

Ludwig Heinrich Bojanus and the anatomy of the European pond turtle: Facts, fiction, and future

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Abstract

Detailed anatomical knowledge is a prerequisite for studying a variety of biological questions. This holds true particularly for the evolutionary realm, in which fossils play an important role. Putting paleontological data in perspective consequently requires a profound knowledge of the corresponding structures of the extant representatives of a given lineage as well. Numerous morphological studies have contributed to our understanding of chelonian anatomy over the past centuries, but one of the earliest ones—whose completion celebrated its bicentenary with this symposium—still stands out among all of them: *Anatome Testudinis Europaeae*, published by Ludwig Heinrich Bojanus (1776–1827) in two installments in 1819 and 1821. Numerous myths around this publication have evolved ever since. The intent of this article is to set the record straight for some of them, and, based on personal inspection of multiple copies, to discuss currently unrecognized aspects about the existence of exceptional colored variant editions. This ends in a proposal for how this work could be used even more effectively in its upcoming third century of existence. Last but not least and despite the controversies related to its bibliographical aspects, one fact remains an unchallenged reality: *Anatome Testudinis Europaeae*, even 200 years after its first publication, still ranks very high among the most detailed and accurate anatomical works on a single chelonian—and for that matter reptilian—species ever produced and has lost absolutely none of its value for modern-day science.

KEYWORDS

Anatome Testudinis Europaeae, bibliography, *Emys orbicularis*, Friedrich Lehmann, history of science, Ludwig Heinrich Bojanus, Testudines, turtle anatomy

1 | INTRODUCTION

The history of comparative anatomy undoubtedly dates back much further than that of human anatomy. If we accept the publication of the *Fabrica* by Vesalius (1514–1564) in 1543 as the starting point of the latter in a

modern sense, it should not be forgotten that it was among his intentions to overcome Galenic views, which were derived from animal dissections. Still, dedicated publications on comparative anatomy are few and far between up until the second half of the 17th century and the “convergent” rise of the famous groups of scholars in

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Amsterdam, Paris and Copenhagen. With more and more interesting works subsequently added to the shelves, the 19th century eventually can be called the golden age of comparative anatomy, during which masterminds such as Georges Cuvier (1769–1832), Heinrich Rathke (1793–1860), Johannes Müller (1801–1858), and Richard Owen (1804–1892) took center stage. Their contributions remain unforgotten, either via eponymous structures such as the Cuvierian duct, Rathke's pouch, the Müllerian duct, or through important advancements such as for instance the formalization of the concept of homology.

Entire volumes, although valuable and more than worth reading (e.g., Cole, 1944; Coleman, 1979; Mocek, 1998; Nyhart, 1995), so far have failed to provide a comprehensive history of comparative anatomy. The list of unsung heroes is endless and there are numerous scientists of the past that made exceptional contributions, but still fell into oblivion. To stay in the theme of this special issue on turtles, these contributions may have been isolated, like those of Robert Townson (1762–1827), who was undoubtedly the first to understand the ventilatory mechanism of turtles—more than one and a half centuries before people eventually began to “swallow” a mechanism that is powered by the hypaxonic musculature of the flanks (Townson, 1799, see figure 2.1 in Perry, Lambertz, & Schmitz, 2019, and note that the alternative but prevailing scenario was that the air actually was swallowed into the lungs). Other protagonists, on the other hand, may not have been forgotten, but rather almost have grown a mythology around them. Bojanus definitely is one of these latter characters. There is no—at least there should be no—single person working in the field of chelonian anatomy that has never heard of Bojanus, and most even will have cited his major contribution to the anatomy of the European pond turtle, probably even more than once. It is a relatively safe bet though that only a small fraction of at least contemporary scientists have ever laid their hands on the original publication of Bojanus, given that it is rightly considered one of the exceptional rarities of zootomical literature. Fortunately, efforts such as the *Biodiversity Heritage Library* make digitized copies readily available,¹ and there also exist, of course, several reprints (see also below).

However, in light of the well-recognized importance of Bojanus' contribution to chelonian anatomy, it is surprising to note how little, upon closer examination, is actually known about this publication. It begins with rumors about the original edition size that eventually became treated as fact, and ends with the discovery of an overlooked gem that makes an already invaluable publication even better.



FIGURE 1 Portrait of Ludwig Heinrich Bojanus. Stipple engraving executed in Darmstadt in 1809 by Friedrich Lehmann. This portrait sets the minimum date when Bojanus must have first met the engraver of his later *opus magnum*. Coll. M.L.

2 | A BRIEF BIOGRAPHICAL SKETCH OF THE PROTAGONIST

Several older (Adamowicz, 1839; Eichwald, 1835; Fedorowicz, 1958; Otto, 1831) and also more recent (e.g., Daszkiewicz, 2004; Daszkiewicz & Edel, 2014, 2018; Edel, 2014; Edel & Daszkiewicz, 2015, 2016) pieces have already been devoted to Ludwig Heinrich Bojanus (Figure 1) and his legacy, but it seems in order to repeat some essentials of his life here, and particularly give reference to the most relevant sources and summaries. There is, for instance, an exceptional genealogy of him that dates back into the late 14th century due to the fact that his younger sister Louise Friederike (1789–1880) married into the famous Merck dynasty from Darmstadt

(Germany) (Euler, 1966). Ludwig Heinrich was born in Buchsweiler (Bouxwiller, today France) on July 16, 1776 as the second child and oldest son of Johann Jakob Bojanus (1740–1820) and Marie Eleonore Magdalene Kromayer. He married Wilhelmine Roose (1777–1826) in Vienna in 1803, and had no children of his own, but a stepdaughter called Amelie (1819–1893, see Edel, 2014 for further details on her). He obtained his doctorate in 1797 and eventually went to Vilnius (today Lithuania) in 1806 taking over the chair for veterinary science that was offered to him in 1804. He additionally became professor for comparative anatomy there in 1814, and Vilnius was the place where his major scientific work was done.

