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V. *Observations on the Bones, commonly supposed to be Elephants Bones, which have been found near the River Ohio in America: By William Hunter, M.D. F.R.S.*

Read February 25,
1768.

NATURALISTS, even those of our own times, have entertained very different opinions concerning fossil ivory, and the large teeth and bones, which have been dug up in great numbers in various parts of the world.

At first, some thought them animal substances, and others mineral. When only a certain number of observations had been collected, these substances were determined to be mineral: but, the subject having been more carefully examined, they were found certainly to be parts of animals.

After this point was settled, a dispute arose, to what animal they belonged. The more general opinion was, that they were bones of the elephant; and the great similitude of the fossil tusks to the real elephants teeth gave this opinion considerable credit.

It was liable however to great objections: the bones were observed to be larger than those of the elephant; and it was thought strange that elephants should have been formerly so numerous in western countries, where they are no longer natives, and in cold countries, Siberia particularly, where they cannot now live.

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We had information from Muscovy, that the inhabitants of Siberia believed them to be the bones of the mammoth, an animal of which they told and believed strange stories. But modern philosophers have held the mammoth to be as fabulous as the centaur.

Of late years the same sort of tusks and teeth, with some other large bones, have been found, in considerable numbers, near the banks of the Ohio, in North America. The French Academicians became possessed of some specimens of them; and having compared them with the bones of real elephants, and with those which had been brought to France from Siberia, and with similar bones found in various other parts, determined, with an appearance of probability on their side, that they were elephants bones.

Monfieur Buffon gives us the following account of this decision ^a: “ All this put together, leaves us
 “ no longer any room to doubt, that those tusks
 “ (*defenses*), and those large bones (*ossemens*), are
 “ truly the tusks and bones of the elephant.
 “ M. Sloane had said this, but had not proved it.
 “ M. Gmelin has likewise said so, and more positively ;

^a “ Tous. cela réuni, fait que nous ne doutons plus que ces
 “ défenses & ces ossemens ne soient en effet des défenses & des
 “ ossemens d'éléphant.. M. Sloane l'avoit dit, mais ne l'avoit
 “ pas prouvé. M. Gmelin l'a dit encore plus affirmativement, &
 “ il nous a donné sur cela des faits curieux ; mais M. Daubenton
 “ nous paroît être le premier, qui ait mis la chose hors de doute,
 “ par des mesures précises, des comparaisons exactes, & des
 “ raisons fondées sur les grandes connoissances qu'il s'est ac-
 “ quisés dans la science de l'anatomie comparée.” Hist. Na-
 turelle, Tom. XI. p. 87.

“ and he has given us some curious facts concern-
 “ ing this question ; — — — but M. Daubenton
 “ appears to us to be the first who has put the mat-
 “ ter beyond doubt, by accurate measures, by exact
 “ comparisons, and by reasons founded upon the
 “ great knowledge which he has acquired in the
 “ science of comparative anatomy.”

From the first time that I learned this part of natural knowledge, it appeared to me to be very curious and interesting ; inasmuch as it seemed to concur with many other phænomena, in proving, that in former times some astonishing change must have happened to this terraqueous globe ; that the highest mountains, in most countries now known, must have lain for many ages in the bottom of the sea ; and that this earth must have been so changed with respect to climates, that countries, which are now intensely cold, must have been formerly inhabited by animals which are now confined to the warm climates.

Some time in the last spring, having been informed that a considerable quantity of elephants teeth had been brought to the Tower, from America ; and being desirous of procuring some information concerning them, I waited upon Mr. Bodington, to know the particulars, and to beg leave to examine them. He obligingly gave me a verbal account of their having been brought from the banks of the Ohio ; and on the following day sent me one tusk, and one grinder, as specimens for my examination. The tusk, indeed, seemed so like that of an elephant, that there appeared no room for doubt. I shewed it to my brother, and he thought so too : but, being particularly conversant with comparative anatomy, at the

first sight he told me that the grinder was certainly not an elephant's. From the form of the knobs on the body of the grinder, and from the disposition of the enamel, which makes a crust on the outside only of the tooth, as in a human grinder, he was convinced that the animal was either carnivorous, or of a mixed kind. This made me think that the tusk itself was not a real elephant's tooth: for Mr. Bodington had told me, that there were many grinders, as well as tusks, and that they were all similar to those specimens which he had sent to me. And some time after, when I went to the Tower, and examined the whole collection which had been sent over from the Ohio, I saw that the grinders were all of the same kind. I examined two elephants jaws in my brother's collection: I examined the tusks and grinders of the Queen's two elephants: and I examined a great number of African elephants teeth at a warehouse.

