, LXXXI	Literal quotation; whole paragraph
Cynomya	Fly	VIII, 12		Cinomia DAv, XXX	Literal quotation; whole paragraph
Culex	Mosquito	VIII, 13		DAv, XLI	Literal quotation; whole paragraph
Sciniphes	Fly	VIII, 14		Scinifes DAv, CVII	Almost literal quotation; whole paragraph
Oestrus (asilus, tabanus)	Horse-fly	VIII, 15		No	-
Bibio (mustio)	Vinegar fly	VIII, 16	Afranius, 407	Bibo DAv, XVIII	Literal quotation; whole paragraph; mistakes in Afranius's quotation
Gurgulio	Weevil	VIII, 17		DA, LXX	No quotation

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<sup>75</sup> *De Animalibus* is designated by DA, *De Avibus* – by DAv.

TABLE II. ANIMALS OF THE *TRACTATUS DE ANIMALIBUS* OF THE *HORTUS SANITATIS* IN THE ORDER OF THE CHAPTERS WITH REFERENCE TO THE AUTHORITIES USED AND TO ISIDORE'S BOOK XII

Animals	Name in English/ type of animal	Chapter of <i>De animalibus</i> in <i>Hortus sanitatis</i>	Authors	Place is Isidore's <i>Etymologiae</i>	Details of the quotations	Secondary quotations from Isidore's text <sup>76</sup>
Agnus	Lamb	II	Isidore Isidore Aristotle and Avicenna Pliny, lib. VIII Pliny, lib. XVIII Ambrosius Aristotle Palladius, lib. XV Actor	XII, 1, 12	Name mentioned, but not a literal quotation	
Aries	Ram	III	Isidore Isidore Isidore Lex Mosayca Pliny, lib. VIII, cap. XLVII Avicenna Ysaac in dietis particularibus Aristotle (Humerus incl.) and Avicenna Euscolapius	XII, 1, 11	Mixed order	Sedulius

<sup>76</sup> The names of the authors appear in *italics* when they have been identified by the editor of the *Etymologiae*, W. M. Lindsay.

Animals	Name in English/ type of animal	Chapter of <i>De animalibus</i> in <i>Hortus sanitatis</i>	Authors	Place is Isidore's <i>Etymologiae</i>	Details of the quotations	Secondary quotations from Isidore's text <sup>77</sup>
Aper	Wild boar	III	Isidore Pliny, lib. VIII Liber de naturis rerum	XII, 1, 27	Almost literal quotation; whole paragraph	
Azinus	Ass	V	Liber de naturis rerum Aristotle Actor Ambrosius Physiologus	XII, 1, 38		
Ahane/alches	Deer	VI	Liber de naturis rerum (according to Aristotle)	-		
Anabulla	Herbivore	VII	Isidore	-	(?)	
Antaplon/aptalos	Herbivore	VII	NB! No name mentioned.	-		
Aucacinor	?	VII	- (denotes missing description after mentioning in the beginning of the chapter)	-		
Afferaco	Serpent	VIII	Avicenna	-		
Affudio	Serpent	VIII	-	-		
Anfibena/armena	Amphisbaena	IX	Isidore	XII, 4, 20	Literal quotation; whole paragraph	Lucanus
Aspis	Viper	X	Isidore	XII, 4, 12	Almost literal quotation; partial	

<sup>77</sup> The names of the authors appear in *italics* when they have been identified by the editor of the *Etymologiae*, W. M. Lindsay.

Animals	Name in English/ type of animal	Chapter of <i>De animalibus</i> in <i>Hortus sanitatis</i>	Authors	Place in Isidore's <i>Etymologiae</i>	Details of the quotations	Secondary quotations from Isidore's text <sup>78</sup>
Aranea	Spider	XI	Isidore Avicenna Avicenna et Aristotle Aristotle, lib. V Aristotle, lib. VIII Avicenna et Pliny, lib. XI, cap. XXV Aristotle and Pliny	XII, 5, 2	Almost literal quotation; whole paragraph	
Blacte/ungula	Mollusk	XII	Serapion libro aggre. ca. Serapion libro aggre. ca.	-		
Bonnacon	Herbivore	XIII	Solinus Actor Aristotle Aristotle	-		
Bos	Bull	XIII	Isidore Aristotle Actor Pliny lib. V Pliny lib. XI Theophrast Ysaac in dietis particularibus	XII, 1, 29-30	Almost literal quotation; whole paragraph; missing reference to Naevius	

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Animals	Name in English/ type of animal	Chapter of <i>De animalibus</i> in <i>Hortus sanitatis</i>	Authors	Place is Isidore's <i>Etymologiae</i>	Details of the quotations	Secondary quotations from Isidore's text <sup>79</sup>
Bombex	Silkworm	XV	Isidore in li. Ethimologiarum Pliny Phisiologus	XII, 5, 8	Almost literal quotation; whole paragraph	
Borax/botracha	Frog	XVI	Liber de naturis rerum Philosophus	XII, 4, 35	No quotation	
Bufo	Toad	XVII	Actor Liber de naturis rerum Phisiologus	-		
Bubalus	Buffalo	XVIII	Isidore Liber de naturis rerum Solinus	XII, 1, 33	Almost literal quotation; whole paragraph	
Bisontes	European bison	XVIII	Solinus Pliny lib. VIII	-		
Bruchus	Grasshopper	XIX	Rudolphus Glossa super Johel	-		
Bupreste	Insect	XX	Isidore et Pliny lib. XXX	XII, 8, 5	Literal quotation; whole paragraph	
Bubio/bibio	Vinegar fly	XXI	Isidore	XII, 8, 16	Literal quotation; whole paragraph; differences in the quotation of Afranius	Afronius (sic); [Afranius]
Blata	Cockroach	XXI	No name (Isidore?) Liber de naturis rerum Palladius de agricultura	XII, 8, 7	Differences; partial	

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Animals	Name in English/ type of animal	Chapter of <i>De animalibus</i> in <i>Hortus sanitatis</i>	Authors	Place in Isidore's <i>Etymologiae</i>	Details of the quotations	Secondary quotations from Isidore's text <sup>80</sup>
Capra	She-goat	XXII	Liber de naturis rerum Constantinus Sera. In libro de simplici medicina Isidore Aristotle Pliny lib. VIII Pliny lib. XI Pliny lib. VIII Aristotle Palladius lib. VIII	XII, 1, 15	Almost literal quotation; partial	
Caprea	Chamois	XX(X)III	Pliny lib. VIII Pliny lib. XI Isidore Liber de naturis rerum	XII, 1, 16	Almost literal quotation; partial	
Canis	Dog	XXIII	Aristotle Alexander Liber de naturis rerum Isidore Ambrosius Phisiologus Liber de naturis rerum Aristotle	XII, 2, 25-26	Almost literal quotation; partial	
Cattus/cathaplepa	Cat	XXV	Isidore Albert the Great	XII, 2, 38	Almost literal quotation; whole paragraph; mixed order of sentences	

