TRANSLATIONS

Chelonian Conservation and Biology, 1996, 2(2):287–302

Books on Marine Fish, in which True Figures of the Fish are Presented. Book XVI. Chapters II–V. On Turtles

GUILLAUME RONDELET†

[Originally published in Latin in 1554 — Libri de Piscibus Marinis, in quibus verae Piscium effigies expressae sunt. Liber XVI. Caput II–V. De Testudinibus. Lugduni: Matthiam Bonhomme, 583 pp; selection on pp. 443–453.]

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GVLIELMI

RONDELETII

DOCTORIS MEDICI

ET MEDICINAE IN SCHOLA MONSPELIENSI PROFESSORIS REGII.

Libri de Piſcibus Marinis, in quibus veræ Piſcium effigies expreſſæ ſunt.

Quæ in tota Piſcium hiſtoria contineantur, indicat Elenchus pagina nona & decima.

Poſtremò acceſſerunt Indices neceſſarij.

LVGDVNI,
Apud Matthiam Bonhomme.

M. D. LIIII.

Cum Priuilegio Regis ad duodecim annos.

Original 1554 Title Page

Editorial Introduction

We take great pleasure in presenting here a translation of Rondelet (1554), the first "modern" work on marine turtles, which includes the earliest known illustration and description of the leatherback turtle (*Dermochelys coriacea*), as well as the first illustration and description of the loggerhead turtle (*Caretta caretta*). Published in Latin 442 years ago, the work has stood the test of time and is considered a classic zoological reference of undisputed importance, having been cited innumerable times by later scientific authors. However, no English translation of this work has ever appeared, and only an abridged old French translation has been published (Rondelet, 1558). Rondelet was both a scholar and a naturalist, in that his work contains both copious references and citations from classical Greek and Roman writers as well as accounts of his own careful observations and conclusions. Trained as a physician, his interests encompassed both the disciplines of medicine and zoology, and his attention to detail and the need to verify facts through firsthand observation and dissection were a result of his rigorous scientific training. Not always willing to accept earlier writers' statements at face value, he recommended the application of personal investigations in scientific studies. His advice remains valid to this day.

Biographical Notes

Guillaume Rondelet (Fig. 1) was born at Montpellier, near the French Mediterranean coast, on 27 September 1507, the son of an apothecary (MacGillivray, 1834), or less generously, a drug and spice merchant (Keller, 1975). His story in many ways is more evocative of an American rags to riches story than that of a sixteenth century Frenchman. Rondelet was ill and weakly as a child and thought unfit for a very active life, so when his father died at an early age, young Guillaume's portion of the estate was just sufficient to insure he could enter the monastery. He did not enjoy the monastic existence (a fact which anticipates his later lavish tastes) and his health soon improved. So he left the monastery and moved to Paris to begin serious studies at the delayed age of eighteen, supported by his elder brother who had inherited more of the paternal estate. Rondelet wanted to be a physician, so in 1529 he first transferred to the Medical Faculty at Montpellier and settled at Pertuis, a small village in Provence (today's Vaucluse) and began to practice. In 1530 he even met and became friendly with Rabelais, whose fictional character Rondibilis might in fact be based on Rondelet (Keller, 1975).

Yet, in the kind words of MacGillivray (1834), Rondelet next opened a grammar school "not meeting with success in the healing art." His early story is thus one of delayed beginnings and unmet expectations. Not surprisingly, perhaps, the school failed, so Rondelet returned to Paris to improve his Greek and study anatomy under Johannes Guinter. His studies over, he moved to Maringues, in Auvergne, where he again entered into practice and in 1537 obtained his medical degree at Montpellier. Shortly thereafter he married Jeanne Sandre, who was of poor background. Since Rondelet's brother had died, he found himself even more strapped financially than before, moved back to Montpellier, and was forced to exist with the financial assistance of his wife's sister.

From this point on his fortunes changed. He did so well as a physician that in 1545 he was appointed the Regius Professor of Medicine at Montpellier and was later also named personal physician to Cardinal François Tournon. In his service he traveled throughout France and the Low Countries where he learned firsthand about the whaling industry. On all these trips he used the opportunity to study local fauna, and in the passages which follow the reader will see references to some of these trips. In 1549, for example, he traveled by sea to Rome for the inauguration of Pope Julius III. It may have been at this time that he saw the statue of the turtle he mentions in the present selection. He left the service of the Cardinal in 1551 and returned to Montpellier where he eventually, in 1556, became chancellor of the university. He also set up an anatomical theater at Montpellier where he lectured several hours daily. According to one story, his passion for dissection was so strong that he autopsied one of his own children after death (MacGillivray, 1834). It is thus no surprise to hear him, below, tell the reader that he should more readily accept the evidence offered by firsthand dissection than to blindly believe even such an authority as Aristotle.

It was after he returned to Montpellier that Rondelet published most of his works. Several dealt with his medical practice or anatomy and are listed in the bibliography. But in 1554, four hundred and forty-two years ago, he published the book that would insure his reputation through the ages: *Libri de Piscibus Marinis, in quibus verae Piscium effigies expressae sunt.* A section of this volume deals with marine turtles and is translated here. In 1555 he published a second companion book: *Universae aquatilium Historiae pars altera, cum veris ipsorum Imaginibus.* A section of this second work deals with freshwater turtles. So popular was the combined work that an abridged French version appeared in 1558, evidently translated by his student Joubert, to whom we also owe most of our information about his life. The books secured Rondelet's reputation as an ichthyologist

Figure 1. Woodcut portrait of Guillaume Rondelet [1507–1566] from the frontispiece of *Libri de Piscibus Marinis*.

and zoologist and the impact of his work was vast. Rondelet soon attracted such students as Konrad Gesner and Ulyssis Aldrovandi, and even Georges Cuvier later praised the work. It is safe to say that *Libri de Piscibus Marinis* was the standard reference on sea creatures for at least a century. In the book Rondelet studied all marine life and was ready to challenge even the most revered stories of sea monsters. In the following selection he exhibited this caution in his unwillingness to accept on face value the story of St. Martha and the monster inhabiting the Rhone River.

One outstanding trait of the work is clearly marked in the selections offered here. Rondelet possessed a knowledge of Greek and Latin works on natural history which would rarely be found in a contemporary scholar of the Classics. Given the state of published books at the time, and lacking such devices as indices, concordances, or that staple of today's text critic, the computer, the extent of what he had read and remembered is astounding. Nor is his reading confined to the great names. Below, the reader will encounter such obscure authors as Oppian, Aelian, and an anonymous account of the circumnavigation of the Red Sea. In addition, the passages which follow also show Rondelet as a cautious text critic. Just as he is hesitant to accept stories of sea monsters, so is he ready to emend the text when personal observation or common sense indicate that it is erroneous.

Finally successful and prosperous, Rondelet suffered the death of his wife in 1560. His second wife, Tryphène de La Croix, was also poor. Yet this posed less of a burden than previously and there are numerous reports of his lavish life style. Perhaps compensating for his earlier poverty, we know that he spent vast sums on renovating and expanding his houses. He loved music and had even built a fiddle as a student. He loved to dance as well, but his short, vigorous body was not up to the rich foods he enjoyed. We know that he had given up wine for fear of gout at age twenty-five, but he compensated amply with a passion for fruits and pastries. He soon became so stout that he could no longer dance and, in fact, died as the result of dysentery brought on by an overindulgence of figs. He died on 30 July 1566, in his fifty-ninth year, four hundred and thirty years ago.

On the Translation

There is always a temptation, when translating a work of ancient natural history, to lapse into modern terminology. Thus, one could easily write "oviparous" where the Latin reads "those animals which lay eggs." Yet to do this would give the original a flavor it did not possess. For the most part, then, such terms are not employed in this translation. It is immediately apparent that Rondelet moved fluently between Greek and Latin. Yet this is not the case for most modern readers. Thus most of the Greek words and passages in the original text are simply rendered in our transcribed Latin text as: [*Greek*]. For the same reason, whenever possible, reference has been made to the easily accessible and bilingual Loeb editions of the ancient authors (though some of the authors Rondelet quoted remain untranslated to this day). Each Loeb edition has Greek or Latin on the left hand page and the English translation on the right, making it easy for the interested reader to compare the original text to the translated version. We have done the same for our translation here, with the original Latin text in the left hand column and the English translation in the right hand column. The original publication was typeset in classic Latin orthography for the letters v, u, s, and f, and we have corrected this into modern Latin in our version. The text in the original publication was also very tightly and unevenly set, making it difficult to read. In addition, there are very few copies of the work available in libraries. We therefore felt that rewriting and republishing the entire Latin text here with the translation was well worth the effort. Where Rondelet quoted directly from earlier sources, we indent the cited text in both the original and translated versions. Superscript footnote numbers in the translated text refer to translator's text notes that appear at the end of the text. Literature cited includes all sources mentioned by either Rondelet or in the introduction and endnotes. Finally, note that whatever appears between parentheses (x) or braces {x} represents Rondelet's words and marginal notes, whereas anything appearing in brackets [x] represents the words of the translator and editor.

Books on Marine Fish, in which True Figures of the Fish are Presented. Book XVI. Chapters II–V. On Turtles

GUILLAUME RONDELET†

De Testudinibus

Caput II

TESTUDINUM Quatuor sunt genera, si Plinio credimus, qui Lib. XXXII {Cap.4} haec scripsit.

> Geminus similiter victus in aquis terráque & testudinum, effectus quoque pari honore habendi, vel propter excellens in usu pretium, naturaeque proprietatem. Sunt ergo testudinum genera, terrestres, marinae, lutariae, & quae in dulci aqua vivunt: has quidam è Graecis emydas appellant.