From all these observations I was convinced that the grinder tooth, brought from the Ohio, was not that of an elephant; but of some carnivorous animal, larger than an ordinary elephant: and I could not doubt that the tusk belonged to the same animal. The only difference that I could observe between it and a real elephant's tusk was, that it was more twisted, or had more of the spiral curve, than any of the elephants teeth which I had seen.

Some time after this, Dr. Franklin received a large box of the same sort of bones from the Ohio, by the way of Philadelphia. He informed me of this, and told me likewise that another large box of those bones was sent to the Earl of Shelburne, one of his Majesty's

Majesty's secretaries of state. I waited upon Dr. Franklin, with some other friends, and found the bones to be exactly such as I had seen; and was, therefore, confirmed in my former opinion.

Then I waited upon Lord Shelburne, and was permitted to examine the bones which he had received. Besides the tusks and grinders, which were all such as I had seen, and still served to confirm me in my opinion, there was the half of the lower jaw of the animal, with one large grinder still fixed in it. This jaw-bone was so different from that of an elephant, both in form and in size, and corresponded so exactly with the other bones, and with my supposition, that I was now fully convinced, that the supposed American elephant was an animal of another species, a *pseud-elephant*, or *animal incognitum*, which naturalists were unacquainted with. I imagined farther, that this *animal incognitum* would prove to be the supposed elephant of Siberia, and other parts of Europe; and that the real elephant would be found to have been in all ages a native of Asia and Africa only.

The Earl of Shelburne, from his love of natural knowledge, shewed a desire that the enquiry might be carried on; and did me the honour to offer his assistance in transmitting orders to America, for procuring farther information about this matter. In consequence of this generous offer, I proposed that his lordship should send the following questions and orders, to any person in America, whom his lordship might think the best qualified for conducting such business.

Queries and orders concerning the bones, called elephants bones, found in the marsh, called the Salt-Lick, near the River Ohio.

- I. Do those bones appear to have lain upon the surface of the earth from the first? Or,
- II. Do they seem to have been originally at some depth in the earth, and to have been afterwards exposed by the earth's falling away, or by its being washed away by floods, &c.?
- III. How far is that part of the marsh from the river? How high above the common surface of the water of the river? And does it appear probable, from the level and face of that marsh, that in former times the river may have run where the bones are?
- IV. How many elephants skeletons have been found, as far as may be collected from the number of tusks, or other marks? and at what distance from one another?
- V. To send over, if possible, a whole head, or the most entire parts of a head, especially of the upper jaw; and a foot, or the small bones of it, if they can be distinguished; and any bones which have those parts pretty entire which once made a joint.
- VI. To make correct drawings of any of the bones which are pretty entire, if, on account of their size, or tenderness, they cannot be sent over to England.
- VII. If the bones do not lie in blended heaps, but those of one single animal all together, and
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at some little distance from others, it might be of service towards ascertaining the species of this animal, to expose or uncover one compleat sett of bones, without moving any one of them from its place; and to make a general drawing of the whole, as they appear in that situation; and to send as many of them as are tolerably perfect over to England, with that drawing.

Lord Shelburne was pleased to take the care of this proposal upon himself; and in proper time will probably receive such information as may be satisfactory.

I thought it would be adviseable, in the mean time, to collect all the information I could upon this subject; and to lay the result of such enquiries before this Society: that those who may have better opportunities might be invited to the subject, and no longer leave so capital an article of natural history uncertain.

I examined all the fossil teeth, as they are called, in the Musæum of this Society, and the head and teeth of an hippopotamus. Then, with Dr. Knight first, and a second time with Dr. Solander, I examined all the fossil teeth, and all the jaw-bones, and teeth of elephants, and hippopotami, and other large animals, in the British Musæum; and some likewise in private collections. In making this search, I met with grinders of the *incognitum* that were found in the Brazils and Lima, as well as in different parts of Europe.

At this time Lord Shelburne presented the largest of the American tusks, and the jaw-bone, and some grinders, to the British Musæum; and his Lordship did me the honour to send me the smaller tusk, and two grinders.

I went to four of the principal workers and dealers in ivory, with whom I saw and examined many hundreds of elephants teeth. Though they all assured me, that the real elephants teeth have often a spiral twist, like a cow's horn; they could not shew me one tooth so twisted, in all their collections, at the time when I visited them. Three of them did me the favour to come to my house; and they gave it as their opinion, that my two American tusks were genuine elephants teeth. One of them was even positive that they were African teeth. Another worker in ivory cut through that tusk which Lord Shelburne gave me. It proved to be found on the inside. He assured me, that it was true elephantine ivory; and that workers in ivory could readily distinguish the genuine, by its grain and texture, from all other bony substances whatever. He polished it: we compared it with other pieces of genuine ivory; and indeed they appeared to be perfectly similar. His opinion was afterwards confirmed by another experienced worker in ivory. Yet their opinion, and what I saw with my own eyes, convinced me of this fact only, viz. that true or genuine ivory is the production of two different animals; and not of the elephant alone.