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Animals	Name in English/ type of animal	Chapter of <i>De animalibus</i> in <i>Hortus sanitatis</i>	Authors	Place in Isidore's <i>Etymologiae</i>	Details of the quotations	Secondary quotations from Isidore's text <sup>81</sup>
Caccus	Fantastic	XXVI	Liber de naturis rerum Adelinus philosophus Virgil, VIII lib. Aen.	-		
Camelus	Camel	XXVII	Liber de naturis rerum Aristotle Solinus Vegetius de re militari lib. III	XII, 1, 35	No quotation	
Cameleon	Chameleon	XXVIII	Isidore Rudolphus super Leviticum Glosa super Leviticum Ambrosius Aristotle Solinus	XII, 2, 18	Almost literal quotation; whole paragraph	
Camelopardus	Giraffe (?)	XXIX	Isidore Pliny lib. VIII	XII, 2, 19	Literal quotation; whole paragraph	
Capreolus	Deer	XXX	Avicenna Aristotle lib. VIII Aristotle	-		
Castor	Beaver	XXXI	No name Liber de naturis rerum Physiologus Liber de naturis rerum	XII, 2, 21	No quotation	

<sup>81</sup> The names of the authors appear in *italics* when they have been identified by the editor of the *Etymologiae*, W. M. Lindsay.

Animals	Name in English/ type of animal	Chapter of <i>De animalibus</i> in <i>Hortus sanitatis</i>	Authors	Place in Isidore's <i>Etymologiae</i>	Details of the quotations	Secondary quotations from Isidore's text <sup>82</sup>
Chama	Spotted hyena/ canine	XXXII	Albert the Great	-		
Calopus	Herbivore	XXXIII	Albert the Great	-		
Cerus	Red deer	XXXIII	Liber de naturis rerum Aristotle Aristotle Physiologus Ambrosius Aristotle	XII, 1, 18-19	No quotation	
Ceruleus	River crab	XXXV	Actor (ut aiunt Solinus et sticius sebosus)	XII, 6, 10	No quotation	
Cecula	Serpent	XXXVI	Isidore	XII, 4, 38	Literal quotation; whole paragraph	
Celidros	Serpent	XXXVI	No name (Isidore) Solinus	XII, 4, 24	Literal quotation; whole paragraph; differences in the quotations	Lucanus
Cenchrus	Serpent	XXXVI	Isidore	XII, 4, 26	Literal quotation; whole paragraph	Lucanus
Cerastes	Serpent	XXXVII	Liber de naturis rerum Solinus Avicenna	XII, 4, 18	No quotation	
Cephus	Fantastic	XXXVIII	Pliny lib. VIII Solinus	-		

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Animals	Name in English/ type of animal	Chapter of <i>De animalibus</i> in <i>Hortus sanitatis</i>	Authors	Place in Isidore's <i>Etymologiae</i>	Details of the quotations	Secondary quotations from Isidore's text <sup>83</sup>
Centrocota	Fantastic	XXXVIII	Physiologus Pliny lib. VIII Pliny lib. VIII Solinus	-		
Citrogrillus	Small mammal	XXXIX	Rudolphus super Leviticum Actor Glosa super proverbias Salomonis Hieronymus Super Leviticum	-		
Cicade	Cicada	XL	Vincent de Beauvais in speculo naturali lib. I Ambrosius Isidore Pliny lib. XI	XII, 8, 10	Almost literal quotation; whole paragraph	
Citrochea	Canine carnivore	XLI	Albert the Great	-		
Critetus	Small mammal	XLII	Albert the Great Solinus	-		
Coluber	Snake	XLIII	Isidore Ambrosius Physiologus Actor	XII, 4, 2	Literal quotation; whole paragraph	

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Animals	Name in English/ type of animal	Chapter of <i>De animalibus</i> in <i>Hortus sanitatis</i>	Authors	Place in Isidore's <i>Etymologiae</i>	Details of the quotations	Secondary quotations from Isidore's text <sup>84</sup>
Cocodrillus	Crocodile	XLIII	Isidore Pliny lib. VIII, cap. XXVI Pliny Pliny lib. VIII, cap. XXVI Pliny lib. XII Solinus Solinus et Aristotle et Avicenna	XII, 6, 19-20	Almost literal quotation; partial	
Cuniculus	Hare	XLV	Isidore Pliny lib. VIII Varro Liber de naturis rerum	XII, 1, 24	Almost literal quotation; whole paragraph	
Damma	Deer	XLVI	Albert the Great	-		
Damula	Roe deer	XLVII	Bartholomeus in libro de proprietatibus rerum Papias Isidore	XII, 1, 22	Almost literal quotation; whole paragraph; differences in the quotation	Marcianus (sic) [Martialis]

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Animals	Name in English/ type of animal	Chapter of <i>De animalibus</i> in <i>Hortus sanitatis</i>	Authors	Place is Isidore's <i>Etymologiae</i>	Details of the quotations	Secondary quotations from Isidore's text <sup>85</sup>
Draco	Dragon	XLVIII	Physiologus Isidore Liber de naturis rerum Augustine Pliny lib. XXVI Ambrosius Pliny lib. X Aristotle Isidore Aristotle in libro de animalibus Petrus Damianus	XII, 4, 4-5	Literal quotation; partial	
Draconcopedes	Fantastic	XLIX	Liber de naturis rerum Beda Augustine super Genn.	-		
Daxus	Badger (?)	L	Albert the Great	-		
Dypsa	Serpent	LJ	Isidore Andromachus Avicenna	XII, 4, 13	<i>Literal quotation; whole paragraph</i>	Lucanus
Dromeda	Camel	LII	Isidore	XII, 4, 32 XII, 1, 36	Literal quotation; partial Almost literal quotation; partial	
Dammula	Roe deer	LII	Isidore Glosa super Paral. Pliny Pliny lib. XI	XII, 1, 22	Literal quotation; whole paragraph	Martialis

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Animals	Name in English/ type of animal	Chapter of <i>De animalibus</i> in <i>Hortus sanitatis</i>	Authors	Place in Isidore's <i>Etymologiae</i>	Details of the quotations	Secondary quotations from Isidore's text <sup>86</sup>
Duran	Bovine	LIII	Liber de naturis rerum (according to Aristotle) Actor Aristotle Aristotle	-		
Equus	Horse	LIII	Liber de naturis rerum Aristotle Aristotle	XII, 1, 43-56		
Elephas	Elephant	LV	Aristotle Liber de naturis rerum (according to Cassiodore) Avicenna Liber de naturis rerum Isidore Aristotle Liber de naturis rerum Pliny Actor	XII, 2, 14	Literal quotation; partial	
Enchires	Yak (?)	LVI	Liber de naturis rerum Actor Aristotle	-		
Enidros	Small mammal	LVII	Isidore	XII, 2, 36	Almost literal quotation; whole paragraph; next quotation on <i>ichneumon</i> included	

