

THE
GEOGRAPHICAL DISTRIBUTION
OF
MAMMALS.

BY
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CHAPTER XXVI.

MULTUNGULA *continued*—NASICORNIA (RHINOCEROS).

RHINOCEROS.—(Map 46.) The distribution of the species of Rhinoceros corresponds with their structural affinity. The characters chosen for classification by some authors no doubt fail to show this, but that is the fault of their selection of characters, and is not due to the absence of good structural distinctions. For example, Dr. Giebel * divides them into species with two horns, species with one horn, and species without horns; an arrangement which has the effect of making a jumble of all the species, Asiatic and African together, and, moreover, has no good structural foundation on which to rest. No doubt the bones of the skull have a certain relation to the horn, being formed so as to support it; but the number of horns does not materially affect this; the horns are mere agglutinations of hair; and in very old individuals of the two-horned species, both in Africa and Asia, a third smaller horn sometimes makes its appearance. Classification on such a basis could not be expected to lead to any true combination of affinities.

Characters such as the possession of "permanent incisors in both jaws," and "no permanent incisors in the upper jaw," have a very different significance and value, and separate the Asiatic species entirely from the African; the Asiatic having incisors in the upper jaw, and the African none, or only milk teeth, which disappear early.†

Of living species, five African and three Asiatic are known. The African are three black ones and two white. 1. The RH. AFRICANUS (*olim* BICORNIS, the Borelé of the Cape colonists). 2. The RH. KEITLOA *Smith*, a second black species. 3. RH. CUCULLATUS *Wagner*, from the Highlands of Ethiopia. 4. The White Rhinoceros, RH. SIMUS *Burch.*; and 5. A second white species, RH. OSWELLII *Elliot*; all with two horns. These African species fall naturally into two groups—those which browse on trees and those which graze, distinguished readily by a prehensile or non-prehensile upper lip. There may be a sixth with only one horn. Mr. Edward Blyth, in his paper "On the Living Asiatic Species of Rhinoceroses," says, "Sir Andrew Smith assured me that he had been repeatedly told by the natives that such an animal occurred in the regions northward of the tropic of Capricorn."‡ And Mons. F. Fresnel, then Consul of France at Jidda (Djidda),§ some time since published an elaborate letter, "Sur l'existence d'une espèce Unicorne de Rhinoceros dans la partie tropicale de l'Afrique," the information in which may very possibly be well founded.

* Giebel, D. C. G. "Die Säugethiere in Zoologischer Anatomischer and Palæontologischer Beziehung."—Leipzig, 1859, vol. i. 197.

† VAN DER HOEVEN, "Handbook of Zoology." Clarke's Translation, 1858, p. 634.

‡ E. BLYTH, in "Journ. Asiat. Soc." 1862. Separate copy, p. 3.

§ FRESNEL, in "Comptes Rendus," tom. xxvi. (1848), p. 281.

These are all found in Africa proper, that is, south of the Sahara. None are found in North Africa. The Borelé ranges over the whole of the west and south of Africa, from the Sahara, through Congo, to the Cape. It does not appear to extend into Abyssinia. The other species, so far as yet known, more affect the east and centre of the continent than the west.

The Asiatic species are—1. The great one-horned species, RH. INDICUS (*olim* RH. UNICORNIS*), which, according to Mr. Blyth, is now limited to the *Terai* region at the foot of the Himalayahs and valley of the Brahmaputra (or province of Assam). 2. A smaller one-horned species, which was formerly believed to be confined to Java (RH. SONDAICUS, *Horsf.*, *olim* RH. JAVANICUS, *Cur.*), but has been lately satisfactorily shown by Mr. Blyth to extend from the mainland by Malacca to Burma into India. It appears, indeed, from his investigations, that the species usually supposed to be the Indian Rhinoceros, in contradistinction to the Javanese, has, in point of fact, been all the time the latter species, while the true large Indian species is confined to the limited sub-Himalayan territory above mentioned. The third species is the RH. SUMATRANUS, formerly thought to be confined to Sumatra, but now ascertained by Mr. Blyth to range alongside the RH. SONDAICUS in the Indo-Chinese country, keeping towards the east, while the latter holds more to its west or Burman side.

