

each; but there are some of them wasted, and some of Holders that go into the Jaw broken off.

I am,

My LORD,

Your Lordship's most dutiful  
and obedient Servant.

FRANCIS NEVILE.

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V. *Remarks upon the aforesaid Letter and Teeth, by Thomas Molyneux, M. D. and R. S. S. Physician to the State in Ireland: Address'd to his Grace the Lord Archbishop of Dublin.*

MY LORD,

WHEN your *Grace* was pleas'd to communicate to me a Letter you received some while since, containing an Account of an extraordinary Natural Curiosity, lately discover'd in the *North of Ireland*, in the County of *Cavan*, you desired I would give you my Thoughts concerning it, and the Purport of the Letter: but truly when first your *Grace* gave me the Opportunity of perusing this Account, and I consider'd the imperfect Sketches of the *Teeth* annex'd to it, I was not a little concern'd, that upon the making so surprizing a Discovery, I could not command a Sight of the Originals themselves, from whence the Draughts were taken; or that so great a Curiosity should be express'd by the Hand of an Artist that shew'd so little Skill: however, by the best Judgment

I

I could make from so imperfect an Information, I told your *Grace* then, I was pretty well convinced they must have been the *Grinding Teeth* of an *Elephant*: Yet I engaged, if hereafter I might be so lucky as to procure a View of the *Teeth* themselves, I would be more positive in my Opinion, and give the Reasons on which I grounded my Conjecture; as likewise I would have the Shape of the *Teeth* express'd in their full Dimensions, by more true and exact Figures.

Since that, the *four Teeth*, with some of the Fragments of the Bones that were found with them, have been brought here to *Dublin*, where, by the Favour and Assistance of my ingenious Friend Sir *Thomas Southwell*, I procured the Loan of them, so long as to examine them particularly, make some Remarks, and take the following correct Sketches, that express their Form truly, just as big as the Life; and your Lordship seem'd well satisfied with the Performance of the Artist, when at the same time I produced the Draughts and the Originals from whence they were copied, that we might compare them both together.

Upon the whole, I am now fully convinced, and I can upon sure Grounds affirm to your Lordship, that they must certainly have been the *Four Grinding Teeth* in the lower Jaw of an *Elephant*: and that the many loose Fragments of those large Bones that were found with them, must have been Remains of the same *Animal*. This I take to be one of the greatest Rarities that has been yet discovered in this Country.

In order to clear this Matter 'twill be first requisite to have recourse to, and explain the annex'd Figures

Figure the 1<sup>st</sup>. *AA* is the large Grinder of the under Jaw on the right Side, weighing two Pounds and three Quarters of a Pound.

*b. b. b. b. b. b.* are white, rough, indented Borders, Seven in Number, of an irregular Shape, rising about the tenth of an Inch higher than the hard black shining Surface of the Tooth; this rough raised Work serves for the bruising and grinding the *Animal's* Food, the tough Grains of Rize, Leaves, Fruits and the Boughs of Trees; and is made of so extream an hard Texture, that it resembles large knotted Threads of white *Glass*, laid on and closely fastned to the dark Superficies of the *Tooth*: and answers that glassy Surface wherewith Nature has armed the Outside of the *Teeth* of most *Animals*, to prevent their wearing from the constant Attrition in Chewing of their Foods.

*c. c. c. c. c.* is that part of the Tooth which rises above the Gumms, and continues even now distinguish'd from the rest of the Bone, by having its Colour of a different Shade.

*d. d. d. d. d. d.* are many strong Tangs er Roots, seemingly united altogether, by which the Tooth received its Sense and Nourishment, and tho' it was so large and ponderous. by these it kept firmly fixt into the Jaw.

For the Mechanism Nature shews it self to have followed in framing the *Teeth* of this *Animal*, is no more than this: whereas in other Creatures, she has divided that bony Substance wherewith they chew their Food, each having its peculiar Roots to secure its Articulation in the Jawbone: she has in this of so great Bulk (As *Pliny* the *Naturalist* stiles it *Terrestrium maximum Elephas*.) for the greater Strength, Stabiliment, and Duration of it's *Teeth*, and the better to provide for a compleat Attrition of the Aliment, in order to perfect the Digestion so thoroughly, as to sustain the Life of the Animal for two or three hundred Years, (as it is a common received Opinion in the *East*) She has, I say, contrived to make the Substance of the *Teeth* in their Roots below, and in their upper

per parts above the Gums, closely unite together; and coalescing thus, form a few large massy Teeth instead of many small ones.