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Enitra	Small mammal	LVII	Liber de naturis rerum	-	-	
Erinactus	Hedgehog	LVIII	Isidore Aristotle	XII, 3, 7	Mixed order; partial	
Ermineus	Mustelid (?)	LVIII	Liber de naturis rerum	-		
Edus	Goat	LIX	Isidore Palladius Pliny lib. VIII	XII, 1, 13	Literal quotation; whole paragraph	
Emorrois	Serpent	LX	Isidore Alexander	XII, 4, 15	Almost literal quotation; partial	
Enidros	Serpent	LX	Isidore	XII, 2, 36	Reference to ch. LVII	
Excedra	Fantastic serpent	LX	Isidore Actor Hieronymus In prohemio	XII, 4, 23	Literal quotation; partial	
Engula	Worm	LXI	Liber de naturis rerum	-		
Eruca	Caterpillar	LXI	Liber de naturis rerum Isidore	XII, 5, 9, 18	No quotation	Plautus
Falena	Mammal	LXII	Isidore	-		
Fiber	Beaver	LXII	Solinus Pliny lib. XXXI Sestius medicinae diligentissimus	XII, 2, 21	No quotation	

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Animals	Name in English/ type of animal	Chapter of <i>De animalibus</i> in <i>Hortus sanitatis</i>	Authors	Place in Isidore's <i>Etymologiae</i>	Details of the quotations	Secondary quotations from Isidore's text <sup>88</sup>
Formica	Ant	LXIII	Actor Isidore Liber de naturis rerum Aristotle	XII, 3, 9	Literal quotation; partial	
Formicae majores	Fantastic insect	LXVIII	Solinus Liber de naturis rerum Johannes de Manda	-		
Furus	Mustelid (?)	LXV	Isidore Aristotle	XII, 2, 39	Literal quotation; whole paragraph	
Furunculus	Mustelid (?)	LXV	Liber de naturis rerum	XII, 2, 39	Literal quotation; whole paragraph	
Gala	Mustelid	LXVI	Isidore	-		
Genetha	Carnivore	LXVI	Isidore	-		
Gamaleon	Serpent (?)	LXVII	Isidore Isidore Pliny	-		
Gazelle	Herbivore	LXVIII	Sera. Li. Aggre. ca.	-		
Glandosa	Serpent	LXIX	Constantinus	-		
Gnatrix	Serpent	LXIX	Isidore	XII, 4, 25	Literal quotation; whole paragraph; differences in the quotation	Lucanus
Grillus/gurgulio	Insect	LXX	Isidore	XII, 3, 8	Quotation does not match	
				XII, 8, 17	No quotation	

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Animals	Name in English/ type of animal	Chapter of <i>De animalibus</i> in <i>Hortus sanitatis</i>	Authors	Place in Isidore's <i>Etymologiae</i>	Details of the quotations	Secondary quotations from Isidore's text <sup>89</sup>
Hericius	Hedgehog	LX[X]I	Aristotle Pliny lib. VIII Isidore Jorath	XII, 3, 7	No quotation	
Hyena	Hyena	LXXII	Hieronimus contra Jovinianum Liber de naturis rerum	-		
Histrix	Porcupine	LXXIII	Hieronimus contra Jovinianum Liber de naturis rerum Aristotle Aristotle	XII, 2, 35	No quotation	
Hircus	Goat	LXXIII	Liber de naturis rerum Isidore Actor	XII, 1, 14	Literal quotation; whole paragraph; differences of Suetonius' quotation	
Hymnulus	Fawn	LXXV	Bartholomeus Aristotle lib. VIII	XII, 1, 21	Quotation does not match	
Iaculus	Serpent	LXXVI	Isidore Jorath Liber de naturis rerum	XII, 4, 29	Literal quotation; whole paragraph	Lucanus
Ipnalis	Serpent	LXXVI	Isidore	XII, 4, 14	Quotation does not match	
Icinus	Hedgehog (?)	LXXVII	Isidore Actor	-	(?)	
Inachlin	Hedgehog (?)	LXXVII	Pliny lib. VIII	-		

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Animals	Name in English/ type of animal	Chapter of <i>De animalibus</i> in <i>Hortus sanitatis</i>	Authors	Place in Isidore's <i>Etymologiae</i>	Details of the quotations	Secondary quotations from Isidore's text <sup>90</sup>
Lacertus	Lizard	LXXVIII	Isidore Liber de naturis rerum Glosa super Leviticum XI	XII, 4, 34	Almost literal quotation; partial	
Lamia	Fantastic	LXXIX	Liber de naturis rerum Aristotle Glosa super Ysaïam Glosa super Trenorum	VIII, 11, 102	No quotation	
Lauzanum	Fantastic	LXXIX	Liber de naturis rerum	-		
Leo	Lion	LXXX	Isidore Aristotle Liber de naturis rerum Aristotle Pliny lib. VIII Physiologus Liber de naturis rerum Solinus Physiologus Isidore Jorath Rasi in Almansore Esculapius in libro de membris	XII, 2, 3-6	Literal quotation; partial	
Leopardus	Leopard	LXXXI	Liber de naturis rerum Physiologus	XII, 2, 11	No quotation	

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Leonthophonos	Mustelid (?)	LXXXII	Isidore Solinus Pliny lib. VIII	XII, 2, 34	Literal quotation; whole paragraph	
Leucrocuta	Fantastic	LXXXII	Solinus et Pliny lib. VIII Actor	-		
Lepus	Hare	LXXXIII	Isidore Actor Terence Ambrosius Pliny	XII, 1, 23	Literal quotation; partial	
Leviathan	Dragon	LXXXIII	Actor Jorath	VIII, 11, 27-28	No quotation	
Lanificus	Worm	LXXXV	Liber de naturis rerum	-		
Limax	Snail	LXXXV	Isidore	XII, 5, 7	Almost literal quotation; whole paragraph	
Linx	Linx	LXXXVI	Isidore Algazel super libro de sensu et sensato Liber de naturis rerum	XII, 2, 20	Literal quotation; partial	
Locusta	Grasshopper	LXXXVII	Liber de naturis rerum Salomon Aristotle	XII, 8, 9	No quotation	

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Lupus	Wolf	LXXXVII I	Liber de naturis rerum Pythagoras Actor Aristotle Ambrosius Aristotle Isidore Liber de naturis rerum Aristotle	XII, 2, 23-24	Literal quotation; partial	
Luther	Small mammal	(XCIX) LXXXIX	Liber de naturis rerum	-		
Lumbricus	Worm	XC	Isidore Haly in libro regalis dispositionis	XII, 5, 13	Almost literal quotation; whole paragraph	
Luchaon/lichan	Canine	XCI	Liber de naturis rerum Pliny	-		
Lintiscus	Canine	XCI	Liber de naturis rerum (ut dicit experimentator in libro suo) Pliny lib. VIII Isidore	XII, 2, 28	Literal quotation; whole paragraph	Pliny
Maricomorion	Fantastic	XCII	Albert the Great	-		
Mustela	Weasel	XCIII	Liber de naturis rerum Pope Clement	XII, 3, 3	No quotation	

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Mumunetus/mammonetus	Small monkeys	XCIII	Isidore	-	(?)	
Manticora	Fantastic	XCIII	Avicenna	-		
Marcatus	Mustelid	XCV	Albert the Great	-		
Melo	Mammal	XCVI	Isidore Glosa super epistolam ad hebreos	XII, 2, 40	Almost literal quotation; whole paragraph	
Melosus	Mammal	XCVI	Liber de naturis rerum	-		
Monoceros	Unicorn	XCVI	Isidore Jacobus Phisiologus Pliny lib. VIII	XII, 2, 12-13	Quotation does not match	
Migale	Small mammal	XCVII	Actor Rudolphus super Leviticum Avicenna	-		
Mulus	Mule	XCVIII	Liber de naturis rerum	XII, 1, 57, 61	No quotation	
Mus	Mouse	XCIX	Liber de naturis rerum Pliny lib. VIII Liber de naturis rerum	XII, 3, 1	No quotation	
Musquelibet	(?)	C	Isidore	-	(?)	
Muscus	Herbivore	C	No name (Isidore) Constantinus in libro graduum Constantinus in Pantegni	-	(?)	