Whether the RH. SUMATRANUS occurs in Borneo is a disputed question. Mr. Blyth treats it as perfectly proved, but he himself has no personal knowledge on the subject. So slight is the evidence in support of it that Mr. Spencer St. John† only says, "Among the principal animals which frequent the forests of Borneo may be mentioned the Elephant, Rhinoceros, the Tapir," &c., "the first three have not been seen by Europeans," and again, "The Rhinoceros is a rare animal, though it is reported in some of the wilder parts of the country, and the existence of the Tapir rests upon *the same testimony!*"‡ What testimony? He has just said that there is none. "*It is reported*" is usually considered the reverse of *testimony*. I can find no better authority, and until I do I cannot agree with Mr. Blyth in admitting that either the Rhinoceros or the Tapir are inhabitants of Borneo.

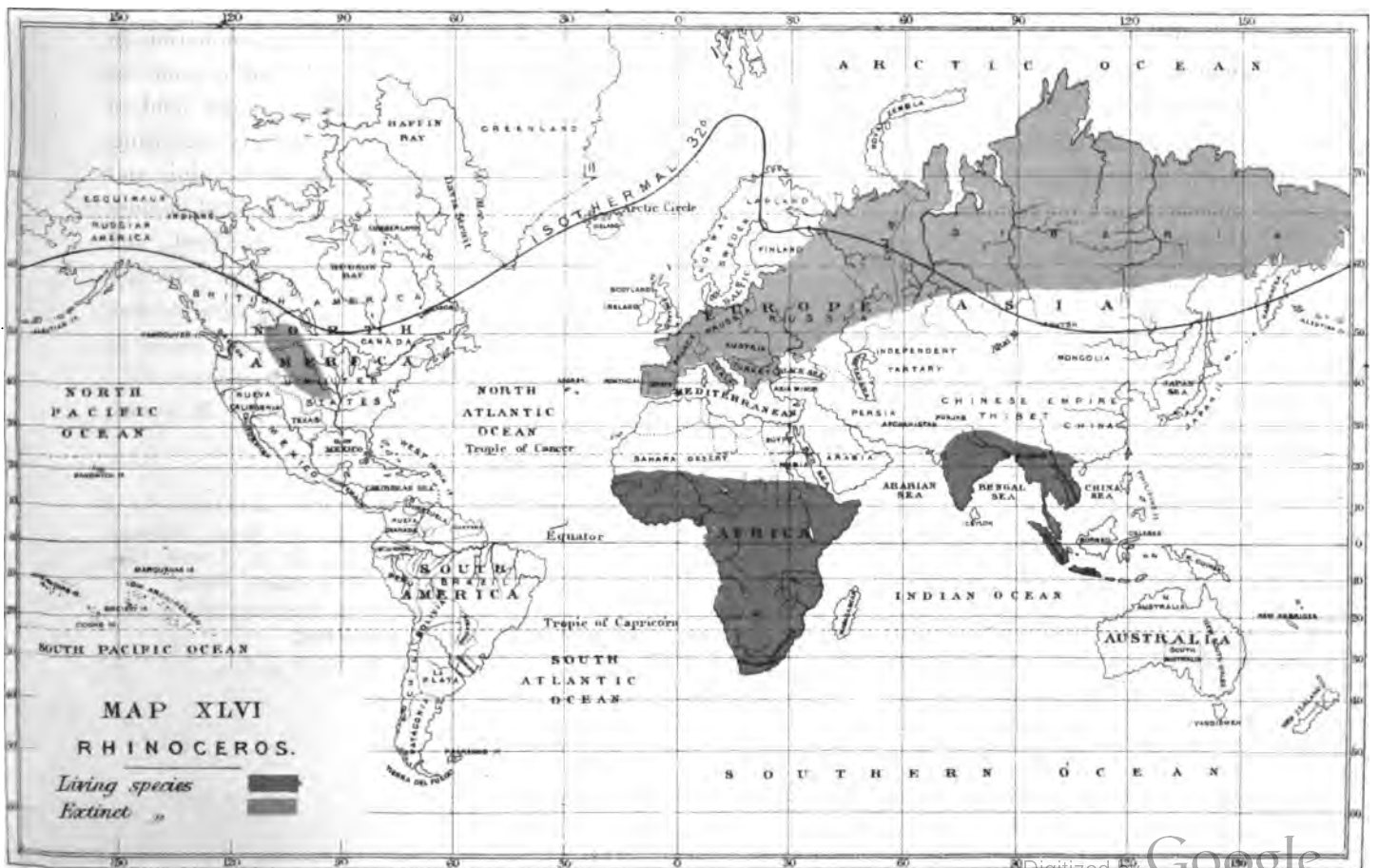
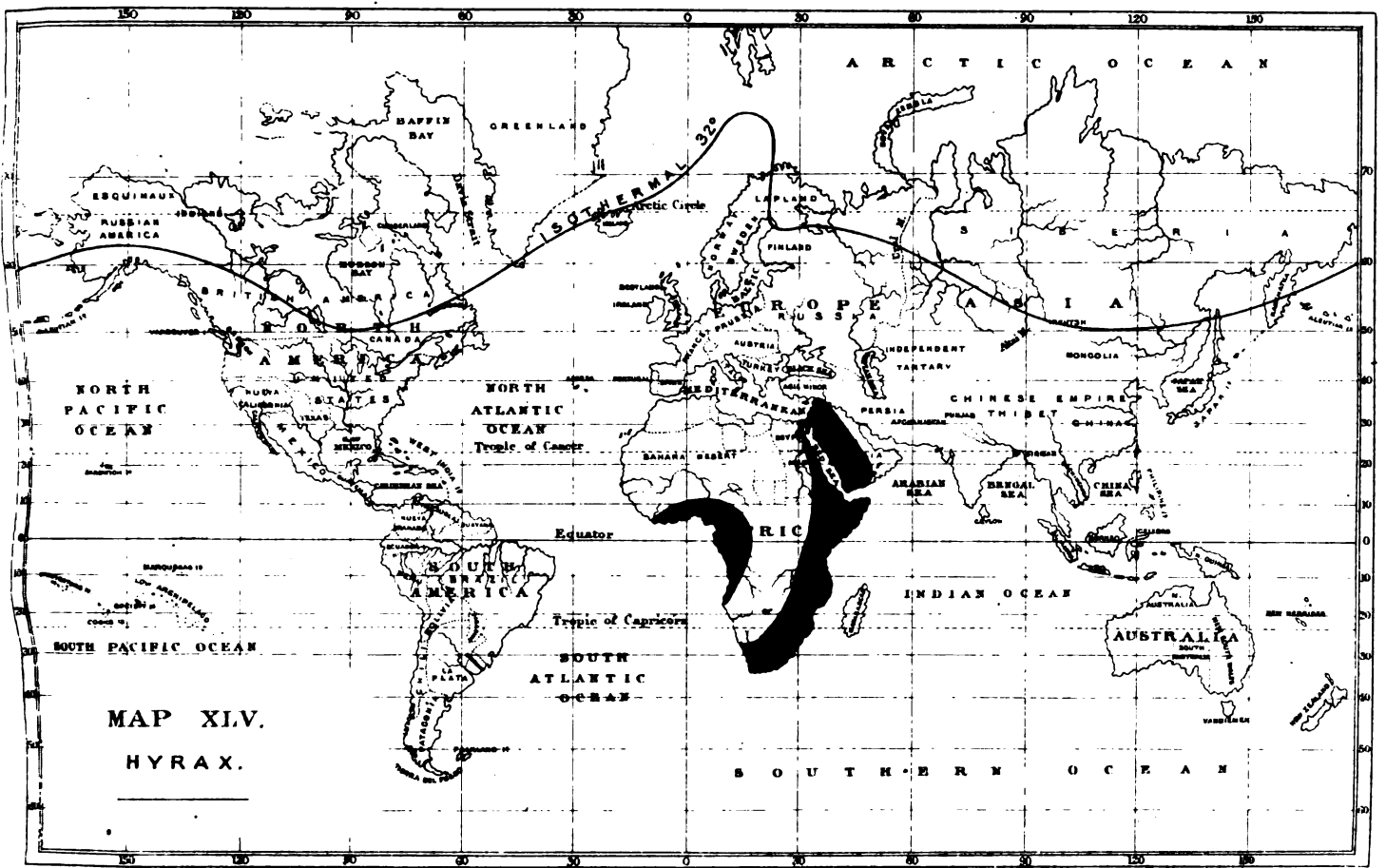
While I render all homage to my friend Mr. Blyth's admirable powers of discrimination in matters falling under his own personal observation, I do not think him nearly so safe a guide in questions depending upon testimony or report. Nothing delights him more than to get hold of some old tradition or natives' report, or to untomb some black-letter notice of antiquity regarding some unknown animal, and to bring his great knowledge to bear in expiscating its meaning and determining the species thereof. I rather demur to some of his determinations of this kind because I think nothing but deliberate examination by a competent naturalist ought to be received, and that it matters little whether a report comes from a native or a European, if they are not conversant with the subject on which they speak. An instance illustrative of the idiosyncrasy which leads Mr. Blyth to swallow with zest everything that comes seasoned with obscurity and natural history, occurs in his "Memoir on the Living Asiatic Species of Rhinoceros" above referred to, so excellent in all that has come within his own personal observation. It is with

