ORGANIC REMAINS OF A FORMER WORLD.

AN EXAMINATION OF THE

MINERALIZED REMAINS OF THE VEGETABLES AND ANIMALS

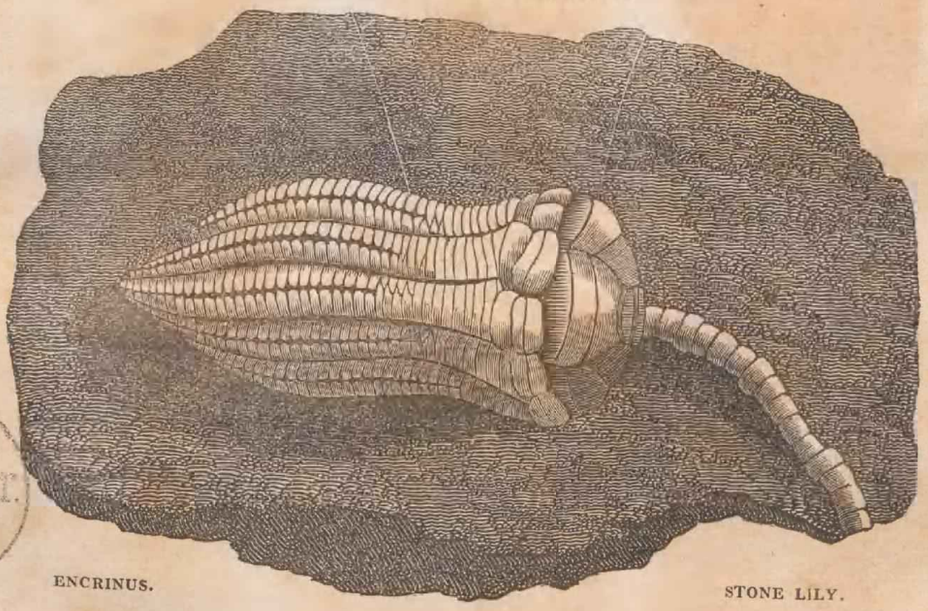
OF THE

ANTEDILUVIAN WORLD;

GENERALLY TERMED EXTRANEOUS FOSSILS.

BY JAMES PARKINSON.

IN THREE VOLUMES.



ENCRINUS. STONE LILY.

THE THIRD VOLUME;

CONTAINING

THE FOSSIL STARFISH, ECHINI, SHELLS, INSECTS, AMPHIBIA, MAMMALIA, &c.

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attrition; so that, although no doubt could be entertained of its having belonged to an animal of the genus *Mastodon*, I think that no opinion could be formed respecting its species; but on this point I speak with hesitation, since, at the time I saw it, I was unacquainted with the existence of more than one species of this fossil.

LETTER XXVIII.

FOSSIL REMAINS OF THE RHINOCEROS.....FOSSIL ANIMAL DIFFERENT FROM THE RECENT SPECIES.....HIPPOPOTAMUS.....FOSSIL REMAINS.....SMALL FOSSIL HIPPOPOTAMUS, AN UNKNOWN SPECIES.....FOSSIL ANIMALS APPROACHING TO THE TAPIR.

An accurate knowledge of the anatomy and of the number of species of the rhinoceros has been but lately obtained, and that through the assiduous inquiries of Cuvier. Thus the celebrated Camper, unacquainted with the characteristic differences of the teeth of the unicorn and bicorn rhinoceros, and not finding incisive teeth in the two-horned species, charged Parsons, Linnæus, and Buffon, with error, in supposing them to exist in the one-horned species. But, on examining the living animal of the latter species at Paris, and seeing its incisive teeth, he immediately acknowledged the error into which he had fallen. M. Faujas also, for want of correct notions respecting the teeth of this animal, formed erroneous conclusions as to the number of species.

In every adult rhinoceros there are twenty-eight grinders, seven on each side, at the top and bottom. It must be, however, remembered that, as the teeth of the rhinoceros, like those of other herbivorous

animals, have their roots brought into use when the crown is worn away; and as the root divides into two branches, the two stumps of the roots of one tooth, forced upwards by the filling up of the alveolus, will give the appearance of two teeth.

In the lower jaw are two large incisors, placed at the anterior angle; and between these are two very small incisive teeth, which remain concealed within the gums. There are also two large incisive teeth in the upper jaw; and Cuvier has discovered, that in this jaw also there are two very small incisors, which are disposed, contrary to those of the lower jaw, on the outside of the larger incisors.

The differences observable in separate detached grinders of these animals are not such as will serve to distinguish the species, but merely to point out the age of the individuals. Of course, it is not from the fossil grinders alone that we are able to determine whether the fossil remains of this animal belong to a species which still exists, or to one which is lost. Happily, however, complete information may be obtained on this point from the examination of the whole skull. By a careful comparison of the fossil with the recent skull, it is found that the fossil skulls exactly agree with each other, and belong to one and the same species, and that the fossil species is essentially different from those which are known in a living state.

