

## The sources of Gessner's pictures for the *Historia animalium*

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### Summary

Gessner's sources for the pictures in his *Historia animalium* were varied in kind and in quality. This should be understood within the larger context of the *Historia animalium* in which Gessner sought to collect everything ever written about animals, an enterprise that could not be completed by a single individual. Just as Gessner did not distil or reduce similar texts but retained these as well as contradictory or false textual descriptions as part of a repository of knowledge, so also Gessner included several pictures of the same animal, false or badly drawn ones, and juxtaposed erroneous and 'true' images. The attribution of images to witnesses and correspondences also reflects Gessner's strategy to credit those who drew his attention to new information first. The sources of Gessner's images thus indicate how his visual world encompassed more than the strictly self-observable, and a pictorial practice that was intimately connected with textual traditions and intellectual networks.

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### 1. Introduction

The sixteenth century saw the publication of illustrated printed books on the topics of plants, anatomy, and animals. Though such publications may constitute a fraction of illustrated books printed at the time, they were nevertheless important landmarks in the scholarly and scientific study of nature in the period.<sup>1</sup> It is tempting to expect pictures in printed books about nature to have something to do with the descriptive and observational character of the newly emerging disciplines such as botany, anatomy and zoology. Indeed recent studies confirm how visualisations in the form of drawings, atlases or wax models have been central to the practice,

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<sup>1</sup> For the rich variety of illustrated printed books from the sixteenth century, see for example Ruth Mortimer, *Harvard College Library; Department of Printing and Graphic Arts: Catalogue of Books and Manuscripts; French 16th Century Books*, 2 vols (Cambridge: Belknap Press, 1964) and *Harvard College Library; Department of Printing and Graphic Arts: Catalogue of Books and Manuscripts; Italian 16th Century Books*, 2 vols (Cambridge: Belknap Press, 1974).

authority and identity of scientific investigations.<sup>2</sup> Yet, the connection between observational, descriptive and pictorial practices in the development and production of scientific knowledge is far from simple or transparent.<sup>3</sup> Conrad Gessner's monumental *Historia animalium*, published between 1551 and 1558, may on first inspection appear to hail the dawn of a visual era in the history of zoology.<sup>4</sup> I wish to argue in this paper, however, that the variety of the sources (declared and undeclared) of the images in the *Historia animalium* would suggest that it would be rash to take Gessner's images as a product of observation alone. Indeed, images in printed books in the past could function in a variety of ways, and this was certainly the case for Gessner's *Historia animalium*.

The *Historia animalium* was a product of a Renaissance scholar, philologist and physician.<sup>5</sup> Following Aristotle's classification, the first volume dealt with viviparous quadrupeds; the second volume with oviparous quadrupeds; the third with birds; and the fourth with aquatic animals.<sup>6</sup> The animals were ordered alphabetically in each volume. A more slender collection of the woodcuts alone, grouped more systematically, was issued as the *Icones animalium* (1553 and 1560) and the *Icones avium* (1550, 1560).<sup>7</sup> A fifth volume on serpents was published posthumously in 1587.

As may be surmised from the sheer size of the four-volume set published in Gessner's life-time—a total of over 3500 folio pages—the *Historia animalium* was certainly not a work aimed at the student market. In 1561, Froschauer quoted the price of 2 florins for the first volume, 7 shillings (20 shillings = 1 florin) for the second volume, 1 fl. 10 s. for the third and 3 fl. for the fourth, at a total of 6 fl. 17 s. for the four-volume set.<sup>8</sup> In the preface to the first volume, Gessner had stated that for those

<sup>2</sup> The seminal work on the visual aspect of science is Martin Rudwick, 'The Emergence of a Visual Language for Geological Science 1740–1840', *History of Science*, 14 (1976), 149–95; more recent, helpful studies include Martin Kemp, 'Taking it on Trust: Form and Meaning in Naturalistic Representation', *Archives of Natural History*, 17 (1990), 127–88; James Elkins, 'Art History and Images that Are Not Art', *Art Bulletin*, 77 (1995), 553–71; Nick Hopwood, 'Visual Standards and Disciplinary Change: Normal Plates, Tables and Stages in Embryology', *History of Science*, 43 (2005), 239–303; Thomas L. Hankins, 'A "Large and Graceful Sinuosity": John Herschel's Graphical Method', *Isis*, 97 (2006), 605–33.

<sup>3</sup> Lorraine Daston, and Peter Galison, *Objectivity* (New York: Zone, 2007) and Horst Bredekamp, *Galilei Der Künstler. Der Mond. Die Sonne. Die Hand* (Berlin: Akademie Verlag, 2007).

<sup>4</sup> For publications in zoology for this period, see Laurent Pinon, *Livres de Zoologie de la Renaissance: une Anthologie (1450–1700)* (Paris: Klincksieck, 1995). For studies of images from the *Historia animalium*, see P. Leemann van Elck, *Der Buchschmuck in Conrad Gessners naturgeschichtlichen Werken* (Bern: Verlag Paul Haupt, 1935); Caroline Aleid Gmelig-Nijboer, *Conrad Gessner's 'Historia Animalium': An Inventory of Renaissance Zoology* (Meppel: Krips, 1977), 77–95, Paul Delaunay, *La Zoologie au XVI<sup>e</sup> Siècle* (Paris: Hermann, 1962), 161–78; William B. Ashworth Jr, 'Natural History and the Emblematic World View', in *Reappraisals of the Scientific Revolution*, edited by D.C. Lindberg and R.S. Westman (Cambridge: Cambridge University Press, 1990), pp. 303–32 and 'Emblematic Natural History of the Renaissance', in *Cultures of Natural History*, edited by N. Jardine, J. A. Secord and E. C. Spary (Cambridge: Cambridge University Press, 1996), pp. 15–37. See Lucien Braun, *Gessner* (Geneva: Editions Slatkine, 1990) for a sampling of Gessner's pictorial *Nachlass*; and for a more focused study, see now Angela Fischel, *Natur im Bild: Zeichnung und Naturerkenntnis bei Conrad Gessner und Ulisse Aldrovandi* (Berlin: Gebr. Mann, 2009).

<sup>5</sup> For Gessner's biography, I follow Hans Wellisch, 'Conrad Gessner: A Bio-Bibliography', *Journal of the Society of the Bibliography of Natural History*, 7 (1975), 151–247. For Gessner's *Historia animalium*, I have particularly benefitted from the insights in Laurent Pinon, 'Conrad Gessner and the Historical Depth of Renaissance Natural History', in *Historia: Empiricism and Erudition in Early Modern Europe*, edited by Gianna Pomata and Nancy Siraisi (Cambridge, MA and London, 2005), pp. 241–67.

<sup>6</sup> Wellisch, 'Gessner' (as in note 5), 194–203 and Alfredo Serrai with Maria Cochetti, *Conrad Gessner* (Rome: Bulzoni Editore, 1990), 303–22.

<sup>7</sup> Gessner attempted to group animals morphologically and by size in the *Icones*.

<sup>8</sup> W. Becker, 'Zacharias Ursins Briefe an Crato von Crafftheim, nach den in Breslau befindlichen Urschriften', *Theologische Arbeiten aus den rheinischen wissenschaftlichen Prediger-Verein*, 12 (1892), 41–107,

willing to pay more, the printer had made coloured copies after an exemplar, which was presumably kept in the printer's shop.<sup>9</sup> Froschauer asked for 19 florins for a coloured set (vol. 1: 4 fl., vol. 2: 1 fl. 10 s., vol. 3: 6 fl., vol. 4: 7 fl. 10 s.).<sup>10</sup> As a comparison, Feyerabend's coloured Bibles (folio, over 750 pages) ranged in price between 8 and 10 fl., while the uncoloured copies were offered at 3 fl. in 1565.<sup>11</sup> Thus an uncoloured, four-volume set of the *Historia animalium* was worth a little more than two copies of an uncoloured Bible, and a coloured set worth two copies of the best coloured Bible by Feyerabend. Coloured copies of the *Historia animalium* with known contemporary provenance suggest that such copies were aimed at the de luxe end of the market, rather than a book aimed at mass circulation.<sup>12</sup> Some of the original watercolours, possibly the 'exemplar' copy for the colouring, cut out and mounted onto separate sheets of paper, have survived in Basel in Felix Platter's collection, and although a systematic comparison and survey is a *desideratum*, some surviving coloured copies of the *Historia animalium* appear to resemble closely the colouring of the originals.<sup>13</sup> Though the number of coloured copies prepared by Froschauer must have been a small proportion of the total number of copies printed, the book was conceived and written by Gessner with a coloured copy in mind—thus woodcuts were repeated for the sub-species of martens and weasels to indicate varieties differing only by colour, for example.<sup>14</sup>

Another point to note, apart from its length and price, is the fact that the publisher Froschauer listed the *Historia animalium* under works of grammar and rhetoric (*grammatica et rhetorica*) in his advertisement.<sup>15</sup> Gessner himself pointed out that the *Historia animalium* was not a book to be read through from start to finish, but rather to be used like a dictionary to be dipped into from time to time.<sup>16</sup> The alphabetical ordering of animals and descriptions grouped under eight headings for each animal facilitated this intended use. It would be rash to interpret this work as a zoological dictionary, given the eight headings: names of the animal in various languages; habitat of the animal; physical features and habits; character; use of the animal other than for food or medicine; culinary uses; medical uses; philology. The *Historia animalium* contains much to do with animal physiology, behaviour and *materia medica*, but the predominant part of the work which made the volumes so bulky, was the discussion on animal philology, including etymology, names, epithets,

at 85, also noted in B. Weber, 'Die zürcherische Buchillustration im 16. Jahrhundert', in *Zürcher Kunst nach der Reformation: Hans Asper und seine Zeit*, edited by Marianne Naegeli (Zürich: Schweizerisches Institut für Kunstwissenschaft, 1981), pp. 21–26, at 22.

