Brief History of Evolutionary Theory Before Darwin

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Course: Darwin's *Origin of Species* and *Descent of Man*

Theories of Species Change Prior to Darwin Entangled with:

1. Theories of geological change.
2. Theories of heredity.
3. And theories of ontogenesis, that is, of individual development– embryology.

Notions of Species in the Classical Period of Greece

Plato: the essence or form of an organism is eternal and unchanging; embodiment only the appearance of that form.

Aristotle: the essence or form of an organism is incorporated in the physical body; the only kind of eternity enjoyed is through continued reproduction.

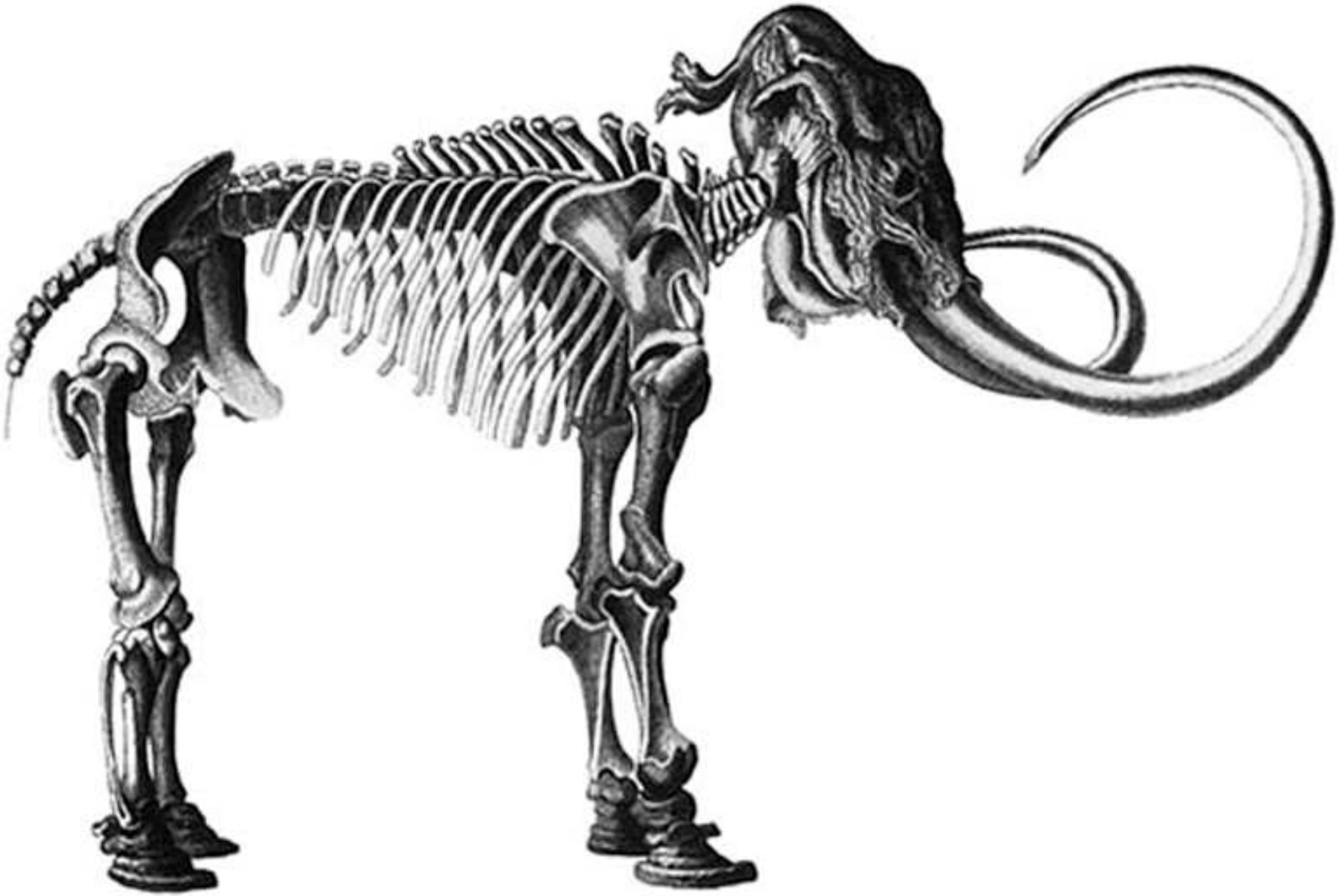
Theories of Species Change in the Early Modern Period