Ne quis verò emydas easdem cum lutariis esse existimet, Plinium quatuor genera distinguentem audiat, aliquantò pòst {In fine eiusdem cap.}:

> Ex quarto genere testudinum, quae sunt in amnibus divulsarum pinguia cum aizoo herba tusa, admisto unguento & semine lilij, ante accessiones perunguntur aegri praeter caput, &c.

Aristoteli duo duntaxat genera esse videntur, testudo terrestris & marina, ac videtur [*Greek*] nomine testudinem terrestrem propriè intellexisse: quum enim de marina loquitur, [*Greek*] semper dicit: quam verò testudinem lutariam sive murem aquatilem vertit Gaza [*Greek*] vocat Aristoteles nisi mendosi sint loci. Haec ex Lib. V {Cap.33} de histor. animal. perspicua fiunt, quum de testudinum partu loquitur:

> [*Greek*]. Testudo ova durioris testae, & bicolora edit, quale ovum avium est.

Deinde

> [*Greek*]: mus aquatilis sive testudo lutaria in terra scrobe effossa dolij amplitudine parit ova. [*Greek*]. Testudines etiam marinae egressae in terram pariunt ova avium cortalium ovis similia.

Item libro secundo {Cap.16} [*Greek*] non sine epitheto dicit, & inter quadrupedes recenset, ne quis in mari quadrupedes esse neget, quanquam pedes ij ad natandum magis quàm ad ingrediendum sint comparati.

> [*Greek*]. Quadrupedium una testudo marina habet magnitudine caeterarum partium rationem, similes bubulis renes omnino ei adhaerent.

Alio loco {Li.5.cap.3} eiusdem operis utraque

On Turtles

Chapter II

There are four genera of turtles if we believe Pliny, who wrote as follows in his Book 32:[1]

> The turtle likewise has a dual lifestyle, in the water and on land. It also possesses medical properties which should be held in equal honor, because of the high price its use fetches as well as because of its special nature. These, then, are the genera of turtles: land, sea, mud dwelling, and the ones which live in fresh water. Some of the Greeks call these last the *emydae*.[2]

Lest anyone think that these *emydae* are the same as the mud turtles, let him listen to Pliny as he enumerates the four genera a little later:[3]

> [Now let us discuss] the fourth genus of turtle which lives in rivers. Once their shells have been torn off, their fatty parts are beaten with the plant which is called *aizoum* [house-leek] and this is mixed with an ointment and with lily seed. If all the parts of the sick person (with the exception of the head) are smeared with this before the attacks [of fever] set in, etc.

There seem to be only two genera for Aristotle, namely the terrestrial and sea turtle. He seems specifically to have understood the terrestrial turtle by the term *chelone*, for when he is speaking about the sea turtle he always calls them *thalatiai chelonai* [sea turtles]. But the one which Gaza translates as the mud turtle, or the "aquatic mouse",[4] Aristotle calls the *mys* [mouse], unless the passages are corrupt. These matters become clear from Book 5 of the *Historia Animalium*, when he is speaking about the reproduction of turtles:[5]

> [Greek]. The turtle bears eggs with fairly hard shells which are bi-colored, rather like birds' eggs.

Then he says:

> [Greek]. The aquatic mouse or mud turtle lays its eggs in a hole dug into the earth about the size of a jar. [Greek]. Sea turtles also come out onto the land and they lay eggs which resemble the eggs of domesticated fowl.

Likewise, in the second book he speaks of the *chelone*, and does so using the adjective [sea] and he reckons them among the quadrupeds lest anyone deny that there are quadrupeds that exist in the sea, even though their feet are designed more for swimming than for walking:[6]

> [Greek]. Of the quadrupeds, only the sea turtle has [kidneys] proportionate in size to its other parts and its kidneys are entirely like those of cattle.

loquens utrique epitheton addidit.

> [*Greek*]. Quinetiam pedestrium quadrupedes quae ova pariunt, eodem coëunt modo, quo ea quae animal generant mare superveniente, ut testudo tam aquatilis quàm terrestris.

Idem libro tertio {Cap.9} de partibus animal.

> [*Greek*]. Renum etiam similis est ratio: nullum enim pennatum, nullum squamatum, nullum corticatum renes habet excepta testudine terrestri & aquatili.

Ex his perspicuú est Aristotelem duarum dútaxat testudinum métionem fecisse, [*Greek*] verò quam testudinem lutariá interpretatus est Gaza, nunquá [*Greek*] appellasse sed seorsum semper expressisse, ut ex iam citatis locis liquet. nunc expendendum non potiùs [*Greek*] apud Arist. quàm [*Greek*] legere oporteat. Quanvis enim testudinem lutariam Gaza murem aliquando verterit, ut inde appareat [*Greek*] legisse, tamen libro tertio de partibus animal. non [*Greek*] sed [*Greek*] legitur. Cùm enim de utriusq; testudinis renibus locutus fuisset Aristoteles, subdidit,

> [*Greek*]. Genus tamen testudinis, quam lutariam vocant, & vesica renibus caret: fit enim propter eius mollitudinem tegminis, ut humor facilè diffletur.

Et libro octavo {Cap.2} de histor. animal.

> [*Greek*]. Multa spirabilis pedestrisque generis humore gaudent, & ita nonnulla ut ne vivere quidem disclusa ab aquae natura valeant, ut quae marinae testudines appellantur, & crocodili, & fluviatiles equi, & vituli marini, atq; etiam ex minori genere testudines lutariae sive mures aquatiles dicti.

Vides apostrophum solùm deesse, quominus [*Greek*] legatur, ut pro [*Greek*] substituendum sit [*Greek*]. atque ita ubique legendum esse contenderim ubique apud Aristotelem ut apud Plinium. Hoc confirmat ex Hesychio Phavorinus,

> [*Greek*].

Quare duobus testudinis generibus ab Aristotele constitutis, tertium addere possumus scilicet [*Greek*], quas in duo genera partitus est Plinius, ut aliae sint lutariae, aliae in aqua dulci vivunt. De marinis tantùm dicemus, quarú tria genera describemus.

De Testudine corticata

Caput III

CÙM Testudinum marinarum genera diversa sint, nominibus eas distinguere oportet. Primam igitur corticatam vocabimus, sive corticosam, quia cortice, id est, duro & crustoso ac aspero integumento operta sit, ab arboribus ad animantes

In another place in the same work, speaking about each of them he gives each an adjective:[7]

> [Greek]. Indeed, those footed quadrupeds which lay eggs copulate in the same manner as those which bear live young with the male mounting the female. An example is the turtle, both the aquatic and the terrestrial sort.

Likewise, in the third book of his *De Partibus Animalium*:[8]

> [Greek]. The same situation exists with respect to the kidneys. For no winged, scaled, or corticate creature has kidneys with the exception of the terrestrial and aquatic turtle.[9]

Now it is notable that although Aristotle has made mention of only two turtles, he never called the *chelone* the *mys* (this being the one which Gaza translated as mud turtle) always referring to them separately. This is already clear from the passages cited here. Now, however, we should consider whether *emys* should be read instead of *mys* in Aristotle.[10] For even though Gaza sometimes changes or translates the mud turtle as the "mouse," with the result that it appears that he has read *mys*, nevertheless, in the third book of the *De Partibus Animalium*, *omys* is read instead of *mys*.[11] For when Aristotle spoke about the kidneys of both turtles, he said:[12]

> [Greek]. The genus of turtle which people call the mud turtle lacks both a bladder and kidneys. For, due to the softness of its covering, it happens that moisture flows out of it easily.

And in the eighth book of his *Historia Animalium*:[13]

> Many members of the genus of those which breathe and walk take pleasure in moisture, some to the extent that they cannot live if removed from the nature of water. Examples include the sea turtles, crocodiles, hippopotamuses, seals and the like. Further, from a lesser genus we have mud turtles, that is, aquatic mice.

You see that only an apostrophe is missing. If it were present it would yield a reading of *emydes* so that *hai t'emydes* could be substituted for *hai temydes*. I would thus contend that this should be read everywhere in Aristotle as it is in Pliny.[14] Favorinus confirms this in a reading from Hesychius:[15]

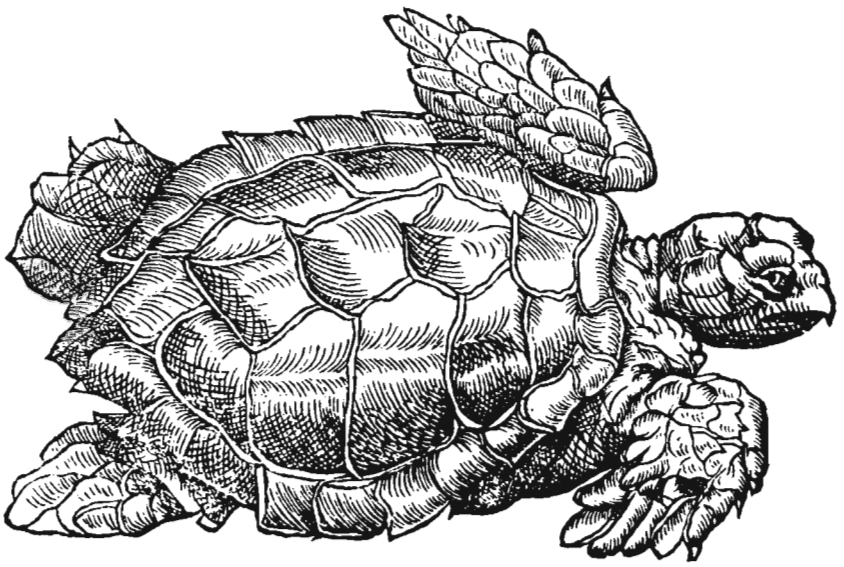
> [Greek]. *Hemys*, an animal occurring in lakes and in sources of fresh water. Some take it to be a turtle with a tail.