<sup>9</sup> 'Optassem equidem cum suis coloribus excudi potuisse effigies: quod quoniam fieri potuit, typographus pro iis qui sumptum facere aliquanto maiorem non recusabunt, exemplaria aliquot pictoris manu coloribus illustrantanda ad archetypum nostrum curavit', Gessner, Conrad Gessner, *Historia Animalium*, 4 vols (Zurich: C. Froschauer, 1551–58), I,  $\gamma$ 1 v (*Historia animalium*, hereafter).

<sup>10</sup> Becker, 'Zacharias Ursins Briefe' (as in note 8), 85.

<sup>11</sup> H. Pallmann, 'Ein Meßregister Sigmund Feyerabend's aus dem Jahre 1565', *Archiv für Geschichte des Deutschen Buchhandels*, 9 (1884), 5–46, at 7, 17–31.

<sup>12</sup> Archbishop Matthew Parker's copy, Cambridge University Library, N\*.1.19-21(A); for an illuminated copy in Ulrich Fugger's library, see P.J.G. Lehmann, *Eine Geschichte der alten Fuggerbibliotheken*, 2 vols (Tübingen, 1956–1960), II, 165. I thank Ian Maclean for the latter reference.

<sup>13</sup> For Platter's collection, see Claus Nissen, *Die Zoologische Buchillustration: ihre Bibliographie und Geschichte*, 2 vols (Stuttgart: Hiersemann, 1966–1978), II, 114.

<sup>14</sup> Gessner, *Historia animalium*, I, 851 and 852 (weasel); 865 and 866 (martens); see also his comments in *Icones* (Zurich: C. Froschauer, 1553), 45–6.

<sup>15</sup> G. Richter, *Verlegerplakate des XV. und XVI. Jahrhunderts* (Wiesbaden: Pressler, 1965), pl. 19 (1555).

<sup>16</sup> Gessner, *Historia animalium*, I,  $\beta$ 1v– $\beta$ 2r. A point also noted in Pinon, 'Conrad Gessner' (as in note 5), 247.

and proverbs.<sup>17</sup> This is perhaps why it made sense for Froschauer to classify the book under ‘grammar and rhetoric’. While it is important to note the extended discussion on animal symbolism in the philological section of the *Historia animalium*, the work comprised more than ‘emblematic’ discussions of animals.<sup>18</sup> Use of philology is also prominent in the examination and comparison of ancient descriptions which added an ‘historical’ dimension to each animal, as Laurent Pinon has argued.<sup>19</sup> As Brian Ogilvie has pointed out, the field of natural history developed in the Renaissance out of humanist, philological investigations.<sup>20</sup>

Gessner’s stated aim on the title page was to collect everything written about animals by authors, both ancient and modern.<sup>21</sup> In this sense, Gessner was building on his earlier work, the *Bibliotheca Universalis* (Zurich: C. Froschauer, 1545). Books were an important source about animals, not just of native species, but also of newly discovered ones, as presented, for example, in André Thevet’s *Les singularitez de la France antarctique*.<sup>22</sup> Gessner’s *Historia animalium* was furthermore an ‘inventory’ of knowledge about animals throughout history—Gessner did not distil or reduce similar descriptions, but rather juxtaposed them; nor did he eliminate contradictory or false descriptions of existing animals, or omit descriptions of animals whose existence was uncertain.<sup>23</sup> The *Historia animalium* thus included familiar species such as horses, cats, dogs and mice, mythical beasts like the unicorn and the griffin, exotic animals including the crocodile, the sloth and the turkey, as well as various ‘monsters’. Rarely was direct experience or observation the sole criterion for including an animal, while the existence of a textual description was. Texts were important: Gessner explained in the preface that agreement among writers over centuries made knowledge reliable.<sup>24</sup> As Pinon astutely pointed out, Gessner’s study

<sup>17</sup> See the discussion in Ashworth, ‘Natural History’ (as in note 4), Wolfgang Harms, ‘Allegorie und Empirie bei Konrad Gessner. Naturkundliche Werke unter literaturwissenschaftlichen Aspekten’, in *Akten des V Internationalen Germanisten-Kongresses, Cambridge*, edited by Leonard Wilson Forster and Hans-Gert Roloff, 4 vols (Bern: H. Lang, 1976), 2, pp. 119–23.

<sup>18</sup> The importance of the philological section has been extrapolated into an ‘emblematic worldview’ by Ashworth, ‘Natural History’ and ‘Emblematic Natural History’ (as in note 4); more generally, see Wolfgang Harms and Heimo Reinitzer, eds, *Natura Loquax: Naturkunde und allegorische Naturdeutung vom Mittelalter bis zur frühen Neuzeit* (Frankfurt a. M.: P. D. Lang, 1981).

<sup>19</sup> Pinon, ‘Conrad Gessner’ (as in note 5), *passim*.

<sup>20</sup> Brian W. Ogilvie, *The Science of Describing: Natural History in Renaissance Europe* (Chicago and London: Chicago University Press, 2006), 49–51 (with botany leading ahead of zoology). For studies on animals in this period, see also Carlos Steel, Guy Guldentops, and Pieter Beullens, eds, *Aristotle’s Animals in the Middle Ages and Renaissance* (Leuven: Leuven University Press, 1999), Stefano Perfetti, *Aristotle’s Zoology and its Renaissance Commentators (1521–1601)* (Leuven: Leuven University Press, 2000), and Karl A.E. Enekel, Elmer E.P. Kolfin, and Paul J. Smith, eds, *Early Modern Zoology: The Construction of Animals in Science, Literature and the Visual Arts*, 2 vols (Boston: Brill, 2007).

<sup>21</sup> *Historia Animalium*, I, title page.

<sup>22</sup> For Gessner’s sources for the new world, see Urs B. Leu, ‘Konrad Gessner und die Neue Welt’, *Gesnerus*, 49 (1992), 279–309 at 283–7, and for his private library, Urs B. Leu, Raffael Keller, and Sandra Weidmann, *Conrad Gessner’s Private Library* (Leiden: Brill, 2008). For Thevet, see Frank Lestringant, *Mapping the Renaissance World: The Geographical Imagination in the Age of Discovery*, trans. David Fausett (Cambridge: Polity, 1994).

<sup>23</sup> Pinon, ‘Conrad Gessner’ (as in note 5), 253, 258.

<sup>24</sup> ‘Quod ad res ipsas, earumque veritatem et certitudinem, fidem meam in plurimis non astringo, auctorum (pene quos ea esto) nomina posuisse contentus. Ea certe magna ex parte fidem merentur, quae multorum et eruditorum multis iam seculis consensu muniuntur, ut hac etiam gratia auctores a nobis complures nominatos, et quaedam fortassis non magno alioqui fructu repetita non sit poenitendum’, *Historia animalium*, I, β2v. Also noted by Pinon, ‘Conrad Gessner’ (as in note 5), 248 and Ogilvie, *The Science of Describing* (as in note 20), 236.

of animals was thus inconceivable in a world without books.<sup>25</sup> And it is in this context that the images in the *Historia animalium* should be understood.

## 2. Sources of images of the *Historia animalium*

In the preface to the first volume, Gessner explained the advantage of having pictures of animals: princes of the Roman Empire used to exhibit exotic animals in order to overwhelm and conquer the minds of the populace, but those animals could be seen or inspected only for a short time while the shows lasted; in contrast, the pictures in the *Historia animalium* could be seen whenever and forever, without effort or danger.<sup>26</sup> Menageries had indeed continued to be used for display of princely power since Antiquity, but Gessner's point here was that pictures were an appropriate way of examining and studying animals because they did not invoke any sense of fear or danger and were timeless.<sup>27</sup> Gessner explained, furthermore, that unless otherwise stated, which (he pointed out) was rare, all pictures were made 'ad vivum' by either having them drawn himself or accepting from trustworthy friends pictures similarly drawn.<sup>28</sup> It is tempting to translate 'ad vivum' as 'from the life', but Gessner's own comments on and uses of images suggest a more complex practice.

As it was impossible for one man to visit all the places in the world and see everything that was unique to that place, Gessner certainly needed to rely on friends and correspondents in order to achieve his stated aim of including in his work every animal ever written about.<sup>29</sup> He also relied on other sources, such as artists, broadsides, books, and manuscripts, and he was usually meticulous about stating the source of his images. In the first volume, of the 96 woodcuts, no source is listed for 46 of those which were mainly of native and domestic animals.<sup>30</sup> Gessner's discussion was also longest for these animals—197 folio pages on the dog (Figure 1), 178 pages on the horse, and 80 pages on the cow, and indeed Gessner does not comment on the source or the veracity of the accompanying images, presumably on the assumption that they would be familiar to his readers also.<sup>31</sup>

<sup>25</sup> Pinon, 'Conrad Gessner' (as in note 5), 251.

<sup>26</sup> 'Romani imperij principes olim adhuc maximae orbis terrarum partis domini, multa peregrina subinde animalia populo spectanda offerebant, ut ita illius animos sibi devincitent. Atqui illa non nisi brevi tempore, quo scilicet durabant spectacula, inspicere et considerari poterant. Nostrae vero icones, quas omnes ad vivum fieri aut ipse curavi, aut ab amicis fide dignis ita factas accepi (nisi aliter admonuerim, quod rarum est), quovis tempore et perpetuo se spectandas volentibus, absque labore, absque periculo, offerent', *Historia Animalium*, I,  $\gamma$ 1 v.

<sup>27</sup> The best historical survey of menageries remains Gustave Loisel, *Histoire des Menageries L'antiquité à nos Jours*. 3 vols. I. Antiquité; Moyen âge; Renaissance (Paris, 1912), though see also J. M. C. Toynbee, *Animals in Roman Art and Life* (London: Thames and Hudson, 1973), 16–23 (for Roman menageries) and Almudena Pérez de Tudela and Annemarie Jordan Gschwend, 'Renaissance Menageries: Exotic Animals and Pets at the Habsburg Courts in Iberia and Central Europe', in *Early Modern Zoology: The Construction of Animals in Science, Literature and the Visual Arts*, edited by Karl A.E. Enekenel and Paul J. Smith (Boston: Brill, 2007), pp. 419–47.

<sup>28</sup> *Historia animalium*, I,  $\gamma$ 1 v.