The father of our protagonist was a public servant (see Euler, 1966 for the details on the offices held), and this was not only of critical influence to Bojanus' career, but potentially even the prerequisite for the present article. When the French revolutionary troops seized Alsace, the Bojanus family was forced to flee to Darmstadt. Darmstadt first was home to the landgrave and subsequently the grand duke, whose scholarship facilitated our protagonist's academic education, while he was a young refugee. Bojanus' continued thankfulness for this, potentially revived after having to flee again, this time from the Napoleonic troops to St. Petersburg in 1812, led to him sending the grand duke the remarkable copy of his *opus magnum* on chelonian anatomy that will be discussed below.

The references cited above provide access to the life and non-chelonian scientific activities of Bojanus, but here we already come to his end, which was rather tragic and beginning around 1822 dictated by severe illness. By the year 1825, he even ceased publishing under his own name, contributing several, mostly short pieces to the *Isis von Oken* anonymously. Among those is one comparably long one even of importance to chelonian anatomy, related to a discussion of the bones and muscles of the shoulder girdle (Bojanus, 1827). The actual article is signed “November 1826. Anonymus,” but note that the index for the entire volume 20 of the *Isis* indeed adds Bojanus' name in parentheses to this. Bojanus died in early April 1827, the article appeared in the April issue of the *Isis* for this year, and the index appeared at best with the last issue, consequently probably at the end of 1827. It somehow can be speculated that when the article went into typesetting, Lorenz Oken (1779–1851) still honored the agreement he as editor of the journal apparently must have had with Bojanus and did not reveal his identity, but that once he was dead felt the urge to indicate the last lines ever written by this great anatomist.

A particular blow near the end of his life was when Bojanus' wife died and we have an almost immediate record of this. Karl Friedrich Burdach (1776–1846) was visiting him at this time and he described his encounter

in a letter to Karl Ernst von Baer (1792–1876) on June 8, 1826, 2 weeks after his visit, as follows: “[...] ich fand die Frau von Bojanus auf der Bahre, und so den armen kranken seiner treuesten und liebevollsten Pflegerin beraubt! Es war ein herzerreißender Anblick. Ich blieb einige Tage in Darmstadt, und nahm dann [von] dem trefflichen Bojanus für diese Welt Abschied!”² Burdach recalled and further elaborated on this visit also in his posthumously published autobiography (Burdach, 1848, pp. 356–357): “Bojanus war 1824 auf der Reise nach dem Bade einige Tage in Königsberg gewesen, leider in einem betrübenden Zustande, mit Hohlgeschwüren am Rücken, die in Folge vernachlässigter rheumatischer Entzündungen entstanden waren und offenbar mit der Brusthöhle in Verbindung standen. Er lebte nun in Darmstadt, und da ich ihm von meiner Reise geschrieben hatte, bat er mich auf das Dringendste, ihn zu besuchen. Ich that es, aber fand ihn in der hilflosesten Lage; seine Frau, die mit einer dem Wundarzte unerreichbaren Zartheit seine Wunden allein behandelt, gereinigt und verbunden, ihn auf das Sorgsamste selbst gepflegt, und Tag und Nacht mit einer Hingebung, die nur der treuesten Liebe möglich ist, über ihm gewacht hatte, war am Tage vor meiner Ankunft gestorben; in der Erwartung, daß sie mit mir einige heitere Stunden verleben würden, hatte sie schon Alles zu meiner Aufnahme vorbereitet. Mich jammerte der theure Freund, der, selbst nur noch wenige Schritte vom Grabe entfernt, seiner Trösterin beraubt worden war,—ich dachte nicht daran, ob es nicht ein ungleich herberes Loos ist, ohne gleiche Aussicht auf ein nahes Ende die Gefährtin seines Lebens zu verlieren.”³ Burdach later quotes what are allegedly Bojanus' own prophetic words: “Wir werden uns nicht wieder sehen. Wenn man mich nach meinem Tode angreifen sollte, so retten Sie meine Ehre! Ich habe Manchen hart getadelt, aber nur Liebe zur Wissenschaft hat mich dabei geleitet.”⁴ Indeed, less than a year later, Bojanus passed away on April 2, 1827. May this brief biographical sketch now be ended identically to the one by his former student Adamowicz (1839): peace to his ashes!

3 | BOJANUS' OPUS MAGNUM ON CHELONIAN ANATOMY

Anatome Testudinis Europaeae was published in a folio format in two installments in 1819 and 1821 (Figure 2). The first installment comprised a preliminary title page (dated 1819), a preface (paginated [III]–VI), explanations of the plates I–XVII (paginated [1]–74), and 18 plates (denominated I–XVII and “ad XVI”). The second installment contained the half-title page, the final title page (dated 1819–1821), another preface (two unpaginated