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Musio	Cat	CI	Isidore Liber de naturis rerum	XII, 2, 38	Almost literal quotation; whole paragraph	
Multipes	Invertebrate	CII	Isidore Aristotle Liber de naturis rerum Augustine	XII, 5, 6	Almost literal quotation; whole paragraph	
Nepa	Serpent	CIII	Physiologus Actor	-		
Obex	Serpent	CIII	Isidore	<i>XII, 4, 30</i>	Literal quotation; partial	Lucanus
Neomon	Mammal	CIII	Albert the Great	-		
Onager	Wild ass	CV	Isidore Actor Jeremiah Liber de naturis rerum Pliny lib. VIII	XII, 1, 39	Literal quotation; partial	
Oraffius	Herbivore	CVI	Albert the Great	-		
Onocentaurus	Fantastic	CVII	Liber de naturis rerum Adelinus philosophus	XI, 3, 39	No quotation	
Orasius	Giraffe	CVII	Isidore Albert the Great	-	(?)	
Orix	Orix	CVIII	Actor Isaiah Liber de naturis rerum	-		

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Panthera	Leopard (?)	CIX	Isidore Glosa super Hosea Jo propheta(?) Liber de naturis rerum Pliny lib. XI Pliny Physiologus	XII, 2, 8-9	Literal quotation; partial	
Papio	Canine	CX	Albert the Great	-		
Pathyon	(?)	CXI	Albert the Great	-		
Parandrus	Herbivore	CXII	Solinus	-		
Pardus	Big feline	CXII	Isidore Liber de naturis rerum Basilius Magnus	XII, 2, 10	Almost literal quotation; partial	
Pilosus	Fantastic	CXIII	Liber de naturis rerum (sicut dicit glosa super Isaiam) Hieronymus in Vita Pauli heremite	-		
Pirolus	Squirrel	CXIII	Liber de naturis rerum	-		
Putorius	Mustelid (?)	CXIII	Isidore	-	(?)	
Pegasus	Fantastic	CXIII	Albert the Great	-		
Pirargus	Goat-like herbivore	CXV	Bartholomeus Deuteronomy XIII	-		

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Pigmei	Pigmies	CXVI	Bartholomeus Papias Augustine Pliny lib. VIII cap. III Aristotle	XI, 3, 7, 26	No quotation	
Poledrus	Fawn	CXVII	Albert the Great Aristotle lib. VII Isidore lib. VIII	-		
Pulex	Flea	CXVIII	Liber de naturis rerum	XII, 5, 15	No quotation	
Pediculus	Lice	CXIX	Isidore Liber de naturis rerum	XII, 5, 14	Literal quotation; whole paragraph	
Porcus	Pig	CXX	Liber de naturis rerum Actor Aristotle Liber de naturis rerum Physiologus	XII, 1, 25	No quotation	
Padera	Serpent	CXXI	Liber de naturis rerum	-		
Parias	Serpent	CXXI	Isidore	XII, 4, 27	Literal quotation; whole paragraph	Lucanus
Prester	Serpent	CXXI	Isidore Alexander	XII, 4, 16	<i>Almost literal quotation; whole paragraph</i>	<i>Lucanus</i>
Rana	Frog	CXXII	Isidore Liber de naturis rerum Isidore Liber de naturis rerum	XII, 6, 58	Literal quotation; partial	

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Rangifer	Cervid herbivore	CXXIII	Albert the Great	-		
Rosurella	Mustelid	CXXIII	Isidore	-		
Rattus	Rat	CXXIII	Actor Liber de naturis rerum	-		
Sorex	Shrew	CXXIII	Isidore	XII, 3, 2	Almost literal quotation; partial	
Regulus	Fantastic	CXXV	Isidore Glosa super Isaiam XIII Actor Andromachus in libro de confectione Tyriace Jorath	XII, 4, 8	Almost literal quotation; partial; mixed order	
Rinocephalus	Fantastic	CXXVI	Phisiologus	-		
Rinoceron	Rhinoceros	CXXVI	Isidore Liber de naturis rerum	XII, 2, 12	Almost literal quotation; whole paragraph	
Rutela	Arachnid invertebrate	CXXVII	Avicenna Galus	-		
Rubetum/rubeta	Tree frog	CXXVIII	Actor Liber de naturis rerum Pliny lib. VIII	XII, 6, 58	No quotation	

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Salamandra	Salamander	CXXIX	Isidore Liber de naturis rerum Aristotle Alexander papa Pliny lib. XXIX	XII, 4, 36	Literal quotation; partial	
Saura	Lizard	CXXX	Isidore	XII, 4, 37	Almost literal quotation; whole paragraph	
Stellio	Lizard	CXXX	Rudolphus super Leviticum Liber de naturis rerum Pliny lib. XXX	XII, 4, 38	No quotation	
Sanguisuga	Leech	CXXXI	Liber de naturis rerum Avicenna in secundo canone	XII, 5, 3	No quotation	
Scrabrones	Fly	CXXXII	Isidore	XII, 8, 4	Literal quotation; whole paragraph	
Salpiga	Serpent	CXXXIII	Isidore	XII, 4, 33	Literal quotation; whole paragraph	
Scitalis	Serpent	CXXXIII	Isidore Solinus	XII, 4, 19	Almost literal quotation; whole paragraph	Lucanus
Seps	Serpent	CXXXIII	Isidore Lucanus (?)	XII, 4, 17	<i>Literal quotation; whole paragraph</i>	<i>Lucanus</i>
				XII, 4, 31	Literal quotation; whole paragraph; interpolations	

<sup>98</sup> The names of the authors appear in *italics* when they have been identified by the editor of the *Etymologiae*, W. M. Lindsay.