As for instance, in *Man's Body*, that is of so much a less Size, the Number of the Teeth, (when the whole Sett is compleat) reckons to thirty two, whereas in the large *Elephant*, the Teeth of both the Jaws amount in all but to Eight, besides it's two great Tusks, which rather serve as Horns for its defence than Teeth to prepare it's Food, and therefore I think not so very properly call'd Teeth.

Figure the 2<sup>d</sup>. *E. E.* is the smaller *Grinding Tooth* of the under Jaw on the same side: it's Surface covered over with the same white indented Work, as before describ'd for grinding of the Food.

*f. f. f.* are three large Roots that kept it firmly fixt in the Jaw Bone.

This smaller Tooth weigh'd full six Ounces.

Figure the 3<sup>d</sup>. *G. G.* is the large *Grinder* of the under Jaw on the left side, much of the Size and Shape and Weight with it's fellow Tooth describ'd Figure the 1<sup>st</sup>. It shews its Roots and all its parts, with the rough protuberant white Work on its upper Surface made after the same Contrivance, and formed after the same strong Model as the former.

And truly if one considers it, 'tis plain that were not the *Teeth* of this Creature made of so large a Size, and withal of so massy and firm a Substance, 'twere absolutely impossible they could resist the Force, and bear all that Pressure wherewith those vast Muscles exert themselves, that move the lower Jaw in Mastication in this so strong an Animal.

Figure the 4<sup>th</sup>. *H. H.* is the smaller *Grinding Tooth* of the under Jaw on the same side; it is less compleat than the small Tooth describ'd before in Figure 2<sup>d</sup> for some of the Root is wanting, and part of its outward grinding  
Surface

Surface is broke off at *k. k.* so that it weighs somewhat less; yet what remains exactly shews the same kind of Work and Shape of the other Tooth, that answer'd it on the right Side.

These *Four Teeth* here describ'd, fully compleat the Sett of the Teeth, wherewith Nature has furnished the lower Jaw of the *Elephant*; and are answered by just as many more, formed after the same manner in the upper Jaw, as Dr. *Moulins* informs us, who dissected the *Elephant* that was burnt here at *Dublin* in 1681. In it's Anatomy p. 40. speaking of the Teeth he assures, there were besides the Tusks only four Teeth in each Jaw, two in every side: and that these eight Teeth were all *Molares*, so that he had no *Incisores*.

But notwithstanding this, perhaps it will be said, we may not hastily conclude from hence, that our *Great Teeth* dug up in *Ireland* must certainly have been the *Four Grinders* of an *Elephant*, since they might as well belong to some other large kind of *Terrestrial* or *Marine Animal*. As for the Hint of their being *human* or *gigantick*, 'tis so groundless a Thought, and so contradictory to *comparative Anatomy* and all *Natural History*, it does not deserve our Consideration.

To obviate this, I shall take notice first in general, that the differing Kinds of living Creatures, wherewith Nature has stock'd the World, are not more distinguish'd by the Make of any part of their Bodies from one another than by the various Shape and Disposition of their *Teeth*: and hence it is, we shall not find any two distinct *Classes* of *Animals* that do exactly agree in the same Make and Ranging of their Teeth.

But yet to be more particular, and make this Point so plain, I hope, as that it may admit of no Controversy, I shall here set down at length, as I find them. the  
Words

Words of two late Authors, that purposely have described the *Teeth* of the *Elephant*.

The first I shall mention is Mr. *Patrick Blair*, who has publish'd a Treatise he calls *Osteographia Elephantina*, or a Description of the Bones and other Parts of an *Elephant*, that died and was dissected near *Dundee* in *Scotland*, anno 1706. in the *London Philosophical Transactions* for April, May, June, July, August and September, 1710. Numb. 326. and 327. Here giving us a Description of the Teeth of this *Animal* pag. 110. he says, *Dr. Moulins* well observes that they are all *Molares*, being two Inches broad in that part of them wherewith they grind, and six Inches and a half long on the *Right Side*, and five Inches and a half on the *Left*. Their Surface, tho' flat, is yet very unequal, for they have alternately placed, running from the *Right* to the *Left Side*, an *Hollowness* and then an *Eminence*; and this *Eminence* is surrounded by a rough protuberant *Border*. There are *Nine* of these *Hollownesses* and as many *Eminences*, undulated as they paint *Sea Waves*,

'Tis remarkable how very exactly all this agrees with our *Figures*; 'tis true those *Hollownesses* and *Eminences* which he mentions to be *Nine*, do not so nicely hit with the *Number* of those in our *Teeth*: but this Difference proceeds from hence, that he describes here the *Grinders* of the upper, whereas ours are the *Teeth* of the lower *Jaw*; tho' such a *Distinction* as this, I am apt to think, may very well arise even in those of the same *Jaw*, in various *Animals*, from some peculiar *Disposition* in one from another, nay and perhaps in the same *Animal*, at differing times, according as it happens to be older or younger, but this by the bye.

