Svenska Linnésällskapets Årsskrift

Årgång 1996–1997

SVENSKA
LINNÉSÄLLSKAPETS
ÅRSSKRIFT

ÅRGÅNG 1996-1997

YEARBOOK OF THE

SWEDISH LINNAEUS SOCIETY

UPPSALA 1998

INNEHÅLL

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The Sources of Linnaeus on the Rhinoceros

Introduction

Carolus Linnaeus (1707-1778) is a good example to study the understanding of the systematics of the recent rhinoceroses in the 18th century. His treatment of the subject in the context of his *Systema Naturae* reflected his age rather well, while he did not manage to contribute new insights in the then contentious matter of the number of species of rhinoceros in existence. We could say that Linnaeus was just as confused as his contemporaries. Most authors confidently wrote about the rhinoceros with one horn, but as soon as a second horn appeared in the texts, they tried to accommodate that second horn in their concept of a single-horned rhinoceros with increasingly complicated arguments (Rookmaaker 1981). This reluctance to add another species of mammal in the world's fauna is rather surprising in an age when unicorns and dragons were still discussed in extenso. Linnaeus in his own way struggled with this issue, trying to understand if different species of rhinoceros could be allowed, how many horns each had and where they lived. Our present late 20th-century understanding is as follows. There are two species of rhinoceros with a single horn in Asia, with one incisor (on either side) in both jaws and one canine tooth in the lower jaw: Indian rhinoceros *Rhinoceros unicornis* Linnaeus, 1758; and Javan rhinoceros *R. sondaicus* Desmarest, 1822. There is one species of rhinoceros with two nasal horns in Asia, with one upper incisor and one lower canine: Sumatran rhinoceros *Dicerorhinus sumatrensis* (Fischer, 1814). Finally, the two African species are double-horned and lack any frontal teeth: black rhinoceros *Diceros bicornis* (Linnaeus, 1758); and white rhinoceros *Ceratotherium simum* (Burchell, 1817).

The Rhinoceros in the Systema Naturae

In the first edition of the *Systema Naturae* of 1735, Linnaeus divided the mammals (Quadrupedia) into five orders characterized by the number of frontal teeth (including incisors and canines). This use of dental characters was the major innovation compared with the previous attempts to classify mammals. The rhinoceros appears, with a question mark, as a kind of elephant in the or-

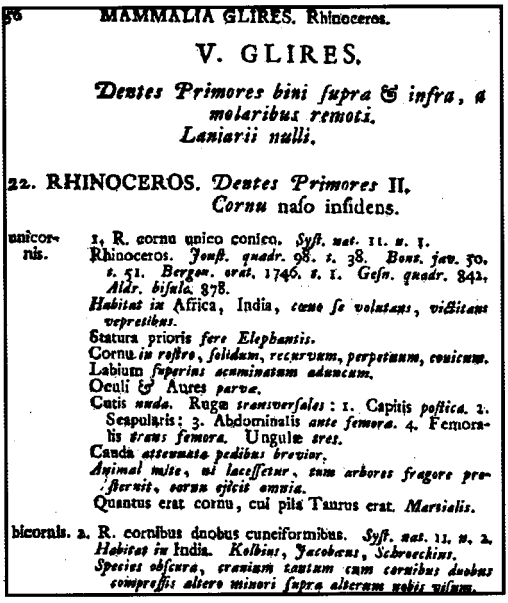
der Jumenta, a group of animals with uncertain or various numbers of frontal teeth. The reason of the question mark is not clear, probably it meant that Linnaeus had not studied the animal and was uncertain about its number of teeth.

In the second edition of 1740 (and in the 3rd to 5th editions), Linnaeus continued to class the rhinoceros in the order Jumenta as part of the genus *Elephas*, characterized by the absence of incisors and the presence of long superior canines, which referred to the elephant's tusks ('incisores nulli, canini superiores longi'). Linnaeus instinctively tried place the rhinoceros in his system close to the equally pachydermatous elephant, but he never studied the teeth in a rhinoceros skull.

In the sixth edition of 1748 (and in the 7th to 9th editions), the rhinoceros continued to be classed in the order Jumenta, but it was awarded its own genus (*Rhinoceros*) having two incisors on either side of the jaw and no canines ('incisores utrinque II, canini nulli'). The genus contained two species, the first with one horn, the second with two horns (no localities indicated). The dental formula differs from any of the existing rhinoceros species, which makes one wonder if Linnaeus actually studied a specimen in detail. One could suggest that he saw the lower jaw of either the Indian or the Javan rhinoceros, which has two frontal teeth, without realising the difference from the upper jaw. Linnaeus was rather brave to allow the two species known mainly from the number of horns. Although it was a reasonable interpretation of available information, it was still subject to controversy: some authors attributed differences in number of horns to age, sex, or climate.

In the tenth edition of 1758, Linnaeus essentially did not change much (fig.1). The genus *Rhinoceros* still has two front teeth on either side ('dentes primores II') and there are two species, *unicornis* (in India and Africa) and *bicornis* (in India). However, on a higher level, Linnaeus realised that an animal with 2 front teeth actually belonged in the order Glires, where the rhinoceros now appeared, rather incongruously, away from other pachyderms together with various kinds of rodents. It seems as if Linnaeus wanted to defend his acceptance of two species, convinced of the reality of the double-horned rhinoceros by the examination of a skull: 'cranium tantum cum cornibus duobus compressis altero minori supra alterum nobis visum' [I have seen the whole skull with two flattened horns, the smaller one located above the other].

In the twelfth edition of 1766, Linnaeus continued to allow one genus *Rhinoceros* with two frontal teeth on either side, with two kinds. However, the double-horned kind is now shown as a 'variety' of the single horned rhinoceros:



56 MAMMALIA GLIRES. Rhinoceros.

V. GLIRES.

Dentes Primores bini ſupra & infra, a molaribus remoti.
Laniarii nulli.

22. RHINOCEROS. *Dentes Primores* II.
Cornu naſo inſidens.

unicornis. 1. R. cornu unico conico. *Syſt. nat.* 11. *n.* 1.
Rhinoceros. *Jonſt. quadr.* 98. *t.* 38. *Bonr. jav.* 50, *t.* 51. *Bergon. orat.* 1746. *t.* 1. *Geſn. quadr.* 842, *Aldr. biſula.* 878.
Habitat in Africa, India, *cœno ſe volutans, victitans vepretibus.*
Statura prioris *fere Elephantis.*
Cornu *in roſtro, ſolidum, recurvum, perpetuum, conicum.*
Labium *ſuperius acuminatum adunctum.*
Oculi & Aures *parvæ.*
Cutis *nuda.* Rugæ *transverſales*: 1. Capitis *poſtica.* 2. Scapularis: 3. Abdominalis *ante femora.* 4. Femoralis *trans femora.* Ungulæ *teres.*
Cauda *attenuata pedibus brevior.*
Animal mite, ni laceſſetur, tum arbores fragore proſternit, eorum ejectis omnia.
Quantus erat cornu, cui pila Taurus erat. *Martialis.*

bicornis. 2. R. cornibus duobus cuneiformibus. *Syſt. nat.* 11. *n.* 2.
Habitat in India. *Kolbius, Jacobæus, Schroeckius.*
Species obſcura, cranium tantum cum cornibus duobus compreſſis altero minori ſupra alterum nobis viſum.