Animals	Name in English/ type of animal	Chapter of <i>De animalibus</i> in <i>Hortus sanitatis</i>	Authors	Place in Isidore's <i>Etymologiae</i>	Details of the quotations	Secondary quotations from Isidore's text <sup>99</sup>
Situla	Serpent	CXXXVIII	Liber de naturis rerum Actor	XII, 4, 13	No quotation	
Spuens	Serpent	CXXXVIII	Avicenna	-		
Syrena	Serpent	CXXXVIII	Isidore	XI, 3, 31	No quotation	
				XII, 4 29	Almost literal quotation; whole paragraph	
Symia	Monkey	CXXXV	Liber de naturis rerum Pliny Alexander Liber de naturis rerum Isidore	XII, 2, 30-31	Literal quotation; partial	
Scorpio	Scorpion	CXXXVI	Exlari Isidore Glosa super Lucam	XII, 5, 4	Almost literal quotation; partial	
Seta	Worm	CXXXVII	Liber de naturis rerum	XII, 1, 26	No quotation	
Simultas	Worm	CXXXVII	Papias Papias	-		
Solifuga	Serpent	CXXXVII	Isidore Solinus	XII, 3, 4	Quotation does not match	
Spoliator colubri	Worm	(CXXXIII I) CXXXVII I	Liber de naturis rerum Aristotle	-		
Stella	Insect	CXXXVII I	Liber de naturis rerum	-		

<sup>99</sup> The names of the authors appear in *italics* when they have been identified by the editor of the *Etymologiae*, W. M. Lindsay.

Animals	Name in English/ type of animal	Chapter of <i>De animalibus</i> in <i>Hortus sanitatis</i>	Authors	Place in Isidore's <i>Etymologiae</i>	Details of the quotations	Secondary quotations from Isidore's text <sup>100</sup>
Talpa	Mole	CXXXIX	Liber de naturis rerum Rudolphus Isidore	XII, 3, 5	Almost literal quotation; whole paragraph	
Thaurus	Bull	CXL	Liber de naturis rerum	XII, 1, 29	No quotation	
Tarandrus	Herbivore	CXLI	Pliny Actor Solinus	-		
Taxus	Small carnivore	CXLII	Liber de naturis rerum Isidore	-	(?)	
Tragelaphus	Herbivore	CXLIII	Isidore Pliny Helymandus XI li	XII, 1, 20	Almost literal quotation; whole paragraph	
Tragodita	Herbivore	CXLIII	Liber de naturis rerum	-		
Terredo	Wood worm	CXLIII	Bartholomeus	XII, 5, 10, 18	No quotation	
Tynea	Moth	[CX]LV	Bartholomeus	XII, 5, 11, 18	No quotation	
Tyrus	Serpent	CXLVI	Liber de naturis rerum Actor	XII, 6, 38	No quotation	
Tigris	Tiger	CXLVII	Isidore Physiologus Pliny	XII, 2, 7	Almost literal quotation; whole paragraph	
Tortuca	Turtle	CXLVIII	Liber de naturis rerum Ambrosius Aristotle Actor	-		
Taranta	Serpent	CXLVIII	Physiologus	-		

<sup>100</sup> The names of the authors appear in *italics* when they have been identified by the editor of the *Etymologiae*, W. M. Lindsay.

Animals	Name in English/ type of animal	Chapter of <i>De animalibus</i> in <i>Hortus sanitatis</i>	Authors	Place is Isidore's <i>Etymologiae</i>	Details of the quotations	Secondary quotations from Isidore's text <sup>101</sup>
Trogodica	Herbivore	CXLIX	Albert the Great	-		
Vacca	Cow	CL	Aristotle	XII, 1, 31	No quotation	
Veruex	Ram	CLI	Liber de naturis rerum Isidore	XII, 1, 10	Almost literal quotation; whole paragraph; cf. <i>Aries</i>	
Vesontes	Bison (?)	CLII	Albert the Great	-		
Vitulus	Young bull	CLIII	Isidore Aristotle	XII, 1, 32	Literal quotation; whole paragraph	
Iuencus	Young bull	CLIII	Isidore	XII, 1, 28	Almost literal quotation; whole paragraph	
Vipera	Viper	CLIII	Avicenna Liber de naturis rerum Physiologus	XII, 4, 10-11	No quotation	
Unicornus	Unicorn	CLV	Isidore	XII, 2, 12-13	Quotation does not match (?)	
Varius	Small mammal	CLV	Isidore	-		
Urro	Bull	CLVI	Isidore Helyandus lib. XXVI	XII, 1, 34	Literal quotation; whole paragraph; mixed order	
Ursus	Bear	CLVII	Liber de naturis rerum Aristotle Isidore Ambrosius Alexander Solinus	XII, 2, 22	Almost literal quotation; partial	

<sup>101</sup> The names of the authors appear in *italics* when they have been identified by the editor of the *Etymologiae*, W. M. Lindsay.

Animals	Name in English/ type of animal	Chapter of <i>De animalibus</i> in <i>Hortus sanitatis</i>	Authors	Place in Isidore's <i>Etymologiae</i>	Details of the quotations	Secondary quotations from Isidore's text <sup>102</sup>
Uncia	Carnivore	CLVIII	Isidore	-	(?)	
Vulpis	Fox	CLIX	Isidore Aristotle Amrosius in Hexameron Liber de naturis rerum Constantinus	XII, 2, 29	Quotation does not match	
Ybex	Capricorn	(CLV) CLX	Pliny lib. VIII Liber de naturis rerum	XII, 1, 16-17	No quotation	
Ychneumon	Mongoose (?)	CLXI	Isidore Aristotle	XII, 2, 37	Almost literal quotation; whole paragraph	Dracontius
Yppotamus	Hippopotamus	CLXI	Liber de naturis rerum	XII, 6, 21	No quotation	
Ydra	Hydra	CLXII	Isidore	XII, 4, 23	Not literal quotation; whole paragraph	
Ydros	See hydros	CLXII	Liber de naturis rerum Pliny	XII, 4, 22	Almost literal quotation; whole paragraph	
Zubro	Bison	CLXIII	Liber de naturis rerum	-		
Zilio	Canine	CLXIII	Albert the Great	-		

<sup>102</sup> The names of the authors appear in *italics* when they have been identified by the editor of the *Etymologiae*, W. M. Lindsay.



**TABLE OF THE AUTHORS QUOTED IN *DE AVIBUS OF THE HORTUS SANITATIS* IN THE ORDER OF THE CHAPTERS AND BIRDS**  
**(English names included only when known; please refer to chapter IV: The Naming of Animals)**

Birds	Name in English/ type of animal	Chapter of <i>De avibus</i> in <i>Hortus sanitatis</i>	Authors	Place in Isidore's <i>Etymologiae</i>	Details of the quotation	Secondary quotations from Isidore's text <sup>103</sup>
Aquila	Eagle	I	Isidore Jorath Liber de naturis rerum Liber de naturis rerum Aristotle Pliny Actor	XII, 7, 11	Literal quotation; whole paragraph	
Achacus		II	Isidore Liber de naturis rerum	-	(?)	
Avis Padisus		II	No name	-		
Aurifrigus	Osprey	II	Actor	-		
Achantis		III	Liber de naturis rerum Pliny lib. X Actor Isidore	-	Quotation does not match	
Accipiter	Hawk	III	Liber de naturis rerum Physiologus Aristotle	XII, 7, 55-56		
Aerioiphilon		V	Liber de naturis rerum	-		
Agochiles		VI	Isidore Pliny	-	(?)	

<sup>103</sup> The names of the authors appear in *italics* when they have been identified by the editor of the *Etymologiae*, W. M. Lindsay.