We can thus add one genus to the two genera of turtles established by Aristotle, namely the *hemydes*. Pliny split these into two genera, with one being the mud turtles and the other those which live in fresh water. Of the sea turtles, we will only say that we will describe three genera of them.

On the Corticate Turtle

Chapter III

Since the genera of turtles are diverse we should distinguish among them by name. We will therefore call the first one corticate [*corticata*] or corticose, because it is covered with bark, that is, with a hard, crusty, rough covering [= *Caretta caretta*, the loggerhead turtle, Cheloniidae]. In so doing we



Original Figure (Caput III, p. 445). *Testudine corticata* [= *Caretta caretta*, the loggerhead turtle].

ducta translatione. Est igitur corticata testudo terrestribus ac lutariis similis capite ac testa sed maior; caput nunquam in testa condit, sed semper exertu habet, ac cervicem tantùm pro arbitrio modò extendit, modò contrahit. Dentibus testudinum genus omne caret, sed rostri margines acuti sunt superiore eius parte inferiorem claudente pyxidum modo. Natura testudini marinae tanquam amphibio animali partim pinnas, partim pedes tribuit: priores pinne latae sunt admodùm, alas rectè appellaveris, hae duris aculeis veluti unguibus munitae sunt, posteriores pedibus similiores sunt cum unguibus, qui ungues natationi nihil conferunt, sed ingressui in terra, ale verò pedésque natationi in mari. Linguam imperfectam habet, sed asperam arteriam, pulmones, cor, diaphragma, iecur, lienem, intestina testes & mentulam mas, uterum foemina. Pulmones in testudine maiores sunt & multò densiores, quàm in terrenis animantibus, ne, ut opinor, aquae maior copia unà cum alimentis hausta in tenues meatus se penitus insinuatus reiici to ta non posset per foramina illa, quae narium loco in superiori rostri parte habet, quibus aquam reiicit non aliter quàm delphini per fistulam. Et si linguam minus perfectam habeat testudo, per exiguum tamen & abruptum sonum edit, ut scribit Aristoteles {Libro 4.de hist.cap.9}, qui terrestri tantùm id tribuere videtur, sed etiam marine competit, ut ego experientia comperi. Cùm enim in omnibus sit eadem oris, aspere arterie, pulmonum constructio, cur nó omnes eundem sonum edent? Quin & manifesta suspiria emittit marina, id quod in ea expertus sum, quam domi alui, quum diutius extra aquam moribundam detinerem. Cùm ex iis quae ova pariunt aves

are using a metaphor comparing trees with animate creatures. The turtle, then, is corticate and resembles the terrestrial and mud turtles in its head and shell, but is bigger. It never hides its head in its shell but always has it extended. But only to ascertain direction will it alternately extend and contract its neck. The entire genus of turtles lacks teeth, but the upper part of its beak has sharp edges and these enclose the lower part like the lid of a box. Nature, however, gave the sea turtle, since it is an amphibious animal, part flippers and part feet. The front flippers are somewhat broad and you might even properly call them fins. These are armed with sharp spikes rather like claws. The rear ones are like feet with nails. These nails contribute nothing to swimming but rather to progress on the land, but the fins and the feet contribute to swimming in the sea. It has an undeveloped tongue but a rough windpipe, lungs, heart, diaphragm, liver, spleen, intestines, testes and penis in the male, and a uterus in the female. The lungs in the turtle are bigger and denser than they are in terrestrial animals which breathe air. In my opinion, this is because, if this were not the case, then if a great deal of water happened to be taken in along with its food and worked its way deep into its narrow passages, it could not be expelled through those openings which it has in place of nostrils on the upper part of its beak. It is through these that it expels water exactly as dolphins do through their blowholes. Even though the turtle has an underdeveloped tongue, it still emits a thin and abrupt sound as Aristotle writes.[16] He seems to attribute this only to the terrestrial variety, but it also applies to the sea variety as I have confirmed through experience. For since they all have the same construction to their mouth, windpipe, and lungs, why do they all not emit the same sound? Indeed, in one sea turtle which I kept at home I have experienced the fact that it emits clear sighs when I keep it out of water for too long, to the point of its demise. Although of oviparous animals both birds and fish lack both bladder and kidneys, the turtle alone

piscésque, neque vesicam, neque renes habeant quadrupedum una testudo habet, rationé magnitudinis caeterarum partium: habet & renes quasi ex multis parvis renibus constitutos, similes vitulorum, lutrarum, delphinorum renibus. Idem in puerorum renibus observavimus, dum utero gestantur, & quandiu lactae nutriuntur, cuius rei causam aliâs exposuimus. Quibus vesica inest, necessariò & renes, vel quod renibus portione respódeat, inesse oportet, non contrà: nam aves quae dam vesica quidem carent, sed renum vice carunculas quasdam latiusculas habent, renú speciem ostendentes, quasi ea caro quae renibus delegata est, locum non habeat, sed in plura dispersa sit. Renes autem & vesica avibus desunt, quia raro potu utuntur, siccioribúsque vescuntur alimentis: quamobrem si quid serosi sit humoris, facilè per cutim digeritur, vel in plumas abit. Illud non sine causa miretur aliquis, cur testudo marina renes vesicámque habeat: lutaria verò & vesica & renibus careat ex sententia Aristotelis libro tertio {Cap.9} de partibus animal. quem locum superiore capite citavimus. Cuius quidem ratio quam ipse Aristoteles reddit, infirma mihi esse videtur: fit hoc, inquit, propter tegumenti eius mollitudinem, ut humor facilè digeratur. At testudo coriacea, de qua posteà dicemus, mollius tegumentum habet, plúsque humoris colligit, tamen & renes & vesicam habet. Quare cum maiorem [*Greek*] quàm cuiusdam hominis autoritate fidem adhibeá, affirmo testudinem lutariam & vesicam manifestam ac magnam, & renes cranosos habere prope testes. Idque per mihi mirum videtur Aristotelem, qui splenem admodùm exiguum in ea viderit ut rectè annotavit libro secundo {Cap.15} de histor. animal. vesicam & renes non animadverterit, nisi fortè impedimento fuerint ossa, quibus coxae articulantur, sub quibus, veluti sub pubis ossibus in homine latent eae partes, vel unà cum peritonaeo disrupta evulsáque fuit vesica, quae à peritonaeo non nisi ab exercitatissimo disiungi possit. Haec demonstratione nulla mihi sunt confirmanda, cùm sensus solus huius rei fidem faciat. Sed cùm rem ita habere compereris, tum quaerenda causa ususque harum partium, quae eadem sunt in lutaria ae marina testudine. Sed iam de actionibus disseramus. Testudines tam aquatiles quàm terrestres, & pedestrium quadrupedes quae ova pariunt, eodem coëunt modo, quo ea quae animal generant, mare scilicet superveniéte sine ullo negotio, ut aliquoties vidimus, etiam si cortice contectae sunt: habent enim in quod meatus contingant, & quo in coitu adhaereant. Pariunt autem marinae egressae in terram, ova avium cortalium ovis similia, & defossa coopertáque incubant noctibus. Ovorum

of the quadrupeds has them due to the size of its other parts. It also has kidneys that are made up, as it were, of many small kidneys, like those of calves, otters, and dolphins. We have observed the same thing in the kidneys of children while they are being carried *in utero* and as long as they are fed on milk. We have set forth the reason for this fact elsewhere. It is necessary that those possessing a bladder also have kidneys, or something that corresponds to kidneys, but the reverse is not true. For some birds indeed lack a bladder, but instead of kidneys they have certain rather broad bits of flesh which give the appearance of kidneys, as if this were the flesh which had been delegated to be kidneys. Now it does not occupy the same position but is scattered in several locations. Now kidneys and a bladder are lacking in birds because they rarely take a drink and feed on drier foods. Therefore, if there is some serous fluid, it is easily digested through the skin or it passes over into its feathers.[17] Now someone might wonder, and not without reason, why the sea turtle has both a bladder and kidneys, whereas the terrestrial and mud turtle lack kidneys. This is according to the third book of Aristotle's *De Partibus Animalium*, a passage we cited in a previous chapter.[18] The reason for this which Aristotle himself gave seems weak to me. He said that this happens because of the softness of its covering, allowing the moisture to be easily "digested." But the leathery turtle, about which we will speak later on, has a soft covering and it collects a lot of moisture, yet it has both kidneys and a bladder. Therefore, since I attribute greater faith to dissection [Greek], "autopsia," than I do to the authority of a given person, I assert that the mud turtle has both a visible and large bladder as well as granular kidneys near its testes. It seems amazing to me that Aristotle, who observed the fairly tiny spleen in it, as he rightly notes in the second book of his *Historia Animalium*,[19] did not notice its bladder and kidneys, unless they were blocked by the bones upon which the hip are articulated.[20] For these parts are hidden beneath these bones, just as they are hidden beneath the bones of the pubis in humans. Or perhaps the bladder was disrupted and dislodged along with the peritoneum, for the bladder can only be separated from the peritoneum with the greatest of effort. These things do not have to be confirmed by any demonstration on my part because mere use of the senses provides the credibility of the matter. But once you have ascertained that this is how the matter stands, the cause and use of these parts must be sought, for they are the same in the mud and sea turtle. But let us now differentiate among their actions. Both aquatic and terrestrial turtles, as well as those quadrupedal walkers which lay eggs, copulate in the same way as do those which produce a live young, namely, as we have often seen, with the male covering [the female] and doing so with no difficulty even if they are covered with a shell. For they have an arrangement by which the passages by which they are connected during intercourse touch one another. The female sea turtles, having come out onto land, bear eggs similar to those of domesticated fowl, and they lay them by digging a hole and covering it up at night. The number of eggs is very large for they bear up to one hundred. Here are the words of

numerus maximus est: nam ad centena pariunt. Haec Aristoteles {Libro 5. de hist.anim.cap.33}, cuius sententiam retulit Plinius {Li.9.c.10} his verbis:

> In terram egressae in herbis pariunt ova, avium ovis similia ad centena numero, eáque defossa extra aquas & cooperta terra, ac pavita pectore ac complanata incubant noctibus. Educant foetus annuo spatio.