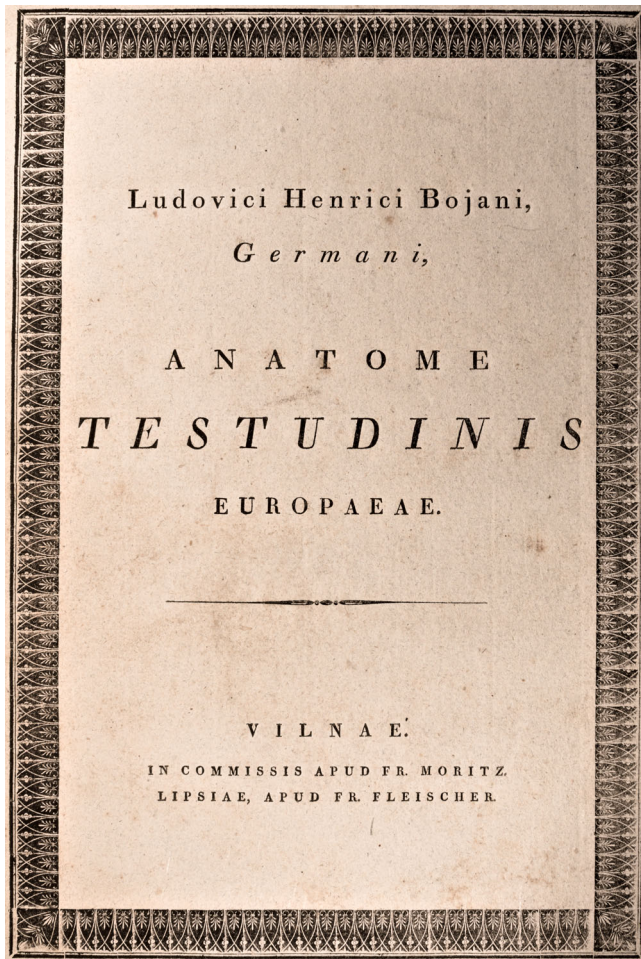


FIGURE 2 Original wrapper of one of the installments of *Anatomie Testudinis Europaeae*. This particular wrapper was bound as a title page to an atlas-only volume containing the 40 plates but no text. An unbound and complete first installment of 1819 (text plus plates) was available for sale in the antiquarian book trade a couple of years ago and had an identical wrapper. A verified second-installment wrapper has not been seen as of yet. Coll. M.L

pages), explanations of the remaining plates XVIII-XXX as well as the “Parergon” (paginated [75]-178), one errata sheet, and 22 plates (denominated XVIII-XXX, “ad XVIII-XXII,” “ad XXVI-XXVIII,” “Parergon”). For further information on the Parergon see also Daszkiewicz and Edel (2018). The work was printed at the author’s expenses by Józef Zawadzki (1781–1838) and commissioned by Moritz and Fleischhauer in Leipzig (Germany).

There are 31 different plates showing the complete anatomy of the European pond turtle and 9 that are repetitions in outline (the “ad” plates). The anatomical outline plates containing the lettering were engraved by Bojanus himself, whereas the artistic ones were executed by Friedrich Lehmann (1787-?), based on Bojanus’ drawings. Bojanus met Lehmann at least as early as 1809, when the latter engraved the portrait of the former here

reproduced as Figure 1, as well as one of Bojanus’ friends, the explorer Georg Heinrich von Langsdorff (1774–1852), also based on a drawing by Bojanus. Information on Lehmann is scarce, and not even the date of his death is certainly known. It is sometimes given as early to mid-1830s, but this seems unlikely as we have reports about his career from exactly this time period that as a matter of fact even relate to the late Bojanus. In a letter dated May 19, 1828, Karl Eduard Eichwald (1795–1876), who was the successor of Bojanus for comparative anatomy and zoology in Vilnius, wrote to von Baer: “Bojanus Kupferstecher Lehmann ist noch immer hier, aber verdamt theuer; er verlangt für eine Platte in klein Folio (wie bei Spix Brasil.), auf der eine grosse oder 2 kleine Schlangen Eidechs usw. gestochen werden soll, 100 R. Silb.!”⁵ Karl Ernst von Baer in turn wrote later to Christian Friedrich Reusch (1778–1848), who was the curator of the university in Königsberg, a letter in support of hiring Lehmann as engraver at his then place of work on December 9, 1832: “Herr Lehmann hat die Kupfer zu Bojanus anatomie Testudinis europaeae gestochen und diese Kupfer gelten bei allen Naturforschern für meisterhaft und haben in Frankreich und England nicht weniger Anerkennung gefunden als in Deutschland. Ueberhaupt hat Herr Lehmann unter Bojanus Anleitung, der selbst ein ganz vorzüglicher Zeichner war[,] sich für dieses Fach so auszubilden Gelegenheit gehabt, daß er einem [Christian] Koeck [(1758-1818/1825)] und andern berühmten naturhistorischen Kupferstechern nicht nachstehen dürfte.”⁶ Based on several of the works Lehmann illustrated while in Königsberg, such as those of Rathke (1837, 1839, 1841, 1842), we can speculate that he most likely lived at least up until 1840/1841 (the preface to Rathke, 1842 is signed April 15, 1841).

Returning to *Anatomie Testudinis Europaeae*, the work could only be accomplished through a considerable amount of time spent on dissections. Adam Ferdynand Adamowicz (1802–1881), a student of Bojanus (see also below), tells us in his biographical memoir of Bojanus (Adamowicz, 1839, pp. 169–170): “mit beispiellosem Fleiße arbeitete Bojanus an seinem Werke, so daß er dasselbe schon in fünf Jahren ganz vollendete, wobei er 500 Schildkröten eigenhändig zergliederte.”⁷

After the shutdown of the university in 1832, most of the zoological and comparative anatomical collections from Vilnius were transferred to Kiev in 1842 (Skujinė, Skėraitytė, & Kuznecova, 2019), but Alexander Walther (1817–1889) wrote to Karl Ernst von Baer from Kiev on May 9, 1845 that “Bojanus [...] Praeparate ins Ausland gerathen sind.”⁸ Which preparations and which country that might have been unfortunately remains shrouded in mystery, and there is, as of yet, no trace of these collections. An inquiry in Kiev was prevented by the current

war. However, Walther continues in his letter and specifically refers to the turtles: “Bojanus Vermächtniß, die Schildkröten sind hier in gehöriger Menge.”⁹ Again, the fate of these specimens currently cannot be ascertained.