Having thus collected all the materials to which I could have access, I carefully read what the French Academicians Messrs. Buffon and Daubenton have written on this question, in the *Histoire Naturelle*,

Tom. XI. p. 86. &c. and p. 147. &c. Tom. XII. p. 63.; and *Memoires de l'Acad. Roy. des Sc.* Ann. 1762. p. 206. &c. But, instead of meeting with facts which could disprove my opinion, I found observations and arguments which confirm it. One very material fact, which Mr. Daubenton furnishes in support of my hypothesis, is the comparison of the American thigh-bone, with that of a real elephant; both of which he has represented in figures, which appear to be done with accuracy. To me it seems most evident, that they are bones of two distinct species. The vast disproportional thickness of the American bone, compared with that of the elephant, is surely more than we can attribute to the different proportions of bones, in the same species, which arise from age, sex, or climate. But Mr. Daubenton, to support his hypothesis, that the American *femur* is elephantine, is obliged to refer the great disproportion in thickness to the causes above-mentioned; and he affirms that in all other circumstances they are exactly alike. Now, to my eye, there is nothing more evident, than that the two *femora* differ widely in the shape and proportion of the head; in the length and direction of the neck; and in the figure and direction of the great trochanter: so that they have many characters, which prove their belonging to animals of different species.

In order to prove to the satisfaction of the society, that the *incognitum* of America is of a very different species from the elephant, I have added three drawings of the jaw-bone of that animal; which the curators of the British Musæum were pleased to give me leave to take, and which Mr. Rymdyk executed with a most scrupulous exactness: and that the comparison

II.

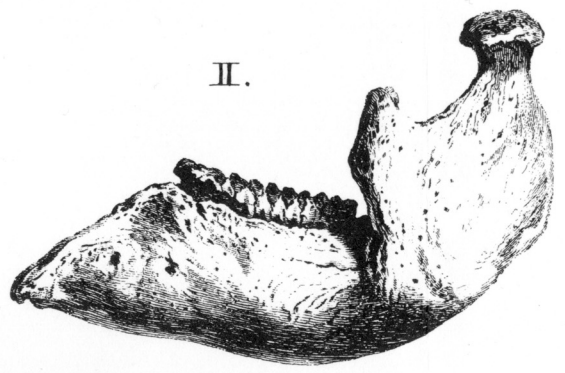
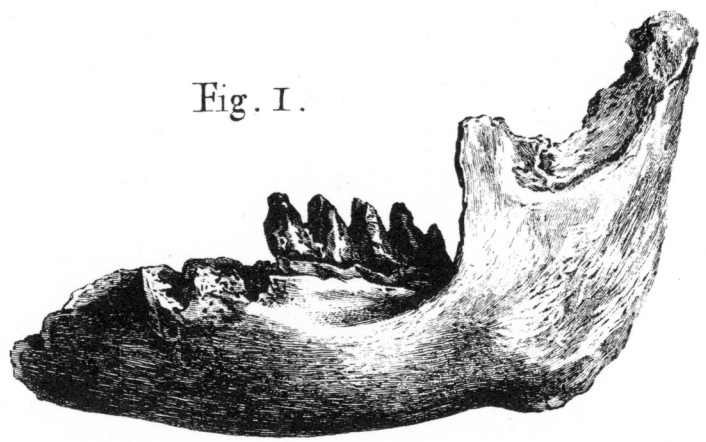
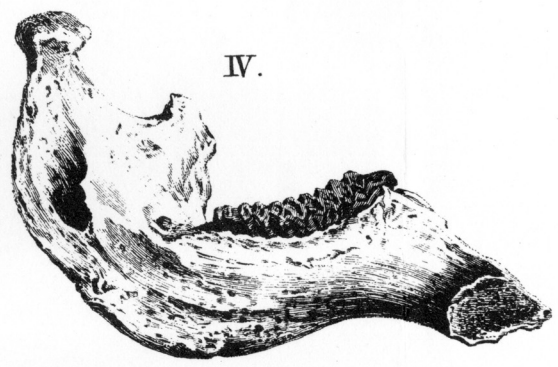


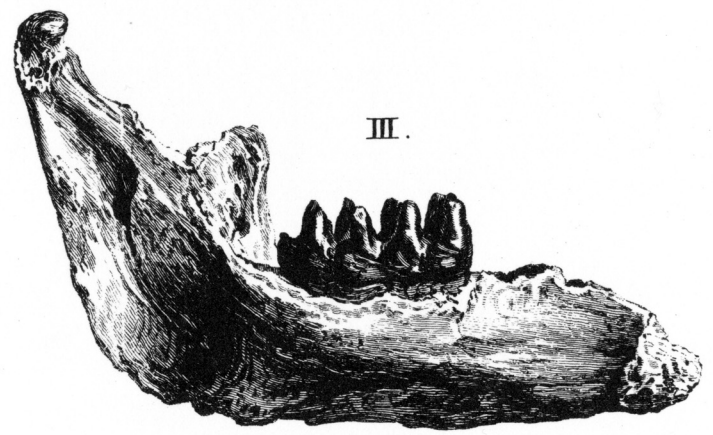
Fig. I.