Cùm de marinis loquatur Plinius, ut ex toto contextu apparet, commiscet ea quae Aristoteles {Lib. 5. de hist. c.33} de marinarum & terrestrium testudinum partu seorsum scribit hoc modo:

> Testudo (de terrestri intelligendum) ova durioris testae, & bicolora edit, quale ovum avium est, eáque defossa & cooperta terra, ac pavita & complanata incubat crebriùs repetens, foetúmque sequente anno excludit {Ibidem}.

Et paulò pòst.

> Testudines marinae egressae in terram pariunt ova avium cortaliú ovis similia, & defossa coopertáque incubant noctibus.

Ex his igitur distinguenda erit Plinij lectio. Idem ex quorundam sentétia aliam pariendi rationem adfert. Quidam oculis spectando quoq; ova foveri ab iis putant. Foeminam coitum fugere, donec mas festucam aliquam imponat adversae, in qua sententia fuit Oppianus {Libro 1. [*Greek*]} scribens testudines foeminas timere atque odisse concubitus, quod nulla in coitu voluptate sed dolore magno afficiantur, quia maris pudendum veluti stimulus est acutus, durus & osseus, eam ob causam inter se dimicant, ac multùm incuruis dentibus, id est rostris, sese lacerant, ille concubitus molestos fugientes, mares inuitas magis ac magis concupiscentes donec vi victas necessario amore sibi copularint.

[*Greek* verse, 10 lines]

Testudines marinae conchis vescuntur, & herba in terra, deniq; pamphagae sunt, quemadmodum & crustacei pisces, si Aristoteli credimus {Lib.8. de histo.anim.cap.2}. Testudines marinae, inquit, conchulas petunt: habent enim os omnium robustissimum, quicquid nanq; in os ceperint, sive lapidé, sive quiduis aliud perfringunt ac devorant, exeunt etiam in terram, ac pascunt herbam: hic idem modus vescendi crustaceis est: nam ea quoque omnivora sunt, quippe que & lapillos, & limum & algam devorant. Plinius {Li.9.c.10}.

> In mari vivunt conchyliis, tanta oris duritia ut lapides comminuant.

Duas habui domi, quas & aqua & quibuscunque iniectis piscibus, rostro comminutis vivere sum expertus. Carnem potissimùm omoplatarum,

Aristotle, whose opinion Pliny relates in these words.[21]

> Having come out onto land, they bear their eggs in plants.[22] These resemble bird eggs and are up to one hundred in number. Once the eggs have been buried and covered with earth out of the reach of the water, and, with the earth beaten down and leveled off with her chest, the female incubates them by night. The young come forth within the space of a year.

Although, as is clear from the context, Pliny is speaking about the sea turtles, he mixes up the things which Aristotle had to say on his own about the reproduction of sea and terrestrial turtles in the following manner:[23]

> The turtle (one must understand this refers to the terrestrial turtle) lays eggs with a fairly hard shell and which are bi-colored, rather like birds' eggs. When these have been buried and covered with earth, and once the earth has been beaten down and leveled off, it incubates them, crawling on them frequently, and in the following year it hatches out the young.

And a bit later he says:

> Sea turtles, having come out onto land, lay eggs that resemble the eggs of domesticated fowl. When these have been buried and covered over, it incubates them by night.

The reading offered by Pliny must be differentiated from these, therefore. This same fellow offers another explanation of how they reproduce based on the statements of certain others. Some say that their eggs are kept warm by the turtles staring at them with their eyes. Others say that the female flees copulation until the male offers her a bit of straw as she is facing him. Oppian was of this opinion, writing that female turtles fear and loathe intercourse because they experience no pleasure in the copulation but rather great pain, saying this is because the male's member is sharp like a goad and is hard and bony. For this reason, he says, they fight among themselves, wounding each other greatly with their curved teeth (that is, their beaks). Thus, as the females flee unwelcome intercourse, the males grow ever more desirous of the unwilling females, until they copulate with them in a love that is a necessity, but only once they have been overcome with force:[24]

> Turtles greatly fear and hate their mating, for they take no pleasure or enjoyment in it the way other animals do but rather endure a great deal of pain. This is because the male's instrument of love is quite hard, bony and not yielding, sharpened for a union bereft of pleasure. They therefore fight and rend one another with their bent-back teeth when they approach one another. The females try to avoid the rough mating, the males all willing for union with their unwilling mates. Finally, the male wins out by force of his strength in this forced love affair.

If we believe Aristotle, sea turtles feed on shells and, when on land, on plants, and are, in the end, omnivorous after the fashion of crustaceans.[25] Sea turtles, he says, seek out little shells, for they have the strongest mouth of all, and they

posteriorúmque crurum suavem ac delicatam pinguémque habet testudo, & omnis ferè marini odoris expertem. Sanguis qui etiam è viva effluit, actu frigidus sentitur. Ovorum albumen coctura nunquam bene spiffatur, quod nó tam frigiditati, quàm partium tenuitati adscribo: quae enim natura crassa sunt vel léta, quantumuis frigido diluta, facilè spissantur, que valde tenuium partium, ut aqua nunquam. Testudines omnes magni sunt in medicina usus. Sed nunc de marinis tantùm. Harum carnes, ut tradit Plinius {Li.32.c.4}, admistae ranarum carnibus, contra salamandras praeclare auxiliantur, neque est testudine aliud salamandrae adversius. Sanguine alopeciarum inanitas, & porrigo, omniáque capitis ulcera curantur: inarescere autem eum oportet, lentéque ablui. Instillatur & dolori aurium cum lacte mulierum. Adversus comitiales morbos manditur cum polline frumenti: miscetur autem sanguis meninis tribus aceti, hemina vini addita his, & cum hordeacea farina, aceto quoque admisto, ut sit quod devoretur fabae magnitudine. Haec singula & matutina & vespertina dantur, dein post aliquot dies vespera. Comitialibus instillatur ore, deductis labris his qui modicè corripiantur. Spasmo cum castoreo clystere infunditur. Quòd si dentes per annum colluuntur testudinum sanguine, immunes à dolore fiunt. Et anhelitus discutit quasque orthopnoeas vocant, ad has in polenta datur. Fel testudinum claritatem oculorum facit, cicatrices extenuat, tonsillas sedat & anginas, & omnia oris vitia: privatim nomas ibi, & ardentium testium. Naribus illitum comitiales erigit attollitque. Idem cum vernatione anguium aceto admisto, unicè purulentis auribus prodest. Quidam bubulum fel admiscent, decoctarúmque carnium testudinis succum, addita aequè vernatione anguium: sed diu in vino testudinem excoquunt. Oculorum quoque vitia omnia fel inunctum cum melle emendat. Suffusiones etiam marinae felle. Vel cum fluviatilis sanguine & lacte mulierum capillus inficitur. Fel & contra salamandras, vel succum decoctum bibisse satis est. Galenus {Libro 2. de antidotis} autor est veteres medicos saepius in antidotis sanguine testudinis marinae usos fuisse, ut Dorotheum in antidoto [*Greek*], & in aliis multis. Et Dioscorides {Li.2.c.97}. Sanguis marinae testudinis cum vino & leporis coagulo cuminóque contra serpentum morsus, & hausta rubetae venena convenienter bibitur. Adversus venena & ad cópescendum fluxum sanguinis è naribus vel vesica plurimùm valet per sevel addito sanguine draconis utrisque in aqua vulgaris herbae quae bursa pastoris nuncupatur dissolutis. Capiuntur testudines marinae multis quidem modis, ut tradit Plinius {Lib.9.c.10}, sed maximè evectae in summa

break to bits and devour whatever they take in their mouth, be it a rock or anything else. They also come out onto land and they feed on plants. This is the same manner of feeding found in the crustaceans, for they also are omnivores, eating even pebbles, mud, and seaweed. Pliny:[26]

> They live in the sea on shells and have such a hard mouth that they grind up stones.