Birds	Name in English/ type of animal	Chapter of <i>De avibus</i> in <i>Hortus sanitatis</i>	Authors	Place in Isidore's <i>Etymologiae</i>	Details of the quotation	Secondary quotations from Isidore's text <sup>104</sup>
Alanda	Lark	VI	Actor Liber de naturis rerum	-		
Alietus	Falcon	VII	Actor Rudolphus super Leviticum	-		
Altion	Kingfisher	VIII	Ambrosius Liber de naturis rerum	XII, 7, 25	No quotation	
Anas	Duck	IX	Liber de naturis rerum	XII, 7, 51	No quotation	
Anser	Goose	X	Liber de naturis rerum Isidore	XII, 7, 52	Almost literal quotation; partial	
Ardeola	Heron	XI	Isidore Pliny lib. X Pliny lib. XVI	XII, 7, 21	Almost literal quotation; partial; one sentence missing; mistake in Lucanus' quotation	Lucan
Ardea	Heron	XI	Liber de naturis rerum	XII, 7, 21	No quotation	
Azalón		XI	Liber de naturis rerum	-		
Azida	Ostrich	XI	Actor	-		
Apis	Bee	XII	Aristotle Actor Liber de naturis rerum Ambrosius Ambrosius Virgil (long)	XII, 8, 1	No quotation	
Basiliscus	Basilisc	XIII	Isidore Avicenna in IIII canone Liber de naturis rerum Isidore	XII, 4, 6-7	Literal quotation; partial	

<sup>104</sup> The names of the authors appear in *italics* when they have been identified by the editor of the *Etymologiae*, W. M. Lindsay.

Birds	Name in English/ type of animal	Chapter of <i>De avibus</i> in <i>Hortus sanitatis</i>	Authors	Place in Isidore's <i>Etymologiae</i>	Details of the quotation	Secondary quotations from Isidore's text <sup>105</sup>
Barliates		XIII	Isidore Jacobus Athonensis Episcopus	-	(?)	
Berneka	Goose	XIII	Philosophus	-		
Bistarda		XV	Liber de naturis rerum	-		
Bonosa		XV	Liber de naturis rerum	-		
Bubo	Owl	XVI	Liber de naturis rerum Zri	XII, 7, 39	No quotation	
Buteus	Hawk	XVII	Liber de naturis rerum	-		
Butorius		XVII	Liber de naturis rerum	-		
Botaurus		XVII	Physiologus Actor	-		
Bibo	Vinegar fly	XVIII	Isidore	XII, 8, 16	Literal quotation; whole paragraph; mistakes in Afranius' quotation	Afranius (sic) [Afranius]
Blata	Cockroach	XVIII	No name (Isidore) Liber de naturis rerum Palladius De agricultura	XII, 8, 7	Literal quotation; partial; one sentence missing	
Cantarides	Flying insect	XIX	No name Pandecta cap. CXXXV	-		
Carbates		XX	Albert the Great	-		
Caladrius/ Calandris		XXI	Isidore	-	(?)	
Capo	Falcon	XXII	Actor	-		
Caprimulgus		XXII	-	-		

<sup>105</sup> The names of the authors appear in *italics* when they have been identified by the editor of the *Etymologiae*, W. M. Lindsay.

Birds	Name in English/ type of animal	Chapter of <i>De avibus</i> in <i>Hortus</i> <i>sanitatis</i>	Authors	Place in Isidore's <i>Etymologiae</i>	Details of the quotation	Secondary quotations from Isidore's text <sup>106</sup>
Carduelus	Goldfinch	XXIII	Isidore Pliny Liber de naturis rerum	XII, 7, 74	Literal quotation; whole paragraph	
Carabdrion		XXIII	Rudolphus super Leviticum Actor Glosa interlinearis	-		
Carista		XXIII	Solinus	-		
Cervus volans	Stag-beetle	XXV	Liber de naturis rerum	-		
Cicade	Cicad	XXVI	Pliny lib. XI	XII, 8, 10	No quotation	
Ciconia	Stork	XXVII	Isidore Liber de naturis rerum Solinus Liber de naturis rerum Isidore	XII, 7, 16-17	Almost literal quotation; partial	
Cignus	Swan	XXVIII	Aristotle Isidore Liber de naturis rerum	XII, 7, 18-19	Almost literal quotation; partial	Aemilius
Cinormulgus		XXIX	Isidore Aristotle	XII, 7, 23	Literal quotation; whole paragraph	
Cispedo		XXIX	Pliny Aristotle	-		
Citramo		XXIX	Pliny lib. X Aristotle Liber de naturis rerum	-		

<sup>106</sup> The names of the authors appear in *italics* when they have been identified by the editor of the *Etymologiae*, W. M. Lindsay.

Birds	Name in English/ type of animal	Chapter of <i>De avibus</i> in <i>Hortus sanitatis</i>	Authors	Place in Isidore's <i>Eymologiae</i>	Details of the quotation	Secondary quotations from Isidore's text <sup>107</sup>
Cinomia	Flying insect	XXX	Isidore Liber de naturis rerum Actor Exodus Psalmist	XII, 8, 12	Literal quotation; whole paragraph	
Cicendula	Flying insect	XXXI	Isidore Liber de naturis rerum	XII, 8, 6	Literal quotation; whole paragraph	
Cimice	Mosquito	XXXI	Isidore Avicenna in II canone Palladius	XII, 5, 17	Almost literal quotation; whole paragraph	
Costro	Horse fly	XXXI	Isidore	XII, 8, 2	Almost literal quotation; whole paragraph	
Columba	Pigeon	XXXII	Liber de naturis rerum (according to Bede) Aristotle Jacobus Liber de naturis rerum Aristotle	XII, 7, 61	No quotation	
Coredulus		XXXIII	Liber de naturis rerum Isidore	XII, 7, 34	No quotation	
Cornix	Crow	XXXIII	Liber de naturis rerum	XII, 7, 44	Literal quotation; whole paragraph	
Corvus	Raven	XXXIV	Liber de naturis rerum Fulgentius LXIII Ovid Gregory in moralibus Liber de naturis rerum	XII, 7, 43	No quotation	

<sup>107</sup> The names of the authors appear in *italics* when they have been identified by the editor of the *Eymologiae*, W. M. Lindsay.

Birds	Name in English/ type of animal	Chapter of <i>De avibus</i> in <i>Hortus sanitatis</i>	Authors	Place in Isidore's <i>Etymologiae</i>	Details of the quotation	Secondary quotations from Isidore's text <sup>108</sup>
Coturnix	Quail	XXXV	Liber de naturis rerum Comestor Isidore	XII, 7, 64	Almost literal quotation; whole paragraph	
Coccyx		XXXVI	Pliny lib. X Aristotle	-		
Crochilos		XXXVII	Liber de naturis rerum Albert the Great	-		
Corinta		XXXVIII	Pliny Albert the Great	-		
Cuculus	Cuckoo	XXXIX	Liber de naturis rerum Isidore Aristotle	XII, 7, 67	Almost literal quotation; whole paragraph	
Cubeth		XL	Aristotle Actor	-		
Culex	Gnat	XLI	Isidore Aristotle Liber de naturis rerum	XII, 8, 13	Literal quotation; whole paragraph	
Diomedas	Gannet	XLII	Isidore Solinus	XII, 7, 28-29	Literal quotation; partial	
Draycha		XLIII	Albert the Great Aristotle	-		
Egithus		XLIII	Pliny lib. X	-		
Emeria		XLIII	Jorath	-		
Ercinia		XLIII	Isidore	XII, 7, 31	Literal quotation; whole paragraph	
Falco	Falcon	XLV	Liber de naturis rerum Aristotle Liber de naturis rerum	XII, 7, 57	No quotation	

<sup>108</sup> The names of the authors appear in *italics* when they have been identified by the editor of the *Etymologiae*, W. M. Lindsay.