<sup>29</sup> 'Fieri non potest ut unus homo diversas orbis regiones adeat, et quae singulis peculiaris sunt ipse videat', *Icones animalium* (Zurich: C. Froschauer, 1560), p. 7. See Gessner's use of letters for this purpose, as studied by Candice Delisle, 'Accessing Nature, Circulating Knowledge: Conrad Gessner's Correspondence Networks and his Medical and Naturalist Practices', *History of Universities*, 23 (2008), 35–58.

<sup>30</sup> Gmelig-Nijboer, *Conrad Gessner's 'Historia Animalium'* (as in note 4), 95.

<sup>31</sup> Though it is perhaps worth noting that the woodcut of the dogs appears to be based on figures of dogs from at least two well-known prints by Dürer, St Eustace, and Melancholy I. I owe this observation to Sarah Cohen.



Figure 1. For images of common animals such as dogs, Gessner usually did not state its source, though the dogs here appear to be based on some prints by Dürer. Gessner, *Historia animalium*, I, 173. Courtesy of the National Library of Medicine, Bethesda, USA.

Gessner often stated that he had had images made ‘ad vivum’: for example the picture of the porcupine (Figure 2) was of the animal shown around in Zurich by a beggar (presumably for money).<sup>32</sup> Images of fishes in particular were often made after a dried specimen (‘ad sceleton’).<sup>33</sup> Pictures of rare beasts such as the reindeer, the gulo, the ‘Scythian wolf’, sea monsters and cetaceous creatures (Figure 3) were copied from the map of the northern regions by Olaus Magnus (1490–1557);<sup>34</sup> those of the ichneumon and hyena were taken from an old manuscript by Oppian, a classical author on fishing and hunting;<sup>35</sup> woodcuts of ‘Indian goats’, a long-tailed monkey, and the giraffe were copied from Bernard von Breydenbach’s *Die heyligen reyszen gen*

<sup>32</sup> ‘Picturam hanc Tiguri ad vivum fieri curavimus, cum agyrta quidam spectaculi gratia hystricem circumderet’, *Historia animalium*, I, 631. See also ‘Avis hanc ad vivum depicta, in Helveticis alpiibus, circa Claronam praecipue, vocatur ein Grügelhan, per onomatopoeiam’, *Historia animalium*, III, 477.

<sup>33</sup> For example, *Historia animalium*, IV, 207, 516, 746.

<sup>34</sup> *Historia animalium*, I, 623 (gulo), 775 (lupus schythicum), 770 (lynx), 950 (reindeer); IV, 245–9 (marine beasts).

<sup>35</sup> *Historia animalium*, I, 624 (hyena) and 645 (ichneumon).



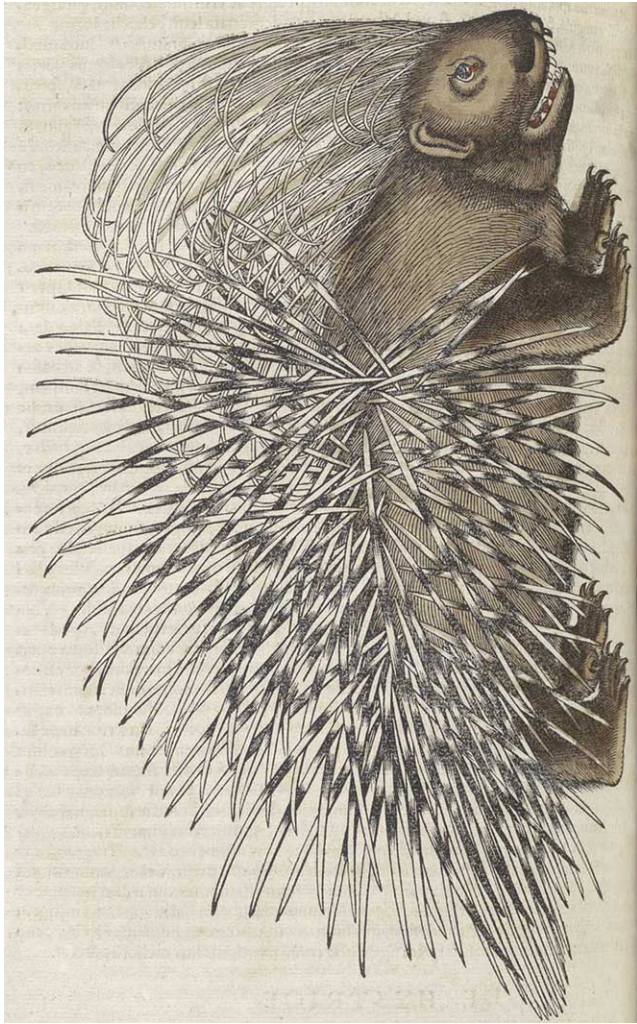


Figure 2. This woodcut was made after a porcupine which was shown around Zurich by a beggar. Gessner, *Historia animalium*, I, 932, Courtesy of the National Library of Medicine, Bethesda, USA.

*Jherusalem* (1486, 1488);<sup>36</sup> Gessner reported that he had not seen a live *cricketus* (hamster to us), but had once seen its pelt at the Frankfurt fair, and that he borrowed its image from a German book on animals by Michael Herr.<sup>37</sup> ‘Composite’ images were

<sup>36</sup> *Historia animalium*, I, 160 (giraffe—this borrowing is not acknowledged by Gessner), 960 (ape), 1098 (Indian goats). Joan Barclay Lloyd, *African Animals in Renaissance Literature and Art* (Oxford: Clarendon Press, 1971), 87–90; for the giraffe, see Charles D. Cuttler, ‘Exotics in Post-Medieval European Art: Giraffes and Centaurs’, *Artibus et Historiae*, 12 (1991), 161–79, at 170. A woodcut of the camel copied from an Italian version of Breydenbach’s travels was used in *Icones* (1560, as in note 29), 42.

<sup>37</sup> ‘Ego cricketum vivum non vidi, sed pelles olim Francofordiae venales, quas Hamster appellat. Effigies quam damus desumpta est ex Germanico libro de quadrupedibus Michaelis Heri’, *Historia animalium*, I, 836. Michael Herr, *Gründtlicher Unterricht, warhaffte und eygentliche Beschreibung wunderbarlicher seltzamer Art, Natur, Krafft und Eygenschaft aller vierfüssigen Thier wild und zam* (Strasbourg: B. Beck, 1546), noted also in Gmelig-Nijboer, *Conrad Gessner’s ‘Historia Animalium’* (as in note 4), 82.



Figure 3. Gessner stated that these cetaceous creatures were copied from Olaus Magnus' map of the Northern Lands. Gessner, *Historia animalium*, IV, 176. Courtesy of the National Library of Medicine, Bethesda, USA.

created from part of an animal and a description in a book. In the case of the *Pica Bresillica* (toucan to us), its woodcut was based on a beak sent to Gessner by Giovanni Ferrerio, and the rest of the body was reconstructed from Thevet's *Les singularitez de la France antarctique*.<sup>38</sup> The resulting fictitious bird had an enduring career in later books.<sup>39</sup> When reconstruction from part of an animal appeared impossible, he just showed the part that he had—the pelt of the genet cat, for example.<sup>40</sup> In the fourth volume of the *Historia animalium*, Gessner acknowledged his debt to recently published works such as Guillaume Rondelet's *Libri de Piscibus Marinis* (1554), Pierre Belon's *De Aquatilibus* (1553), and Hippolyto Salviani's *Aquatilium Animalium Historiae Liber Primus* (1554). Many woodcuts in the fourth volume are copied out of those books by Belon or Rondelet, though in the case of the sardine, Gessner explained that he had amalgamated figures from both Belon and Rondelet.<sup>41</sup> For singular or very rare animals, contemporary pictorial broadsides were an important

<sup>38</sup> *Icones* (1560, as in note 29), 130. John Durkan, 'Giovanni Ferrerio, Gesner and French Affairs', *Bibliothèque d'Humanisme et Renaissance*, 42 (1980), 349–60, at 352.

<sup>39</sup> Paul J. Smith, 'On Toucans and Hornbills: Readings in Early Modern Ornithology from Belon to Buffon', in *Early Modern Zoology: The Construction of Animals in Science, Literature and the Visual Arts*, edited by Karl A. E. Enenkel and Paul J. Smith (Brill: Leiden and Boston, 2007), pp. 75–117, at 87.

<sup>40</sup> Gessner's father was a furrier (Wellisch, 'Conrad Gessner' (as in note 5), 153), which may have helped him obtain pelts, such as that of the genet cat, *Historia animalium*, I, 1102.

<sup>41</sup> Gessner, *Historia animalium*, IV, 485, a composite from Pierre Belon, *De Aquatilibus* (Paris: C. Stephanus, 1553), 172 and Guillaume Rondelet, *Libri de Piscibus Marinis* (Lyon: M. Bonhomme, 1554), 222.



source.<sup>42</sup> Gessner was careful not only to offer descriptions from these broadsides, but also to record a chain of custody or proof of its reliability: thus a broadside of a 'monkfish' monster was given to Rondelet by Marguerite, Queen of Navarre, who received it from Emperor Charles V's ambassador, who had in fact seen the monster himself.<sup>43</sup> Gessner reproduced the picture and description from Rondelet, but also added a description of pictures sent by others, with similar attention to their provenance. This helped the readers work out whether the pictures depicted the same creature or several occurrences of a similar beast.

Perhaps the most famous broadside of all used by Gessner was that of the rhinoceros by Albrecht Dürer. The woodcut of the rhinoceros was copied faithfully from Dürer's famous print.<sup>44</sup> Gessner reported that it was the picture of a rhinoceros sent to the King of Portugal from the Cambaia region (Gujarat to us) in 1515.<sup>45</sup> He also added that he had seen a painted picture of the same rhinoceros which was certified by another scholar. Even with a notable artist like Dürer, Gessner referred to an additional witness.