I had two at home which I personally observed to live on water and on whatever fish happened to be thrown in with them, grinding them up with their beaks. The turtle's toughest flesh is that of the shoulders while that of the rear legs is sweet, delicate, and fatty, free of almost all marine smell. The blood which flows from it when alive is actually cold to the touch. When the white of its eggs is cooked it never properly thickens, a fact which I ascribe not so much to coldness as to thinness of its parts. For things which are naturally thick or viscous are readily thickened no matter how diluted by the cold, whereas those things which have thin parts, like water, are never thickened by it. All turtles are of great utility in medicine, but for now we will speak only of the sea turtles. Their flesh, as Pliny relates, mixed with frog flesh, is of excellent use against salamander bites, and nothing is more harmful to the salamander than the turtle.[27] The bareness and itch of baldness and every sort of ulceration of the head are cured by its blood, but one should dry out the area and bathe it gently. For earache, let it be instilled along with woman's milk. It is chewed against epilepsy along with wheat flour.[28] Mix its blood with three measures of vinegar, add one measure of wine to these along with barley flour and a bit of vinegar mixed in so that something the size of a bean is produced which is to be swallowed. Let one of these be given morning and night and then, after a few days, only at night. Instill it into the mouth of epileptics, having pried open the lips of those who have just recently been afflicted with a fit. For colic, it should be administered in a castor oil enema. If, over the course of a year, one's teeth are rinsed with turtle blood, they will be rendered pain-free. It also alleviates difficulty in breathing as well as those disorders people call orthopnea [positional shortness of breath] and is given against these in pearl barley. Turtle bile makes the eyes clear, reduces scars, and calms tonsils, angina, and all problems both of the mouth (especially for malignant sores there) and of the testicles. When smeared on the nostrils, it arouses and revives epileptics. The same item, mixed with cast-off snake's skin and vinegar, is singularly good for pus-filled ears. Some mix equal parts cow's bile, a decoction of turtle meat broth, and cast-off snake's skin, but they cook the turtle for a long time in wine. The bile, smeared on with honey, is restorative for all ailments of the eyes. Hair is dyed with a suffusion made of the bile of the sea variety (or the blood of the river variety) and woman's milk.[29] The bile is also good against salamanders but it is adequate also to drink a broth decocted from it. The author Galen tells us that ancient doctors frequently used sea turtle blood in antidotes. An example is Dorotheus in the antidote *"Against Snake Bites,"* and there are many others.[30] Dioscorides also says that the blood of the sea turtle, mixed with wine and hare's

pelagi, aut meridiano tempore blandito, eminente toto dorso per tranquilla fluitantes, quae voluptas liberè spirandi, in tantum fallit oblitas sui, ut folis vapore siccato cortice, non queant mergi, inuitaeque fluitent, opportunae venantium praedae. Ferunt & pastum egressas noctu, avidéque saturatas lassari, atque ut remearint matutino, summa in aqua obdormiscere, id prodi stertentium sonitu, túncque leviter capi, adnatare enim singulis ter nos, à duobus in dorsum verti, à tertio laqu eum iniici supinae, atque ita ad terram à pluribus trahi. In Phoenicio mari haud ulla difficultate capiuntur, ultróque veniunt statuto tempore anni in amnem Eleutherum effusa multitudine. Aristoteles. Testudines marinae laborant plerunque & intereunt quoties innatantes siccantur sole, deferri enim in gurgitem facilè nequeunt. Diversam capiendarum testudinum rationem adfert Oppianus {Libro 5. [*Greek*]}. Aliquando testudines, inquit, importunè piscantibus obuie prede parande nocent damnúmq; afferunt. Sed facile est audaci & intrepido viro eas vincere. Si quis se in mari immergés testudinem supinam in dorsum converterit, quantúvis connitatur, fatum vitare non potest.

[*Greek* verse, 7 lines]

Capiuntur apud nos sagena quemadmodum & reliqui pisces, capiuntur etiá iisdem retibus, quibus thunni. Terrestres testudines frequétiùs visuntur, & notiores sunt & minores quàm marine. Ex oceano marinam aliquando apud me alui aliquádiu. Quum Rome essem aliam vivi multò maiorem. In India maxime sunt, quéadmodum & reliqua animalia. Plinius {Lib.9.c.1}.

> Testudines tante magnitudinis Indicú mare emittit, ut singularú superficies habitabiles casas integant, atq; inter insulas rubri precipuè maris his navigét cymbis.

Immanis fuit testudo illa que in mari nostro anno 1520, capta est tanta, ut pueros atq; homines imperitos terreret, iis erat viribus, ut funibus tracta homines tres supra dorsum stantes veheret, eadem bigis vix trahebatur. Qui ceperat, circulatorú more per vicina oppida ostentabat lucri faciendi causa. Huiusmodi testudinem arbitror fuisse eá, que olim in Provincie oppido, quod Tarrasco nominatur, capta fuit, quantú ex eius pictura, que etiá hodie in oppidi templo cernitur, coniicere licet, nisi quòd pictor absurdè pedes duos addidit, aculeósque maiores etiam in dorso effinxit. Quanquam longè aliter de ea re olim scripserint. Ferunt ad Rhodanum in nemore quodam inter Arelatem & Avenionem monstrum quoddam fuisse altera parte terrenum animal, altera piscé referens, bove crassius, equo longius, dentes habés in utraq; maxilla, binos, ense longiores & acutiores, in flumine delitescens in

rennet and cumin is good against serpent bites and that it is useful if the poison of a toad has been imbibed . It is very effective against poisons and to staunch the flow of blood from the nostrils or bladder, either taken by itself or with the addition of the blood of the serpent, both having been dissolved in the juice of the common plant called "shepherd's purse".[31] Sea turtles are caught by several methods according to Pliny, but especially as they are borne along on the top of the sea, floating on smooth waters.[32] The pleasure they take from breathing freely so fools them into being so oblivious to themselves that their skin is dried out by the sun's rays and they are not able to submerge. They thus float along unwillingly, opportune prey for hunters. They say also that having come out at night to eat, they grow tired from filling themselves greedily and that when, in the morning, they would return, they sleep instead on top of the water and are there betrayed by the sound of their snoring. At such a time they are easily captured. They [hunters] swim up stealthily, three to a turtle. Two turn it on its back, and the third puts a noose on it while it is supine. It is then hauled to shore by several others. They are captured in the Phoenician Sea with scarcely any difficulty at all. Moreover, at an appointed time of the year they come to the Eleutherus River in vast multitudes.[33] Aristotle says that sea turtles suffer and very often even die when they are dried by the sun as they swim and they are unable easily to return to the depths.[34] Oppian offers a different ploy for capturing turtles. Sometimes, he says, when they are preparing to raid fishermen's bait, they cause harm and present a danger to fishermen. But it is easy for a bold and daring man to overcome them. If someone gets into the sea and turns the turtle on its back, then try as it might, it can not avoid its fate.[24]

> Indeed, turtles very often encounter the fishermen's catch and destroy it, becoming a large problem for the men. But to catch one of them is the easiest work of all for a man who is bold and has a steadfast spirit. For if, leaping into the water, he turns the craggy turtle over in the waves, no longer can it avoid its doom, try though it might.

In our lands they are caught in a seine net like other fish and they are also caught in the same nets used to catch tuna. Terrestrial turtles are seen often and are both better known and smaller than the sea turtles. I once kept for a while a sea turtle taken from the ocean. When I was in Rome I saw another one that was much bigger than this one. They are largest in India, as is true for other animals. Pliny:[35]

> The Indian Ocean produces turtles of such size that the inhabitants build habitable dwellings from the shell of a single creature and among the islands of the Red Sea, they sail in the shells for canoes.

The turtle which was captured in our sea in 1520 was so huge that it terrified children and inexperienced people. It had such strength that, led by ropes, it could drag along three people standing on its back and it could scarcely be dragged along by carts. The one who caught it exhibited it throughout

homines irruebat, & naves submergebat, huc ex Asia erupisse ex Leviathan aquatili serpente & ferocissimo natú, tandem à diva Martha ita evictum, ut ove placidius reddiderit, quod cingulo suo ligatum, cùm in terrá eduxisset à plebe saxis fustibúsq; peremptú fuit. Incolae monstrú id Tarasconú vocabant, unde oppido quod etiá hodie extat nomen positú cú antea *nerluog*, id est, niger locus vocaretur à nemore denso, umbrosóq. Alij ré paulò aliter referunt. Sed utut res haec habeat, antequá Martha in Provinciá venire potuisset Tarasco oppidú dicebatur, Strabone teste: Abest, inquit, à Rhodano Nemausus cétena circiter stadia, quo in tractu ulteriore Tarasco exiguú oppidú, quo nó nisi post Christi in celos ascésum appellere potuit Martha: scripsit autem Strabo tempore Tiberij Caesaris sub quo passus est Christus Neq; est quod quis miretur testudinem mariná in Rhodano ad Tarasconé repertam fuisse, neq; enim procul locus is à mari abest, & aquarú dulcedine captae aliquádo belue marinae, vel undarú & procellarú vi cópulsae lógè altiùs fluvios ingrediútur, quod de testudinibus marinis asserit Plin. scribens {Li.9.c.10} in Phoenicio mari haud ulla difficultate capiultróq; venire tépore statuto anni in amnem Eleutherú effusa multitudine.

neighboring towns in a traveling show to make some money. I think that the turtle which once was captured in the town in Provence called Tarascon was of just this kind. This is based on the extent that this can be conjectured from the picture of it that today is to be seen in the town's church, except for the fact that the painter absurdly added two feet and represented two rather large spikes on its back. People have written about this matter at length elsewhere, however. They say that near the Rhone, in a certain grove between Arles and Avignon, there was a certain monster which was half terrestrial animal and half fish. It was stockier than a cow, longer than a horse, and in either jaw it had two teeth which were longer and sharper than a sword. Lying in wait in rivers it used to attack people and sink ships. It burst forth to here from Asia, an offspring of Leviathan, that ferocious aquatic serpent. It was, however, ultimately so overcome by blessed Martha that it was rendered meeker than a lamb and was bound by her girdle. But when she led it out on land it was killed by the people with stones and clubs. The inhabitants called this monster "Tarasconum" and from this came the name of the town, which it bears today, whereas formerly it was called *nerluog*, that is, "dark place," after its dense and shady grove. Other people tell the tale a bit differently.[36] But whatever the case is, before Martha could have come to Provence, the town was called Tarascon, and Strabo is the witness for this. "Nemausus is," he says, "about one hundred stades distant from the Rhone and in its furthest part lies the small town of Tarasco." Now Martha could only have named the town after the ascent of Christ into the heavens, and Strabo wrote at the time of Tiberius Caesar, under whom Christ endured his passion.[37] Nor should anyone wonder that a sea turtle was found in the Rhone near Tarasco, for this place is not far from the sea and large sea creatures are sometimes captured in fresh waters. Driven by the force of waves and storms they enter the deeper rivers. Pliny asserts this fact concerning sea turtles, writing that they are captured in the Phoenician Sea with hardly any difficulty at all and further that at an appointed time of the year they enter the Eleutherus River in vast multitudes.