Fig. 1. Facsimile of Linnaeus, Systema Naturae, 10th edition, p. 56 with the text on the genus Rhinocerus.

1. *unicornis*, ß *bicornis*, with a common diagnosis and locality. The meaning of this slight change and the reason for it are not clear from the text.

The different dental formulae found in the five species of rhinoceros currently recognised obviously would have upset the division of mammals into orders based only on the number of front teeth from the start. Linnaeus should have realised that even the two species which he claimed to know could not fit together in one genus. Maybe the controversial status of the double-horned rhinoceros kept him from another brave step, probably the absence of comparative osteological material did not allow far-reaching conclusions. However, one wonders what Linnaeus actually did examine. He claimed, implicitly, to have seen the skull of a rhinoceros from India, with two nasal horns, and at the same time provided with two frontal teeth in either side of the jaw. Such an animal does not exist in nature, even to suggest a confusion with the double-horned Sumatran rhinoceros leaves one to explain an anomalous dentition.

It is time to study the sources which led Linnaeus to propose the classification of the rhinoceros as he did. First, I will list the authors which he quoted in the various editions of the *Systema Naturae* in the section of the rhinoceros, with the illustrations, and secondly, I will examine the specimens which Linnaeus could have had at his disposal and search for the anomalous double-horned skull.

Literary sources

In the 10th (1758) and 12th (1766) editions of the *Systema Naturae*, Linnaeus referred to ten authors who had previously written about the rhinoceros. Each of these is briefly characterized below. They are listed in the order of the 10th edition, with those only found in the 12th added at the end. He also referred back to earlier editions of his own work, which does not need to be specified here, although it shows that his classification of the rhinoceroses essentially dates back to the sixth edition of 1748 (Thomas 1911).

1. "Jonst. quadr. 98, t.38" (Linnaeus 1758 & 1766 *R.unicornis*)
Johannes Jonston (1603-1675) published the *Historiae Naturalis de Quadrupedibus* in 1653. The rhinoceros (pp. 98-99) is described in quite general terms, without distinction of different kinds, including notes on the appearance and habits of these animals. They would be found 'in Africae desertis, Abasia, multis Asiae locis, regno Bengalae & Jacatra' [in remote regions of Africa, Abasia, several Asian places, the kingdoms of Bengal and Jacatra]. The accompanying plate 38 was based on the woodcut by Albrecht Dürer depicting an Indian rhinoceros in Lisbon in 1515 (fig. 2).

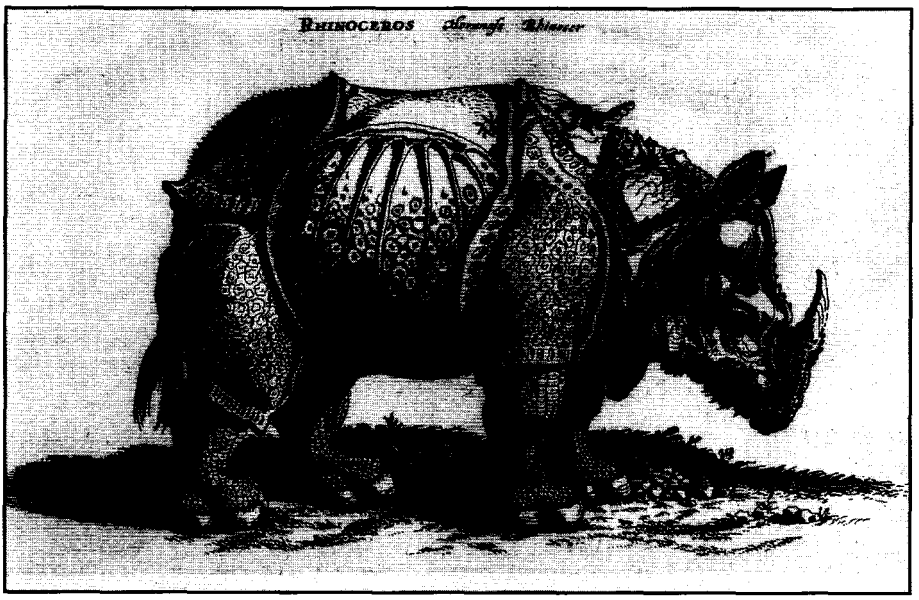


Fig. 2. The Indian rhinoceros (after Albrecht Dürer) in the Historiae Naturalis by J. Jonston, 1653. Lectotype of Rhinoceros unicornis L., 1758.