Descartes: gradual evolution of physical system according to fix laws (*Discourse on Method*, 1628).

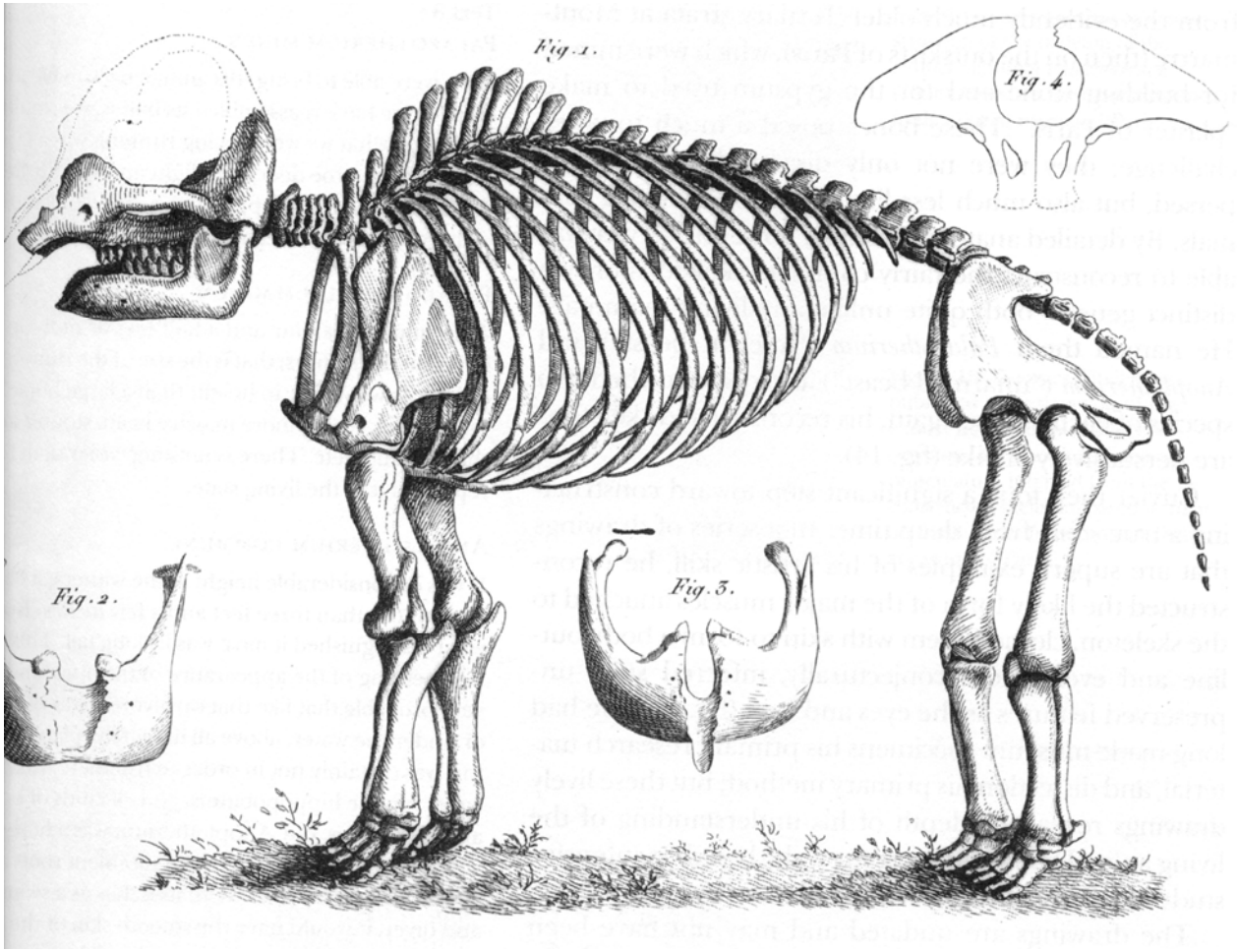
Buffon (1707-88) and Linnaeus (1707-78): God created a limited number of species, but through hybridization and impact of environment, new species appear.