Of the 96 images in the first volume, 25 were sent in by correspondents.<sup>46</sup> Hence the picture of the 'zibeth cat' was drawn 'ad vivum' by the 'learned nobleman Petrus Merbel';<sup>47</sup> the picture of the 'glis' (dormouse to us) was sent to him by 'the most learned physician at Bergamo', Guilhelmo Gratarolo;<sup>48</sup> a picture of the 'hortulana' was sent to Gessner by Ulisse Aldrovandi, a man 'most excelling in medical matters as well as in the history of plants'.<sup>49</sup> The 'very learned Conrad Peutingering' sent Gessner a picture of the feet-less bird of paradise whose authenticity Peutingering and many other trustworthy witnesses confirmed.<sup>50</sup> The names, qualification and status of his friends were no doubt meant to add credibility to the images.

Gessner also reported that a bird of paradise was on sale in Nuremberg for 800 talers.<sup>51</sup> This confirms that there was profit to be made out of exotic fauna, dead or

<sup>42</sup> For a catalogue of natural historical broadsides, see I. Faust, and K. Barthelmess, eds, *Zoologische Einblattdrucke und Flugschriften vor 1800*, 5 vols (Stuttgart: Anton Hiersemann, 1998–2003).

<sup>43</sup> For the monkfish, see Pinon, 'Conrad Gessner' (as in note 5), 254–6.

<sup>44</sup> F.J. Cole, 'The History of Albrecht Dürer's Rhinoceros in Zoological Literature', in *Science, Medicine and History: Essays of the Evolution of Scientific Thought and Medical Practice, Written in Honour of Charles Singer*, edited by E. A. Underwood (London: Oxford University Press, 1953), p. 337–56, at 340–1 for Gessner's copying.

<sup>45</sup> 'Pictura haec Alberti Dureri est, qua clarissimus ille pictor (cuius etiam libri de pictura extant) Rhinocerotem Emmanueli Lusitanae regi anno salutis 1515 e Cambaia Indiae regione Vlysbendam allatum, perpulchre expressit. Rhinocerotis, id est naricornis, nuper pictam vidimus imaginem, referentem ex hoc genere animal, quod per haec tempora Lusitano regi ex India alligatum est, Aug. Iustinianus hanc ipsam indubie, quam hic damus, imaginem intelligens', *Historia animalium*, I, 952.

<sup>46</sup> Gmelig-Nijboer, *Conrad Gessner's 'Historia Animalium'* (as in note 4), 83.

<sup>47</sup> 'Hanc iconem doctus et nobilis vir Petrus Merbelius Mediolani ad vivum depingendam nobis curavit', *Historia animalium*, I, 948.

<sup>48</sup> 'Hanc gliris imaginem doctissimus Bergomensis medicus Guilhelmus Gratarolus ad nos misit', *Historia animalium*, I, 619. For Gratarolo, see Ian Maclean, 'Heterodoxy in natural philosophy and medicine: Pietro Pomponazzi, Guglielmo Gratarolo, Girolamo Cardano' in *Heterodoxy in Early Modern Science and Religion*, edited by John Hedley Brooke and Ian Maclean (Oxford, 2005), 1–30, at pp. 17–9.

<sup>49</sup> 'Huius avis effigiem Ulysses Aldrovandus, vir cum in re medica tum stirpium historia praestantissimus as nos misit', *Historia animalium*, III, 774.

<sup>50</sup> 'Paradiseam vel paradisi avem, vel apodem Indicam appello illam, cuius figura sequens est, a clarissimo viro et doctissimo I. C. felicis memoriae Conrado Peutingero nobis communicata: qui et mortuam similem sibi visam testabatur, ut et alii multi fide digni homines alii alias se vidisse mihi testati sunt', *Historia animalium*, III, 611.

<sup>51</sup> 'Ostentatur Norimbergae apud I. Kramerum et numis argenteis octo drachmarum fere (quas a valle Ioachimica denominant) centenis indicatur. *Historia animalium*, III, 611.

(less commonly) alive, or even of imagined creatures like dragons made out of dried rays.<sup>52</sup> Ostrich eggs, crocodile skins, as well as hides and pelts of other exotic animals made their way into collectors' cabinets, while leopard skins and ostrich feathers adorned fashionable clothes in the period.<sup>53</sup> Whilst Gessner hoped he could obtain specimens, or failing that, their pictures or descriptions, through (free) gift exchange among friends, there were certain things that were out of his reach because of their extraordinary price.<sup>54</sup> A unicorn's horn was just one instance where the exorbitant price charged by apothecaries made Gessner state that its medical efficacy should be tested by those richer than himself.<sup>55</sup>

While Gessner appears meticulous and careful in citing sources for the images of rare or exotic animals, a puzzling case is presented by the pictures belonging to one of Gessner's correspondents, the physician Johannes Kentmann.<sup>56</sup> The *Codex Kentmanus* (Fol. 323), now at Herzogin Anna Amalia Bibliothek, Weimar, is a manuscript consisting of pictures of plants and fishes Kentmann had gathered during his medical studies in Italy between 1547 and 1549.<sup>57</sup> He lent the manuscript to Gessner, who had it copied. The *simia marina* in the *Historia animalium* credited to Kentmann is fairly close to the original watercolour in the *Codex Kentmanus* (Figure 4).<sup>58</sup> What is somewhat odd is the fact that there were several other images in Gessner's *Historia animalium* that were virtually identical to Kentmann's images except for the right/left inversion, which is what one would expect between woodcuts and their original drawings. All of these, however, were attributed in the *Historia animalium* to another physician, Cornelius Sittardus from Nuremberg.<sup>59</sup> Pictures which show striking resemblance between Kentmann and Gessner, yet attributed by Gessner to Sittardus include those of the *acus* (Figure 5a, b), the *cancer hirsutus* (Figure 6a, b), the *squilla lata* (Figure 7a, b), the *squilla crange* (Figure 8a, b), the skeletal head of the *sargus*, the *manus marina*, and the *fungus marinus* (Figure 9a, b), which in fact is not a sea organism at all.<sup>60</sup> Indeed the majority of images that Gessner credits to Sittardus can be found in

<sup>52</sup> Michael Gorgas, 'Animal Trade between India and Western Eurasia in the Sixteenth Century—the Role of Fuggers in Animal Trading', in *Indo-Portuguese Trade and the Fuggers of Germany: Sixteenth Century*, edited by Kuzhippalli Skaria Mathew (New Delhi: Manohar, 1999), pp. 195–237. For the trade in imaginary creatures such as dragons or hydra, see Paula Findlen, 'Commerce, Art, and Science in the Early Modern Cabinet of Curiosities', in *Merchants and Marvels: Commerce, Science, and Art in Early Modern Europe*, edited by Pamela H. Smith and P. Findlen (London: Routledge, 2002), pp. 297–323.

<sup>53</sup> Lloyd, *African Animals* (as in note 36), 67–73.

<sup>54</sup> For the mechanism of gift exchange, see Paula Findlen, 'The Economy of Scientific Exchange in Early Modern Italy', in *Patronage and Institutions: Science, Technology and Medicine at the European Courts, 1500–1700*, edited by B. Moran (Woodbridge, UK: Boydell and Brewer, 1991), pp. 5–24.

<sup>55</sup> *Historia animalium*, I, 785. As noted in Pinon, 'Conrad Gessner' (as in note 5), 250.

<sup>56</sup> For Kentmann, see Johannes Helm, *Johannes Kentmann* (Wiesbaden: Steiner, 1971).

<sup>57</sup> For a study of the section on plants of the *Codex Kentmanus*, see Sachiko Kusakawa, 'Image, Text and "Observatio": The *Codex Kentmanus*', *Early Science and Medicine*, 14 (2009), 445–75.

<sup>58</sup> *Codex Kentmanus*, fol. 148v; Gessner, *Historia animalium*, IV, 1054.

<sup>59</sup> Georg Andreas Will, *Nürnbergisches Gelehrten-Lexicon*, 4 vols (Nuremberg and Altdorf, 1755–8), III, 710, gives Sittardus' death as November 1550. See also Melchior Adam, *Vitae Germanorum Juresconsultorum et Politicorum* (Heidelberg: haered. J. Fossa and J.G. Geyder, 1620), 43, 121, 268.

<sup>60</sup> *Codex Kentmanus*, fol. 160v–161r (*ursus/squilla lata*); fol. 162v (matrix); fol. 166r (*squilla crange*); fol. 167r (*vulna marina/pudendum marinum/Aedron*); fol. 167v (*caecilia*); fol. 168v–169r (*vulpecula*); fol. 169v (*penna marina*); fol. 170r (*fungus*); fol. 171r (*manus marina*); fol. 172r (*Sargi caput*); fol. 166v (*Lupus marinus* or Rondelet's *cancer hirsutus*); fol. 167r (*urtica cinerea*). Cf. Gessner, *Historia animalium*, IV, 1225 (*acus*), 187 (*cancer hirsutus*), 619 (*manus marina*), 996 (*sargus*), 1097 (*squilla lata*), 1099 (*squilla crange*), 1144 (*fungus marinus*).



Figure 4. *Simia Marina*. *Codex Kentmannus*, 148v, Herzogin Anna Amalia Bibliothek, Weimar.

Kentmann's collection. It cannot be that Gessner fell out with Kentmann, as their correspondence points to quite the contrary, and elsewhere in the *Historia animalium*, Kentmann's help is acknowledged.<sup>61</sup>

As it happens, there are two sheets of drawings now in Leiden attributed to Sittardus.<sup>62</sup> One depicts a *squilla lata* (Figure 10) and the other (Figure 11) contains figures of shrimps, pipe fish, and shell fish. If we compare Sittardus' images with Gessner's woodcuts of the *squilla crange* (Figure 8a), the *squilla lata* (Figure 7a), and the *tethya* (Figure 9a), they are indeed close enough to make them plausible as the ones Gessner's woodcuts were based upon. There are differences between the drawings by Kentmann and by Sittardus, namely the latter's use of shadows to indicate the source of light to the left of the image, and in general, Sittardus' watercolours show finer contours. Yet, the similarity between the two is also striking, for example in the positioning of the legs and the curves of the antennae in the *squilla crange* (Figure 8a, b). Furthermore, the watercolours of the *squilla lata* (Figure 7a, b) show such similar placements of the legs, similar colouring of the antennae, and similar intervals and colouring of blue nodes on the sides, that it is reasonable to infer that these were *pictorial* copies, rather than drawings made of the same objects. Both

<sup>61</sup> For Kentmann's correspondence with Gessner, see Conrad Gessner, *Epistolarum Medicinalium . . . Liber Quartus* (Wittenberg: ex off. S. Gronenbergij, 1584). For references to Kentmann, see *Icones* (1560, as in note 29), 207, 303, 330; *Historia animalium*, IV, b5r.