* Although I follow the nomenclature now in general use, I must acknowledge that I see no good reason for altering the old well-known names *unicornis* and *bicornis*, merely because we now know more than one one-horned or one two-horned species, or to alter a geographical name because its range proves wider than was supposed—names have long ceased to be scientific descriptions, and are now simply *cognomina rerum*. If, indeed, a name

embodies an untruth (as *Chrysomela Americana* for a Mediterranean species), that is a different thing. Although we cannot have the whole truth, let us at least have nothing but the truth even in *cognomina rerum*.

† "Life in the Forests of the Far East," by Spencer St. John, vol. ii. p. 244. London, 1863.

‡ Spencer St. John, *op. cit.*, vol. ii. p. 2.6.



regard to another species of Rhinoceros said by Sir Stamford Raffles to exist in the forests of Sumatra. "There is," says Sir Stamford, "however, another animal in the forests of Sumatra never yet noticed, which in size and character nearly resembles the Rhinoceros, and which is said to bear a single horn. This animal is distinguished by having a narrow whitish belt encircling the body, and is known to the natives of the interior by the name of *Tennu*. It has been seen at several places, and the descriptions given of it by people quite unconnected with each other coincide so nearly that no doubt can be entertained of the existence of such an animal. It is said to resemble in some particulars the Buffalo, and in others the Badah or Rhinoceros. A specimen has not yet been procured, but I have several persons on the look out, and have little doubt of soon being able to forward a more accurate description from actual examination. It should be remarked that the native name *Tennu* has until lately been understood to belong to the Tapir. It is so applied at Malacca and by some of the people at Bencoolen. In the interior, however, where the animals are best known, the white-banded Rhinoceros is called *Tennu*, and the Tapir *Gindol*, and by some *Babi-ah*," &c. Mr. Blyth sets himself to work to account for this animal never yet having been found, but it never seems to have occurred to him to question its existence or to doubt Sir Stamford's judgment on the subject, and yet what does his statement come to? That in Sumatra there is an animal something between a Buffalo and a Rhinoceros, with a band of white round the body, and called by the natives a Tapir. Why, what on earth should it be but a Tapir? One is surprised at Sir Stamford Raffles accepting the fable, and still more at Mr. Blyth following his example.

All the three Asiatic species are shown by Mr. Blyth to possess two typical forms or characters, a broad and a narrow-skulled variety; and it is to the existence of these two varieties that he ascribes the misapprehensions as to the range of the *true* RH. INDICUS and RH. SONDAICUS. However that may be (and his inferences seem very fair), I draw attention to this variation in their characters for another purpose. He suggests, seeing the amount of variation which exists in the living species, extending into other points besides the breadth or narrowness of the head, as, for example, the horns—the remarkable horn in the British Museum on which Dr. Gray had founded his species RH. CROSSII, turning out to be merely a magnificently-developed specimen of the anterior horn of RH. SUMATRANUS—that probably *all* the fossil species may not be good species, and that possibly the enormous remains found by Falconer and Cautley in the Sivalik formations may in point of fact be the vestiges of "magnificently-developed" individuals of the still living Indian and Sumatran species. He says, "The affinity of the extinct European species with RH. SUMATRANUS has been long ago remarked by Cuvier and Owen. The Sevalik RH. PLATYRHINUS of Cautley and Falconer is just RH. SUMATRANUS enormously magnified; and the RH. SIVALENSIS of the same naturalists comes exceedingly close to the existing INDICUS with the narrow form of skull, and their RH. PALÆINDICUS to the same with the broad form of skull. Can it be the identical species which has lived down to the present time? The discrepancy is, at least, not greater than subsists between BISON PRISCUS and the modern Zubr, which are considered by Owen to be one and the same."*