Omitting to notice the opinions of those who had written on this subject before the necessary anatomical knowledge respecting the living species of this animal was attained and published, I shall place before you a sketch of the observations of M. Cuvier, on the opinions entertained by M. Faujus on this subject.

There appeared to be three living species of rhinoceros: 1. That of *India*, a unicorn, with a rugous coat, and with incisors, separated, by a space, from the grinders. 2. That of the *Cape*, a bicorn, the skin without rugæ, and having twenty-eight grinders, and no incisors. 3. That of *Sumatra*, a bicorn, the skin but slightly rugous, thus far resembling that of the Cape, but having incisive teeth like that of India.

On comparing the skulls of the fossil rhinoceros with those of the existing species, the following differences are observed: 1. The skulls of the fossil rhinoceros are, in general, much larger than those of the living species; but as the skulls of the living species, which have been obtained, may not have been of the largest individuals, this difference is not such as should be insisted upon. 2. The occipital surface, which in the recent skulls is nearly perpendicular with the axes of the head, and which, in the unicorn, even inclines forward, in all the fossil skulls, inclines considerably backwards; which necessarily occasions the distance from the nose to the occipital ridge to exceed considerably that from the nose to the occipital condyles. 3. The *meatus auditorius* has its axis vertical in the living species; but, in consequence of the obliquity of the temporal bones occasioned by the obliquity of the inclination of the occiput, this axis is oblique in the fossil species. 4. The fossil species has two horns, but the skull has nothing of the form of the bicorn of Africa. There is a considerable space between the bases of the two horns in the fossil species, whilst in the rhinoceros of Africa and of Sumatra the bases touch. This difference evidently proceeds from the elongation of the skull in the fossil species. The basis of the second horn, too, agreeable to the remark of M. Adrian Camper, has a more raised, and embossed, and a much more rugous surface, in the fossil, than in the existing species. 5. Instead of the anterior apophysis of the superior maxillary bone being short, and the intermaxillary very small, as in the bicorn of Africa, the fossil bicorn had these parts very strong, and longer than in all the other species, which renders the length of the nasal notch more considerable. 6. There is in the fossil species a prominence on the superior part of the incisive bone, which is not to be seen in the bicorn of Africa, in that of Sumatra, nor in a young unicorn, which appeared to approach to that of Sumatra. It was found only in the large unicorn, the skeleton of which is in the National Museum. 7. The most important character in the fossil rhinoceros is the form of the bones of the nose, and their junction with

the incisive bones: in these respects it differs not only from the other rhinoceroses, but from all other known animals. The point of the nasal bones, instead of terminating in a distinct projection, at a certain distance above the incisives, descends, without becoming thinner, before the nasal notches; and, after being separated in three projecting tubercles, becomes united, by a portion which is a little thinner, to the incisive bones, where they unite, and form of themselves two other tubercles. All these four bones become so consolidated together, that the sutures by which they were connected, as well as that which distinguished the intermaxillary from the maxillary bones, are not perceptible at only a moderately advanced age. This structure, so solid, was doubtlessly intended for the support of the horn, and would lead us to suppose, that it was more strong, and could be applied with more power in this species, than in any of those which now exist. 8. Behind this junction of the nasal with the incisive bones begins a bony partition, which separates the two nostrils, and passing backwards, is united with the vomer. 9. In consequence of this partition, the incisive openings are separate from each other; whilst, in the living species, they are formed into one large opening. 10. From the length of the nasal notch, the eye is placed more backward in this than in the other species.

With respect to the existence, or the number, of incisive teeth in the fossil animal, M. Cuvier observes, that after an infinite number of researches, he has not yet obtained any thing certain: he, however, thinks he has a right to assert, that the fossil rhinoceros did not possess them, at least in the upper jaw. In the lower jaw, M. Pallas, however, speaking of a jaw found at Tchikgi, says: *In apice maxillæ inferioris, seu ipso margine, ut ita dicam, incisorio, dentes quidem nulli adsunt; verumtamen apparent vestigia obliterata quatuor, alveolorum minusculorum equidistantium, e quibus exteriores duo obsoletissimi, sed intermedii satis insignibus fossis denotati sunt. Nov. Com.* XIII. p. 600. Supposing, then, this jaw had actually contained incisors, they, from being so very small, must have belonged to a different species from any

which is known living; since the incisive teeth, in the rhinoceros of Asia and Sumatra, are considerably larger, independent of the age of the animal. Hence, if any of the fossil rhinoceroses had incisive teeth, it appears that they must have existed in the lower jaw only, and have also differed in size, and probably in form, from those of the living rhinoceroses.

It appears that two incisive teeth of the rhinoceros are in the cabinet of the celebrated anatomist Soemmereng, which, it is said, were dug out of the earth in the neighbourhood of Mentz; one of which has been figured by Merck, and another by M. Adrian Camper. Supposing, M. Cuvier observes, that these teeth are really fossil, they prove nothing contrary to what has been assumed above. This circumstance can only show, that there is also, among the fossil species, one which is different from that which has been hitherto found. The grinder teeth of the fossil species appear to agree precisely with those of the living species.