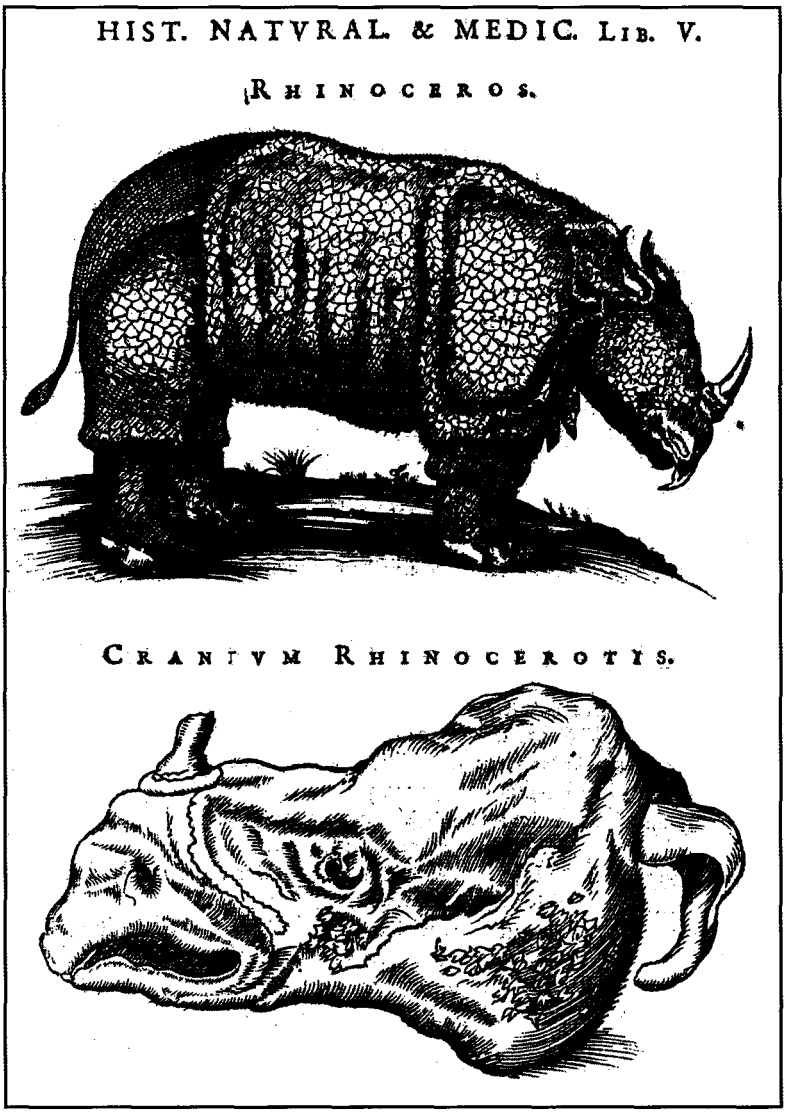
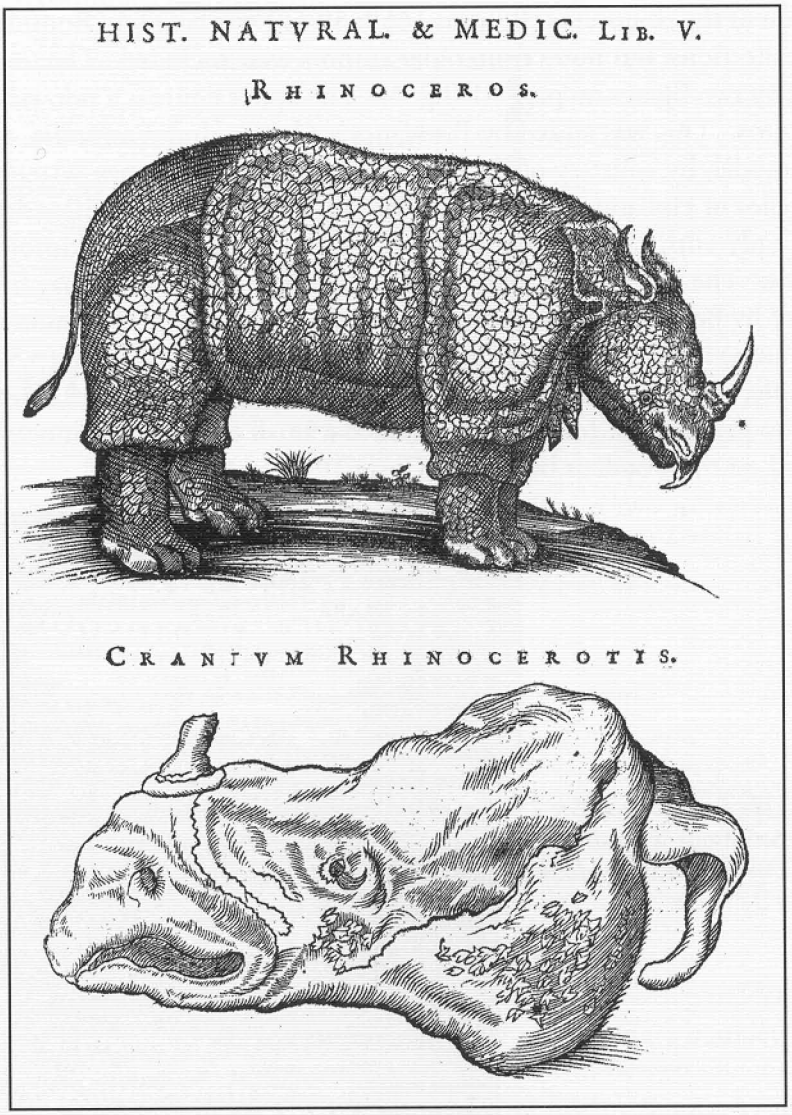


Fig. 3. The rhinoceros from the East Indies and a head illustrating the account by Bontius, in the edition of W. Piso of 1658.

2. "Bont.jav. 50, t.51" (Linnaeus 1758 & 1766 *R.unicornis*)
Jacob de Bondt or Bontius (1592-1631) served from 1627 to his death as physician to Jan Pietersz. Koen on Java, Indonesia. His notes on the animals of the East Indies were published after his death, usually cited (as by Linnaeus) from the 1658 edition edited by Willem Pies or Piso (1611-1678). Part of the de-



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scription of the rhinoceros (Bontius 1658: 50-52) was based on Bontius' personal recollections, but notes from older authors were included. The text is illustrated by two figures on page 51 (fig. 3). The upper figure is a side-view of the rhinoceros. This was added by Piso from a picture 'drawn in India, after the living model, by courtesy of the excellent gentleman Johannes Wttenbogaert, Chancellor of Holland in Amsterdam' (p.52). It is a rather primitive depiction, which only with some imagination shows the characteristic skinfolds of *R. sondaicus*. The lower figure shows the head of a rhinoceros. This may have been supplied by Bontius, or it may depict the specimen which on dissection revealed a large stone in the braincase as mentioned in a note added by Piso (p.52). The frontispiece of this entire volume published in 1658 (with other chapters on Brazil by Piso and G. Marcgrave) included a small figure of a rhinoceros (fig. 4) based on the woodcut by Dürer (Coste 1946).