Birds	Name in English/ type of animal	Chapter of <i>De avibus</i> in <i>Hortus sanitatis</i>	Authors	Place in Isidore's <i>Etymologiae</i>	Details of the quotation	Secondary quotations from Isidore's text <sup>109</sup>
Fasianus	Pheasant	XLVI	Liber de naturis rerum Aristotle Isidore	XII, 7, 49	Literal quotation, partial	
Fatator		XLVII	Liber de naturis rerum	-		
Fenix	Phoenix	XLVIII	Isidore Ambrosius lib. V Solinus	XII, 7, 22	Almost literal quotation; whole paragraph	
Filomena	Nightingale	XLIX	Liber de naturis rerum Pliny Actor	-		
Ficedula	Warbler	XLIX	Isidore Pliny lib. X	XII, 7, 73	<i>Almost literal quotation; whole paragraph</i>	<i>Marial</i>
Fulica	Moorhen	L	Actor Physiologus Physiologus Pliny lib. XI	XII, 7, 53	No quotation	
Fucus	Flying insect	LI	Bartholomeus Virgil Pliny	XII, 8, 3	No quotation	
Gallus	Rooster	LII	Liber de naturis rerum Gregory in moralibus Ambrosius Ambrosius Aristotle Isidore Liber de naturis rerum	XII, 7, 50	Literal quotation, partial	

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Birds	Name in English/ type of animal	Chapter of <i>De avibus</i> in <i>Hortus sanitatis</i>	Authors	Place in Isidore's <i>Etymologiae</i>	Details of the quotation	Secondary quotations from Isidore's text <sup>110</sup>
Gallina	Hen	LIII	Isidore Liber de naturis rerum Philosophus	-	Almost literal quotation; whole paragraph	
Gallinactus	Cock-like bird	LIIII	Alexander Liber de naturis rerum	-		
Graculus	Jay	LV	Liber de naturis rerum	XII, 7, 45	No quotation	
Garrulus		LV	No name	-		
Grippes	Griffin	LVI	Isidore Solinus Liber de naturis rerum Albert the Great John of Mandeville	-	Literal quotation; whole paragraph	
Gricocenderon/ gracocenderon		LVII	Albert the Great	-		
Girfalco	Falcon	LVIII	No name Actor	-		
Gosturdo		LVIII	Liber de naturis rerum	-		
Grus	Crane	LIX	Isidore Aristotle Liber de naturis rerum Isidore Aristotle	XII, 7, 14-15	Literal quotation; partial; text divided in two parts	
Gluta		LX	Isidore Aristotle	-	(?)	
Harpia	Harpy	LXI	Actor Liber de naturis rerum Virgil, lib. III Aeneidos	-		

<sup>110</sup> The names of the authors appear in *italics* when they have been identified by the editor of the *Etymologiae*, W. M. Lindsay.



Birds	Name in English/ type of animal	Chapter of <i>De avibus</i> in <i>Hortus sanitatis</i>	Authors	Place in Isidore's <i>Etymologiae</i>	Details of the quotation	Secondary quotations from Isidore's text <sup>111</sup>
Hirundo	Swallow	LXII	Liber de naturis rerum Ambrosius Philosophus Liber de naturis rerum Pliny	XII, 7, 70	No quotation	
Herodius	Gyr Falcon	LXIII	Isidore Glosa super psalmum CIII Glosa super Deuteronomy Liber de naturis rerum Glosa super Leviticum	-	Not Literal quotation; partial	
Ibis	Ibis	LXIV	Liber de naturis rerum Pliny Glosa super Isaia Pliny lib. X Phisiologus	XII, 7, 33	No quotation	
Ibos		LXV	Albert the Great	-		
Ispida		LXVI	Albert the Great	-		
Kiches		LXVII	Liber de naturis rerum	-		
Koky		LXVII	Liber de naturis rerum Actor	-		
Kynius		LXVIII	Albert the Great	-		
Karbolos		LXVIII	Albert the Great	-		
Lagus		LXIX	Jorath Elicius super Leviticum Actor	-		
Lucidius		LXIX	Liber de naturis rerum	-		

<sup>111</sup> The names of the authors appear in *italics* when they have been identified by the editor of the *Etymologiae*, W. M. Lindsay.

Birds	Name in English/ type of animal	Chapter of <i>De avibus</i> in <i>Hortus</i> <i>sanitatis</i>	Authors	Place in Isidore's <i>Etymologiae</i>	Details of the quotation	Secondary quotations from Isidore's text <sup>112</sup>
Lagepus		LXX	Albert the Great	-		
Linachos		LXXI	Liber de naturis rerum	-		
Luscinia	Nightingale	LXXII	Actor Isidore Ambrosius Pliny lib. X	XII, 7, 37	Not accurate quotation; partial	
Magnales		LXXIII	Albert the Great	-		
Merula	Blackbird	LXXIII	Isidore Pliny lib. VIII Pliny lib. X Liber de naturis rerum	XII, 7, 69	Almost literal quotation; whole paragraph	
Mergus	Coot	LXXV	Liber de naturis rerum Pliny lib. XVIII	XII, 7, 54	No quotation	
Merillus		LXXVI	Isidore	-	(?)	
Merops	Bee-eater	LXXVI	Isidore Jorath	XII, 7, 34	(?)	
Melancoriscus		LXXVII	Albert the Great Pliny	-		
Morsex/morfex		LXXVII	Albert the Great	-		
Mennonides	Mythical bird	LXXVIII	Albert the Great	XII, 7, 30	No quotation	
Meance		LXXVIII	Albert the Great	-		
Merustio		LXXVIII	Albert the Great	-		
Milvus	Kite	LXXIX	Isidore Liber de naturis rerum Pliny Glosa super Hieremiam Jorath ex Aviano	XII, 7, 58	Almost literal quotation; whole paragraph	

<sup>112</sup> The names of the authors appear in *italics* when they have been identified by the editor of the *Etymologiae*, W. M. Lindsay.