A little farther pag. 114. and 115. where he gives an Account of those of the under *Jaw*, he says.

*The hind Tooth of the Right Side is four Inches, and that on the Left five: the one half of their Surface, where they begin*

gin to appear above the Gums, is semicircular, with the fore-mentioned Ridges and Sulci running transversely, four on the Right Side and five on the Left, the other half (or Tooth I suppose he means) has five of these Eminences where it grinds on the Right, and four on the Left: each of the four Teeth is six Inches long, and has six or seven of the forementioned Eminences and as many Depressions: these Teeth are the most firm, solid and weighty Bones of any Animal yet known.

So much from Mr. Blair.

The other Author I shall produce for the further Illustration of this Matter, is the laborious and accurate Naturalist Mr. Ray, who, in his *Synopsis Animalium Quadrupedum*, when he comes to give us the Description of the Elephant, has the following Words. *Os pro mole Belluae parvum, quatuor in utraq̃ue maxilla Dentibus molaribus seu Dentium molarium Massis instructum; si quidem plurimi Dentes in Os solidum & durum ita infixi sunt, ut cum eo & inter se unum & continuum Corpus efficiant. Dentes hi lineas parallelas undulatas octo vel novem in superficie massa efficiunt; suntque reliquo osse candidiores: Massa integra, Dentium singularium modo, per Gomphosin maxillis inseruntur. Incisoribus omnino caret.*

Thus Mr. Ray in very proper and expressive Terms describes the Teeth of this Animal: and truly if your Grace will but compare Mr. Blair's Words with his, and the Particulars of both Accounts with the Description and Figures we have before given of the Teeth dug up in Ireland, and observe how they all agree exactly, even so as one may say they tally together, I think it will amount to nothing less than Demonstration, and that all our Ideas have been taken from one and the same Natural Object; and as they, so we, must certainly have described no other Teeth but those of the Elephant.

But then perhaps it will be ask'd what is become of all the rest of the Teeth that were in the upper Jaw, which  
being

being as firm and solid Bones as those that are here preserved, might for the same reason have still remained intire.

But since we find it otherwise, 'tis obvious to imagine a probable Conjecture how this might come about. From what Mr. *Nevil* mentions in his Letter, 'tis plain that the Bed where all these Bones were found, must once have been the outward Surface of the *Earth*, the *Green-Sod*, producing *Rushes*, *Fern* and *Nutts*: and when the heavy Beast first fell dead upon this Spot, the Scull, with all the Bones and Teeth of the upper Jaw, being the highest Parts of the *Animal*, might likely fall in such a Posture, as to be expos'd some while above the *Earth*; tho' those of the under Jaw first coming to the Ground, might make themselves a Bed, and being covered with the Mould remain preserv'd, whilst the upper Teeth, and most of the other Bones, lying expos'd to the Injuries of the Air and Weather, before they got a Covering, might rot and quickly moulder all away.

But tho' this be allowed, yet still a greater Difficulty remains unsolv'd; how this large Body'd *Animal*, a *Native* of the remote warm *Climates* of the *World*, should be deposited in this wild *Northern Island*, (where *Greeks* or *Romans* never had a footing) so many Miles from Sea, and distant from those Places of the Isle where People might most probably resort.

And still to make the Difficulty yet greater, we must consider, not only from the dark black Colour of the Teeth, contracted by their lying long under Ground, and the remarkable Alteration wrought on their bony Substance, which (by the mineral Streams and Exhalations it has imbib'd whilst it was in the Earth) is now become more solid, hard, and ponderous, than it was naturally at first, (nay in some Parts we find it plainly petrified) but also from the perishing of all the other Bones of the *Animal's Body*, and from the considerable *Depth* of



*Earth* that covered those that were found : we must conclude, I say, from hence, that they have lain in this Place for many Centuries : I won't say with Mr. *Newil* ever since the *Flood*, because I can't suppose that the slight Texture of vegetable Substances, *Nutts* and the Seeds of *Rushes*, could possibly have been preserv'd so long : But this, at least, may safely be affirmed, that these Remains must be Cotemporaries with some of the remote Ages of the *World*; which carries us so far back into the earliest Times, that we can ne'er imagine the rude Inhabitants of *Ireland*, or any of their neighbouring Countries, were Masters of so much Art, in those Days of Ignorance and Darknes, as to make Carriages by Sea strong and capable or of Curiosity and Politeness enough, to transport a Beast of this large Size from those far distant Countries where 'twas bred; which they that now attempt do find a Work of vast Care, Trouble and Expence, even in this Age wherein *Navigation* is brought to such perfection.