Kant: evolutionary development from earth possible only if earth already construed as purposive; species change possible but no evidence (*Critique of Judgment*, 1790).

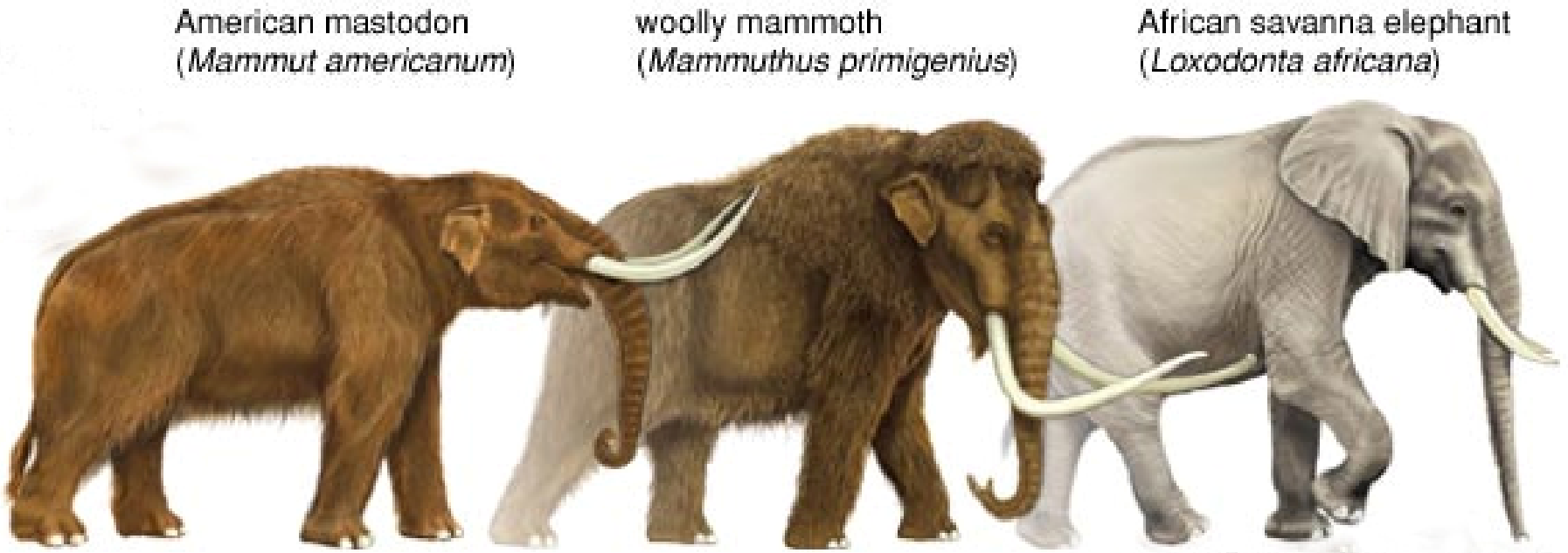
Adam's Mammoth, found in Siberia in 18th century; St. Petersburg Natural History Museum

