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Fact Checking: Can Ostriches Digest Iron?

October 5, 2013
By Thierry Buquet



Tractatus de Herbis. 15th century. London, British Library, Ms Sloane 4016, f. 96.

There were many different legends in the Middle Ages about imaginary beasts and many imaginary properties ascribed to real animals. One of these most striking properties concerns the ostrich's ability to eat and digest iron.

Originally, there were some observations stating that the ostrich, like many birds, eat stones. But this bird is quite big and the stones were quite huge. Perhaps these large stones impressed people, so they concluded that the ostrich could digest almost anything, especially metal. For example, Pliny mentions that its capacity for digesting the objects that it swallows indiscriminately is remarkable (Pliny, *Natural History*, X, 1, p. 292-293: *concoquendi sine dilectu devorata mira natura*). In the Middle Ages, Pliny's readers would have interpreted this as ostriches even being capable of digesting iron.

Iron, nails and horseshoes as iconographic attributes

In iconography, iron, mainly represented by a horseshoe, or more rarely by a nail, becomes the iconographic attribute of the ostrich, so that nobody could confuse it with any other long-legged and long-necked bird.

In a manuscript from the encyclopaedia of Thomas de Cantimpré, although no horseshoe can be seen, the bird is shown eating the gold paintings in the illumination. Even on parchment, the legend continues with the ostrich unable to refrain from eating this appetizing gold bowl.



Thomas de Cantimpré, Liber de natura rerum, circa 1285. Valenciennes, Bibl. Mun., ms. 320, f. 108. Creative Commons IRHT

Digesting iron? An Arabic experiment

Today it is known that no animal can digest iron, but a few centuries ago there was some question as to whether this was true. There were some people who wanted to check out this legend, not simply believing what they read in ancient authorities or in encyclopaedias. They wanted to experience this oddity by themselves and see with their own eyes ostriches eating and digesting iron.

The oldest such experiment I have found appears in an Arabic context and dates from the ninth century. The great al-Ǧaḥīẓ relates this experiment in his *Kitāb al-Ḥayawān* (Book of Animals). After having proven that the ostrich stomach cannot melt rocks with its supposedly burning belly, al-Ǧaḥīẓ relates the following experiment that had been told to him. One day, two scholars threw burning embers to an ostrich that swallowed them without hesitation. After that, they threw burning stones and the bird swallowed them too. Going further, they heated small bits of metal, and the ostrich ate those as well (what an appetite!). The two scholars were quite incredulous and wanted to check whether the ostrich was really able to digest this metal, even though they had to sacrifice the bird by opening up its belly. One scholar heated scissors to a red-hot temperature and threw it to the bird which swallowed it. But of course, the sharp scissors pierced the bird's neck when it swallowed them, killing the ostrich. Al-Ǧaḥīẓ explains that the experiment was then ended because the scholars had their answer... (al-Ǧaḥīẓ, *Kitāb al-Ḥayawān* IV, p. 320-321 ; tr. Souami, p. 269-270).



Arabic keeper with ostrich. Guillaume Durand's Pontificalis, ca. 1357. Paris, Bibliothèque Sainte-Geneviève, Ms 143, f. 12. Creative Commons IRHT

For centuries, despite this early experiment, the legend of iron-digestion persisted in mediaeval Arabic natural history and encyclopaedias. Even more extraordinary was the fact that the blade of an iron sword, having been swallowed and rejected by the ostrich was supposed to become unalterable and unbreakable (Viré, 1993, p. 830). One author from the fourteenth century even adds that this fact had been demonstrated through experimentation! (Ibn Manglī, *De la chasse*, p. 177).

Albertus Magnus was another great experimenter. In the thirteenth century, he uses frequently his own observations in his *De animalibus* to contradict the ancient authorities. He observed ostriches and says that this animal had been quite common in Europe for a long time. He carried out several experiments, spreading out pieces of iron for a number of ostriches. However, the birds refused to eat the iron. He adds that they did eat rocks and large, dry bones that had been broken into smaller pieces but no metal at all (Albertus Magnus, *De animalibus*, 23.139, cap. 102).

The pilgrim fact-checking

At the end of the Middle Ages, many pilgrims were able to see ostriches in oriental countries, especially in Egypt where these birds were kept in menageries or sold in markets. But contrary to the Albertus experiment, some of them report that they had proven that ostriches eat iron.

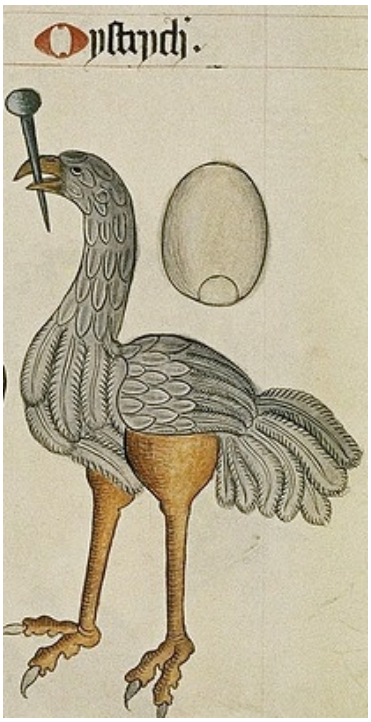
Bas-de-page scene of a man feeding horseshoes and nails to an ostrich. The Queen Mary Psalter, 1310-1320. London, British Library, Ms Royal 2B vii, f. 114.