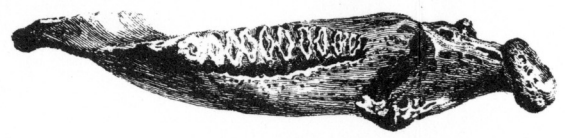
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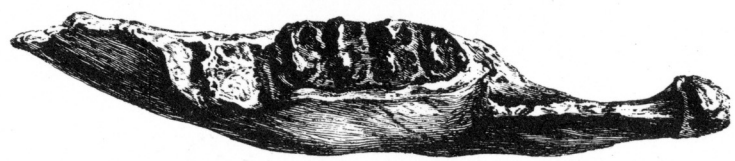
III.



VI.



V.



parison might be made with ease, I have added three similar drawings, taken from the largest of the two full-grown Elephants jaws which were in my brother's collection; executed with the same care, by the same artist; and drawn to the same scale, *nine* inches in the real object making *one* in the figure.

TAB. IV. Fig. I. An outside view of the half of the lower jaw of the American *incognitum*, which the Earl of Shelburne deposited in the British Museum. From the top of the condyle to the anterior extremity, the bone measured, in a straight line, thirty five inches: the basis alone, in a straight line, two feet and four inches.

Fig. II. The same view of the same bone in a full-grown Elephant, drawn to the same scale.

Whoever will take the pains to compare these two figures, with a critical eye, will see that they differ so very much, not only in size, but in their general character, and in the particular parts and features, that he cannot entertain a doubt of their being the jaws of two very different animals.

Fig. III. A view of the inside of the same jaw-bone of the *incognitum*.

Fig. IV. A view of the inside of the same jaw-bone of the Elephant.

In comparing these two views, the difference if possible is still more manifest.

Fig. V. A view from above of the jaw of the *incognitum*.

Fig. VI. The same view of the Elephant's jaw-bone.

It may now be fairly presumed that the American bones are proved to be certainly not elephantine:

and whoever is of that opinion, will naturally suspect that the Siberian bones are of the same kind. I imagine that it will be found, upon strict enquiry, to be so. But, as I have not the necessary materials for discussing this question at present, I shall only state a few facts, to shew that there is some ground for the opinion.

1. All accounts, and particularly those of Mess. Gmelin, Buffon, and Daubenton, say that the bones found in Siberia are larger than the bones of common Elephants. This would make us inclined to suspect that they were not Elephants bones, but that they were of the *Incognitum*.

2. The Siberian *femur*, as represented by Monsieur Daubenton, is *very much* like the American *femur* in size, shape, and proportions.

This circumstance appears to be almost a demonstration, as we have before proved, that the American *femur* is not that of an Elephant. And in this argument, we have even the weight of Monsieur Daubenton's opinion in our favour. For he (page 211.) taking it for granted that the Siberian *femur* was undoubtedly elephantine, *reasons* from the likeness in size, shape and proportions, that the American *femur* is so. Now, as we have shewn that the American *femur* is not elephantine, his proof taken from the size, shape, and proportions of the two bones, must serve to convince us that the Siberian thigh-bone is not of the Elephant, but of the *incognitum*.

3. Monsieur Daubenton found a difference between the temporal bone brought from Siberia, and that of an Elephant. This likewise is an argument in favour of our supposition.

4. The supposed Elephant's tusk, which was brought from Siberia by Mr. Bell, and presented to Sir Hans Sloane, and of which we have a description and figure in the Memoirs of the Academy of Sciences at Paris (An. 1727. page 309), is evidently twisted like the tusk of the *incognitum*, and not at all like any Elephant's tusk which I have ever seen. This proof will have considerable weight with those who will take the trouble to examine that tusk in the British Musæum.

In the last place, it may be observed, that as the *incognitum* of America has been proved to have been an animal different from the Elephant, and probably the same as the Mammouth of Siberia; and as grinder teeth like those of America have been dug up in various other parts of the world; it should seem to follow, that the *incognitum* in former times has been a very general inhabitant of the globe. And if this animal was indeed carnivorous, which I believe cannot be doubted, though we may as philosophers regret it, as men we cannot but thank Heaven that its whole generation is probably extinct.