<sup>62</sup> Lipke Bijdeley Holthuis, 'Original Watercolours Donated by Cornelius Sittardus to Conrad Gesner, and Published by Gesner in his (1558–1670) Works on Aquatic Animals', *Zoologische Mededelingen*, 70 (1996), 169–96. I thank Urs Leu for drawing my attention to this article.

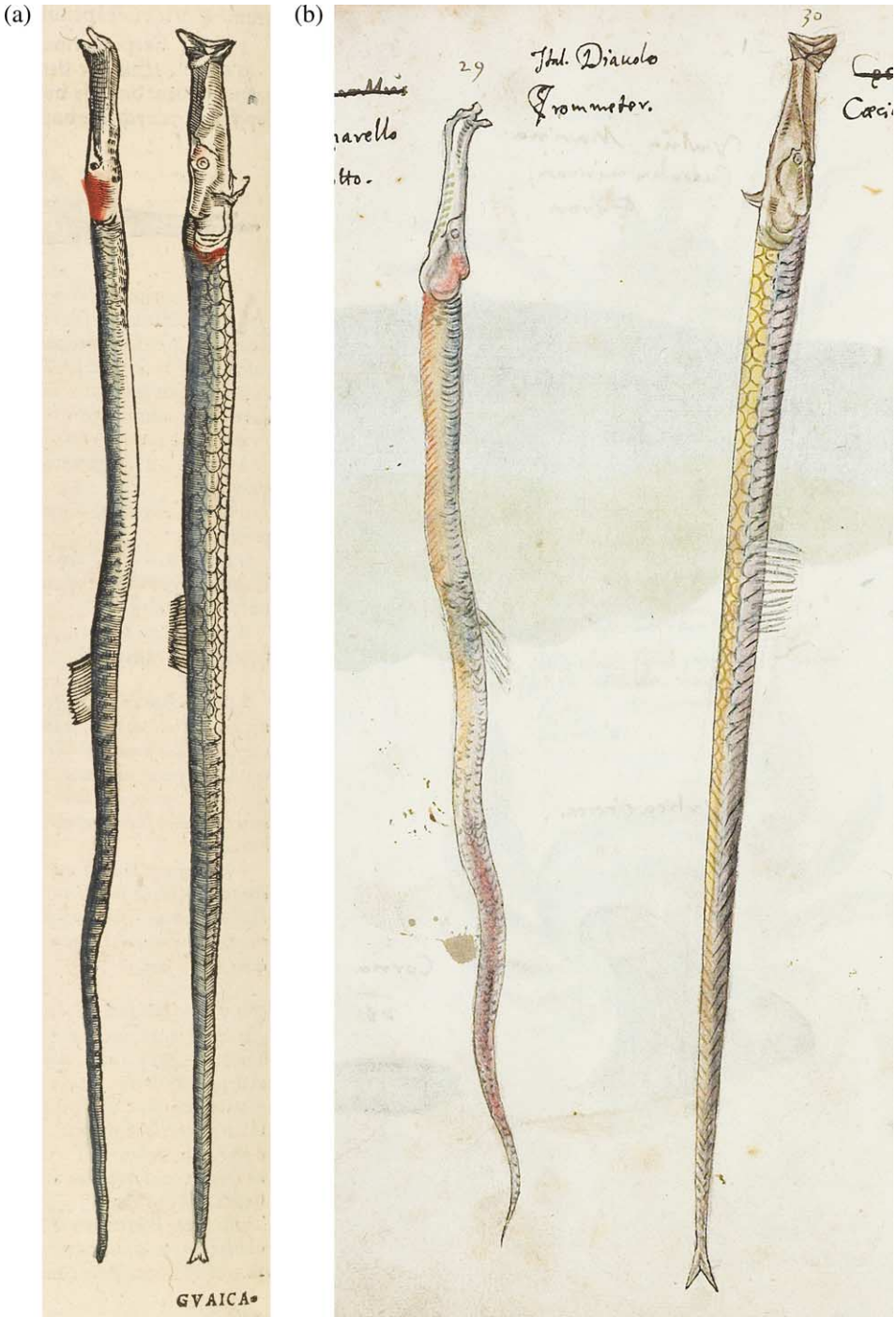


Figure 5. (a) Acus. Gessner, *Icones* (1560), 92, Cambridge University Library, N\*.1.22(A). Reproduced by kind permission of the Syndics of Cambridge University Library. (b) Acus. *Codex Kentmanus*, 167v, Herzogin Anna Amalia Bibliothek, Weimar.



Figure 6. (a) *Cancer hirsutus*. Gessner, *Icones* (1560), 207, Cambridge University Library, N\*.1.22(A). Reproduced by kind permission of the Syndics of Cambridge University Library. (b) *Cancer hirsutus*. *Codex Kentmanus*, 39r, Herzogin Anna Amalia Bibliothek, Weimar.



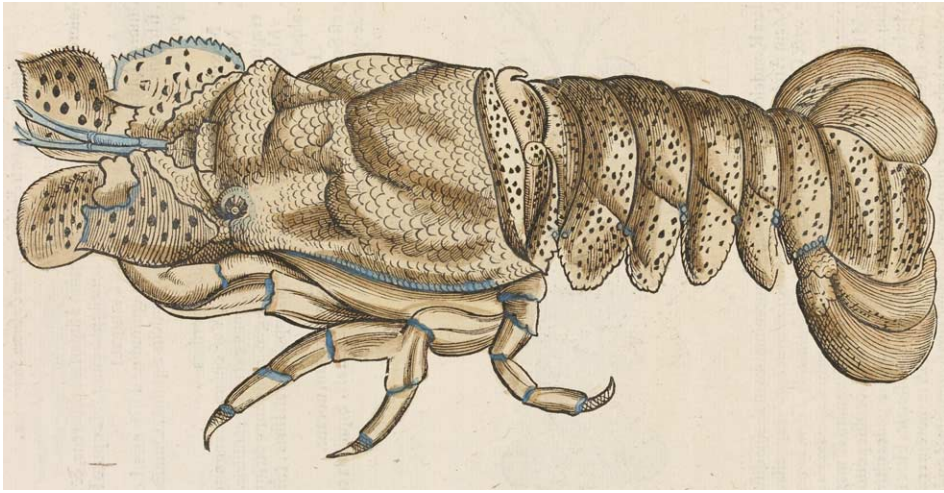


Figure 7. (a) *Squilla lata*. Gessner, *Icones* (1560), 216, Cambridge University Library, N\*.1.22(A). Reproduced by kind permission of the Syndics of Cambridge University Library.

Kentmann and Sittardus have an identical picture of the egg case of the ray, which was not adopted in the publication before Gessner's death, but were included in a later edition of the *Historia animalium*.<sup>63</sup>

When medievalists encounter such similarities in manuscripts, they posit an earlier common source, usually lost. This may well be the case here for the pictures by Kentmann and Sittardus. Their common source is one Gisbert Horstius of Amsterdam, who worked at the hospital of Maria Consolazione in Rome.<sup>64</sup> We know that Kentmann visited Horstius' garden and drew the *telephion*.<sup>65</sup> Sittardus too, is known to have accompanied the naturalist Valerius Cordus to Italy and stayed with Horstius while in Rome.<sup>66</sup> According to other sources, Horstius had a splendid garden full of exotic plants, next to which was a rock mound where he kept snakes and vipers; he had a reputation of being able to handle snakes fearlessly, and without being bitten.<sup>67</sup> It is most likely that Horstius had pictures of plants, fishes and snakes, which he allowed visitors to copy, or more probably, he let visitors hire artists to copy. This would explain why Kentmann's collection of aquatic animals also includes snakes and vipers.<sup>68</sup> A terrestrial fungus was probably misplaced in Horstius' collection of pictures of aquatic creatures, which led Kentmann, Sittardus, and eventually Gessner, to assume that it existed in the sea.

What is interesting is that Gessner had direct contact with Horstius himself, and regarded him well-informed, such that on his authority, Gessner accepted the existence

<sup>63</sup> *Codex Kentmanus*, 162v; Holthuis, 'Original Watercolours' (as in note 62), 176, fig. 6b for the egg case.

<sup>64</sup> Holthuis, 'Original Watercolours' (as in note 62), 192.

<sup>65</sup> *Codex Kentmanus*, 93r.

<sup>66</sup> Holthuis, 'Original Watercolours' (as in note 62), 192.

<sup>67</sup> Bernardus Dessenius Cronenburgius, *De compositione medicamentorum* (Frankfurt a. M.: C. Egenolff, 1555), 96r; 119v.

<sup>68</sup> *Codex Kentmanus*, 164r, 179r.



Figure 7. (b) *Squilla lata*. *Codex Kentmanus*, 160v–161r, Herzogin Anna Amalia Bibliothek, Weimar.



Figure 8. (a) *Squilla crange*. Gessner, *Icones* (1560), 218, Cambridge University Library, N\*.1.22(A). Reproduced by kind permission of the Syndics of Cambridge University Library. (b) *Squilla crange*. *Codex Kentmanus*, 166r, Herzogin Anna Amalia Bibliothek, Weimar.