Besides the fossil species found by Cautley and Falconer in the Sivalik formations, remains of the fossil Rhinoceros have been found in vast numbers all over Europe and Asia. No other animal, unless perhaps the Mammoth, has left so many traces of its existence. From the Siberian shores of the Icy Sea, southward to the Sevalik Hills, they have been found in greater or less abundance, as well as from the Straits of Gibraltar on the east, at least as far as the banks of the Lena, on

* Blyth, op. cit. p. 7

the west. Mr. Dawkins, in an article in the "Natural History Review" (July, 1865), while in the text he gives 72° N. Lat. as the northern limit of these remains, seems disposed in a note to admit that their range probably extended, as I have put it, to the actual shores of the Polar Sea, wherever that might be; for we must remember that in the days we are speaking of, it rested probably more to the south of its present limit. He says, "Probably also in the higher northern latitudes of the islands of New Siberia and the Lächow group, the remains of the Tichorhine Rhinoceros are to be found in the vast accumulation of organic remains, of which, as the energetic Russian explorer Sannikow writes, the *whole soil* of the first of the Lächow Islands appears to consist. The occurrence of large quantities of the bones and skulls of Oxen, Buffaloes, Horses, and Sheep, associated with the Mammoth on the hills of the interior of New Siberia (Lat. 75°·6), led him to infer that, at the time when the island supported such vast herds of these animals, the climate must have been much milder than at present, when the icy wilderness produces nothing that could afford them nourishment. See Wrangel's 'Siberia and Polar Sea,' 1840. Edit. Major Sabine. Introduction."*

Whether there may have been a warmer climate in these icy regions at some former period or not is a question on which these heaps of bones throw no light, for it is plain that they are not the quiet graveyard of parishioners who lived and died upon the spot, but accumulations brought from elsewhere by ice and rivers or floods. The very vastness of the accumulations composing the whole soil forbids the idea of their being remains of the animals that lived and fed where they died, and the fact that frozen carcasses have been found in these places of deposit, shows that since the animal died no material change can have taken place in the climate, because the flesh has kept all that time locked up in ribs of ice. On such a supposition the change from heat to cold must have followed death within a few hours; and had we only one to deal with, we might admit that, however improbable it might be, such a sudden change was at least possible. But in these regions there are more carcasses than one in the same condition, and at different depths; these could not have all died on the same day; but as they are preserved alike, the cold must have been permanent and continuous.

In 1771 (thirty years before the discovery of the Mammoth by Adams, which did not take place until 1801), a carcass of the extinct Rhinoceros, since called the woolly-haired Rhinoceros (RH. TICHORINUS), was found on the banks of the Vilni, a branch of the Lena. Fortunately, Pallas heard of it, and by his exertions the head and feet were secured, and have been preserved in the Museum of St. Petersburg; and these have been latterly carefully examined and described by Brandt. When found, it was considerably advanced towards decay, imbedded in a sandy bank, six feet above the water. It measured about eleven feet in length and ten feet and a half in height. The carcass of the animal, in all its bulk, was still covered with skin; but it was so far gone that only the head and feet could be removed. "I saw the parts," says Pallas, "at Irkutsk, and at the first glance perceived that they belonged to a Rhinoceros fully grown; the head especially was easily distinguished, since it was covered with the hide, which had preserved its organisation, many short hairs remaining upon it. The country watered by the Vilni," he adds, "is mountainous, and the strata horizontal: they consist of sandy and calcareous schists and beds of clay, mixed with great quantities of pyrites. Near the spot, and close to the river, there is a little hillock of about ninety feet elevation, and which, though sandy, contains beds of grind or millstone. The body of the Rhinoceros was buried in a coarse sandy gravel near this hillock; and the nature of the soil,

* Mr. BOYD DAWKINS on the Dentition of Rhinoceros megarhinus in the "Natural History Review," No. xix., p. 399, July, 1865.

which is always frozen, must have preserved it. The ground is never thawed to any great depth near the river. In the valleys, where the soil is half sand and half clay, it is still frozen at the close of summer two feet below the surface. Had it not been for these circumstances, the skin and other soft parts could not have been so long preserved." It would be unfair to quote his further speculations as to this animal having been necessarily transported from the torrid zone to the frozen regions at the time of the Deluge. They correspond to the ideas of his time, and, where erroneous, his age is more in fault than he. His description is what we have really to do with.