De Testudine coriacea sive Mercurij

Caput IIII

[*Greek*] Latinè testudo marina vocatur, à quibusdam Plinium secutis mus marinus. Sed nó immeritò dubitaverit aliquis cur Plinius cùm saepius aliâs testudinem marinam Latinè vocarit, mutato nomine, ali quando murem marinum nominaverit ei tribuens quae Aristoteles tribuit emydi seu testudini lutariae sive muri aquatili, ut convertit Gaza. Verba Plinij sunt:

> Mus marinus in terra scrobe effossa parit ova, et rursus obruit terra, tricesimo die refossa aperit, foetúmque in aquam ducit.

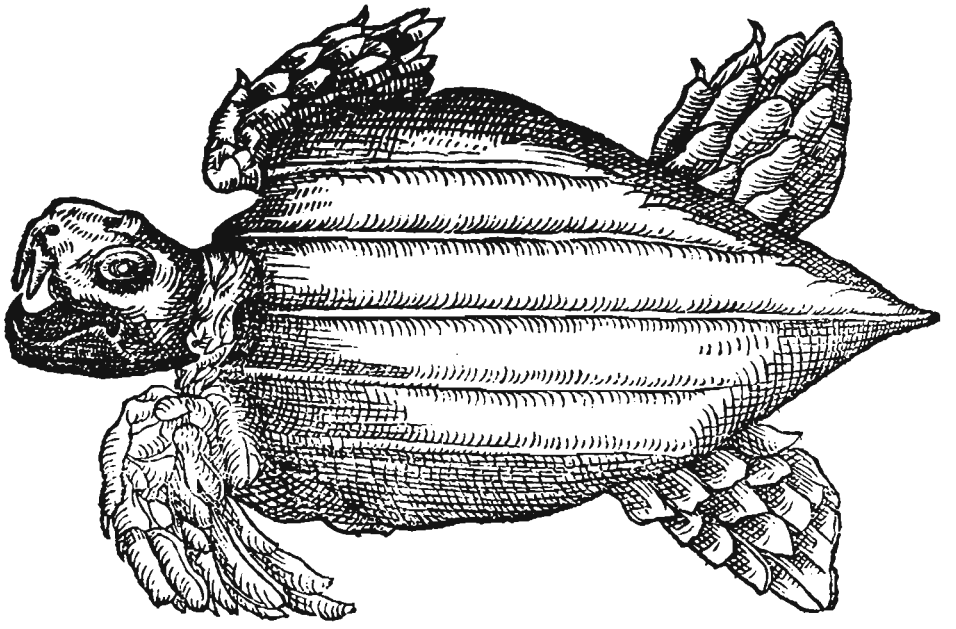
Quae ex Aristotele mutuatum esse constat.

On the Leathery Turtle or Mercury's Turtle

Chapter IIII

The *chelone thalatia* is called the sea turtle [*testudo marina*] in Latin while some, following Pliny, call it the sea mouse [*mus marinus*]. But someone might wonder, and not without merit, why Pliny, who very often calls it the *testudo marina* in Latin, sometimes calls it the *mus marinus*, and attributes to it those traits which Aristotle attributes to the *emys*, that is, the mud turtle [*testudo lutaria*] or aquatic mouse [*mus aquatilis*] according to Gaza's translation. The words of Pliny are as follows:[38]

> The sea mouse, having dug out a hollow in the ground, lays its eggs and then covers them up again with earth. On the thirtieth day, having dug them up again, it uncovers



Original Figure (Caput IIII, p. 450). *Testudine coriacea* [= *Dermochelys coriacea*, the leatherback turtle].

[*Greek*].
De marina verò testudine mox Aristoteles.
[*Greek*].
Alio in loco pro testudine marina murem marinum videtur dixisse.

Exeunt in terram, et qui marini mures vocantur.

Ex quibus efficitur vel Plinium parum animadvertentem aquatilis testudinis sive lutariae Aristotelis nomine marinam vocasse, vel testudinem marinam etiam murem Latinè dici posse, atq; etiam non solùm emyda sed et [*Greek*] apud Aristotelem {Li.9.c.19} legi posse. Galli *tortues* vocant. Nostri *tortugues*. Hispani *tortugas*. Itali *galanas* voce, ut apparet deflexa ex accusativo Graeco [*Greek*]. Quam núc describimus, coriaceam appellamus quod integumétum habeat non tam cortici simile quàm corto bubulo, duro nigróq; et iam concinnato ad calceos equorúmq; fraenos et sellas caeteráque ornamenta conficienda. Eandem Mercurij testudinam appello, quòd eam esse existimem, à cuius similitudine Mercurij musicú instrumentum nobis *leut*, Gallis *luc* vocatum excogitarit ex ea testudine, quam Nilo decrescente in litore repererat, consumpta iam carne superstitibus nervis, et obtensionem ad cótactum sonantibus, cui instrumentú musicum adeò simile est, ut nemo sit procul eam videns capite pedibúsq; truncatis, qui non chelyn nostram theca sua conclusam esse iudicet, ut enim haec, ita testudo altera parte supina scilicet plana est latáque, prona connexa ex sex assulis contexta longis angulos acutos efficientibus, toto ambitu rotundato praeterquam

them and leads its young to the water.

It is commonly agreed that he has borrowed these words from Aristotle:[39]

> [Greek]. The *hemys*, coming out onto land to lay its eggs, digs a hole about the shape of a pithos jar. It lays the eggs and leaves. Letting somewhat less than thirty days pass, it digs them out, hatches them out quickly, and leads the young directly to the water.

But Aristotle soon says of the sea turtle:[40]

> [Greek]. The sea turtles also bear their young on land, etc.

In another passage it seems he [Pliny] used the term sea mouse for the sea turtle:

> The ones called sea mice also come out onto the land.

The consequence of these facts is either that Pliny, not paying close attention, has named the sea variety using the name Aristotle uses for the aquatic or mud turtle or that the sea turtle can also be called the aquatic mouse in Latin, for not only the form *emys* but also *mys* can be read in Aristotle. The French call them *tortues*, our people *tortugues*, the Spaniards *tortugas*.[41] The Italians use the word *galanas*, apparently derived from the accusative Greek form *chelonas*. We will now describe the one we call leathery [*coriaceam*] [= *Dermochelys coriacea*, the leatherback turtle, Dermochelyidae] since it has a covering which does not so much resemble bark as it does the hide of an ox, tough and black, and which is used in the production of coverings for horses' feet, bridles, saddles, and other ornaments.[42] Now I call this same creature Mercury's turtle because I think it is the one out of which he invented the musical instrument which, based on similarity of shape, is called the instrument of Mercury, and is called the *leut* by us and the *luc* by the French. He had found this turtle on the shore when the Nile was receding, and once the meat was eaten and the sinews remained they made a sound when touched because of their tension.[43] The musical instrument is so very much

in cauda, quae in longum et acutum definit, cui etiam instrumenti pars gracilior (cui infixi sunt collopes, quibus fides intenduntur et remittuntur) respondet. Haec testudo à superiore partibus internis, alis, pedibus, unguibus non differt, longiore acutioréque est cauda, capite osseo. Rostri pars inferior acuta est, et sursum recurva, superioris extremum in partes duas divisum, inter quas inferioris extremum recipitur. Huiusmodi rostro minùs avem refert quàm superior testudo. Oculis est maioribus, ante quos sunt foramina narium loco caput semper prominet. Cervix lata est et torosa, in supina parte maculas aliquot rotundas habet, quas ineptè qui de aquatilibus scripsit pronae parti testudinis corticatae appinxit. Carnis habet plurimùm anteriore in parte musculis scilicet omoplatarum, in posteriore multò minùs, ea bubulae similis est. Testa vertebris dorsi alligatur. Costas latas contegit cutis duplex interior corio spisso densoque sed laevi similis, superior tenuis et alba. Sub cute pingue plurimum coacervat. Vidi huiusmodi testudinem ad solem menses aliquot suspensam, ex qua quotidie pinguitudinis libra una destillabat, qua, qui ceperat, ad lucernas utebatur, eiusdem carne salita loco bubulae. Ea ad Frontignanum capta fuerat, longa cubitos quinque, duos lata. Alteram antè videram ad Magalonam captam multò minorem. Aliquot antè annis unius eiconem mihi dederat Agathensis, qui tum erat Episcopus, quam ad Niceam capta, fuisse affirmabat cubitos octo longam. Carne est multò duriore quàm superior. Ceterùm iisdem facultatibus et carnem et fel pollere existimo. Hîc praetermittendum nó est coriaceam sive Mercurij testudinem, quá depinximus ab Aeliano {Li.12.c.57} fortasse simiam maris rubri appellari, id quod ex eius descriptione clariùs intelligetur.

> Est etiam in mari rubro simia, non piscis quidem haec, sed bestia cartilaginea, et velut squamarum expers, eáque ipsa non magna. Colore est terrestri similis, tum aspectu speciem similitudinémque eiusdem terrenae simiae gerit. Non pisceo tegmine reliquum corpus, sed illiusmodi circumvestitur, cuiusmodi testudinis involucrum est. Eadem similiter ac terrestris resima est, eius reliquum corpus instar torpedinis latum est, ut dicas avem esse alas explicantem. Quum natat, volare videtur. Cum igitur terrestri partim differt, partim convenit, maculis distinguitur.