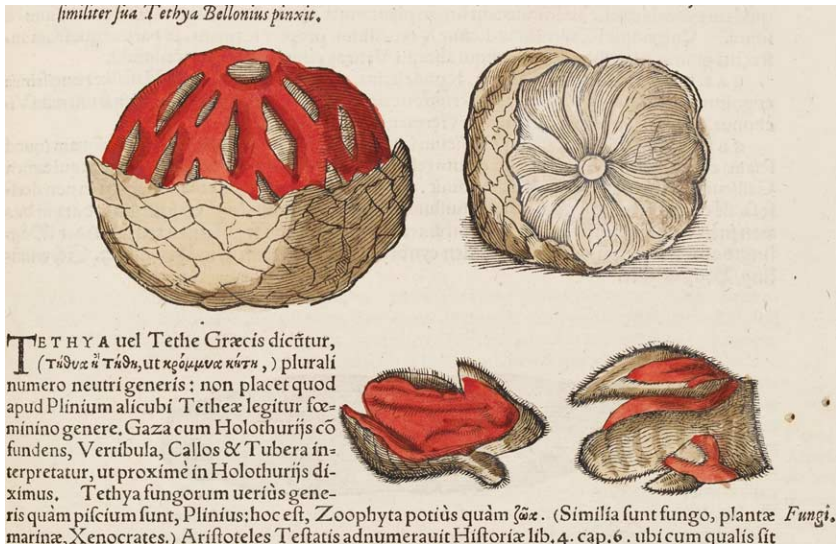


Figure 9. (a) Fungus marinus, with tethya below. Gessner, *Icones* (1560), 263. Cambridge University Library, N\*.1.22(A). Reproduced by kind permission of the Syndics of Cambridge University Library. (b) Fungus marinus. *Codex Kentmanus*, 170r, Herzogin Anna Amalia Bibliothek, Weimar.



Figure 10. Watercolour of the *squilla lata* attributed to C. Sittardus, Nationaal Natuurhistorisch Museum, Leiden.

of a monster called the sea lion.<sup>69</sup> On one occasion, Gessner even explains that Sittardus received one of his images from Horstius.<sup>70</sup> So why were the images of other aquatic creatures not credited to Horstius, instead of Sittardus, let alone to Kentmann?

Gessner was here probably deploying a strategy similar to the one he used in naming plants after his friends. For a plant which was not known to Antiquity, Gessner proposed to name it after its ‘discoverer’, not in the sense of the first person ever to find it, but the first person to communicate it to Gessner. So Gessner for instance offered to name a species of *gentiana* after a correspondent, Benedikt Marti Aretius, since he was the first to tell Gessner its German name and explain its effectiveness against pestilence.<sup>71</sup> This was Gessner’s way of ensuring an expeditious relay of information of natural objects to himself. Kentmann did not get credit for sending Gessner the image of fishes, since Sittardus had sent them to Gessner first. We then see here, in Gessner’s *Historia animalium*, a subtle reflection of the way he managed his correspondents. Attributions of names in the *Historia animalium* were

<sup>69</sup> ‘Monstrum est id, quod hic exhibemus et perfectum animal, partibus nullis ad natandum aptis praeditum. Quamobrem quum dubitarem exitissetne aliquando monstrum istud marinum, Gisbertus (Horstius) Germanus, (qui Romae medicinam facit, vir proculdubio in rerum cognitione praecellens et minime vanus), omni asservatione affirmavit certo se scire, non diu ante obitum Pontificis Pauli tertij Centucellis Captum in medio Mari fuisse. Quare ex illius fide quale fuerit hoc monstrum describere non dubitavi’, *Historia animalium*, IV, 558.

<sup>70</sup> ‘Sunt qui aquilam in cauda non unicum, ut pastinaca, sed binos radios habere putent, qualem figuram subiecimus a Cornelio Sittardo felicitis memoriae transmissam, qui a Gysberto Horstio medico Romae acceperat’, *Historia animalium*, IV, 88.

<sup>71</sup> ‘Antiqua nomina nolim irrita fieri: sed plantis illis, quarum apud veteres, quod sciamus, nulla est mentio, neque nominum neque facultatum, amicorum eruditorum et per quos proficio in hoc opere, nomina imponi velim, ceu inventorum: non refert autem in ipse invenerit aliquis, an prodiderit primus, et mihi communicavit. Multi iam amici mei hoc fecerunt in meam gratiam. Si alia nulla placuerit, vide an *Gentianae* speciem, das Schelmenkrut, alijs grosse bitterwurtz, alijs Spieß blatt tuo nomine dignari velis: a te enim primum Germanicum nomen eius, et usum contra pestem in pecore et bobus intellexi’, Letter to Aretius, 4 February 1565, Conrad Gessner, *Epistolarum Medicinalium Conradi Gesneri* (Zurich: C. Froschauer, 1577), 120v.





Figure 11. Watercolour attributed to C. Sittardus, Nationaal Natuurhistorisch Museum, Leiden.

important, not just to enlist them as trustworthy witnesses, but also for rewarding his correspondents with the chance to be thanked publicly, in print.

Holthuis attributed the Leiden drawings to Sittardus on the basis that they closely resembled the woodcuts in the *Historia animalium* and that Gessner had cited him as their source.<sup>72</sup> The pictures from the *Codex Kentmanus* strongly suggest, however, the possibility that several visitors copied the original images from Horstius' collection, originals which so far appear not to have come to light. It is thus no longer clear that the Leiden drawings were the ones Sittardus had sent to Gessner, especially since they lack the annotations that Gessner habitually made on virtually all drawings that he owned.<sup>73</sup> The copying practices and uses of drawings in the circulation of natural knowledge require careful analysis and study. It is certainly the case that drawings used as models for repeatable images were not always based on direct observation of objects.<sup>74</sup> Indeed, even drawings claiming to be 'ad vivum' could be based on a variety of sources.<sup>75</sup> The lesson for us here is that images from the *Historia animalium* were part of a larger visual culture encompassing live, dried or partial specimens, drawings, prints and illustrated books, in which direct observation of the original was not yet a strict requirement for its images to be 'ad vivum'.<sup>76</sup> This, and the cost of printing as well as convenience, may be the reasons why images of animals, whether reliable or not, were copied and re-copied in later printed works, manuscripts and embroideries.<sup>77</sup>

### 3. Gessner's judgements on pictures

Just as the sources of Gessner's images were varied, so also were their quality, and Gessner was the first to admit this. Though Gessner could, and indeed did, draw, it was more usual for him to have a painter draw on his behalf.<sup>78</sup> Except for Lucas Schan, who drew pictures of birds and was also an expert fowler, the identity of the

<sup>72</sup> 'Original Watercolours' (as in note 58).

<sup>73</sup> See the examples of his botanical drawings in Conrad Gessner, *Historia Plantarum. Faksimilieausgabe. Aquarelle aus dem botanischen Nachlass von Conrad Gessner (1516–1565) in der Universitätsbibliothek Erlangen*, edited by Heinrich Zoller, Martin Steinmann and Karls Schmid, 8 vols (Zürich: Urs Graf, 1972–1980).

<sup>74</sup> For a similar case of the variety of sources of the drawings in Adrian Coenen's fish album, even when he was perfectly familiar with the real fish and actually had no need to copy, see Florike Egmond, 'Curious Fish: Connections between Some Sixteenth-Century Watercolours and Prints', in *Early Modern Zoology: The Construction of Animals in Science, Literature and the Visual Arts*, edited by Karl A.E. Enkel, Elmer E.P. Kolfin and Paul J. Smith (Boston: Brill, 2007), pp. 245–72, especially at 265–8.

<sup>75</sup> See for example Heinrich Geissler, 'Ad Vivum Pinxit: Überlegung zu Tierdarstellungen der zweiten Hälfte des 16 Jahrhunderts', *Jahrbuch der Kunsthistorischen Sammlungen in Wien*, n.s. 82/83 (1986/7), 101–14.

<sup>76</sup> For the uses of the phrase with more empirical emphasis later on, see Claudia Swan, 'Ad Vivum, Naer Het Leven, from the Life: Defining a Mode of Representation', *Word & Image*, 11 (1995), 353–72.

<sup>77</sup> For copying of animal images, see W. B. Ashworth Jr, 'The Persistent Beast: Recurring Images in Early Zoological Illustrations', in *The Natural Sciences and the Arts*, edited by A. Ellenius (Uppsala: Almqvist & Wiksell International, 1985), pp. 46–66, Lucia Tongiorgi Tomasi and Paolo Tongiorgi Tomasi, 'Persistenze e "Migrazioni" dell'immagine Naturalistica', in *Immagine e Natura: L'immagine Naturalistica nei Codici e Libri a Stampa delle Biblioteche Estense e Universitaria. Secoli XV–XVII*, edited by Paola Di Piero Lombardi, Paola Ortolani and Anna Rosa Venturi Barbolini (Modena: Panini, 1984), pp. 173–80 and Smith, 'On Toucans' (as in note 39), 87–88. For Gessner's image being copied into an earlier manuscript, see Cynthia M. Pyle, 'The Art and Science of Renaissance Natural History: Thomas of Cantimpré, Pier Candido Decembrio', *Viator*, 27 (1996), 265–321, and for embroidery based on woodcuts from Gessner's *Icones*, see M. Bath, *Emblems for a Queen: The Needlework of Mary Queen of Scots* (London: Archetype publications, 2008), 69–112.