One may be inclined to think that the publication of *Anatome Testudinis Europaeae* was a success for Bojanus, but the contrary apparently was the case. This, however, was not due to any shortcomings in the publication, which was highly welcomed by his contemporary peers. It just did not sell well. Nonetheless, some of the depictions from Bojanus were copied for the major early illustrated works on comparative anatomy, such as Wagner (1841) or Carus and d’Alton (1853), and the recycling of his illustrations continues up until the present day (e.g., Perry et al., 2019).

While so far it has not been possible to trace the quote Otto (1831) and Adamowicz (1839) put into the mouth of the great Cuvier (“Je le trouve admirable: aucun animal ne sera mieux connu que celui-là,”¹⁰ see also Edel, 2014), we can definitely quote the great Karl Ernst von Baer,

who called it, in a letter to Heinrich Rathke dated March 6, 1822, a “über alles Lob erhabene Werk über die Schildkröten.”¹¹ In this context, it seems also justified to mention a brief entry in the *Litterarischer Anzeiger* for the year 1820 (column 407, see also below). It was added anonymously by the publisher, but may very well have been written by Oken: “Das Werk loben, hieße Mißtrauen in die Kenntnis der naturhist. und anatom. Welt setzen, als wüßte sie nicht, mit welchen Kenntnissen, Ansichten, mit welcher Genauigkeit, mit welchem Geschick Bojanus in der vergleichenden Anatomie arbeitet.”¹² Now even more than 200 years after this was originally published, it still seems like an appropriate judgment.

4 | NOTES ON THE ORIGINAL PRINT RUN

As already indicated in the introduction, the original edition size is far away from being a known fact, although it

W. Junk, Verlag f. Naturwissenschaften Scientific Publisher Berlin, N.W. 5.

Soeben erschienen: Just published:

Facsimile-Edition. Ed. W. Junk. No. II:

Bojanus

Anatome Testudinis Europaeae.


 A black and white illustration of a scholar in a long robe sitting at a desk in a study. The desk is cluttered with books, a lamp, and other items. In the background, there are shelves with more books and a window with a view of a building.

[Wilna 1819–21]. Folio. 190 paginae et 40 tabulae. M. 125 (= 6 £ 2 sh. = Doll. 29,50)

Das Buch von Bojanus, dessen Original-Ausgabe in kaum 80 Exemplaren hergestellt wurde, ist wohl das seltenste zoologische Werk. Im Laufe von 20 Jahren meiner ausschliesslich dem naturwissenschaftlichen Antiquariat gewidmeten Praxis ist mir nur ein einziges vollständiges Exemplar vorgekommen. Der Preis eines Originals ist bis 400 Mark gestiegen. Dabei ist das Werk von Bojanus für die vergleichende Anatomie heute noch unentbehrlich, da es das einzige ausführliche und (vorzüglich) illustrierte Buch über die Anatomie der Schildkröte ist.

Der Nachdruck ist mit den neuesten Mitteln der Reproduktionstechnik auf chemischem und photographischem Wege vorzüglich hergestellt und, um jedem Exemplar gleiche Güte zu wahren, nur in ganz geringer Zahl vervielfältigt worden.

The work by Bojanus, published in hardly 80 copies, is perhaps the rarest zoological book. During 20 years' occupation with scientific literature I have seen only one complete copy. The price of the work has risen to nearly twenty Pounds. — But the book is indispensable for the student of comparative anatomy being the only one treating at large and illustrating — in a superior manner — the Anatomy of the Turtle.

My chemical and photographic Reprint is made in an excellent way and — to ensure the same quality to every copy — only in a very limited edition which is nearly wholly subscribed.

FIGURE 3 Advertisement of Wilhelm Junk from 1902 for the facsimile edition of *Anatome Testudinis Europaeae*. Note that this most likely is the source for allegedly 80 copies of the original edition

has been treated differently in the past. The 1970 reprint by the *Society for the Study of Amphibians and Reptiles* (SSAR) for instance plainly states that the original print run was 80 copies, that Junk (see below) made 100 facsimile copies in 1902, and that this SSAR edition was limited to 300 copies (from which a limited edition bootleg version was prepared in the 1990s). It is beyond any question that the SSAR knew how many copies they printed, and it is also confirmed by several subsequent Junk catalogs that his facsimile edition indeed was printed in a run of 100 copies. But where did the number of 80 copies of the original edition come from?

It turns out that this indeed could only be traced back to the original advertisement of the Junk facsimile reprint (Figure 3). Since the advertisement reproduced here is bilingual, it seems only justified to highlight crucial words: “published in hardly 80 copies.” This is nothing more than a gut-feeling guess, given that the great Wilhelm Junk (1866–1942) “[d]uring 20 years’ occupation with scientific literature” had “seen only one complete copy”! Statistically speaking, this estimate very well may not be too far off from the truth, but there is no credible contemporary evidence that would justify this as an exact number. The print run undoubtedly was pretty low and subscriptions apparently were not working out well. The *Isis von Oken* again is of great value in his context, and provides us with the only reliable information on the number of copies that had been sold at a given point (which of course does not necessarily correlate with the number of copies printed). At any rate, in the August issue for 1822 (column 886) it is stated that: “Bedenkt man nun, daß die Herstellung dieses Werks, welches in seinen zwey Theilen 40 Kupfert. in Fol. enthält, an 5000 Thl. kostet, daß diese Kosten ein Privatmann den Wissenschaften zum Opfer gebracht hat (denn wir wissen, daß noch nicht 30 Exempl. gekauft sind).”¹³ This was about 1 year after this masterpiece had been completed. It seems worthwhile to stress that this was after it had been completed, not simply meaning that only hardly 30 copies of the first installment of 1819 had been sold. The first installment was already known to the community for 2 years before the second installment appeared (see below, it was present in the major cities at the time), and yet another year later, the total sale still was not even reaching 30 copies. This is a ridiculously low sale rate for one of the greatest pieces ever published in the field of comparative anatomy, and may explain why it is of exceptional rarity to come across a copy on the rare book market. Junk may have been quite right, when he stated in his advertisement of the facsimile reprint that this is “perhaps the rarest zoological book.”