These Considerations, my Lord, grounded on other Instances of the like kind, make me inclined to think this *Elephant* we are speaking of, might not be brought hither by any Care or Industry of *Man* : but the Surface of this Terraqueous Globe might, in the earliest Ages of the *World*, after the *Deluge*, but before all Records of our oldest *Histories*, differ widely from its present *Geography*, as to the Distribution of the *Ocean* and *Dry-land*, its *Islands*, *Continents* and *Shores*, so as to allow this Beast, and others of its Kind, for ought I know, that may by some such Accident hereafter be luckily discoverd, a free and open Passage into this Country from the Continent.

For otherwise, how can we e're explain that that other vast large stately *Animal* the *Moose-Deer*, little inferior to the *Elephant* it self, could have been brought to *Ireland*, (where elsewhere I have shewn it formerly was common) from distant *North America*, even long before that Quar-  
ter

ter of the World was known, and is the only Region I can hear, where this great Beast is found at present.

And can we well imagine that *Foxes, Otters, Badgers, Tigers, Wolves,* with *Linxes* and such ravenous *Animals* as we have been told, have lately been discovered by the great Snows that fell this present Winter in the *Island of Sardinia* and other Places, should ever be imported (being uselefs noxious Beasts of Prey) by the Industry of *Man,* to propagate in *Islands,* that they might destroy *Men's Food* and Flocks, and make their Lives not only uneasy but unsafe?

Nay how can we suppose that *Birds* of shortest Flight, the various Sorts of poisonous *Serpents,* and of offensive *Creeping Vermin,* with all the various Tribes of smaller *Insects,* could possibly be found in *Islands,* unless they had been stock'd with those Inhabitants when the Intercourse between them and the Continent was free and open.

But in whatever manner this *Elephant* (to return to our Subject) might first have made its way for *Ireland;* this is beyond dispute, that the *Bones* of *Elephants* have been discovered deep under Ground, in other Places as well as this Kingdom: and those too out of the way, far distant from the Native Countries of this Animal.

For not many Years ago, in a Hill near *Erfurt,* a Town of the *Upper Saxony* in *Germany,* several Parts of the Skeleton of an *Elephant* were Dug up: on which Occasion *Wilhelmus Ernestus Tentzelius* Historiographer to the Duke of *Saxony,* writ a Letter to the very learned *Antonio Magliabechi,* Library Keeper to the great Duke of *Florence:* This Treatise is published, but I have not been so lucky as to procure a Sight of it, and know no more but just the Title-page *Wilhelmi Ernesti Tentzelli Historiographi Ducalis Saxonie Epistola, de Sceleto Elephantino Tonno nuper effosso, ad Antonium Magliabechium, Magni Ducis Etruriae Bibliothecarium.*

And I am well persuaded, by the best Construction I can make of those imperfect and obscure Accounts, we have in *Evert Isbrand Idde's* curious Travels from *Muscovy* to *China* over Land; *Chap. the 6th*, (which he confesses he only gathered from the barbarous *Ostiacks* Inhabitants of that Country) concerning the vast *Teeth* and *Bones* and *Limbs* of *Mammuths* as he calls them, frequently found (and diligently sought after to make profit of them) in the Hills, and Banks of several Rivers in *Siberia*, the *Keta*, *Fenize*, *Trugan*, *Montgamsea* and *Lena*; that they are nothing else but the Remains and *Skeletons* of *Elephants* buried there, and accidentally discovered by the *Earth's* opening, and falling down on the sudden *Thaws*, after severe long *Frosts*. But of this, please to consult the Author, whose Words are too prolix to be inserted here.

But to bring this Matter still nearer home to our selves, *Mr. Camden* in his *Britannia* is of opinion, that those great monstrous *Teeth* and *Bones*, which he takes notice to have been at several times dug up in many parts of *Great Britain*, must have been the Remains of *Elephants*; but then he thinks, they must be of those that *Dion Cassius* the Historian tells us, the *Roman Emperor Claudius* brought over, when he made his Expedition into that *Island*. But that this truly is so, I own is but *Surmise* as yet, and has not been so fairly proved by him or any other, as that we can rely upon't with satisfaction.

What *Mr. William Somner* the learned Antiquary has published in his *Discourse of Chartam News* is more remarkable; (this is reprinted lately in the *Philosophical Transactions* for *July 1701. No. 272.*) where he informs us, that in the Year 1668 in the Village of *Chartam* near *Canterbury* in *England*, digging within 12 Rods of a River, they found a Parcel of strange monstrous *Bones*, some whole, some broken, together with four *Teeth* perfect and sound, each weighing something above half a Pound, and some of them al-

most

most as big as a Man's Fist. They are all Cheek-Teeth or Grinders; the Earth in which they lay being like a Sea Earth, or Fulling Earth with not a Stone in it.