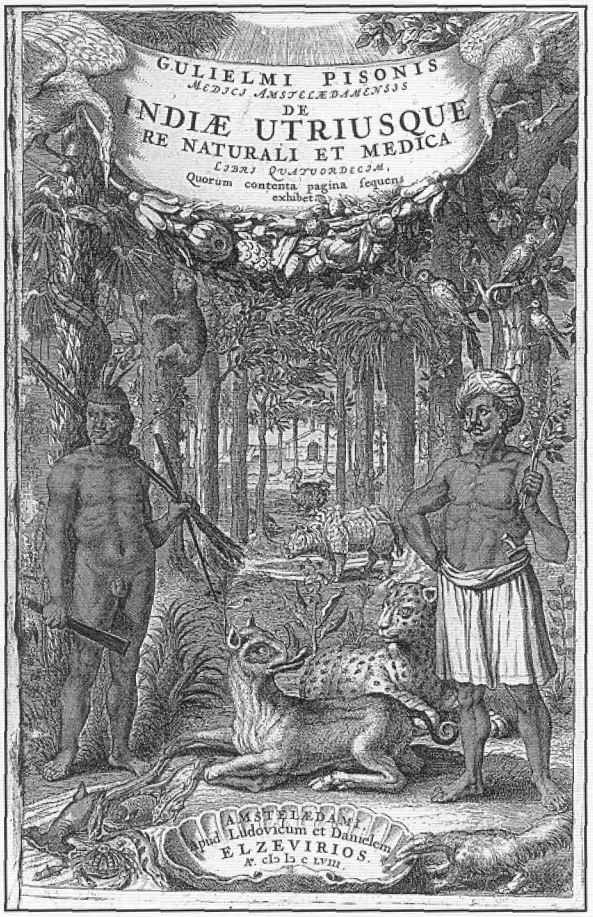
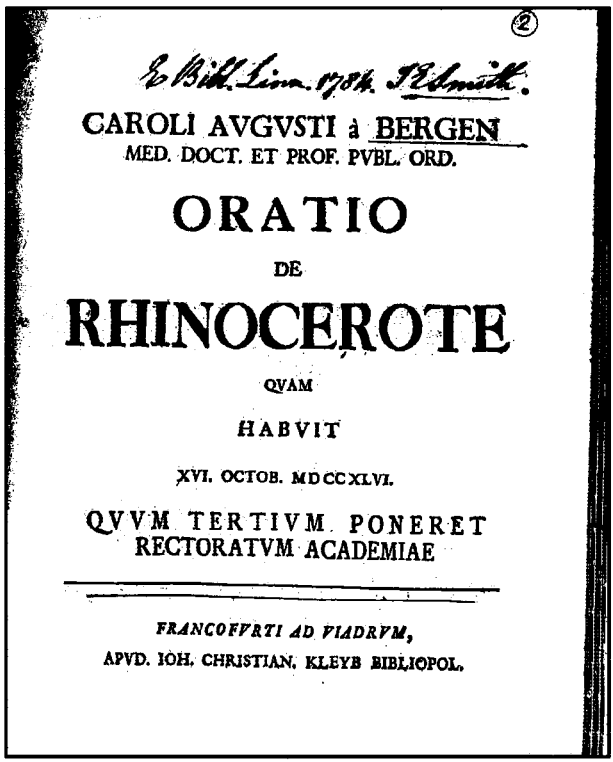


Fig. 4. The frontispiece of Piso's Indiae utriusque re naturali *of 1658 with a small Dürer-rhinoceros in the center.*



CAROLI AVGVSTI à BERGEN
MED. DOCT. ET PROF. PVBL. ORD.

ORATIO

DE

RHINOCEROTE

QVAM

HABVIT

XVI. OCTOB. MDCCXLVI.

QVVM TERTIVM PONERET
RECTORATVM ACADEMIAE

FRANCOFVRTI AD VIADRVM,
APVD. IOH. CHRISTIAN. KLEYB BIBLIOPOL.

Fig. 5. The title- pagee of C. A. von Bergen's Oratio (Linnean Society o London).

3. "Bergen orat. 1746, t.1" (Linnaeus 1758 & 1766 *R.unicornis*)
Carolus Augustus Von Bergen (1704-1759) delivered this inaugural lecture on 16 October 1746 (fig. 5). The text, published in a separate booklet, hardly contained any zoological details about the animal. Von Bergen saw the Dutch rhinoceros in his town, Frankfurt an der Oder, in July or August 1746. Linnaeus probably wanted primarily to refer to the plate 't.1', which is found in his copy of the booklet preserved in the Linnean Society, London (fig. 6). It is not quite certain that this plate actually was part of the volume when it was published, as two other known copies (Library of the University of Amsterdam and a second copy in the Linnean Society) do not contain a plate. Maybe it was inser-ted by the correspondent of Linnaeus who sent it to him. The engraving shows the Dutch rhinoceros and it is similar to a number of other posters or

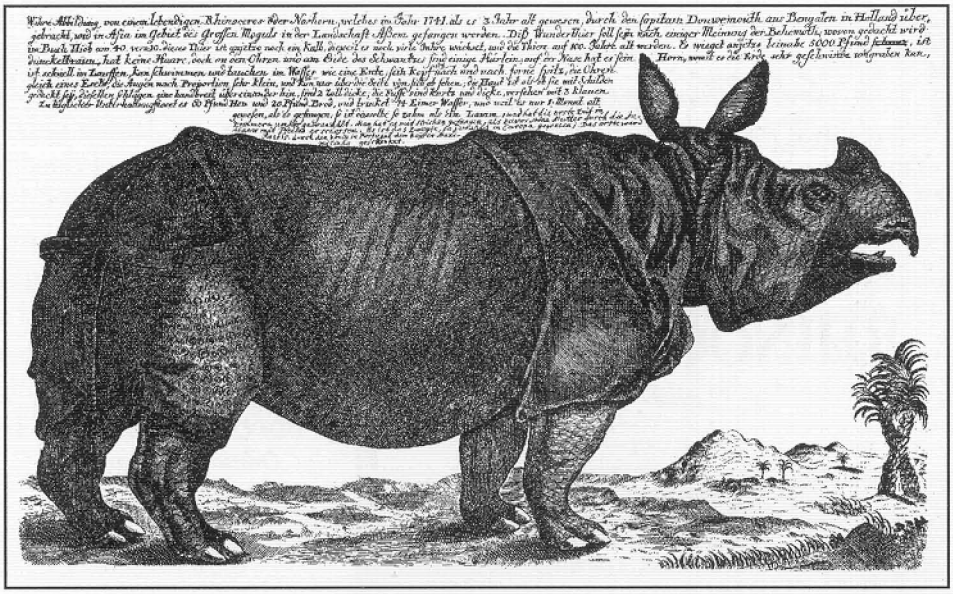


Fig. 6. The poster of the Dutch rhinoceros included in Linnaeus's copy of Bergen's Oratio de Rhinocerote, *1746*

broadsheets connected with the tour of that animal through Europe (Clarke 1986).

4. "**Gesn. quadr. 842**" (Linnaeus 1758 & 1766 *R.unicornis*)
Conrad Gessner (1516-1565) set out to collect information about all animals and he described the rhinoceros in general terms in his *Historia Animalium*. The first edition of the book appeared in 1551 in which the text on the rhinoceros is found on pp. 952-955. Linnaeus referred to the 3rd edition dated 1620, in which the rhinoceros is described on pp. 842-845. The text is illustrated (1551: 953, 1620: 843) with a rhinoceros copied from Dürer (fig. 7).

5. "**Aldr. bisulc. 878**" (Linnaeus 1758 & 1766 *R.unicornis*)
Ulysse Aldrovandi (1522-1605) tried to present an encyclopedic knowledge on all animals, and his text on the rhinoceros published in 1642 runs into not less than twelve folio-sized pages (pp. 878-889) discussing each and every possible aspect of its history and natural history in detail. This chapter is illustrated (on p. 884) with a rhinoceros after Dürer (fig. 8), very much similar to that in Gessner.