The fossil remains of the rhinoceros have been generally found in the same countries where the remains of elephants have been found; but they do not appear to have so generally excited attention; and perhaps but few of those who discovered them were able to determine to what animal they belonged. Thus a tooth of this animal is described by Grew merely as the tooth of a terrestrial animal; and the remains of this animal, found in the neighbourhood of Canterbury, were supposed to have belonged to the hippopotamus.

In Hartzberg, in the principality of Grubenhagen; Quedlimbourg, Darmstadt, the borders of the Rhine, Mentz, Strasbourg, the neighbourhood of Cologne, Westphalia, numerous parts of France, and in several parts of Great Britain, have the remains of the rhinoceros been found. In Siberia these remains have been found in considerable quantities. Pallas, whose researches have been particularly directed to this part of the world, made the astonishing discovery of a complete rhinoceros, still covered by its skin, and buried in the sand on the borders of the river Wiluji.

From several fragments of bones which I met with in the Essex bank, I was also led to suppose that the remains of some other very large animal, besides those of the elephant and elk, had been here imbedded. This supposition was increased by finding one large fragment, a complete mass of pyrites, with the form and external surface of bone, which appeared to be the upper end of an os femoris; but which, either from distortion, or from very uncommon, though natural conformation, differed from that of any animal with whose skeleton I was acquainted. This induced me to be more particular in my research, and occasioned me to discover the tooth which is represented Plate XXI. Fig. 2. This tooth, which is an upper molar tooth of the left side, is pretty much worn, and must have belonged to a small animal, since it is not one half of the size of the teeth which were found at Chartham.

My friend, Mr. Fisher, whose kindness I have already had occasion to acknowledge, was so obliging as to procure for me five teeth, which had been found at Fox-hill, in Gloucestershire, with some fragments of bones. The fragments of bones were too small to allow of any decision respecting them. One of the teeth was of the elephant; and the other four were molar teeth of the upper jaw of the rhinoceros, and had suffered a very considerable degree of decomposition. Their size was more than double that of the tooth depicted above; but their grinding surfaces had suffered very considerable injury.

The horns of the rhinoceros have been repeatedly dug up in Siberia, and of a considerable size, some exceeding in size those of the living species.

Hollman and Zuckert had fossil fragments of the humerus of this animal, from which it appeared, that the obliquity of the radial pulley-like termination, which in the living species is very considerable, is exceeded in the fossil; and, that the inferior head is longer. On comparison with the humerus of the Parisian skeleton, it appeared that the fossil humerus, though shorter, was thicker.

A scapula, apparently of this animal, found at the foot of the Hartz,

was found to have its lower edge straiter and thinner than in that of the recent animal; the projecting part, too, of the spine of the scapula, was extended much further towards the articular termination.

An atlas, figured by Hoffman, and copied by Cuvier, and which must have belonged to some animal of this genus, was compared with that of the skeleton, and found to be specifically different. A fossil axis (the second vertebra) is also figured by Hollman; and, like the former vertebra, appears, from its proportions, to be a different species from the unicorn rhinoceros. A third cervical vertebra is also figured by Hollman, corresponding with the preceding vertebræ, and, like them, differing in proportions from those of the corresponding bone in the skeleton of the unicorn.

From various comparisons of the fossil bones with those of the living species, M. Cuvier was able to conclude, that the head of the fossil species is not only absolutely much larger, but that it is also much larger in proportion to the height of the limbs, and, consequently, that the general form of the animal must have been very different from that of the living species.

A large quadruped, then, of a species unknown at the present day, is thus found buried, M. Cuvier observes, in numerous parts of Europe and Asia; and one very remarkable circumstance is, that it has not been brought from afar; and another, that it has not been by any slow and insensible change of the earth, but by some sudden change, that this species has ceased to exist. The whole rhinoceros, found with its flesh and skin, buried in the ice, on the borders of the Wiluji, evidently demonstrates, he thinks, these two propositions. How, he asks, could it have come there from the Indies, or from any other warm country, without falling to pieces? How could it have been preserved, if the ice had not involved it suddenly; and therefore, how could it have been involved in this manner, if the change of climate had been gradual and insensible?

The discovery of this animal has furnished us with some facts respecting its external structure. None of those protuberances or

irregular callosities were discoverable on the head, which render that of the unicorn-rhinoceros so hideous, but which do not exist in that of the bicorn of the Cape. It appeared also, that the hairs were very abundant on the feet, whilst none exist on these parts of the rhinoceros of the Indies or of the Cape.

The existence of the fossil remains of the hippopotamus has not been so generally admitted as those even of the rhinoceros. M. Faujas St. Fond, who is eager to establish the eastern origin of our fossil remains, is of opinion that the hippopotamus, which he believes to be an animal not known in the East Indies, has not been found among the fossil remains of animals in this part of the world. This opinion he founds, on his never having seen any of the fossil remains of this animal in the several museums he visited in England, Scotland, Holland, France, and elsewhere; and in finding no mention of them in the accounts of different travellers, or in the writings of those authors who have treated of the fossil remains of the larger quadrupeds.