Birds	Name in English/ type of animal	Chapter of <i>De avibus</i> in <i>Hortus sanitatis</i>	Authors	Place in Isidore's <i>Etymologiae</i>	Details of the quotation	Secondary quotations from Isidore's text <sup>113</sup>
Monedula	Jackdaw	LXXX	Isidore Aristotle Liber de naturis rerum	XII, 7, 35	Almost literal quotation; whole paragraph	Cicero
Muscicapa		LXXX	Liber de naturis rerum	-		
Musca	Fly	LXXXI	Actor Isidore Aristotle Liber de naturis rerum	XII, 8, 11	Literal quotation; whole paragraph	
Nicedula		LXXXII	Isidore Actor	-	(?)	
Nisus		LXXXIII	Liber de naturis rerum Alexander Actor	-		
Nocticorax	Owl	LXXXIII	Liber de naturis rerum Isidore	XII, 7, 40	Not accurate quotation; partial, mixed order	
Noctua	Owl	LXXXIII	Ambrosius Glosa super psalterium Glosa super Leviticum	XII, 7, 41	Not accurate quotation; partial, mixed order	
Nepas/nepa		LXXXV	Albert the Great	-		
Onocroculus	Bittern	LXXXVI	Liber de naturis rerum Pliny Isidore Actor	XII, 7, 32	Almost literal quotation; partial	
Opimachus		LXXXVII	Liber de naturis rerum Liber de naturis rerum Actor	-		
Oriolus		LXXXVIII	Liber de naturis rerum	-		

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Birds	Name in English/ type of animal	Chapter of <i>De avibus</i> in <i>Hortus sanitatis</i>	Authors	Place in Isidore's <i>Etymologiae</i>	Details of the quotation	Secondary quotations from Isidore's text <sup>114</sup>
Origometra	Quail	LXXXVIII	Isidore Pliny lib. X	XII, 7, 65	Almost literal quotation; partial; reference to ch. XXXV	
Osyna		LXXXIX	Liber de naturis rerum	-		
Ossifragus		LXXXIX	Isidore Pliny lib. X	XII, 7, 59	Almost literal quotation; whole paragraph	
Othus		XC	Pliny lib. X Pliny lib. XI Aristotle Liber de naturis rerum	-		
Ova	Eggs	XCI	Almanson in tractatu tercio cap. de ovis	XII, 7, 79-81	No quotation	
Passer	Sparrow	XCII	Isidore Liber de naturis rerum Aristotle Aristotle Aristotle Glosa super psalmum CXXIV Actor	XII, 7, 68	Literal quotation; whole paragraph	
Pavo	Peacock	XCIII	Liber de naturis rerum Aristotle Palladius Phisiologus Aristotle	XII, 7, 48	No quotation	
Palumbus	Dove	XCIII	Aristotle Isidore Liber de naturis rerum	XII, 7, 62	Almost literal quotation; partial	

<sup>114</sup> The names of the authors appear in *italics* when they have been identified by the editor of the *Etymologiae*, W. M. Lindsay.

Birds	Name in English/ type of animal	Chapter of <i>De avibus</i> in <i>Hortus sanitatis</i>	Authors	Place in Isidore's <i>Etymologiae</i>	Details of the quotation	Secondary quotations from Isidore's text <sup>115</sup>
Platea		XCV	Pliny lib. X	-		
Pluvialis		XCV	Liber de naturis rerum	-		
Papilio	Butterfly	XCVI	Isidore Palladius lib. V	XII, 8, 8	Almost literal quotation; whole paragraph	
Pellicanus	Pelican	XCVII	Isidore Physiologus Liber de naturis rerum	XII, 7, 26	Almost literal quotation; whole paragraph	
Perdix	Partridge	XCVIII	Liber de naturis rerum Actor Prophet Jeremiah Physiologus Ambrosius Aristotle Liber de naturis rerum	XII, 7, 63	No quotation	
Pica	Magpie	XCIX	Isidore Liber de naturis rerum Physiologus	XII, 7, 46	Literal quotation; partial	
Picus	Woodpecker	C	Isidore Liber de naturis rerum	XII, 7, 47	Almost literal quotation; partial	Martial (taken from the paragraph on <i>pica</i> )
Piralis		CI	Pliny lib. XI Liber de naturis rerum	-		
Psittacus	Parrot	CII	Isidore Solinus Liber de naturis rerum Physiologus	XII, 7, 24	Literal quotation; whole paragraph	

<sup>115</sup> The names of the authors appear in *italics* when they have been identified by the editor of the *Etymologiae*, W. M. Lindsay.

Birds	Name in English/ type of animal	Chapter of <i>De avibus</i> in <i>Hortus sanitatis</i>	Authors	Place in Isidore's <i>Etymologiae</i>	Details of the quotation	Secondary quotations from Isidore's text <sup>116</sup>
Porphirio		CIII	Isidore Actor Deuteronomy	-	(?)	
Regulus	Mythical bird	CIII	Liber de naturis rerum	-		
Scrabrones	Flesh-flies	CV	Isidore Liber de naturis rerum (according to Pliny)	XII, 8, 4,	Almost literal quotation; whole paragraph	
Scarabeus	Scarab	CVI	Isidore Pliny lib. XI	XII, 8, 4	Literal quotation; whole paragraph	
Scinifes	Flying insect	CVII	Isidore Origen super Exodum Glosa super eodem Liber de naturis rerum	XII, 8, 14	Almost literal quotation; whole paragraph	
Strix	Owl	CVIII	Albert the Great Actor	XII, 7, 42	No quotation	Lucan
Selentides	Mythical birds	CVIII	Pliny lib. X Actor	-		
Strophilos		CVIII	Solinus	-		
Strutio	Ostrich	CIX	Actor Aristotle Liber de naturis rerum Physiologus	XII, 7, 20	No quotation	
Strutiocamelus	Ostrich	CX	Pliny Actor	-		
Sturnus	Starling	CX	Liber de naturis rerum Pliny	-		

<sup>116</sup> The names of the authors appear in *italics* when they have been identified by the editor of the *Etymologiae*, W. M. Lindsay.

Birds	Name in English/ type of animal	Chapter of <i>De avibus</i> in <i>Hortus sanitatis</i>	Authors	Place in Isidore's <i>Etymologiae</i>	Details of the quotation	Secondary quotations from Isidore's text <sup>117</sup>
Tarda		CXI	Isidore Avicenna	-	Not accurate quotation; whole paragraph; mixed order	
Tragopa		CXI	Liber de naturis rerum Solinus	-		
Turdela	Thrush	CXII	Isidore	XII, 7, 71	Almost literal quotation; partial	
Turdo	Thrush	CXII	Liber de naturis rerum Pliny lib. X Palladius	XII, 7, 71	Almost literal quotation; partial	
Turtur	Turtle dove	CXIII	Isidore Ambrosius Liber de naturis rerum Aristotle Palladius	XII, 7, 60	Almost literal quotation; whole paragraph	
Vanellus		CXIII	Liber de naturis rerum (according to Pliny)	-		
Vespertilio	Bat	CXV	Aristotle Ambrosius Isidore Liber de naturis rerum Glosa super Deuteronomy	XII, 7, 36	Literal quotation; partial	
Vespa	Wasp	CXVI	Aristotle Liber de naturis rerum Aristotle	XII, 8, 4	No quotation	

<sup>117</sup> The names of the authors appear in *italics* when they have been identified by the editor of the *Etymologiae*, W. M. Lindsay.