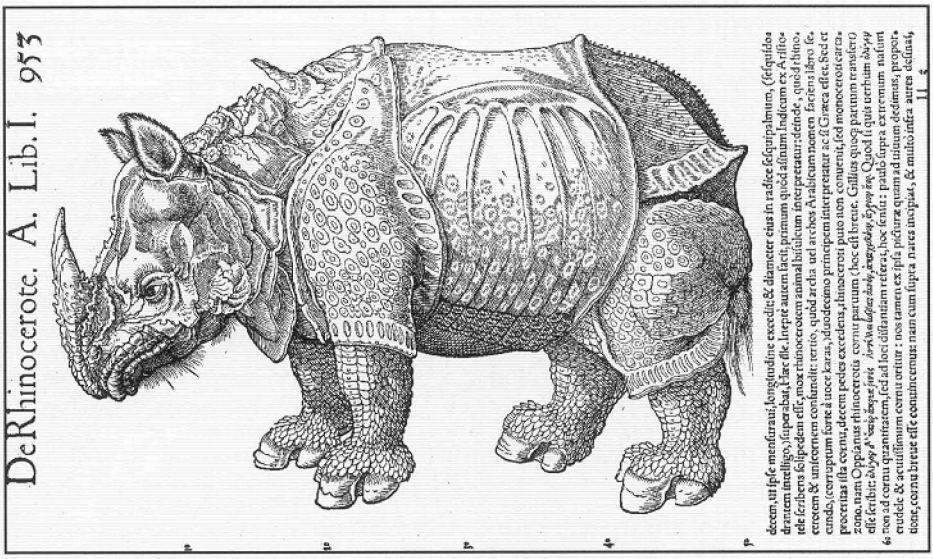


Fig. 7. The Indian rhinoceros (after Albrecht Dürer) in the Historia Animalium *by Gessner, first published in 1551, here reproduced after the edition of 1620.*

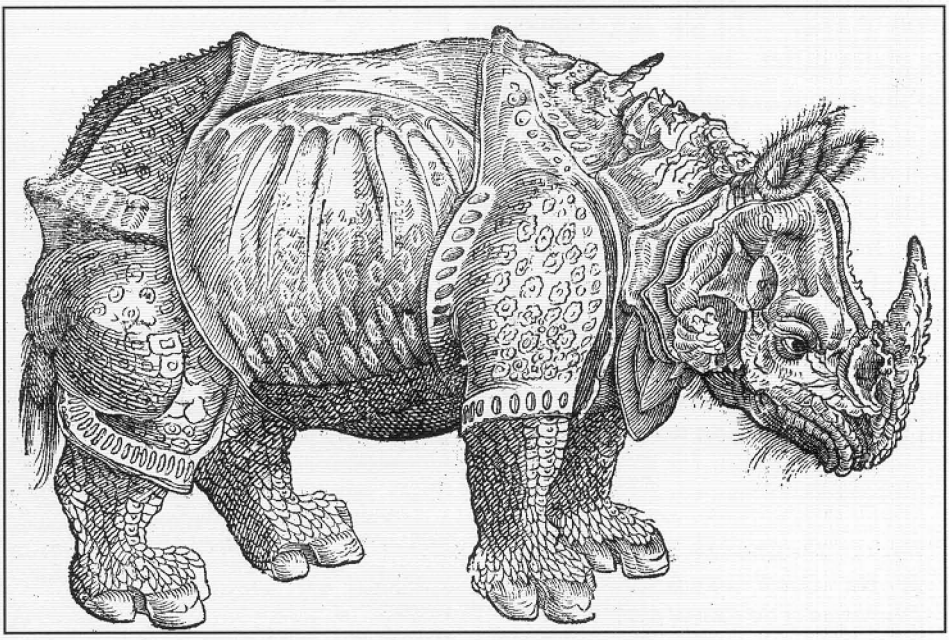


Fig. 8. The Indian rhinoceros (after Dürer) in the book on quadropeds by Aldrovandi of 1642.

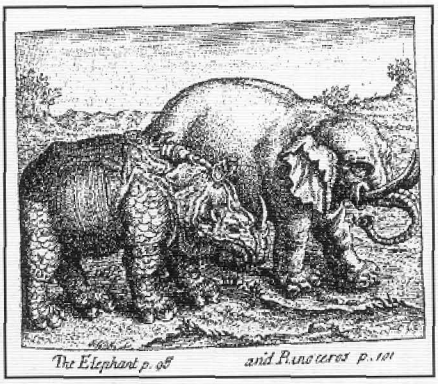


Fig. 9. The Dürer-Rhinoceros and Elephant as depicted by Kolb in his description of the Cape of Good Hope, published in 1719; here reproduced from the identical plate in the English translation of 1731.

6. "Kolbius" (Linnaeus 1758 *R. bicornis*) Peter Kolb (1675-1726) worked at the Cape of Good Hope from 1705 to 1712. The information on the geography, people, flora and fauna of the region was published first in German in 1719 (Rookmaaker 1989: 29). Kolb presented a lengthy description of the rhinoceros found at the Cape (pp. 159-160). This animal had two horns on the nose, one behind the other, which ensures that at least he had an idea of the appearance of the African rhinoceroses. Otherwise his text is quite a mixture gleaned from different areas and sources. It is not known which edition of Kolb's work Linnaeus consulted, either the original German text of 1719 or the Dutch translation of 1727. The text is the same, but the plates differ. In 1719, the account was illustrated (Tabula IV facing p. 158) by a rhinoceros based (incongruously with the text) on Dürer, fighting an elephant (fig. 9). The Dutch edition of 1727 had two plates, one a figurative copy after Dürer (facing p. 189) of the 'Rhinoceros zoo als die meest afgebeeldt worden' [Rhinoceros as usually shown] (fig. 10). The engraver of the plates in this Dutch translation was Jan Wandelaar

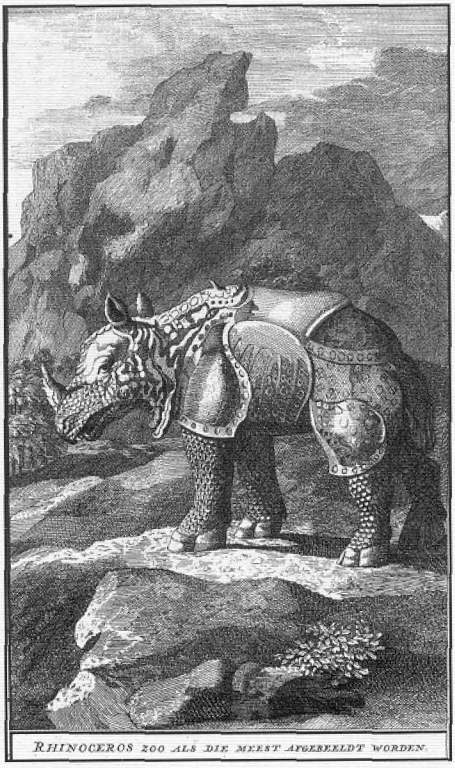


Fig. 10. 'The Rhinoceros as usually depicted' in the Dutch translation of Kolb's Description of the Cape of Good Hope, 127.

in Leiden. While he was working on this task, he found a drawing of a double-horned rhinoceros sent from the Cape of Good Hope to Caspar Commelinus (1668-1731), botanist at the Hortus Medicus in Amsterdam (Rookmaaker 1976). This provided him an example for a second, more naturalistic, plate (1727, facing p.190) of the black rhinoceros, 'Rhinoceros volgens deze beschryving' [Rhinoceros following this description] (fig. 11).