The indicated and frequently cited “original print run” of 80 copies, however, must be considered fictional. Unless some contemporary evidence comes to light,

being it actual contracts and/or receipts, or a written report by Bojanus or one his peers/students, the size of the edition most likely will remain shrouded in mystery forever. One way to determine at least a minimum number of printed copies would be a census of the surviving copies. Such an endeavor has begun, but unfortunately was impeded due to the SARS-CoV-2 pandemic.

5 | VARIANT EDITIONS OF ANATOME TESTUDINIS EUROPAEAE

Another conundrum about Bojanus’ *opus magnum* came to light when Kraig Adler published a revised edition of the first volume of his seminal *Contributions to the History of Herpetology*, which was originally published commemorating the *First World Congress of Herpetology* in Canterbury, UK in 1989 (Adler, 2014). This revised edition contains as a new appendix a series of colored plates, one of which was reproduced from an apparently colored copy of Bojanus’ *opus magnum* in a private collection. I began my scientific endeavors by tackling a problem related to chelonian anatomy (Lambertz, Böhme, & Perry, 2010—obviously citing Bojanus) and still continue to do so, and was simply mind-blown once I noticed this and personally inspected that very copy as soon as possible. This remarkable copy undoubtedly shows contemporary coloration done by hand that considerably enhances the original purpose of the work: being *the* anatomical reference guide for the European pond turtle. Although the contemporaneity of the coloring seemed unquestionable, it could not be ruled out that this was “just” the work of a working anatomist that simply figured it would make much more sense to, for instance, color the blood vessels so that at first look it is obvious whether you look at an artery or vein. Even though the job was pretty accurately done, it could not guarantee that this still was nothing more than an exceptionally appealing working-copy of a skilled scholar, who forever may remain anonymous. This consequently led to additional research related to the originality of a colored variant of *Anatome Testudinis Europaeae*.

The first hint about the actual existence of variant editions of Bojanus’ *opus magnum* that was discovered during the activities that now led to the present article actually hardly can be called a hint, given that it apparently was written and published indeed by Bojanus himself. The truly astounding fact is that this has been completely unnoticed previously! As already mentioned, Bojanus was a frequent contributor to the *Isis von Oken*, and as also already mentioned, part of the concept of the *Isis* was not only to provide original research, but also to

provide information about newly published works. Along the already aforementioned advertising notes on *Anatome Testudinis Europaeae* directly within the pages of the *Isis*, there are additional ones that can be considered quite intimately related to this journal as well. The *Isis* was published by Brockhaus in Leipzig. Beginning in 1796, though with an irregular periodicity, Brockhaus added a yearly *Litterarischer Anzeiger* to several of his publications, particularly his periodicals. The *Anzeiger* was published in several consecutive fascicules, and these were regularly bound together with, for instance, the *Isis*. *Litterarischer Anzeiger* could quite accurately and simultaneously self-explanatorily be translated with *Literary Gazette*. The volume for the year 1819 for instance contains on p. 180 a reprint of the entire preface that occupies pp. [III]-VI of Bojanus turtle anatomy and is entitled “*Lectori salutem!*”¹⁴ in *Anatome Testudinis Europaeae*. The advertisement is only entitled with the

publication's authorship and title as found on the original work's wrapper: “Ludovici Henrici Bojani, Germani, Anatome Testudinis Europaeae.” However, of much larger relevance is an entry on columns 406–407 of the *Litterarischer Anzeiger* for the year 1820. Please note that there is an erroneous pagination of that volume, which as a matter of fact is a frequent occurrence for this publication. There are actually two sheets bearing the indication of columns 406–407 for the 1820 volume. The advertisement for *Anatome Testudinis Europaeae* is found on the first one, printed on signature number 25. Signature number 25 ends with column 409, but signature number 26 then begins again with column 401, consequently including again the columns in question here. At any rate, Bojanus himself—although only signed by “B.,” there is no credible reason to doubt, based on the way the entire entry is written, that this can only refer to Bojanus himself—finally opens the subscription to *Anatome*