<sup>78</sup> For example, 'Avis quam ego pro lagopode *pinxi*, a nostris et montium incolis Germanice nominatur ein Schneehun', *Historia animalium*, III, 556 (my emphasis). Also noted in Gmelig-Nijboer, *Conrad Gessner's 'Historia Animalium'* (as in note 4), 85.

artists for Gessner's *Historia animalium* remains uncertain.<sup>79</sup> While Gessner could tolerate a painter's artistic license in drawing the *Chela astaci marini* like a laughing human face, he also noted errors in images, some of which, as in the case of a duck's bill, he hoped could be corrected when colouring was applied.<sup>80</sup> Some were not necessarily errors by the painters, but rather, inaccuracies arising from using a distorted dried specimen, as in the case of the *squatina*, which Gessner noted as not corresponding well to a live sample.<sup>81</sup> Similarly, other woodcuts in the *Historia animalium* were not necessarily the best picture.<sup>82</sup> Furthermore, there were cases where Gessner felt that he could not judge whether a picture was accurate or not, given his own limited knowledge of the animal itself.<sup>83</sup> In the preface to the first volume, Gessner pointed out that although some of the smaller animals had been represented to its actual size, larger ones had to be reduced to fit the page, which meant that a reliable sense of proportion could not be preserved across pictures.<sup>84</sup> Gessner explained that this was partly due to the different painters who had been employed, and partly to the fact that he was so busy with other things that he had to relegate the supervision of pictures to the printer.<sup>85</sup> Leaving the printer in charge could also lead to further mishaps, such as the woodcuts of the hen and the cock being transposed.<sup>86</sup>

It is tempting to think that the varied nature of the sources and of the quality of the woodcuts in the *Historia animalium* and the *Icones animalium* had to do with the fact that live animal specimens, especially exotic ones, were hard to obtain, and that in an ideal world Gessner would have preferred to use only images made from direct observation of a live specimen. This appears not to have been the case. For example, in the case of the pelican (Figure 12), Gessner juxtaposed the woodcut of a Pelican captured in a lake near Zug and seen by himself, with an image of the head of the pelican sent to him by a 'certain painter', and with a figure copied from Olaus Magnus' map of the Northern lands.<sup>87</sup> Even when Gessner had live specimens and

<sup>79</sup> 'Lucas Schan pictor Argentoratensis aves plurimas ad vivum nobis expressit, & quarundam historias quoque addidit, vir picturae simul et acupij peritus', *Historia animalium*, I,  $\gamma$ 1v; cf. also III, 488–98. For the artists, see Gmelig-Nijboer, *Conrad Gessner's 'Historia Animalium'* (as in note 4), 78, 84.

<sup>80</sup> 'Chela astaci marini, qualem et quantum domi habeo, sed paulo brevior. Pictoris artificio ita pingi potest, ut facies hominis ridicula appareat', *Historia animalium*, IV, 119; 'Figura haec schellariae nostrae rostri latitudinem non exprimit: quod emendabit pictor, si quis colores addet', *Historia animalium*, III, 115.

<sup>81</sup> 'Effigies haec squatinae Venetijs ad me missa, ad aridum piscem extensum facta videtur: vivo enim non probe respondet', *Historia animalium*, IV, 1082.

<sup>82</sup> 'Icon haec Venetijs facta est: Rondeletij melior erat . . .', *Historia animalium*, IV, 491.

<sup>83</sup> See the cases of the reindeer (noted in Ogilvie, *The Science of Describing* (as in note 20), 237–8) and of the ostrich: 'Quidam pictura nostra inspecta, rostrum aiebat latius debuisse exprimi, anserinum fere: & pedes magis bifulcos ut vituli, eosdemque breviores et latiores. Iudicent testes oculati. mihi enim hanc avem nondum videre contigit', *Historia animalium*, III, 710, also noted by Gmelig-Nijboer, *Conrad Gessner's 'Historia Animalium'* (as in note 4), 53.

<sup>84</sup> 'Minora animalia, inter aves, pisces, et insecta praecipue, ea qua vivunt magnitudine plerunque expressa sunt, si libri vel chartae spatium admittebat. Maiora vero necessario imminuta sunt: quod si non satis certa proportione inter ea servata ubique facta est imminutio illa, excusare me poterit, partim pictorum diversitas quibus usi sumus, idque diversis temporibus et locis: partim occupationes plurimae, quae me tum libro conscribendo tum alias intricabant, ut picturis operam dare satis non possem, eamque curam fere in typographos rejicerem. Sed de magnitudine et magnitudinum inter se proportione non admodum refert, dum caetera bene habeant, in quo quidem curando pro mea parte diligentiae nihil intermisi', *Historia animalium*, I,  $\gamma$ 1v.

<sup>85</sup> *Ibid.*

<sup>86</sup> 'Error factum est per festinationem, ut superius gallinaei iconis loco gallinae icon posita sit. cuius occasione hic contra gallinaeum pro gallina ponitur', *Historia animalium*, III, 414.

<sup>87</sup> 'Icon haec onocrotalis est, capti in Helvetica in Lacu prope Tugium, quem ipsi inspeximus. Onocrotali caput, a pictore quodam olim nobis communicatum. Onocrotali figura ex tabula septentrionali Olai Magni', *Historia animalium*, III, 605.

could give his own depiction and description, as in the case of the *porcellus indicus* (guinea pig to us), he provided a picture sent to him by a nobleman in Paris, cited a verbal description by Johann Heinrich Munzinger, the learned physician to the Fugger family who had originally given him a pair of guinea pigs, and further added Peter Martyr's reference to a similar animal in his book on the New World.<sup>88</sup> This suggests that direct observation did not trump other types of pictures or textual descriptions.

In the *Icones* of 1560, 'more accurate (accurator)' images were added of the camel, the elk, the zibeth cat.<sup>89</sup> In each case, however, the older woodcuts were retained.<sup>90</sup> Gessner himself acknowledged in the preface that not every picture was drawn in the best way and that quite a few were mediocre but tolerable. Indeed some were fictitious, in which case he had always stated its source or the author. Yet, according to Gessner, even the rather badly or fictitiously drawn images could be of some use in collations.<sup>91</sup> Indeed the variable quality of pictures was almost inevitable, given Gessner's urge to be comprehensive. Since it was impossible for just one person to travel through various parts of the globe, one had to make do with what friends sent in, even though sometimes they may not be the best drawn pictures. In fact, Gessner said, false or partly false pictures were not entirely useless, if its author is noted and deception is not intended, for it might prompt others to investigate further or to send in true images.<sup>92</sup>

Pinon points out that Gessner did not discard older or less accurate, textual descriptions of an animal when newer or more accurate ones were found, so as to retain earlier states of knowledge.<sup>93</sup> Gessner's retention of old images alongside new and more accurate ones may have a similar purpose. Additional pictures of the same animal could also be cited to show agreement among different sources, and therefore enhance the reliability of images given.<sup>94</sup> Gessner's uses of images, then, may best be understood along his textual strategies, as he applied the same criteria, as Ogilvie has also noted.<sup>95</sup>

<sup>88</sup> *Appendix Historiae quadrupedum viviparorum et oviparorum* (Zurich: C. Froschauer, 1554), p. 19.

<sup>89</sup> *Icones* (1560, as in note 29), 124-5 (camel); 125 (elk); 126 (zibeth cat).

<sup>90</sup> *Icones* (1560, as in note 29), 42 (camel); 53 (elk); 72 (zibeth cat).

<sup>91</sup> 'Quod ad Icones: agnosco non omnes optime pictas: non mea tamen culpa: qua de re nunc dicere tempestivum non est. Mediocres quidem sunt pleraque, et tolerabiles: quandoquidem his meliores (De quadrupedibus loquor) hactenus publicatae non sunt. Fictitiae vero, ut quidam suspiciatur, nullae sunt, vel si quae sunt, non approbantur a me, sed notantur aut reprehenduntur: ut Olai Rangifer, aliaque pauca in Quadrupedibus, in Aquatilibus plura: et Salamandra quorundam etc. Quod si quae ipse non pinxi (id est, pingenda curavi) ad vivum, auctores citavi a quibus acceperim, aut quorum e libris mutuatus sim. Paucas quasdam in hac editione accuratiores dedi, relictis tamen etiam veteribus: ut ex collatione appareat illas quoque non omnino malas neque fictitias esse, ut Alcis, Lyncis, Felis Zibethis', *Icones* (1560, as in note 29), p. 7.

<sup>92</sup> 'Fieri non potest ut unus homo diversas Orbis regiones adeat, et quae singulis peculiaris sunt ipse videat. Acquiescendum est illis quae miserint amici: quamvis non optime aliquando expressis. Falsas etiam vel prorsus vel aliqua ex parte imagines, illarum rerum, quarum veras adhuc nemo dederit, exhibere, modo nominato auctore et nulla dissimulatione id fiat, non est inutile: sed occasio ad inquirendas ab aliquibus, aut communicandas ab iis qui iam habent, veras', *Icones* (1560, as in note 29), p. 7.

<sup>93</sup> Pinon, 'Conrad Gessner' (as in note 5), 258-9.

<sup>94</sup> 'Alces figuram doctissimus vir Seb. Munsterus ad nos misit, ad vivum (ut ait) pictam, quae a nostra nihil differt, nisi quod iubata non est', *Historia animalium*, I, 1097.

<sup>95</sup> Ogilvie, *The Science of Describing* (as in note 20), 237-40.