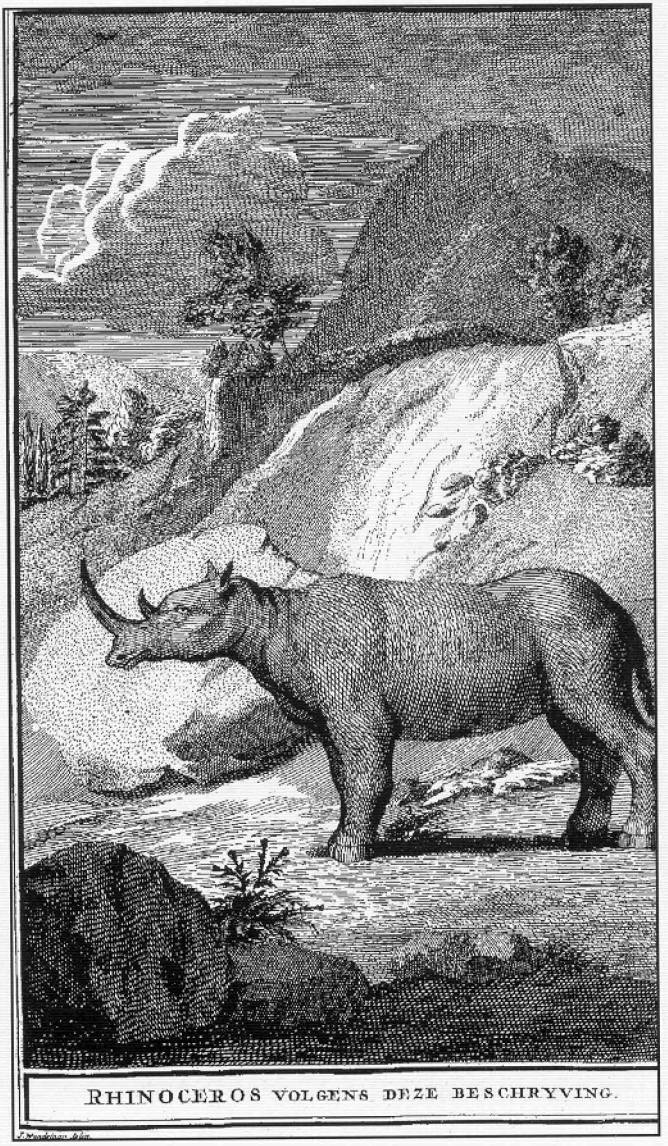


Fig. 11. 'Rhinoceros as following this description' inserted by the engraver Jan Wandelaar in the Dutch translation of Kolb's book, 1727.

7. "**Jacobaeus**" (Linnaeus 1758 *R. bicornis*)

Oligerus Jacobaeus (1650-1701) published a catalogue of the natural history cabinet of King Christian V in Copenhagen. It contained several specimens of rhinoceros (Jacobaeus 1696: 4): a double horn from an animal which died in the zoo of the Great Mogol in India, figured on pl. III fig.4 (see fig. 11); a number of single horns; and a piece of the hide. The rhinoceros would occur in 'Bengala, Cambaja, Malacca, Sumatra, Siam' and elsewhere. The reference to a collection of living animals ('vivarium') maintained by the Great Mogol is interesting, but it doesn't tell us much of the origin of the animal. The horns pictured on the plate seem to be from the black rhinoceros (Hopwood 1939).

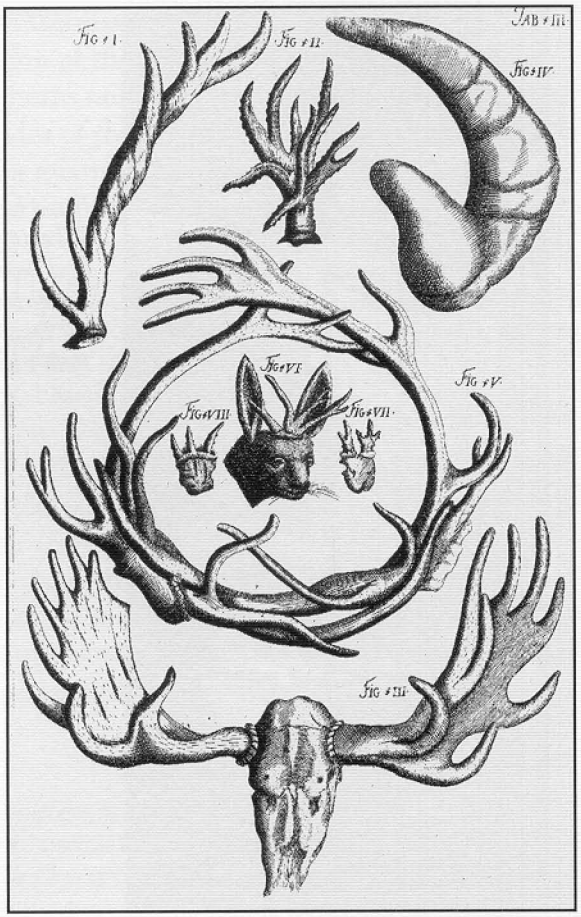


Fig. 12. The double horn depicted by Jacobaeus in 1696 from the Royal Collection in Copenhagen.

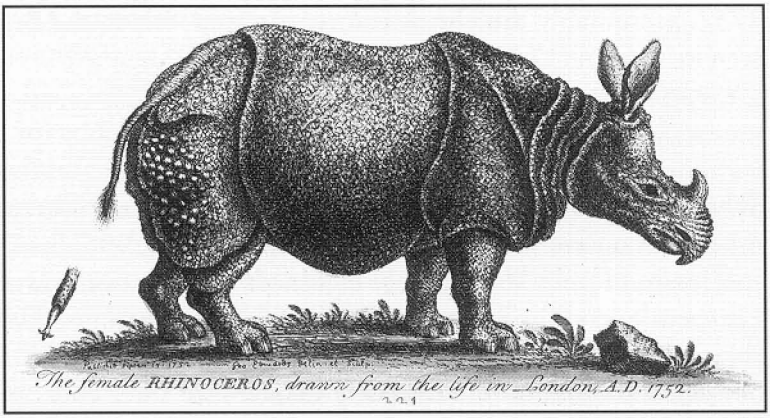


Fig. 13. The Indian Rhinoceros depicted by George Edwards from a specimen seen in London in 1752.