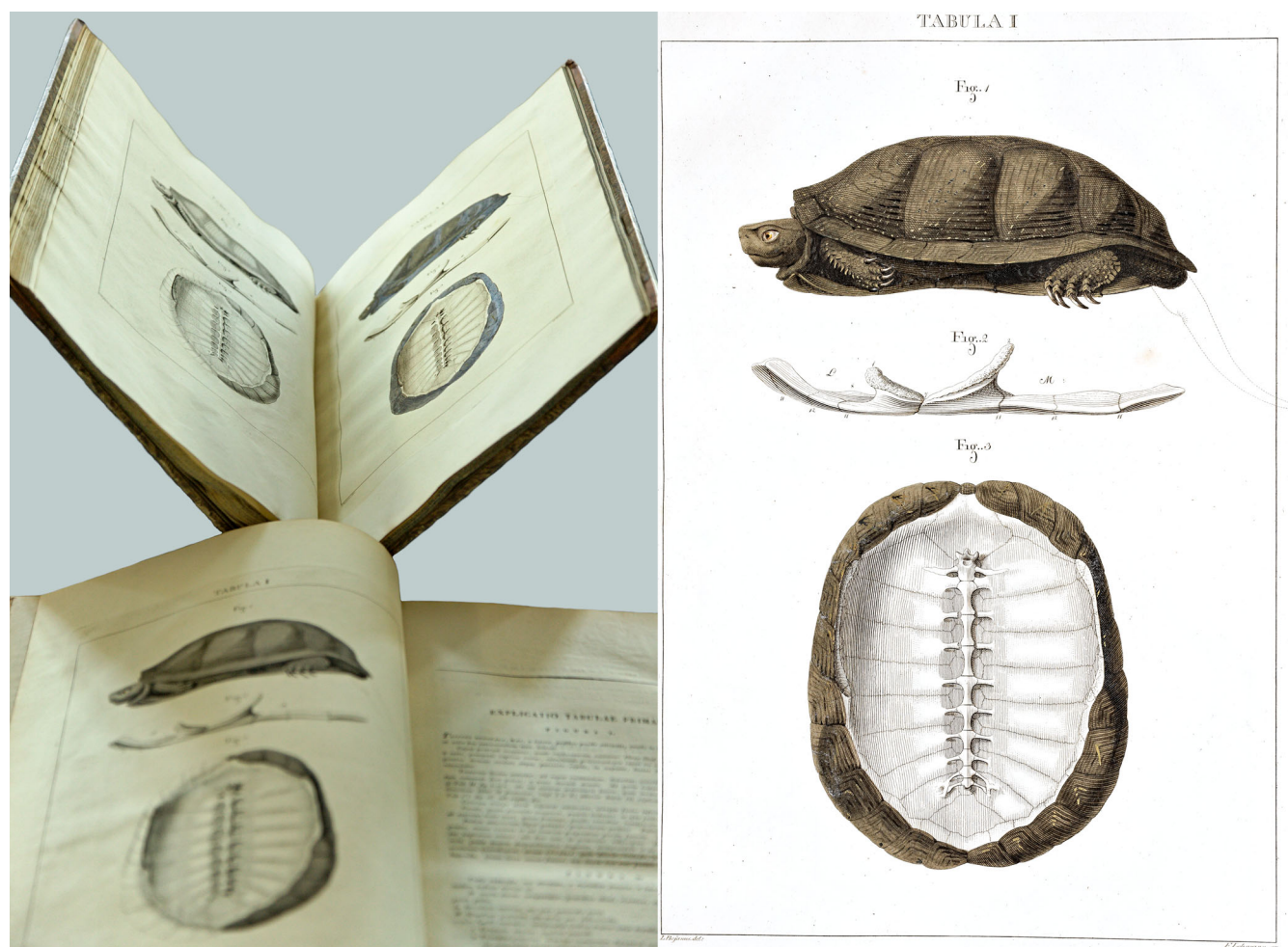


FIGURE 4 The two so far only known (partially) colored copies of *Anatome Testudinis Europaeae*. Compare the additional uncolored plate I (left) and the more extensive coloring (right, and far right) of the presentation copy (above, ULB Darmstadt gr. fol. 3/20 Bd. 1) to the other known colored copy (below, Coll. Thomas Schöttler, Bad Schwalbach, Germany). The remaining partial coloration is basically identical between both copies, just with an overall brighter (fresher) appearance in the Darmstadt copy

Testudinis Europaeae on column 406. He writes “Auf das Werk *Anatome testud. europ.* Auct. Bojanus. Vilnae 1819. wurde früher keine Subscription eröffnet, ehe die

Kenner im Stande waren ein Urtheil darüber zu fällen. Nun aber sind Exempl. desselben nach Berlin, Darmstadt, Göttingen, Halle, Hamburg, Heidelberg, Jena,