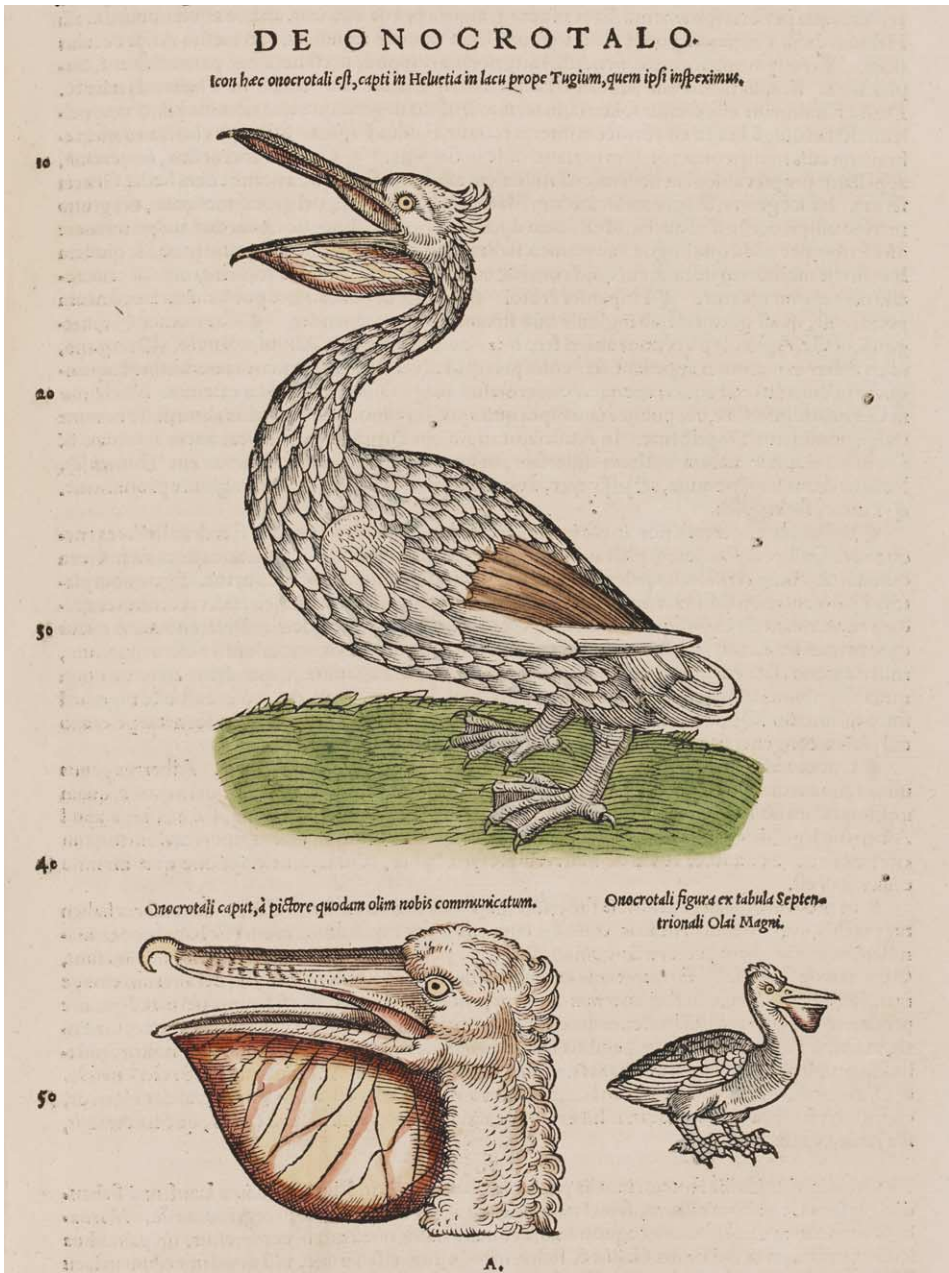


Figure 12. Pelican. Gessner, *Historia animalium*, III, 605. Cambridge University Library, N\*.1.20(A). Reproduced by kind permission of the Syndics of Cambridge University Library.

In the case of the salamander, it appears that Gessner went out of his way to include an erroneous image. In the *Icones* published in 1553, some of the woodcuts (presumably just those that were ready) for oviparous animals to be used in the second volume were included—for the salamander, there were two images, one of a



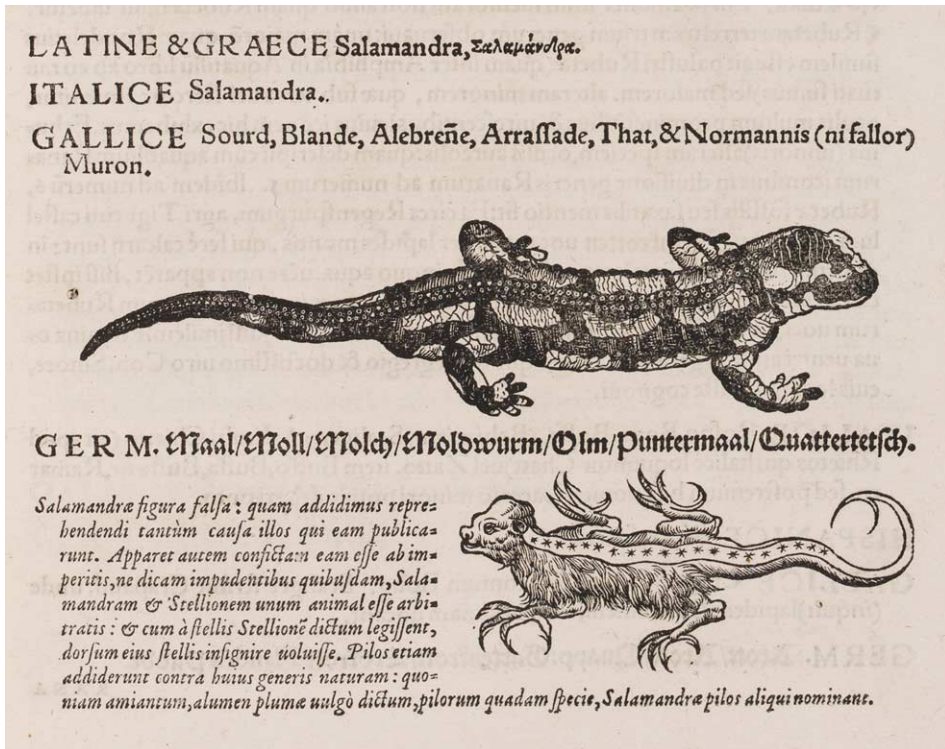


Figure 13. Salamandar. Gessner, *Icones animalium* (1560), 119. Cambridge University Library, N\*.1.22(A). Reproduced by kind permission of the Syndics of Cambridge University Library.

(fire) salamander and another of a hairy creature with stars on its back.<sup>96</sup> Gessner described the latter as depicted recently by some people, but it was an unreliable image.<sup>97</sup> It is most likely that this image was copied from Breydenbach's book on travels to the Holy Land.<sup>98</sup> In the second volume, published the year after, in 1554, Gessner retained the reasonably accurate woodcut of a fire salamander, but noted in the text that it looked different from a picture found in other books which had stars on its back and that it was a product of a confusion of the salamander and the *stellio* (lizard).<sup>99</sup> In the *Appendix* to the first and second volumes (1554), Gessner included the Breydenbach salamander again, now labelled as 'false'.<sup>100</sup> This 'false' woodcut nevertheless reappeared, alongside the 'true' image of the salamander in the *Icones* (1560) (Figure 13).<sup>101</sup> The reason why people might have thought that the 'false' image

<sup>96</sup> *Icones* (1553, as in note 14), 57–8.

<sup>97</sup> 'Ex recentioribus aliqui sequentem figuram pro Salamandra pingunt, nullius omnino apud me fidei', *Icones* (1553, as in note 14), 58.

<sup>98</sup> It is possible that it was copied from another source which had copied the image from Breydenbach, for example, Gregor Reisch, *Margarita philosophica* (Strasbourg, J. Schott, 1503), Diiijr.

<sup>99</sup> *Historia animalium*, II, 74.

<sup>100</sup> *Appendix* (as in note 88), 27.

<sup>101</sup> *Icones* (1560, as in note 29), 119.

was a picture of the salamander is again explained as a philological confusion.<sup>102</sup> Though it is possible that the inclusion of more than one woodcut for an animal was a way for the publisher to re-use woodcuts and 'pad out' a new pictorial edition, Gessner's explanation suggests that there were intellectual reasons for doing so—namely to dispel a possible misconception in readers who may be familiar with an (incorrect) image from an earlier publication. By juxtaposing 'true' and 'false' ones, and explaining how the better-known figure was 'false', and how it had arisen out of a confusion of names, Gessner lent more credibility to the 'more accurate' image. This kind of juxtaposition could thus also function as a form of persuasion.

#### 4. Conclusion

The sources of Gessner's images were thus varied—they included live, dried or partial specimens; images from other printed books, manuscripts, maps and prints; drawings made by artists at his request; drawings sent in by his friends and chosen by Gessner. Their qualities were also varied: accurate, tolerable, false or uncertain. Such variety in the origin and the quality of images should not be read as a result of a hoarding habit of a scholar without any discrimination. Gessner's visual world was wider than the strictly self-observable, and his aim was to gather and order everything that was ever written or known about an animal, past or present. This world was certainly colourful, as the original drawings for the *Historia animalium* suggest, and Gessner hoped and wrote for an audience who had a coloured copy. It is nevertheless important to remember the economical and technical obstacles for replicating this colourful world of animals in every copy of the *Historia animalium*, as he lamented how colours were applied carelessly and perfunctorily as a result of the 'avarice' of the printer.<sup>103</sup>

A focus on the sources of images in Gessner's *Historia animalium* helps to highlight the importance of understanding the uses and functions of images in relation to the text, and to the larger project envisaged by Gessner. The use of a wide range of sources for images with a varying degree of quality becomes understandable within Gessner's enterprise of gathering everything that was ever written or known about an animal. As he cited and collated a variety of texts from a variety of writers, so too did he gather and juxtapose images from a variety of sources, often, but not always, specified.<sup>104</sup> The criterion of direct observation of a live specimen was not the most important one in the choices and the uses of images for Gessner, but it would be unhelpful to characterise Gessner's *Historia animalium* as a haphazard collection of facts, fictions and folklore. Instead, historians ought to appreciate and acknowledge a visual and pictorial world of the sixteenth century which was not necessarily defined by direct observation, and in turn seek to understand description and

<sup>102</sup> 'Salamandrae figura falsa: quam addidimus reprehendendi tantum causa illos qui eam publicarunt. Apparet autem confictam eam esse ab imperitis, ne dicam impudentibus quibusdam, Salamandram et Stellionem unum animal esse arbitratis: et cum a stellis Stellionem dictum legissent, dorsum eius stellis insignire voluisse. Pilos etiam addiderunt contra huius generis naturam: quoniam amiantum, alumen plumae vulgo dictum, pilorum quadam specie, salamandrae pilos aliqui nominant', *Icones* (1560, as in note 29), 119.

<sup>103</sup> Gessner to Johannes Crato a Crafftheim, 26 March 1564, Gessner, *Epistolarum medicinalium* ... *Libri III* (as in note 71), 22r.

<sup>104</sup> For the meaning of an 'ad vivum' image for Gessner as inspired by Wenzel Jamnitzer's artwork, see my 'Conrad Gessner on an "ad vivum" image', forthcoming.

visualisation in the early modern period in much wider and more historical contexts. In particular, a study of the sources of images can bring to light the intersection among observation of nature, textual traditions and intellectual networks in Renaissance natural history.

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