8. "Schroeckius" (Linnaeus 1758 *R. bicornis*)
Lucas Schroeckius (1646-1730), president of the Gesellschaft Naturforschender Freunde in Berlin, wrote a short paper on the double horn of a rhinoceros in 1686. This specimen was in the collection of a pharmacist in Augsburg, Joh. Georg. Michelius. This proved the existence of this animal, but added few details otherwise.

9. "Raj quadr. 122" (Linnaeus 1766 *R.unicornis*)
John Ray (1627-1705) described the rhinoceros in general terms in his *Synopsis methodica animalium quadrupedum* of 1693, pp. 122-123. The animal would occur in remote areas of Africa, Abassia, Bengala and Patane. There is no plate of the rhinoceros. The reference to Ray's work is also found in the second edition of the Systema Naturae (Linnaeus 1740), but it is absent in the 6th and 10th editions. Ray did not differentiate in any way between different types of rhinoceros.

10. "Edw. av. t.221 f.2" (Linnaeus 1766 *R.unicornis*)
George Edwards (1694-1773) published a series of 210 bird paintings with accompanying text in four volumes collectively called *A natural history of un'common birds* from 1743 to 1751. This was followed by the *Gleanings of Natural History* with a more divers subject matter, but despite the changed title, the numeration of the plates continued from the birds. The 'av.' in the reference by Linnaeus therefore stands for 'aves' or birds, and refers to this title. Edwards sent uncoloured copies of the plates to Linnaeus (Mason 1992: 43). The rhinoceros was depicted on the lower figure of plate 221 in the first volume of the *Gleanings* dated 1758 (fig. 13). It shows a female rhinoceros seen in London in

1752, presumably the Dutch rhinoceros on a visit to the British capital, also seen by Bergen (1746) as mentioned above.

Specimens

When trying to classify the mammals, Linnaeus must have relied on literature more than on examination of specimens. Wallin (1994) listed the existence of specimens of only 16 species of mammals in collections owned or studied by Linnaeus and still preserved in Uppsala. He mentioned five single horns of rhinoceros from the collection of King Gustav IV Adolf. Linnaeus (1754: 11) described another horn, artificially shaped into three ends, in the museum of King Adolf Fredrik in Ulriksdal, 'Cornu hujus inferius politum & artificis manu in tria cornua efformatum ex uno s. majore, quorum intermedium duplo majus est; non vero trilobum natum fuit.' Linnaeus personally had a carved rhinoceros cup, brought from China to Magnus Lagerström (1691-1759). The cup passed to Sir James Edward Smith (1759-1828) in London in 1784 together with the Linnaean collections; it was owned by his widow Pleasance Smith (1773-1877) who gave it to the Linnean Society of London in 1869 (fig. 14). Finally in November 1970 the Society presented it to the King of Sweden in honour of his 88th birthday (Blunt 1984: 186, illustration on p.187).

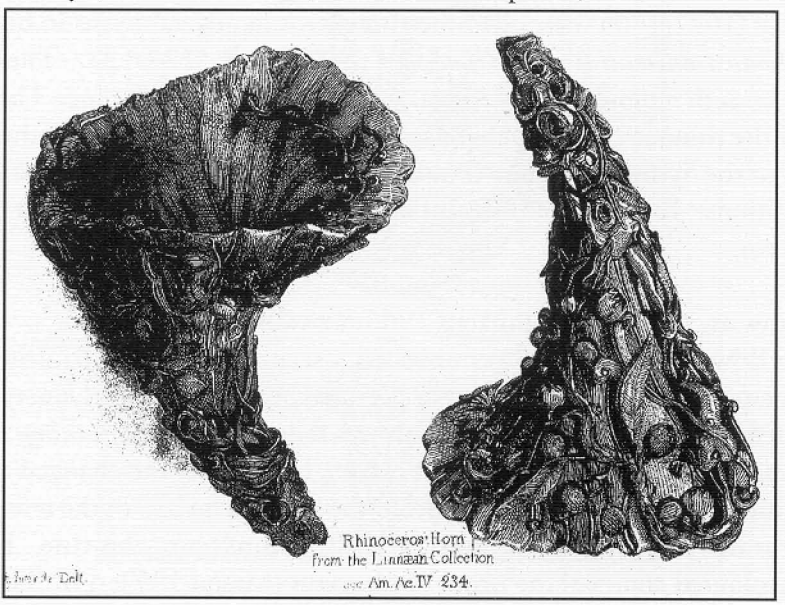


Fig. 14. Rhonceros horn cup once owned by Linnaeus, in 1970 donated by the Linnean Society of London to the Swedish King.

Cranium tantum ... nobis visum

Maybe to justify his inclusion of an obscure species like *Rhinoceros bicornis*, Linnaeus (1758: 56) added that he had seen a skull of such an animal: 'cranium tantum ... nobis visum'. The use of the word *cranium* would appear to indicate that we should look for a 'skull' with two horns attached, but with some stretch of imagination it could replace *caput*, 'head' or the skin of the head of the rhinoceros. Unfortunately, Linnaeus did not tell us where he saw the specimen. Early commentators, like Houttuijn (1761: 348), never asked about the whereabouts, which shows that they were less concerned with the idea of a type specimen than we are today. In more recent times, taxonomists like Hopwood (1939: 453) and Zukowsky (1965: 12) have rather glossed over this point, just stating that the specimen was unknown, while it could not have been the horn listed by Linnaeus (1754) in the *Museum Adolphi Friderici*. It was shown above that Linnaeus implicitly characterized the skull to have a double horn and two front teeth in each side of the jaw.

In an attempt to solve this riddle, I tried to assemble information about the rhinoceros material known in Europe before 1778 (Rookmaaker, in press). This showed that there were many single horns, a few double horns attached to a piece of skin, while mounted specimens were rare. Linnaeus should have seen the rhinoceros skull in one of the countries where he lived or traveled, i.e. Sweden, Denmark, Germany, Holland or Great Britain. Although the available data are likely to be incomplete, there were no specimens in the first three countries which could possibly be described as a 'cranium tantum'. Linnaeus was in Holland in the years 1735-1738 and he visited all the major towns and he had many contacts. In the collection of the University of Leiden, he almost certainly saw the mounted skin of a young rhinoceros, which had died on the way from the Cape of Good Hope in 1677. The specimen was still present in 1736, when it was described by James Douglas and drawn by Jan Wandelaar, exhibiting two very small horns on the nose (Rookmaaker 1976). No skull is mentioned in the records, but it could possibly have been inside the hide. However, Linnaeus described the animal with two large horns, which cannot pertain to the Leiden skin.