In Daubenton's department of the Natural History of Buffon, it is observed by St. Fond, that a report is given of several fossil teeth of the hippopotamus, which were in the Museum of Natural History of Paris; but that, upon examination, these teeth appeared to be teeth of the mammoth, or of the animal of Simorre.

On the other hand, M. Cuvier, on examining the teeth mentioned by Daubenton, found two of them to be actually the teeth of the hippopotamus; and although he found that Lang, Romé de l'Isle, Camper, Merck, and others, had mistaken the teeth of other animals for those of the hippopotamus, he found that Antoine de Jussieu, *Mem. de l'Acad.* 1724, had undoubtedly described the fossil remains of this animal, as found in Montpellier, at a place called La Mosson. On further examination, it was clearly ascertained, that these fossils came from Languedoc, where other remains of this animal were also found, sufficiently proving the existence of the fossil remains of this animal.

From the account also of M. Fabbroni, Director of the Royal

Cabinet at Florence, it appears that there exists, in that cabinet, not only two of the molar teeth of the hippopotamus, but a fragment also of one of the tusks, or canine teeth of the lower jaw. Teeth of the hippopotamus, of different kinds, it appears, have been found scattered in several parts of the upper Vale of Arno.

Remains of the hippopotamus have been found, I am informed, in some parts of Gloucestershire. Mr. Trimmer has kindly communicated to me the information, that the remains of these animals are found in the stratum of blue clay at Brentford; and has also kindly communicated the following account of the strata, as they there occur. The first stratum is nine feet of sandy loam, or common brick earth, in which no fossils are found. 2d. Seven feet of gravelly sand, becoming so coarse, as to deserve to be called sandy gravel. At the bottom of this stratum are found the remains of hippopotami and of elephants; but they are not found in those parts to which the next stratum does not extend: to which, therefore, they may be more properly considered as belonging. 3. From one foot to nine, of an earth highly calcareous, in which are found the horns, bones, and teeth of deer, with many small shells. 4. A few feet of gravel, with water. 5. Two hundred feet of blue clay, in which are found pyritified fruits and wood, with marine fossils, particularly nautili, which are found at all depths in this stratum.

In my visits to Walton, in Essex, I have been successful in obtaining some remains of this animal. The most interesting of these specimens are—

1. An incisor tooth of the right side of the lower jaw. This tooth has lost much of its enamel, but is otherwise in good preservation, possessing all its characteristic markings. It measures fifteen inches and a half in length, and nine inches in circumference towards its base, and is of course too large to be figured in these plates.

2. The point of an inferior canine tooth or tusk, measuring full nine inches in circumference, and having seven inches in length of triturating surface. From the great size of this tooth, it is very likely to have

belonged to the same animal to which the preceding tooth belonged. Besides the longitudinal striæ and grooves observable in the enamel of its sides and inferior part, it is characterized by strong transverse rugous markings, which are placed at nearly regular distances, of about two inches; and are observed to exist in the same manner on the fragment of about eight inches in length, which joins to it.

3. A fragment of a tusk, or lower canine tooth, which is only about half the size of the preceding specimen. It has the markings of its enamel of a different character from that of the larger tooth, and particularly is devoid of those transverse rugous markings which are so strongly formed in that specimen. From the roundness of this specimen in its circumference, and from the difference of its character, I am led to suspect that it may have belonged to the small hippopotamus, which, as will be presently observed, was discovered by Cuvier, and which is only, as yet, known in a fossil state.

4. One of the anterior grinders.

5. One of the last molar teeth of the right side of the lower jaw, and which does not appear to have long pierced the gums. PlateXXI. Fig. 1.

Among the most important discoveries made by M. Cuvier, is that of a small fossil hippopotamus, of not more than half the size of the common species.

The remains of this animal were found in two pieces of sand-stone, in which the bones and teeth were disposed in a manner much resembling that which is observable in the calcareous and stalactitic masses from Gibraltar, Dalmatia, and Cette. Unfortunately, no traces existed by which it could be known where this sand-stone had been found.

After extricating, with extreme care, such bones as could be removed, and as served to demonstrate the species, M. Cuvier was gratified by finding that they belonged to an animal, the existence of which had never been imagined. This animal, it is evident, from the minute and close comparisons which were made, must have agreed, most exactly, in every character with the genus *Hippopotamus;* and

must have differed, not essentially in any respect but in its size, from that species which we know living, and whose fossil remains, we have just seen, have been also sometimes found. The size of this animal could not have exceeded half that of the ordinary species; and it is evident, from the state of its teeth, and from the advanced progress of ossification, that its inferior size could not have proceeded from its being a young animal, but from its having been of a distinct species.

In one of its large grinders, it appeared that, contrary to the horizontally worn surface of these teeth in the ordinary hippopotamus, it was worn obliquely on the anterior side, showing that its projections had shut in between the risings of the opposite tooth.