'Tis observable how this Account in many of it's Circumstances, agrees with that of Mr *Nevil* in his Letter to your Grace: as that the Teeth were all Grinders, Four in number, found with other large broken Bones near a Brook, and in a Claiey Earth, without a Stone: but then the weight and Magnitude of our largest *Teeth* so far surpass those that were found in *England*, that these did not come up to a fifth Part of those, which shows they could not be the Teeth of the same Animal. I must confess the Author does not so much as suspect they were *Elephant's Teeth*, but on the contrary is of opinion that they belong'd to another Species, the *Hippopotamus* or *River-Horse*, a Beast that's yet a greater Stranger in these Parts of the World, than the *Elephant* it-self; and therefore it's Passage hither can never be accounted for; but by some such like Supposition as we have made.

However Mr. *John Luffkins* in his Letter, wherein he designs to have reference to that Discourse; and which is inserted in the *Philosophical Transactions* for Sept. 1701. No. 274. differs in his Judgments from Mr. *Somners* about these Teeth, which he thinks must have been *Elephant's Teeth*; as he is positive those large Bones he describes in the same Letter, and found near *Harwich* in *Essex*, certainly must have been.

Not having seen, much less examined, any of the Bones or Teeth concern'd in this Controversy; either those that were found in *Kent*, or those in *Essex*; I cannot well take upon me to determine any thing in this matter; tho' those dug up at *Chartham*, as I understand, may still be perused by the Curious among the Natural Rarities of the *Royal Society* in their Repository at *London*. But this at present I can safely say, that if the *Figures* of the *Teeth*  
given

given us by Mr. Somner, and represented in the Plate of the foremention'd *Transaction* No. 272. be genuine and well exprest (as I have no reason to doubt, as coming from one so skilful and so accurate) they no way seem to agree either in Shape or Make, or in that particular and *Characteristick* Work on the grinding Superficies, with the *Teeth* of the *Elephant*; or with the Description and Figures we have given, which I am sure are both correct and natural.

I should now, my Lord, make some Apology for detaining your *Grace* so long upon what may seem so light and trivial a Subject, a Piece of meer Curiosity: but I am so vain as to hope, whatever others may fancy, it may not appear so inconsiderable altogether to your Lordship's more discerning Judgment.

For I am inclined to think, (even from these Imperfect Hints) that if we had more correct Histories and Observations of this kind, made in distant Countries, and skilfully registered, with all their instructive Circumstances, they might lead us into great and momentous *Truths* relating to the *Deluge*; to the wise Methods of Providence, in replenishing all Regions of the *World* with *Animal Beings* soon after the *Flood*; and to the Knowledge of several important Changes that may have happen'd on the Surface of this our *Terraqueous Globe*: Inquiries that are truly worthy the utmost Application of the most learned *Divine* and the most sagacious *Philosopher*.

But I shall stop here, and only beg leave to subscribe my self, with the utmost Respect,

My L O R D,

Your Graces most devoted  
faithful and humble Servant.

T. MOLYNEUX.  
This

*This Letter of Mr. Nevile with Dr. Molineux's curious Draughts of the Teeth, and his learned Remarks upon them, having been produced and read before the Royal Society, they ordered that what Teeth they had of like sort should be look'd out and laid before them; to which Sir Hans Sloane was pleas'd to furnish a yet greater Variety, out of his incomparable Collection of Natural Rarities. And to obviate all Doubts, there being at this time in Westminster the entire Skull of a large Elephant with the Teeth in it, That was likewise ordered to be viewed and compared with the Figures: which done, it appeared that the Teeth in question could be no other than those of an Elephant.*

*By this Enquiry we were likewise satisfied, that the Number of Teeth found, being but four, was no Objection: it appearing that the Number of Molares in this Animal is not certain. Pliny Lib. XI. Cap. 37. says expressly Dentes Elephanto intus ad mandendum quatuor, præter eos qui prominent. And in the Remains of that mighty Elephant described by Tenzelius. Phil. Trans. No. 236. there were no more than four Teeth found. In that at Westminster there are Six, viz. One in each lower Jaw, and Two in each of the Upper, whereof the inner Tooth is about three times as long as the other, and both together longer than those of the under Jaw by about an Inch; the upper small Teeth being much worn by grinding. These we have thought fit to represent by Fig. 5. shewing the rough grinding Surface of the left under Tooth, being considerably Concave; and by Fig. 6. the same Roughness on the upper Teeth is shewn, having a Convexity tallying with the Concavity of the under, which is a Circumstance not observed by any of those that have described them.*