Linnaeus spent much less time in England, visiting London and Oxford, in July and August 1736. We know that he visited Hans Sloane (1660-1753), who may have had at that time a double horn. When Sloane (1749) himself wrote about these horns, quite a rarity in his days, he never mentioned the skin of the

head or a skull. Another possibility is a specimen in the collection of Richard Mead (1673-1754) mentioned by Parsons (1766) as 'the bones of the face of a young rhinoceros with two horns in situ' received from Angola. Apparently at first Mead had objected to the suggestion by James Parsons (1743) that there would be two kinds of rhinoceros distinguished by the number of horns, one living in Asia, the other in Africa. However, Parsons (1766) reported that 'four month after the paper was printed', i.e. in the second half of 1743, Mead received the skull from Angola, and he changed his opinion to agree with Parsons. It seems, therefore, that Mead's double-horned rhinoceros skull was not yet present when Linnaeus visited London seven years earlier.

On 1 June 1739 an Indian rhinoceros arrived in London. The medical doctor James Douglas (1675-1742) became interested in the animal. He told James Parsons (1705-1770), his scientific assistant and draughtsman, to make some drawings of it. Both Douglas and Parsons started to collect older engravings of the species, adding some original drawings made by the latter, now preserved in the Hunterian Library of the University of Glasgow, and described in detail by Rookmaaker (1978). Douglas talked about his observations on the rhinoceros in meetings of the Royal Society of London on 21 and 28 June 1739. If he intended to write a monograph of the species, no manuscript was present when he died on 1 April 1742. His collection of rhinoceros engravings and drawings is a bound volume of 45 leaves. It is not clear if it was complete as it is at the time of his death, or that some items were added later. Among the drawings made by Parsons but preserved in the collection left by Douglas there are ten red chalk sketches of rhinoceros material (Rookmaaker 1978, nos. 7.1 to 7.10). It is unfortunate that we cannot be totally certain that these drawings were in the collection when Douglas died, but even so, it is quite likely that these specimens were seen and studied in London cabinets around 1740. Linnaeus could have seen them too. Among these drawings, one (no.7.7 on p.13 of the Douglas Collection) shows a skull of a rhinoceros, with two horns and large incisors (fig. 15). It is obviously a skull of the Great Indian rhinoceros (*R. unicornis*) with a second horn added. Probably the specimen was composed in such a way to enhance its value.

We should now be able to answer the question which skull Linnaeus mentioned in the diagnosis of *Rhinoceros bicornis*. He could have seen the actual skull of an African or Sumatran rhinoceros, although it would not be clear where. Camper (1782: 165) mentioned that the front parts of the jaws were easily damaged or lost in the process of cleaning. If Linnaeus had seen a da-

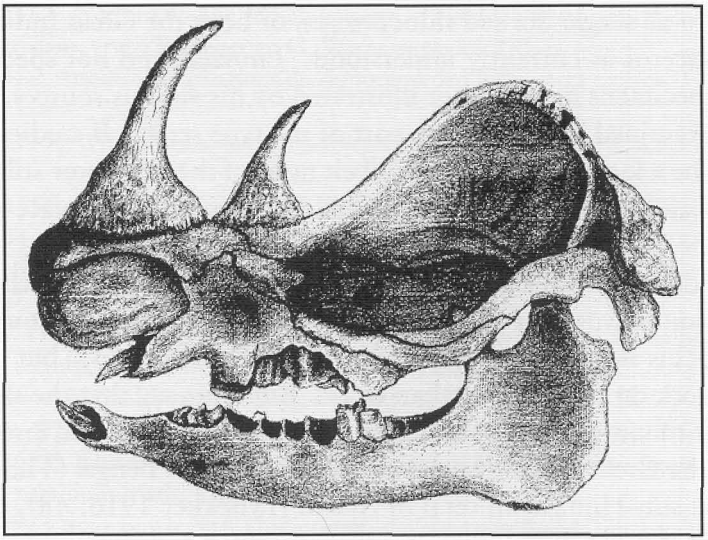


Fig. 15. The double-horned skull with rhinocerotine characteristics (fronts teeth), an artefact drawn in an unknown London collection around 1740 by James Parsons (University of Glasgow).

maged double-horned skull, he could have inferred the existence of front teeth. However, one wonders how he could have used such incomplete evidence to justify the inclusion of an obscure species. Maybe Linnaeus saw the skull which was drawn by Parsons in a London collection. In that case, Linnaeus would have been easily deceived, when we remember how little comparative osteological material was available in those days. Where this skull was, I don't know. There seems to be no reference to it in the papers by Parsons (1743, 1766), maybe he had recognised it to be an artefact. I suggest, however, that Linnaeus saw this specimen in London in 1736, and that he referred to it in his first description of *Rhinoceros bicornis*. It is assumed that the specimen is lost, but even otherwise, it would be of historical rather than taxonomic value.

A taxonomic dimension

Taxonomists today agree that the *Rhinoceros unicornis* of Linnaeus (1758) is the Great Indian rhinoceros, and *R. bicornis* the African black rhinoceros. While this is correct partly by designation and partly by convention, historically this issue is far more complex. *Rhinoceros unicornis* combines characteristics and

references to all single-horned rhinoceroses, or both the Great Indian and the Javan rhinoceros as currently understood. Linnaeus did not specify a type, hence all specimens described or illustrated by his various sources, and those which he examined personally, are part of the type series. If studied in detail, this would be a long list of syntypes, albeit none of them are now still known to exist. Pocock (1944) selected the animal illustrated on the plate in Jonston (1653, pl. 38) as the type of *R. unicornis*. Therefore, the rhinoceros which arrived in Lisbon on 20 June 1515 and which was depicted by Albrecht Dürer in a drawing and a woodcut in 1515 is the lectotype of *Rhinoceros unicornis* of Linnaeus. This animal was transported towards Rome in 1517, but it drowned in a shipwreck on the North Italian coast. Rumours say that the skin was found, maybe mounted, but the specimen must now be considered lost. The type locality of the Great Indian rhinoceros was stated to be Bengal (Thomas 1911: 156) or the sub-Himalayan terai of Assam (Lydekker 1916: 48), but, as the origin of the rhinoceros in Lisbon is unknown, this a matter of anybody's choice (to me the latter is preferable).

The *Rhinoceros bicornis* of Linnaeus (1758) combines characteristics of all double-horned rhinoceroses, at least of the African black and the Sumatran species as currently understood. The type series includes the specimens described or illustrated in his sources as well as the skull mentioned in the description. Although Linnaeus did not state exactly that the rhinoceros head or skull which he examined was the holotype, this would be a logical conclusion. If the skull mentioned in a previous paragraph (fig. 15) actually was seen by Linnaeus (which unfortunately cannot be proven), it is the type, even if it is now lost or unrecognized. However, for the time being it is taxonomically correct to accept the neotype in the Leiden museum selected by Zukowsky (1965: 32), with type locality the Cape of Good Hope.

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