But a more important difference was observable in the lower jaw. The hippopotamus is the only known animal whose jaw, at its inferior and posterior angle, turns backward, and forms a broad hook-formed process. In this small animal, this hook-formed process not only was also observable, but it was found to be carried much further backward. In the common hippopotamus, the turn which it makes describes the fourth of a circle; but in this animal the turn forms a crescent, and is equal to half a circle.

The tapir is one of the pachydermata, and forms a genus in which there is but one species; it is an animal of South America. It is formed like a hog; and although only the height of an ass, it is the largest animal known in those parts. Its snout is elongated into a trunk, which, although not long, is moveable like that of the elephant. The fore-feet have four equal-sized toes, and the hind feet three, all of which have hoofs. It has, in each jaw, six incisive teeth, and two canine, which are not longer than the incisors. The skin is black, and almost without hairs. It is a quiet and docile animal, which lives on the banks of rivers, and feeds on reeds, sugar-canes, &c.

The tapir not having been known but in South America, it was with great pleasure that M. Cuvier ascertained the existence of the fossil remains, in France, of some animal of the same species, or very

nearly resembling it; since this must be most decided evidence against that system which attributes an Asiatic origin to our fossils.

This celebrated naturalist first noticed two specimens in the cabinet of M. de Drée, and which had been described in a Memoir by M. Dodun, being two portions of lower jaws which had been found near the last declivities of the Black Mountain, at Issel, in Languedoc, near Castelnaudari, by M. Dodun. Finding that the resemblance which these jaws bore to those of the tapir was exceedingly close, there being the same number of each sort of teeth, the same form in the molar teeth, and even the external incisive smaller than the others, as in the tapir, he was induced, at first, to declare, that the fossil jaw did not sensibly differ from the jaw of the recent animal. Subsequent examination, however, enabled him to discover, that a difference existed between the first molar teeth of the fossil and of the recent jaw. In the tapir of South America, all the molares have their crown divided into two transverse risings, of an equal width; but in the fossil animal, the three first molares, instead of transverse risings, have a kind of points or pyramids, the foremost of which is larger than that which is behind it. The anterior part of the muzzle is more narrow and long in the common tapir, than in the fossil animal. In the tapir, also, the first molar is longer than any of the four or five following ones; but in the fossil jaw this is the shortest.

These, and other less differences, induced M. Cuvier to conclude, that the fossils of the Black Mountain belonged to some species approaching to the tapir, but which was not precisely the same. These remains of an animal, the analogue of which, if living, can only exist in South America, are, in his opinion, entirely subversive of the notion of those who support the Asiatic origin of our fossils. M. Cuvier calls this animal *the small fossil tapir*.

In the *Journal de Physique* for February, 1772, there appeared the representation of a molar tooth, found in the neighbourhood of Vienna, and which appeared to have belonged to some large animal, at least resembling the tapir. Another specimen was found near St.

Lary, in Couserans. But the most interesting specimens are, the two halves of a jaw, with five molar teeth in each, in the possession of M. Drée. These fossils were found at Comminge, by the side of Beine, five leagues from Alan, a castle of the Bishop of Comminge. Similar teeth are also said, by Fabbroni, to have been found in Italy.

The teeth of the recent tapir are characterized by being divided by transverse risings; but this character, Cuvier observes, is not sufficient to allow the attributing of any fossil teeth, with transverse ridges, to the tapir; since the same transverse risings on the crown are observable in the teeth of the lamantin *(Trichecus manatus)*, and in those of the kanguroo. In the lamantin, the upper teeth have two large risings, and two smaller, or spur-like processes, one before, the other behind. On the lower teeth are three risings. These risings are, in the germ of the tooth, crenulated, both in the lamantin and in the fossil animal.

Of the five molar teeth in M. Drée's fossil, the foremost has only one ridge, which is flat; but the four last have two ridges, with a spur behind, which is largest in the hindermost teeth. The animal to which these teeth belonged, could not, as M. Cuvier observes, have been very aged, since the ridges are not much worn, and since one tooth, at least, was wanting in this jaw. This is, however, assumed on the supposition that the tooth found at Vienna, belonged to a similar animal. This tooth has three ridges and a spur-like process; and in that case, would have been placed behind these; since in herbivorous animals, the teeth composed of the most pieces are always behind the rest. The tooth found at St. Lary, and which agrees in the appearance of its enamel and matrix, with those of M. Drée, has also three ridges, which confirms the opinion of this animal having six molar teeth on each side. Reckoning from the size of the molar teeth of the fossil animal, it is supposed that it must have been one-fourth taller than the rhinoceros. But, by the same made of reckoning, it would have been five times longer than the known lamantin, and eight times larger than the kanguroo, supposing it to have had the same proportions as the species to which it may be imagined to belong.

These fossil remains M. Cuvier considers as belonging to a large animal, which might have approximated to the tapir, and which he calls the *large fossil tapir*. Plate XXI. Fig. 3, is the outline of the fossil tooth of this gigantic animal, found at St. Lary, in Couserans, copied from M. Cuvier's engraving, Pl. II. Fig. 7, *Ann. du Mus.* Tome III.