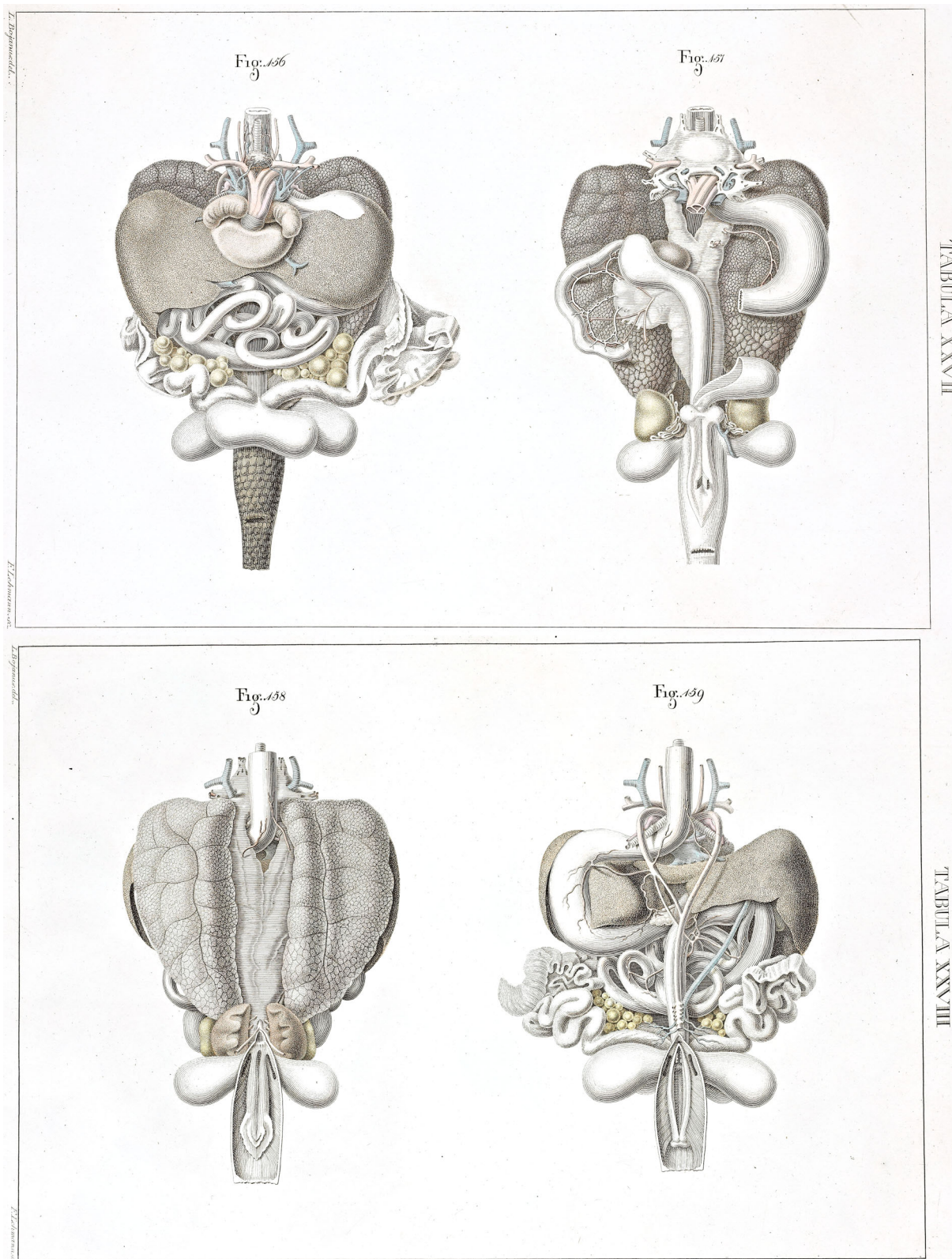


FIGURE 5 The visceral organs of the European pond turtle in the (partially) colored presentation copy. ULB Darmstadt (gr. fol. 3/20 Bd. 2)

Leipzig, München, Weimar, Wien, Würzburg; auch nach Frankreich, England, und Italien versandt. Man hat also ziemlich überall die Probe unter den Augen.”¹⁵ He then lists the basic contents of the work and as a matter of fact provides specifications on different variants of subscription: “Von diesem Werke nun, erscheinen dreierlei Ausgaben zu folgenden Subscriptionspreisen für die 1te Lieferung. Eine Prachtausgabe, Text fein Velin. Kupfer ill. zu 10 Duc. holl.—Mittelausgabe, Text gering Velin zu 18 Rthlr.—geringe Ausgabe, Text Druckpapier zu 16 Rthlr. Die Kupfer zu beiden letzten Ausg. fein Velin. Es wird von der Zahl der Subscribenten abhängen, ob der Preis der folgenden Lieferung geringer sein kann; doch soll er, verhältnismäßig, nicht höher seyn, als der der 1ten Lieferung.”¹⁶ Similarly, although not mentioning colored copies, Brunet (1834, p. 185) also indicates that the work was available for purchase in three different qualities of paper.

The entry in the *Litterarischer Anzeiger*, however, is unambiguous evidence that Bojanus at least was intending to issue colored copies of his work, and consequently provides at the very least circumstantial evidence that the copy that has been partially reproduced by Adler (2014) indeed could be a genuine colored copy. But were there more?

But while at it, another part of this advertisement written by Bojanus deserves being quoted here: “Der ausführliche Commentar folgt nach Ausgabe der Tafeln.”¹⁷ This commentary volume supplementing the two installments of plates unfortunately was never published, most likely due to the degrading health condition of Bojanus during the 1820s—and maybe even at least partly due to the disappointment of the shortage of subscriptions and a resulting simple despair. The anonymously published treatise on the shoulder girdle mentioned above (Bojanus, 1827) is the only piece that comes close to any such commentary effort.

6 | THE DARMSTADT COPY

The only meaningful next step to locate additional colored copies was to read every tiny bit that has ever been published by and about Bojanus. It of course remains shrouded in mystery whether this goal was actually accomplished, but it nevertheless led to another intriguing piece of evidence. Surprisingly though, this again was found not hidden in the literature, but rather in by far the most detailed biography of Bojanus ever published. It was a bit more than a decade after Bojanus' death, so in a historical perspective basically still contemporarily, when Adam Adamowicz, whose own dissertation was at least approved if not even directed by Bojanus, published it (Adamowicz, 1839). On p. 170, it contains the crucial sentence: “In dankbarer

Anerkennung dessen, was für ihn seiner Jugend der Groß-Herzog von Hessen-Darmstadt gethan, überschickte Bojanus dem dortigen Museaeo ein Exemplar seines Werkes mit kolorirten Kupfern, und ein äußerst vollkommen verfertigtes Skelet einer großen Schildkröte (*Emys europaea*).”¹⁸

Sure enough, the *Universitäts- und Landesbibliothek Darmstadt* (Germany) preserves a copy of Bojanus' *Anatome Testudinis Europaeae* (Figure 4). This copy is registered under shelf number “gr. fol. 3/20 Bd. 1 & Bd. 2” and is bound in two volumes, according to the original publication scheme. The original wrappers are not preserved and there is no dedication on it. Most likely there was an accompanying letter by Bojanus, the existence of which remains unknown as of now. However, it is a (partially) colored copy indeed (Figure 5), and it principally agrees perfectly with the coloring of the copy partially reproduced by Adler (2014)!