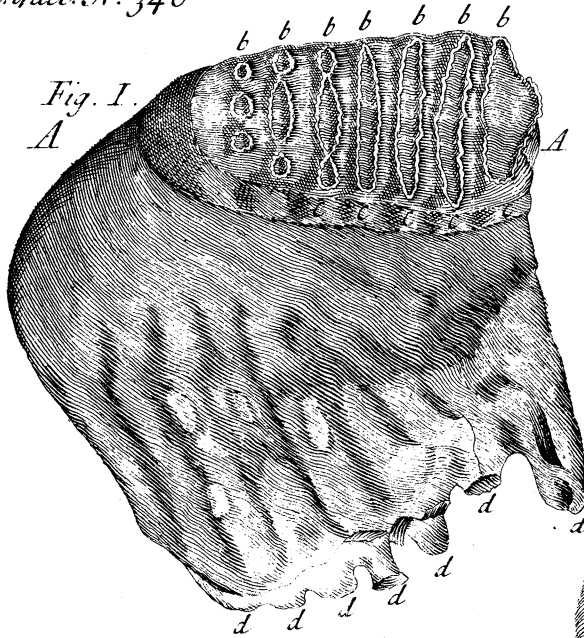
*And altho, by the Observation of Mr. Du Verney, Dr. Moulins, and Mr. Blaire, who dissected three different Elephants, it appear that each of them had eight Molares: yet from them it is also evident that in the division of them Nature observes no Rule, For Dr. Moulins found the two Teeth in each of the upper Jaws of that he dissected, to be divided*

ded after a different manner; so that the inner Tooth on the one side, and the outer on the other, was bigger than its adjoining Fellow, yet not so as to be very unequal: and Mr. Du Verney and Mr. Blaire had on both sides the much greater Tooth outwards: whereas the Westminster-Skull, on the contrary, has only a small one outwards, and the much greater Grinder within. All which considered, we may with Assurance conclude, that this Elephant found in Ireland had but four Teeth in his Head when he died; and that the two Greater were those of the upper Jaws, and the other two those of the Under.

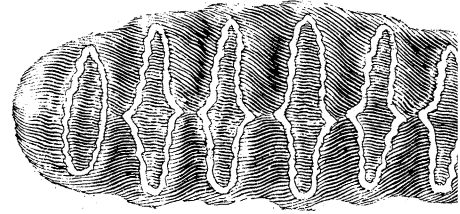
Again, by the Size of the grinding Part, we may conclude these to be the Teeth of a very young and small Elephant; since they are not much above half the Length of those that are to be seen at Westminster, which belonged to a Beast of not more than between 10 and 11 Foot high; nor much above one Third of the Length of a fossil Elephant's Grinder in the Royal Society's Repository, the which is here represented by Fig. 7. (all the Figures being drawn to the Scale of half their true Dimensions). Hence it is not to be marvelled that the Bones of so young an Animal, having not acquired their Firmity, as being in a growing State, should be dissolved by long lying in the Earth, as also the Roots of the Teeth.

On this Occasion, perhaps it may not be amiss to quote a Passage out of Mathew Paris his History, who assures us, that in his Time Louis IX. (afterwards St. Louis) King of France, made a Present of an Elephant to his Cotemporary Henry III. of England; and that in the Year 1255, after the English had been fourscore Tears Masters of Ireland. Of this says Mathew, *Nec credimus quod unquam aliquis Elephas visus est in Anglia præter illum.*