Sed eam rem doctis, qui pisces rubri maris viderunt, aestimandam relinquo.

like this turtle that there is no one who, seeing the turtle from afar with its head and feet cut off, would not think that our turtle was inclosed in his lute case. For, as is true of the musical instrument, the turtle is smooth and wide on one side (namely, the bottom) whereas on its back it is made up of six long plates connected at acute angles. Its entire circumference is rounded except for at the tail, which ends in a long point. The more slender part of the instrument (to which are attached the pegs on which the strings are tightened and relaxed) corresponds to this. This turtle does not differ from the one above with respect to its internal parts, flippers, feet, and claws, but its tail is longer and more pointed and its head bonier. The lower part of its beak is pointed and curved upward. The tip of its upper beak is split into two parts and the tip of the lower beak fits in between them. This sort of beak resembles that of a bird less than that of the aforementioned turtle. Its eyes are rather large and in front of these there are holes taking the place of nostrils. Its head is always extended. Its neck is broad and muscular, and it has on its upper part some round spots which a person who wrote ineptly about aquatic creatures depicted on the lower part of the corticate turtle. It has a lot of flesh to the front, namely on the muscles of its shoulders, whereas there is much less to the rear. This flesh is like that of a cow. The shell is bound to the vertebrae of its back. A double skin covers its wide ribs: the interior one resembles a thick, dense, but smooth hide, and the outer one is thin and white. A great deal of fat accumulates underneath its skin. I saw a turtle of this sort that had hung in the sun for several months, and a pound of oil dripped out of it every day. The fellow who had caught it used this oil for his lamps. Its flesh, salted, took the place of beef. It had been caught at Frontignan and was five cubits long and two wide. I had seen another one previously which had been caught at Maguélone and was much smaller.[44] A few years ago Agathensis, who at that time was the Bishop, gave me a picture of one which had been caught at Nice and which he swore had been eight cubits long. The flesh of this one is much tougher than the flesh of the one above, but I estimate that the flesh and bile of this one have the same powers as those of the other one. We should not omit here that the leathery turtle (or Mercury's turtle) which we have depicted here is possibly called the Red Sea monkey by Aelian. This will be understood more clearly from his description:[45]

> There is also a monkey in the Red Sea, not a fish to be sure, but a cartilaginous beast, lacking scales, and it is not very large. It is similar to the terrestrial version in color, and with respect to appearance it bears both the outer appearance and likeness of the terrestrial monkey.[46] The rest of its body does not have a fish-like covering but is rather encased in the same manner as the covering of a turtle. This same beast, like the terrestrial version, is flat-nosed and the rest of its body is broad like that of a ray, with the result that you might say it was a bird unfolding its wings. When it swims, it seems to fly. Thus, while it is different in part from its terrestrial counterpart, in part it resembles it, and it is picked out with spots.[47]

But I leave this matter for those learned folk who have seen the fish of the Red Sea.

De Testudine cornigèra sive troglodytica & alba

Caput V

PLINIUS Cornigerarum testudinú diversum à ceteris genus facit {Li.9.c.10}.

> Troglodyte, inquit, cornigeras habent, ut in lyra annexis cornibus latis sed mobilibus, quorum in natando remigio se adiuvant. Celetum genus id vocatur eximie testudinis sed rarae: namq; quasi scopuli praecuti clelonophagos terrent: Troglodytae autem ad quos adnatant, ut sacras adorant.

Quo loco pro mobilibus alij immobilibus legunt, sed perperam, ut op inor: nam si cornuum remigio in natando se adiuvant, quomodo immobilia esse possunt? Deinde pro celetum alij celtium, alij celetinum. Hermolaus aliquando existimavit legendum chelytium, [*Greek*], quae vox & testudiné significat & pectora, quasi magnas & pectorosas intelligi voluisset. Placuit posteà ut celetú legatur, ut dicantur celetes testudines à celeritate: quoniam cornuú remigio adiuvant se natando, ceu equites videri possint, non pedestres: sunt enim celetes singulis e quis currentes in certaminibus, & equi ipsi celetes qui soli agitabantur. Sic cancrorum est genus quoddam [*Greek*] Aristoteli, itémque formicarum alterum, quas Plinius pennatas vocat à velocitate. Cornigerae testudinis effigiem eleganter insculptam & expressam vidi Romae in antiquissimo marmore, quae à superioribus testudinibus non differebat nisi cornibus ex utroque capitis latere latis & longis, qualia in eo pisce sunt quem antea cornutam sive [*Greek*] appellavimus, & in lyra sed in his breviora, in testudine pro magnitudine corporis longiora. Arrianus in navigatione maris rubri in testudinum genere albam testudinem numerat, sed aquatilis sit, an lutaria, an terrestris parum constat. Ego testudinem vidi cortice maxima ex parte albescente & denso quam mihi ostendit Iacobus regius vir in chirugicis operibus exercitatissimus & peritissimus. Ea testudo ab alijs omnibus in eo differre mihi videtur quod in medio cortice pronae partis articulationes duas habet, quales in locustarum caudis cernuntur, ex quo apparet animal hoc in pilae modum totum corpus conglobare. Sit ne ea testudo Arriani alba nescio, neque enim de re parum mihi perspecta temere quicquam affirmare volo.

On the Horned Turtle or the Troglodytic and White Turtle

Chapter V

Pliny makes a genus of horned turtles separate from the rest. He says:[48]

> The Troglodytes have horned turtles whose horns resemble the curved attachments on a lyre, but these horns are broad and movable and they use them as oars to aid themselves in their swimming. This genus is called the *celetum* and has an exceptional shell, but it is rare. Rather like sheer cliffs, they terrify the Clelonophagos [Turtle-Eaters]. The Troglodytes, however, toward whom they swim, worship them as sacred.[49]

In the place where the text reads "movable" some read "unmovable," but they do so incorrectly in my opinion. For if they use them as oars to aid in their swimming, how can they be unmovable? Hermolaus once guessed that the word *chelytium* ought to be read, [*apo tou chelyos*], a word which signifies both "turtle" and "chest," as if he had wanted "big and broad-chested" to be understood. Later, he preferred for *celetum* to be read, so that the turtles might be called *celetes* from "swiftness" [*celeritas*]. Because they assist themselves in swimming by the rowing action of their horns, they could be seen as horsemen rather than walkers. For the word *celetes* indicates racehorses that run in individual horse races and also horses which are driven alone. Thus, there is a genus of crab in Aristotle called [*hippeis*] [horsemen] and likewise there is another genus of ant which Pliny calls "winged" for their swiftness.[50] I saw a statue of a horned turtle that had been sculpted and rendered elegantly in very ancient marble. It only differed from the turtles mentioned above in that the horns on either side of its head were wide and long, rather like those on the fish which above we called the "horned" [*cornuta*] or [*olosteon*] [all-bone] and like those on a lyre. But in these they are shorter whereas on the turtle they are longer on account of the size of its body. Arrian, in his navigation of the Red Sea, counts a white turtle in the turtle genus, but whether it is aquatic, mud, or terrestrial, finds little agreement.[51] I saw a turtle with skin that was, for the most part, white and dense. Jacob, a man of the royal court most experienced and skilled in surgical matters, showed it to me. This turtle seems to me to differ from all others because in the middle of the leather of its bottom side it has two articulations rather like those that are seen on lobsters' tails.[52] From this it appears that this animal rolls its entire body up into the shape of a ball. But I do not know if this is the white turtle of Arrian, and neither do I wish to assert anything about a thing I have studied only slightly.

Translator's Text Notes

1. What follows is almost a verbatim version of Pliny's *Naturalis Historia* [*HN* hereafter] 32.14.32, which follows a description of the beaver.

2. The Greek word *hemys* or *emys* will be found throughout this section. *Emydae* is the plural form. Those comparing the original will note that Rondelet was most careful to put all Greek words into the case they would require as a part of his Latin sentence. To follow him would be to confuse the English reader. Likewise, where the Greek is printed in the original version, the transliterated form will be used in the translation.

3. Pliny *HN* 32.14.40.

4. Theodoros Gazes, or Theodorus Gaza [ca. 1400–1475], was a noted scholar of the late Byzantine period, living in Constantinople just before its fall. He was the first professor of Greek at Ferrara and was invited by Nicholas V to hold a chair of Philosophy in Rome. From this chair he embarked on the papal project of translating the Greek classics into Latin. It is undoubtedly in this context that Rondelet knows him, for Gaza's *De Animalibus* was published in Venice in 1476 and was frequently reprinted thereafter.

5. The form is *hemys*, which is close enough to the Greek word for "mouse" to have started the confusion. See Aristotle's *Historia Animalium* [*HA* hereafter] 5.33 (558 1af.) and the evidence for the "sea mouse" as a turtle collected by Thompson (1947, 67-68).

6. Aristotle *HA* 2.16 (505b26f.)

7. Aristotle *HA* 5.3 (540a27f.).

8. Aristotle *De Partibus Animalium* 3.9 (671a27f.).

9. The term "corticate" refers to animals with bark-like integument (as in the first section of Chapter III).

10. Rondelet here engages in the difficult process of textual emendation. At this time secure texts of the ancient authors did not exist, as printed editions were often made from inferior manuscripts. To watch the philologist and zoologist meet in one man is fascinating.

11. The form *omys* seems to represent the Greek article "the" and the word for "mouse" written as a single word.

12. Aristotle *De partibus* 3.9 (671a32f).

13. Aristotle *HA* 7.2 (588a24f.). Gaza reordered the books, and his Book 8 is Book 7 in the Loeb edition.

14. Rondelet is making a case for the proper form of the name and does, indeed, suggest the proper reading of the Greek. The point of this clever text analysis is that Gaza printed the words as he heard them with the particle "*t*" elided to the following word.

15. Rondelet is not directly citing Hesychius, a fairly obscure lexicographer of perhaps the 5th century A.D., but refers to a citation of Hesychius by Guarino of Favera, known in Latin as Phavorinus. Favera had published, in 1496, one of the earliest collections of Greek grammarians, and Rondelet undoubtedly took this quote from that work. For the text see Schmidt (1965).