LETTER XXIX.

FOSSIL PACHYDERMATA OF THE ENVIRONS OF PARIS....PALÆOTHERIUM MAGNUM, MEDIUM, CRASSUM, MINUS....ANOPLOTHERIUM COMMUNE, MEDIUM, MINUS, MINIMUM....UNDETERMINED ANIMAL OF ORLEANS.

I SHALL, with great pleasure, show you in the present Letter, that the unceasing and ingeniously directed labours of Cuvier have been rewarded by the discovery of the fossil remains of two genera of pachydermata, containing seven or eight different species, the analogues of which are at present entirely unknown. To one of these he has given the name of *Palæotherium*, or ancient large animal or beast; and to the other, *Anoplotherium*, or beast without weapons, thereby implying its distinguishing character, its want of canine teeth.

Much of this information was yielded him by the teeth alone; but, in addition to these, he became possessed of other different bones of these animals, and particularly of the bones of the feet, by which the conjectures which he had already formed, respecting the nature of these animals, obtained a considerable degree of confirmation: but as he had found the heads belonging to two genera, one with and the other without canine teeth; so he also found the feet of two genera, one with three complete toes, and the other with two.

Fig. 4. Part of a jaw of some ruminant in the calcareous mass of the Gibraltar rock.
5. A fossil elephant's tooth, with plates in an undulating form.
6. A fossil elephant's tooth, remarkable for the thickness of its plates.
7. A fossil elephant's tooth, remarkable for the disposition of its plates.
8. A fossil elephant's tooth, in which twenty plates exist in the length of six inches and a half.
9. A fragment of a fossil tusk, showing its structure.

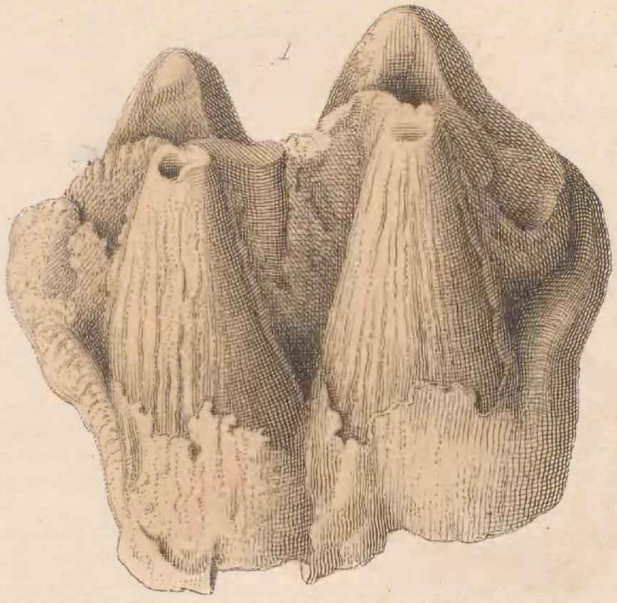
PLATE XXI.

Fig. 1. A fossil molar tooth of the hippopotamus of the right side of the lower jaw, and which has not long pierced the gums.
2. A fossil upper molar tooth of the rhinoceros.
3. A fossil tooth of the tapir.
4. The outer surface of the fourth molar tooth of the lower jaw of *Palæotherium medium*.
5. The inner surface.
6. The outer surface of one of the molares of the upper jaw.
7. The inner surface.
8. The antepenultimate lower grinder of the *Anoplotherium*.
9. The grinder which stands before the one Fig. 8.
10. The fossil claw-bone of the *Megalonix;* half the natural size.
11. A fossil tooth of the *Megalonix*.

PLATE XXII.

Fig. 1. Skeleton of theMegatherium.
2. The hindmost grinder of the upper jaw of the fossil bear of the caverns.
3 The middle upper grinder.
4. The foremost upper grinder.
5. The hindmost grinder of the lower jaw.
6. The penultimate grinder of the lower jaw.
7. The antepenultimate lower grinder.
8. The foremost lower grinder.
9. The canine tooth of the fossil bear.