7 | OUTLOOK

Anatome Testudinis Europaeae maintains its place of high rank among works on chelonian anatomy up to the present day, but even the reprints are rather hard to find these days. The unmatched contents of this work still make it an indispensable anatomical reference guide that will be frequented by numerous scholars for decades to come. The discovery of the exceptionally preserved (partially) colored Darmstadt copy consequently raised the idea for a new edition. Given that, as already mentioned in the outset, digitized copies are readily available online, such a new edition would need some justification, being not just for bibliophilic purposes. Obviously, the original work is written in Latin. And although the Latin is simple, because it provides nothing more than the explanation of the plates, not everybody today is able to read it easily. During the *7th Turtle Evolution Symposium* I therefore made the proposal to produce a first English edition. Using high-resolution scans of the Darmstadt copy to illustrate it, the English translations will make the work much more accessible, because the current potential Latin-barrier will be eliminated. Several colleagues agreed to collaborate for this project and the preparations have begun. As a first step, a complete digitization of the Darmstadt copy is now freely accessible online.¹⁹

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ENDNOTES

- ¹ A digitized copy of Bojanus' *opus magnum* can be accessed at: <https://www.biodiversitylibrary.org/bibliography/3878>
- ² *Universitätsbibliothek Gießen*, Germany. Shelfmark: Nachl. Baer, Briefe 4, Bl. 105–106. Translates as: I found the wife of Bojanus on the stretcher, and so the poor sick one was deprived of his most faithful and loving caretaker! It was a heartbreaking sight. I stayed a few days in Darmstadt, and then said farewell [to] the distinguished Bojanus for this world!
- ³ Translates as: Bojanus had been in Königsberg [Kaliningrad, today Russia] for a few days in 1824 on his journey to [Schlangenbad, Hesse], unfortunately in a distressing condition, with ulcerated cavities on his back, which had developed as a result of neglected rheumatic inflammations and were apparently connected with the chest cavity. He was now living in Darmstadt, and since I had written to him about my trip, he asked me most urgently to visit him. I did so, but found him in the most helpless situation; his wife, who had treated, cleaned, and bandaged his wounds alone with a tenderness unattainable by a surgeon, had nursed him most carefully herself, and had watched over him day and night with a devotion possible only to the most faithful love, had died the day before my arrival; expecting that they would spend a few cheerful hours with me, she had already prepared everything for my reception. I was saddened by the dear friend who, even himself only a few steps away from the grave, had been deprived of his comforter,—I did not think whether it is not a much harsher fate to lose the companion of one's life without the same prospect of a near end.
- ⁴ Translates as: We will not see each other again. If I should be attacked after my death, save my honor! I have rebuked some harshly, but only the love for science has guided me in this.
- ⁵ *Universitätsbibliothek Gießen*, Germany. Shelfmark: Nachl. Baer, Briefe 6, Bl. 123–124. Translates as: Bojanus' engraver Lehmann is still here, but verdamt expensive; he demands for a plate in small folio (as in Spix Brasil.), on which a large or 2 small snakes lizard etc. is to be engraved, 100 R. Silb.!
- ⁶ *Universitätsbibliothek Gießen*, Germany. Shelfmark: Nachl. Baer, Schriften 41, Bl. 1–3. Translates as: Mister Lehmann has engraved the copperplates to Bojanus anatome Testudinis europaeae and these copperplates are considered masterly by all naturalists and have found no less recognition in France and England than in Germany. In general, Mr. Lehmann has had the opportunity to train for this subject under the guidance of Bojanus, who himself was a very excellent illustrator, so that he should not be inferior to a [Christian] Koeck [(1758–1818/1825)] and other famous natural history engravers.
- ⁷ Translates as: Bojanus worked on his opus with unprecedented diligence, so that he completed it in 5 years, dissecting 500 turtles with his own hands.
- ⁸ *Universitätsbibliothek Gießen*, Germany. Shelfmark: Nachl. Baer, Briefe 20, Bl. 362–365. Translates as: Bojanus' [...] preparations have ended up in a foreign country.
- ⁹ Translates as: Bojanus' legacy, the turtles are here in proper quantity.
- ¹⁰ Translates as: I find it admirable: no animal will be better known than this one.
- ¹¹ *Universitätsbibliothek Gießen*, Germany. Shelfmark: Nachl. Baer, Briefe 25, Bl. 232–235. Translates as: a work on turtles above all praise.
- ¹² Translates as: To praise the work would be to place distrust in the knowledge of the natural historical and anatomical world, as if it did not know with what knowledge, [and] views, with what accuracy, with what skill Bojanus works in [the field of] comparative anatomy.
- ¹³ Translates as: Considering now that the production of this work, which contains in its two parts 40 copper plates in folio, costs about 5,000 Thaler, that a private man has sacrificed these costs to the sciences (because we know that not yet 30 copies have been bought).
- ¹⁴ Translates as: hail to the reader!
- ¹⁵ Translates as: In the past, no subscription was opened for the work *Anatome testud. Europ. Auct. Bojanus. Vilnae 1819*. before the scholars were able to pass judgment on it. Now, however, copies have been sent to Berlin, Darmstadt, Göttingen, Halle, Hamburg, Heidelberg, Jena, Leipzig, Munich, Weimar, Vienna, Würzburg; also to France, England, and Italy. Thus, a sample is under the eyes of the public pretty much everywhere.
- ¹⁶ Translates as: Three editions of this work are now published at the following subscription prices for the first installment. A splendid edition, text in fine velin. Coppers illuminated at 10 Dutch ducats.—Middle edition, text light velin at 18 Reichsthaler.—Low edition, text printing paper at 16 Reichsthaler. The coppers to both last editions fine velin. It will depend on the number of subscribers whether the price of the following installment can be lower; however, proportionately, it should not be higher than that of the first installment.
- ¹⁷ Translates as: The detailed commentary follows after the plates have been issued.
- ¹⁸ Translates as: In grateful recognition of what the Grand Duke of Hesse-Darmstadt had done for him in his youth, Bojanus sent to the museum there a copy of his work with colored engravings, and an extremely perfectly finished skeleton of a large turtle (*Emys europaea*).
- ¹⁹ <http://tudigit.ulb.tu-darmstadt.de/show/gr-Fol-3-20>

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