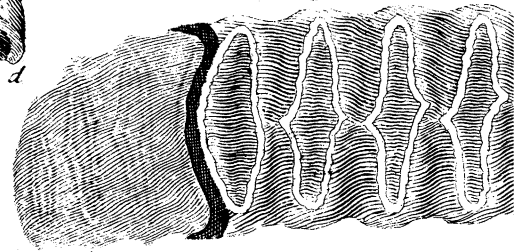
*Fig. I.*  
*A*



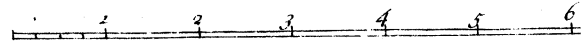
*Fig. V.*



*Fig. VI.*

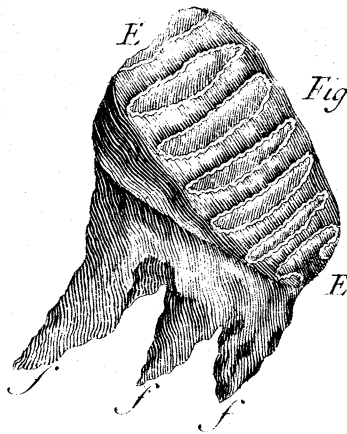


*A Scale of Inches*

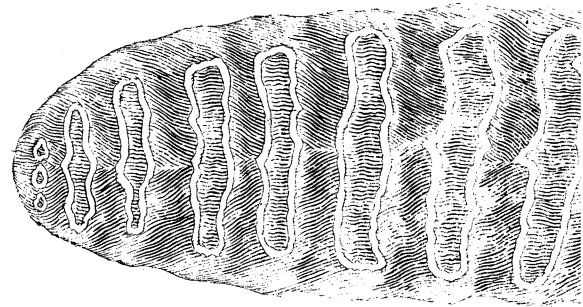


*E*

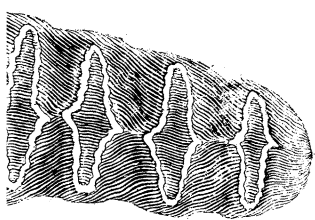
*Fig. II.*



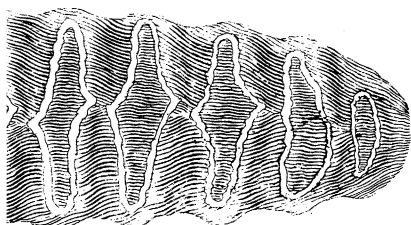
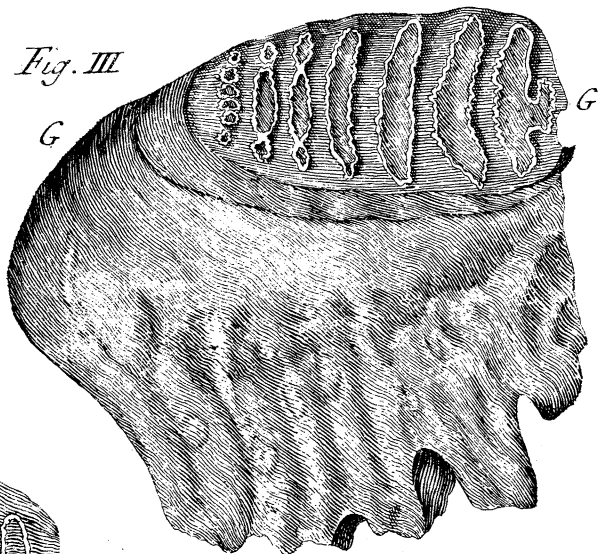
*Fig. VII.*



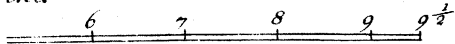




*Fig. III*



shes



*Fig. III*

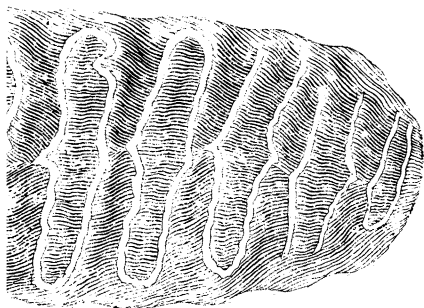
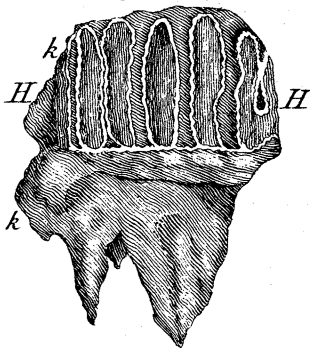


Fig. I.  
A

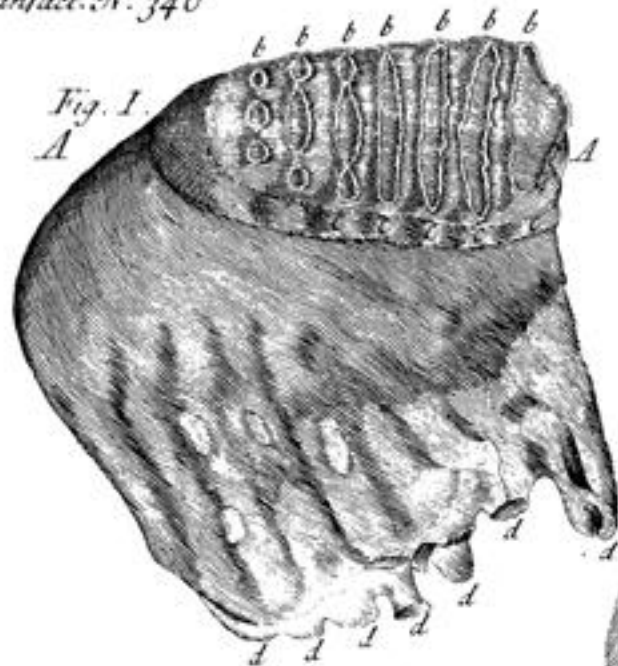


Fig. V.