PL. XXI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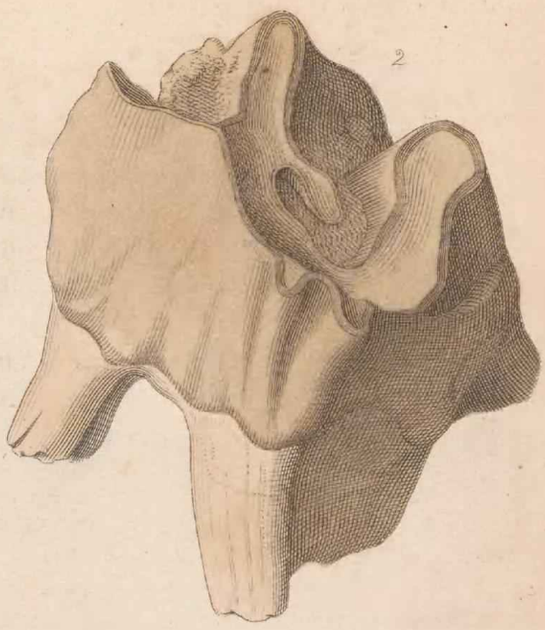
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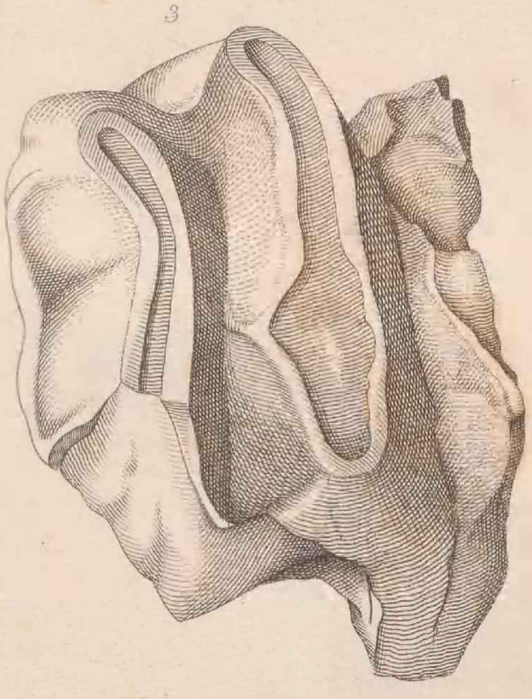
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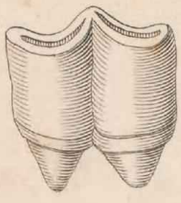
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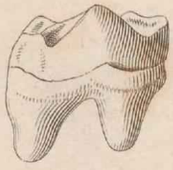
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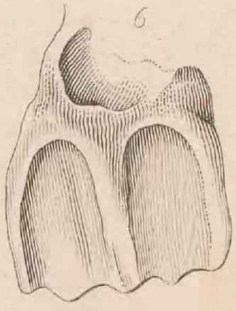
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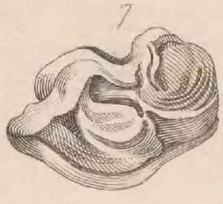
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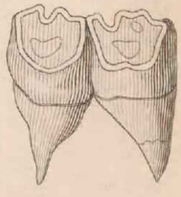
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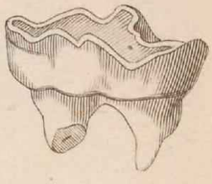
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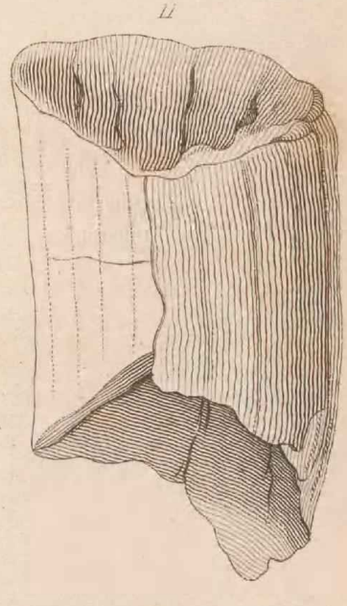
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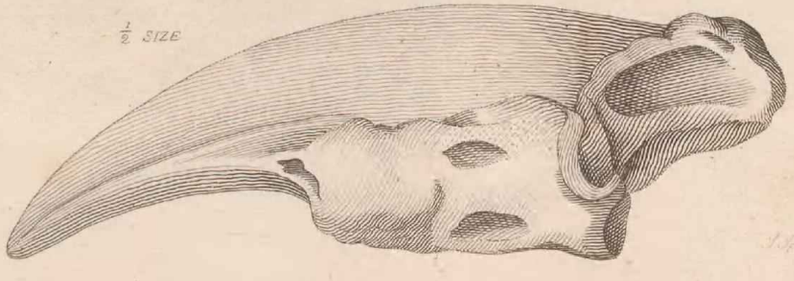
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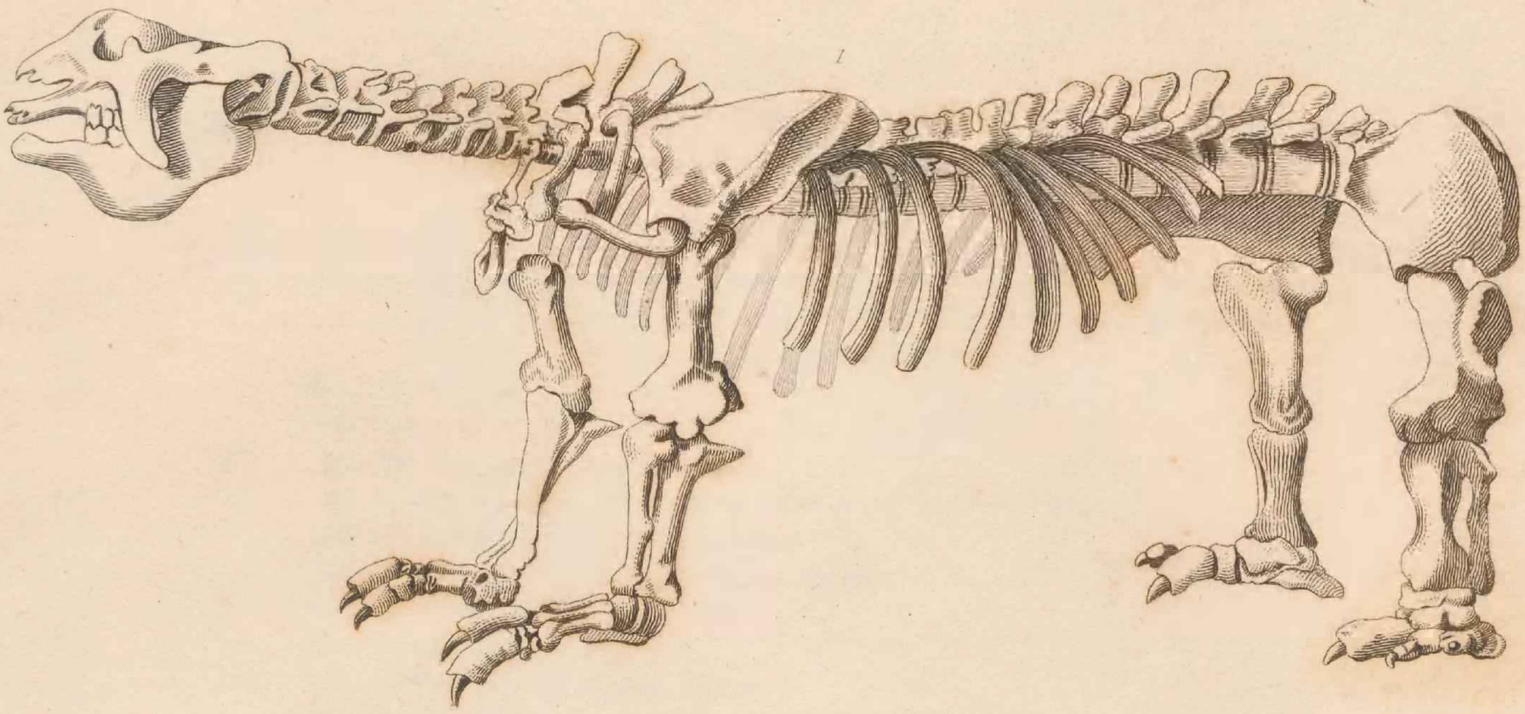