From Brandt's examination,* it appears that the dried skin is of a dirty yellowish colour. He gives a fac-simile coloured figure of it with his paper, which is extremely interesting. The flesh of the muscles is reddish. The eyes are lost (dried out); the lids beset with short stiff bristles; the ear-muscles are entirely gone; and the whole of the anterior part of the snout is unfortunately so much injured, that the form of the nostrils and of the anterior margins of the lips cannot be ascertained, so that we cannot tell whether it had a prehensile snout or not, one fitted for browsing or grazing. The skin does not form callous folds on the head. The mouth is much smaller than in the living species. The skin is of considerable thickness, about half-an-inch deep at the throat; its surface smooth, granulated at the lips; densely covered all over with reticulated or roundish pores, arranged quincunxially. The head and feet are clothed with hair. The hairs stand closely together in tufts in these pores; some are long, stiff bristles; others are softer and shorter; without any peculiar microscopic structure. The single horns which have been found in Siberia have the structure of the horns of the living species. Their length does not appear to exceed three feet. The auditory passage is clad with short fine hairs. The muscles found on the head show neither in their arrangement nor in their intimate structure any deviation from those of the living species, nor has any peculiarity worthy of notice been observed in the vessels or nerves. The food appears to have consisted principally of the leaves and young shoots of pine-trees. Brandt extracted from the pits of the molar teeth of Pallas' frozen specimen part of the albuminous seed of a polygonous plant, portions of pine-leaves, and minute fragments of coniferous wood, characterized by the distinctive porous cells.†

This Rhinoceros lived during the post-glacial epoch in the middle and North of Europe and North Asia. It was, with the Mammoth, one of the commonest pachyderms of our part of the world. Its bones, teeth, and even entire skeletons, have been found in Siberia, also in Russia, in Europe, in Poland, Germany, England, and France. In the bone-layers of Seveckenberges, near Quedlinburg, alone, the remains of upwards of a hundred individuals have been collected. It does not follow, however, from the extensive district over which the bones of this animal are found that it lived over the whole of it at the same time. I imagine it to have been a boreal animal, always hanging upon the outskirts of the Arctic regions as the Reindeer and Elk do now, and that its remains left in countries whose climate is now mild are only proofs that at the time the animal died, the glacial cold had not retreated farther north than that latitude.

RH. LEPTORHINUS, *Cuv.*, is another extinct species, whose remains occur all over Europe—in the more recent tertiaryaries of the South of France, Italy, England—more particularly at Montpellier, Pisa, the Issoire, &c.

Another species, RH. MEGARHINUS of *De Christol* (allied to RH. LEPTORHINUS), has been found

* BRANDT, in "Mem. Acad. St. Petersb." 6th ser. tom. vii. 1849.

† LEONHARD and BRONN's "Jahrbuch," 1846, p. 378; and BRONN's "Lethæa Geognostica," III., p. 855, 1851.

in the tertiaries of Montpellier, but is distinguished by its larger size and the enormous development of its nasal bones, whence it may be supposed to have had a nose approaching the dimensions of a small trunk. It comes nearer in structure to the unicorn RH. SONDAICUS and the bicorn RH. SUMATRANUS, than any other living species.

Remains of a species, supposed to be without a horn, RH. INCISIVUS, *Cur.*, have been found in the middle tertiary deposits at Sansan, in the South of France; at Eppelsheim, Georgensmund, and other localities in Mid Europe.

Multitudes of other extinct species have been described, but on so slight grounds, that De Blainville was at last driven to exclaim that the authors "seemed to consider the bones as mineral masses without biological or physiological relations; so that species were created by them, so to speak, by the compass."* Species so described are mere names; *Vox et præterea nihil*: and as such may without impropriety be disregarded.