Such is the case of Paul Walther of Guglingen who wrote in his travel account:



"I have proven that the ostrich eats iron. In the presence of my companions, I gave to it a rather large nail, about the size of a finger, and the bird swallowed it as soon as she had received it from my hand". (Walther of Guglingen, *Itinerarium*, p. 241).

But the pilgrim does not say a word about what happened just after this marvellous event. Did the ostrich die? We will never know.



Tudor Pattern Book. ca 1520-1530. Oxford, Bodleian MS. Ashmole 1504, fol. 40 (detail)

Some modern enquiries and experiments

Ulysses Aldrovandi in the sixteenth century did observe ostriches swallowing iron but he adds that the bird instantly rejects the metal without digesting it. Sir Thomas Browne, in his *Pseudodoxia epidemica* (Enquiries into vulgar and common errors, 1658, Book III, cap. 22, p. 132-134) cites Aldrovandi and other observers like Albertus to cast doubt on this legendary property of the ostrich. Browne admits he never "had the opportunity of its experiment" (good luck for some of the birds in the area...). Browne concedes that while it has been observed that the animal sometimes swallows stones and objects like many other animals, he refuses to accept that the gizzard of the bird could digest these objects, observing that stones eaten by poultry can be found in their excrement or in their bellies after death.

In the first modern zoos from the seventeenth and eighteenth centuries, animal keepers still tried to feed ostriches with nails: In Holland, in 1659, an ostrich died and his stomach was found to contain dozens of "intact" nails. In the 1750's, in the Tower of London, an ostrich died from swallowing a nail "which stopt its passage". In 1781, the Tower staff appear to have carried out new tests, and the animal did not survive for long after that. After dissection, it was found to have more than eighty (!) nails in its belly (Hahn 2003, 173–174 and footnote). This brings us back to the Arabic experiment that presents the complete story with dramatic endings. For a long time animals were sacrificed

in experiments for the benefit of human knowledge and scientific progress...

Bibliography

Sources

- Albertus Magnus. *De Animalibus Libri XXVI : Nach Der Cölner Urschrift*. Hermann Stadler (ed.), 2 vols. Beiträge Zur Geschichte Der Philosophie Des Mittelalters 15-16. Münster: Aschendorff, 1916.
- Albertus Magnus. *On animals : a medieval summa zoologica*. Translated by Kenneth Francis Kitchell and Irven Michael Resnick. 2 vols. Foundations of natural history. Baltimore: Johns Hopkins University Press, 1999.
- Browne, Sir Thomas. *Pseudodoxia Epidemica*. London: Printed by R.W. for N. Ekins, at the Gun in Paul's church-yard, 1658. http://books.google.com/books?id=kSjH4tiEhGUC.
- Frederick II Hohenstaufen. *L'art de chasser avec les oiseaux: le traité de fauconnerie "De arte venandi cum avibus."* Anne Paulus and Baudouin Van Den Abeele (eds), Bibliotheca cynegetica 1. Nogent-le-Roi: J. Laget, 2000.
- Ibn Manglī. 1984. *De La Chasse : Commerce des Grands de ce monde avec les bêtes sauvages des déserts sans onde*. Translated by François Viré. La Bibliothèque Arabe. Les Classiques. Paris: Sindbad.
- al-Ǧāḥiẓ, ʿAmr ibn Baḥr. *Kitāb al-Ḥayawān*. Edited by ʿAbd as-Salām Muhammad Hārūn. 7 vols. Le Caire: Matb'at Mustafā al-Bābī al-Halabī, 1938.
- al-Ǧāḥiẓ, *Le cadi et la mouche, Anthologie du livre des animaux*. Translated by Lakhdar Souami. Bibliothèque arabe. Paris: Sinbad, 1988.
- Pliny the Elder. *Natural History. III, Libri VIII-XI*. H. Rackham (ed.), Loeb Classical Library 353. London-Cambridge (Ma): William Heinemann-Harvard University Press, 1940.
- Walther von Guglingen, Paul. 1892. *Itinerarium in Terram Sanctam et Ad Sanctam Catharinam*. Matthias Sollweck (ed.), Bibliothek Des Litterapischen. Vereins in Stuttgart 192. Tübingen: Gedruckt für den Litterarischen Verein in Stuttgart. http://www.archive.org/details/fratrispauliwal01waltgoog.

Studies

- Hahn, Daniel. 2003. *The Tower Menagerie: Being the Amazing True Story of the Royal Collection of Wild and Ferocious Beasts*. London: Simon & Schuster.
- Laufer, Berthold. 1926. *Ostrich Egg-shell Cups of Mesopotamia and the Ostrich in the Ancient and Modern Times*. Anthropology, Leaflet 23. Chicago: Field Museum of Natural History. http://archive.org/details/ostricheggshellc24lauf
- Viré, François. 1993. "Na ʿām." *Encyclopaedia of Islam. Second Edition*. Vol 7 (MIF-NAZ). Leiden: Brill, p. 828-831.

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