16. Aristotle *HA* 4.9 (536a4f.).

17. *Serosus humor*: need not have the same technical meaning it does today. A comparison with medieval theory shows that excess humor was thought to be "digested" by the body and it would then pass over into such bodily "extras" as hooves, hair, and shells.

18. Aristotle *De Partibus Animalium* 3.9 (671a26f.). This is also Rondelet's source for the kidney-like objects found in birds.

19. Aristotle *HA* 2.15 (506a18f.).

20. "Hips": perhaps "thighs."

21. Pliny *HN* 9.12.37.

22. Rondelet must have had a corrupt version of Pliny, or read it too quickly. Pliny states that they come out to graze on plants.

23. Aristotle *HA* 5.33 (558a1f.).

24. Oppian lived in Cilicia in the late 2nd century A.D. His poetic work on hunting, the *Cynegetica*, is renowned because the emperor Caracalla gave him a piece of gold for each line he finished. The work cited here is a poem on fishing called the *Halieutica*. It may have been written by another Oppian who lived in the 3rd century A.D. One is again struck by Rondelet's breadth of reading, for the Greek of Oppian is rather difficult and very florid.

25. Aristotle *HA* 7.2 (590b4f.).

26. Pliny *HN* 9.12.37.

27. Compare much of what follows with Pliny *HN* 32.14.35f. and note several discrepancies.

28. Epilepsy was called the disease of the assembly (*comitia*) by the Romans since it broke up such meetings if it occurred.

29. Rondelet's word order differs a bit from Pliny's, who says "women's hair is dyed with the blood of the river turtle, mixed with milk."

30. Galen *De Antidotis*, 2.14 (= Kühn, 183).

31. The term *draco* can be used for almost any venomous serpent. Dioscorides Pedanius lived in the 1st century A.D. and was an army physician. His combined works, usually referred to as the *Materia Medica*, laid out animal, vegetable, and mineral sources for cures. Rondelet is citing 2.79.2 (= Wellmann, 1958, 1.161, lines 9-11). This is a dense, difficult work and speaks highly of Rondelet's devotion to finding the ancient roots of his craft.

32. Pliny *HN* 9.12.35f. Rondelet virtually quotes Pliny in what follows.

33. The Eleutherus River was in ancient Syria, although modern geographers are divided as to its actual location.

34. Aristotle *HA* 7.2 (590b7f.).

35. Pliny *HN* 9.12.35.

36. See Inard (1960) for the involvement of St. Martha with the town. Her bones were said to lie there.

37. Strabo was a geographer who died sometime after 21 A.D. The emperor Tiberius ruled from 14 to 37 A.D. Rondelet's argumentation is thus quite accurate. The passage Rondelet quotes is in Strabo's *Geography* 4.1.12.

38. Pliny *HN* 9.76.166. On Cuvier's opinion on sea mice, identifying them either as the turtle *Testudo coriacea*, L., or as *Tetradon lineatus*, L., see Bostock and Riley (1893, 2.406-07).

39. Aristotle *HA* 5.33 (558a8f.). No translation was offered by Rondelet.

40. Aristotle *HA 5.33 (5*58a11f.). In fact, this is the next sentence.

41. As Rondelet was born at Montpellier, he means by *nostri* [our people] his local dialect of southern France, Languedoc.

42. Horses which were not shod were sometimes fitted with "boots" which afforded some protection to their feet.

43. Antiquity is almost universal in locating this story near Mt. Cyllene in Arcadia on the Greek Peloponnesus.

44. Both cities are in the vicinity of Montpellier.

45. Claudius Aelianus (ca. A.D. 170–235) was an author of the Roman Republic. His works, in Greek, are interesting and entertaining, but too often ignored. Rondelet refers to Aelian's work on animals, *De Natura Animalium*, a collection of random stories about animals, most of which support Aelian's belief that the universal reason by which the world functions is detectable in animals. This passage is found at 12.27, not Rondelet's 12.57.

46. It is likely that Rondelet is using *species* here in its more basic meaning of appearance rather than in a scientific sense.

47. Might not Aelian's description better fit a large type of ray than a turtle?

48. Pliny *HN* 9.12.38.

49. The version of Pliny given in Rondelet is erroneous. In Pliny the shell is called *chelium* and is rare because the tribe called the "Turtle-Eaters," or Chelonophagi [not Clelonophagi], are afraid to fish for them near the local "cliffs" (reefs?). As the following comments show, Rondelet was aware of the condition of the text. Troglodytes, Fish-Eaters, and Turtle-Eaters were among the many tribes of fabulous individuals whose history stretches back to antiquity and were so very popular during the Middle Ages as Friedman (1981) demonstrates.

50. Aristotle *HA* 4.2 (525b7). See also the discussion by Thompson (1947, 92-93).

51. The *Periplus Maris Erythraei,* or *Circumnavigation of the Red Sea,* is a 1st century A.D. merchant's guide to the area which was falsely attributed to the author Arrian (see Anonymous). It is filled with information on coastal tribes and what they would trade, and it is clear that turtles were actively traded during this time. The passage in question is paragraph 32 (= Müller, 1965, 2.281) describing an island off the promontory of Syagrus. The text claims the island held many sorts of turtles. Again the reader must admire Rondelet's grasp of the ancient world.

52. Taking *locusta* in the sense of *locusta maris*, a type of lobster. It may, however, merely refer to the insect.

Literature Cited

AELIANUS, C. [ca. 200 A.D.]. 1958-1959. De Natura Animalium. 3 vols. Transl. A.F. Scholfield, Loeb Classical Library. Cambridge: Harvard University Press.

ANONYMOUS. [ca. 50 A.D.]. Periplus Maris Erythraei [falsely attributed to Arrian]. See Müller, 1965.

ARISTOTLE. [ca. 350 B.C.]. 1965. Historia Animalium, Vols. 1, 2. Transl. A.L. Peck, Loeb Classical Library. Cambridge: Harvard University Press.

ARISTOTLE. [ca. 350 B.C.]. 1991. Historia Animalium, Vol. 3. Transl. D.M. Balme, Loeb Classical Library. Cambridge: Harvard University Press.

ARISTOTLE. [ca. 350 B.C.]. 1961. De Partibus Animalium. Transl. A.L. Peck, rev. ed., Loeb Classical Library. Cambridge: Harvard University Press.

BOSTOCK, J., AND RILEY, H.T. (Transl.). 1893. The Natural History of Pliny, 6 vols. London: George Bell and Sons.

FRIEDMAN, J.B. 1981. The Monstrous Races in Medieval Art and Thought. Cambridge: Harvard University Press.

GALEN, C. [ca. 175 A.D.]. Medicorum Graecorum. See Kühn, 1964.

GAZA, T. 1476. De Animalibus. Venice.

HESYCHIUS. [ca. 450 A.D.]. Lexicon. See Schmidt, 1965.

INARD, L. 1960. Tarascon: Citée de Sainte Marthe. Aix: Éditions Provençales.

KELLER, A.G. 1975. Rodelet. [sic]. In: Gillispie, C.C. (Ed.). Dictionary of Scientific Biography, Vol. IX, pp. 527-528. New York: Charles Scribner's Sons.

KÜHN, K.G. (Ed.). 1964-65. Claudii Galeni Opera Omnia. 20 vols. (Galen's Medicorum Graecorum Opera, vols. 1-20). Reprint of 1821-33 edition. Hildesheim: G. Olms.

MACGILLIVRAY, A.M. 1834. Lives of Eminent Zoologists from Aristotle to Linnaeus. Edinburgh: Oliver and Boyd.

MÜLLER, K. (Ed.). 1965. Geographi Graeci Minores. Facsimile reprint of Paris ed., 1855-1961. Hildesheim: G. Olms.

OPPIAN. [ca. 150 A.D.]. 1963. Halieutica. In: Oppian, Colluthus, Tryphiodorus. Transl. A.W. Mair, Loeb Classical Library. Cambridge: Harvard University Press.

PEDANIUS, D. [ca. 50 A.D.]. De Materia Medica. See Wellmann, 1958.

PLINY (THE ELDER). [ca. 50 A.D.]. 1938-63. Naturalis Historia. Transl. H. Rackham, 10 vols., Loeb Classical Library. Cambridge: Harvard University Press.

RONDELET, G. Undated. De compositione medicamentorum tam internorum, quam externorum libri duo.

RONDELET, G. Undated. De curandis febribus.

RONDELET, G. 1554. Libri de Piscibus Marinis, in quibus verae Piscium effigies expressae sunt. Lugduni: Matthiam Bonhomme, 583 pp.

RONDELET, G. 1555. Universae aquatilium Historiae pars altera, cum veris ipsorum Imaginibus. Lugduni: Matthiam Bonhomme, 242 pp.

RONDELET, G. 1558. L'histoire Entiere des Poissons. Lion: M. Bonhome.

RONDELET, G. 1563. De ponderibus, sive de justa quantitate et proportione medicamentorum, liber, nunc denuo diligentissime auctus, et recognitus ab eodem authore. Ed. 2. Lugduni: Bartholomaeum Molinaeum.

RONDELET, G. 1565. Dispensatorium seu pharmacopolarum officina. Coloniae: Joannem Byrckmannum.

SCHMIDT, M. (Ed.). 1965. Hesychii Alexandrini Lexicon. 5 vols. Reprint of 1858 ed. Amsterdam: A.M. Hakkert.

STRABO. [ca. 20 B.C.]. 1970. Geography. Transl. H.L. Jones, 8 vols., Loeb Classical Library. Cambridge: Harvard University Press.

THOMPSON, D'A.W. 1947. A Glossary of Greek Fishes. London: Oxford University Press.

WELLMANN, M. (Ed.). 1958. Dioscorides Pedanius. De Materia Medica Libri Quinque Edidit. 3 vols. Berlin: Weidmann.