Until the discovery of the extinct animals in the Nebraska beds of the Mauvaises Terres, it was supposed that the Rhinoceros was peculiar to the Old World. Palæontologists and zoologists reasoned upon the fact, and many a false theory was propped up by it, and many a sound argument perilled. But by all the fact was accepted as beyond dispute.

It was, therefore, with no ordinary interest that the scientific world learned about 1831 (twenty years before Nebraska was heard of), that a fragment of a jaw, containing two incisor teeth, of an animal closely allied to the Rhinoceros, had been found in Pennsylvania. This had "nothing of the nature of bone about it except its form, the whole substance, teeth included, being constituted of an aggregate of quartzose particles, and presenting the appearance, not of a gradual substitution by mineral infiltration to osseous matter, but of a cast of part of a jaw and teeth formed of small quartzose grit, and giving a semi-translucency to the teeth, which is wanting to the more opaque jaw." † The American geologists received it with some doubt. Dr. Harlan regarded it as in all probability a mere *usus naturæ* of the mineral kingdom, having a very close resemblance to a portion of the animal skeleton.‡ Dr. J. Hays and Mr. J. Lea regarded it as a mere mineral fragment.§ The specimen was sent to London, and the geologists who there examined it considered it of too doubtful a character to be admitted as a fossil remnant. Lastly, when it came under the penetrating investigation of De Blainville, he spoke out. "This is not the place," says he, "to discuss this at least very questionable point; but as the specimen now forms part of the collections of the museum" (I presume the Museum of the Jardin des Plantes), "we can give our assurance that it does not resemble the least in the world a fragment of the jaw of a Rhinoceros, neither as regards the body of the bone, nor the pretended teeth. It is without doubt an artificial piece, a gross cheat. It is, therefore, truly to be regretted that the expression of the thought has been hazarded, and that all the Catalogues of Palæontology have recorded a species of fossil Rhinoceros from America without even a mark of doubt."||

The regret need no longer be felt. We have now two species of extinct Rhinoceros from America, of whose authenticity and correctness of determination no doubt can be entertained. (RH. OCCIDENTALIS and RH. NEBRASCENSIS, both described by Dr. Leidy.)

Both are from the Nebraska beds. They were smaller than the Old-World species, the largest

* DE BLAINVILLE, "Osteographie," *Osteo. Gen. Rhinoceros*, p. 212, 1845-54.

† FEATHERSTONHAUGH, in "Monthly Americ. Journ. Geology," 1831, p. 10.

‡ HARLAN, "Med. and Phys. Researches," p. 268, 1835.

§ LEIDY, "Extinct Fauna of Nebraska," p. 29. 1852.

|| BLAINVILLE, *op. cit.* p. 212.

being about three-fourths the size of the RH. INDICUS, that is, about the size of Cuvier's RH. MINUTUS, which is regarded by De Blainville as a small variety of the RH. INCISIVUS. The other was less than two-thirds the size of the former species, and is much the smallest Rhinoceros which has yet been discovered.

I have adopted the division of the genus into two groups (which prove respectively African and Asiatic), according to their possessing or not possessing permanent incisors in the upper jaw. The reader may wish to know how this applies to extinct species, and more especially to the new-found American ones. No particular inferences can be drawn from this character as regards them, for at the epoch when they existed (the upper eocene or lower miocene), all the species of Rhinoceros appear to have had incisors in the upper jaw, and so had the Nebraska species. It is only when we come to more recent times, to the period of the drift and diluvium, when the woolly-haired Rhinoceros (RH. TICHORHINUS) flourished, that the type now peculiar to Africa begins to appear. The RH. TICHORHINUS belongs to it, as well as numerous so-called species of the same epoch, and found over the same ground, which probably are only varieties or individuals of that species.

No remains of any species have been found in America in deposits subsequent to the glacial epoch.

A remarkable extinct animal, the ELASMOTHERIUM of Fischer (E. FISCHERI, *Meyer*), should be here noticed. It is placed by Cuvier between the Horse and the Rhinoceros, and has been found in the Siberian drift. The lower jaw was two feet in length, and four inches high.