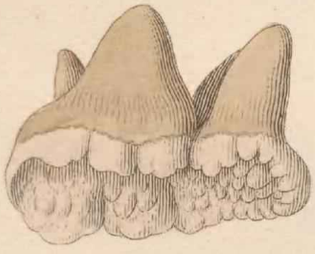

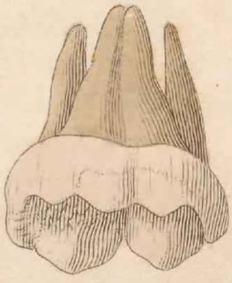

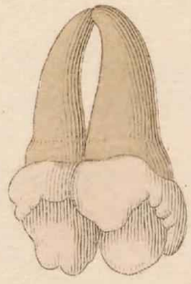

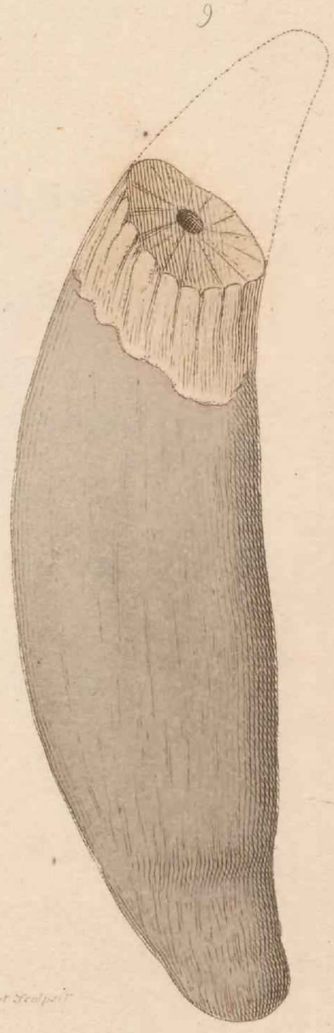

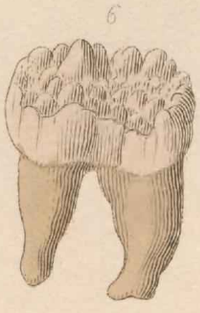

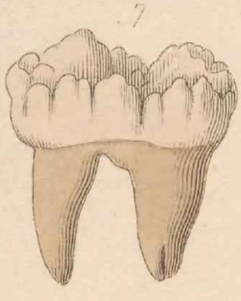

J. Springgrüth. Delin. et Sculpsit.

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