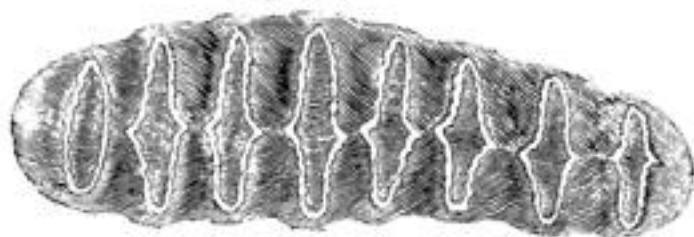


Fig. III

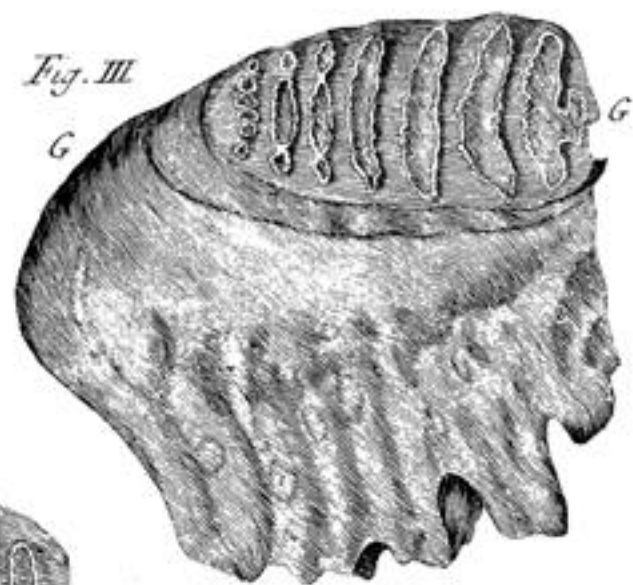
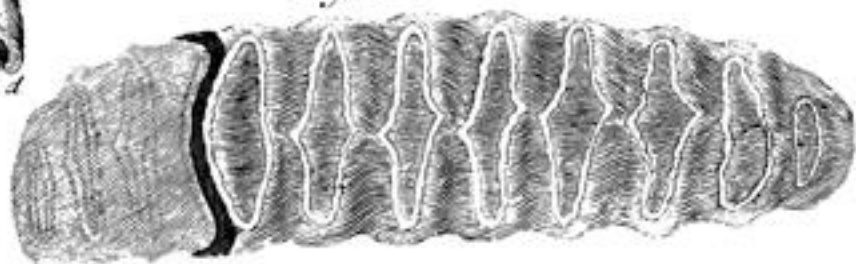
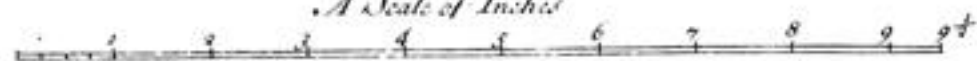


Fig. VI.



A Scale of Inches



E

Fig. II.

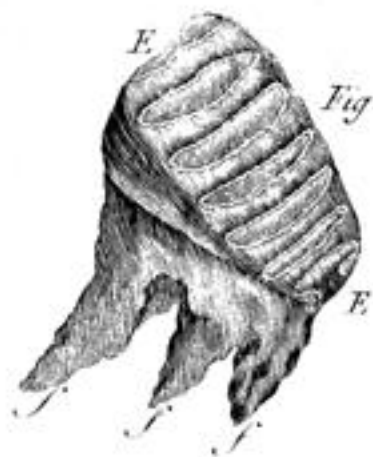


Fig. VII.

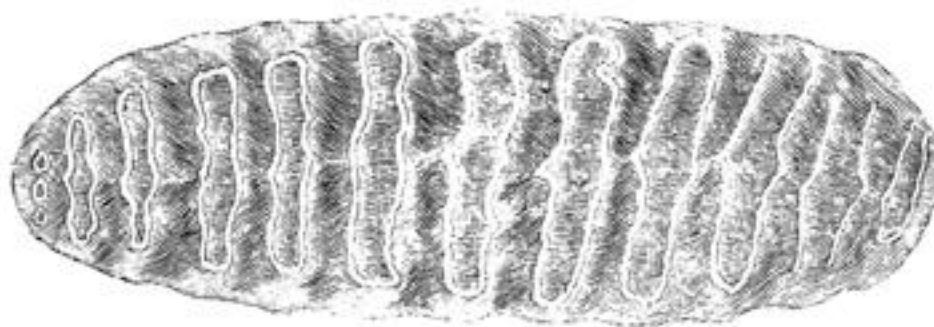


Fig. III