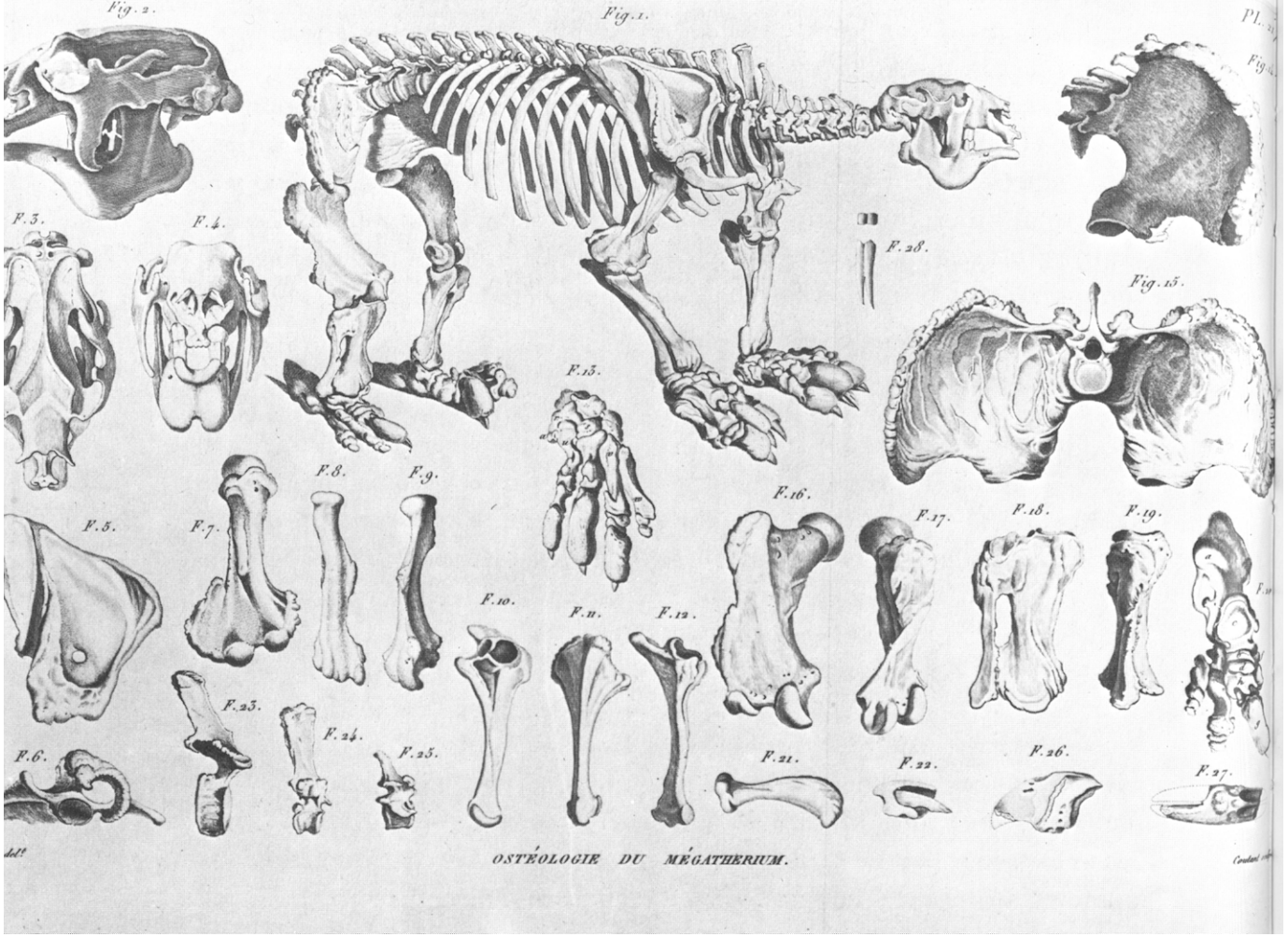


Cuvier’s illustration of the Siberian mammoth; he identified it as an extinct species of elephant (1796).

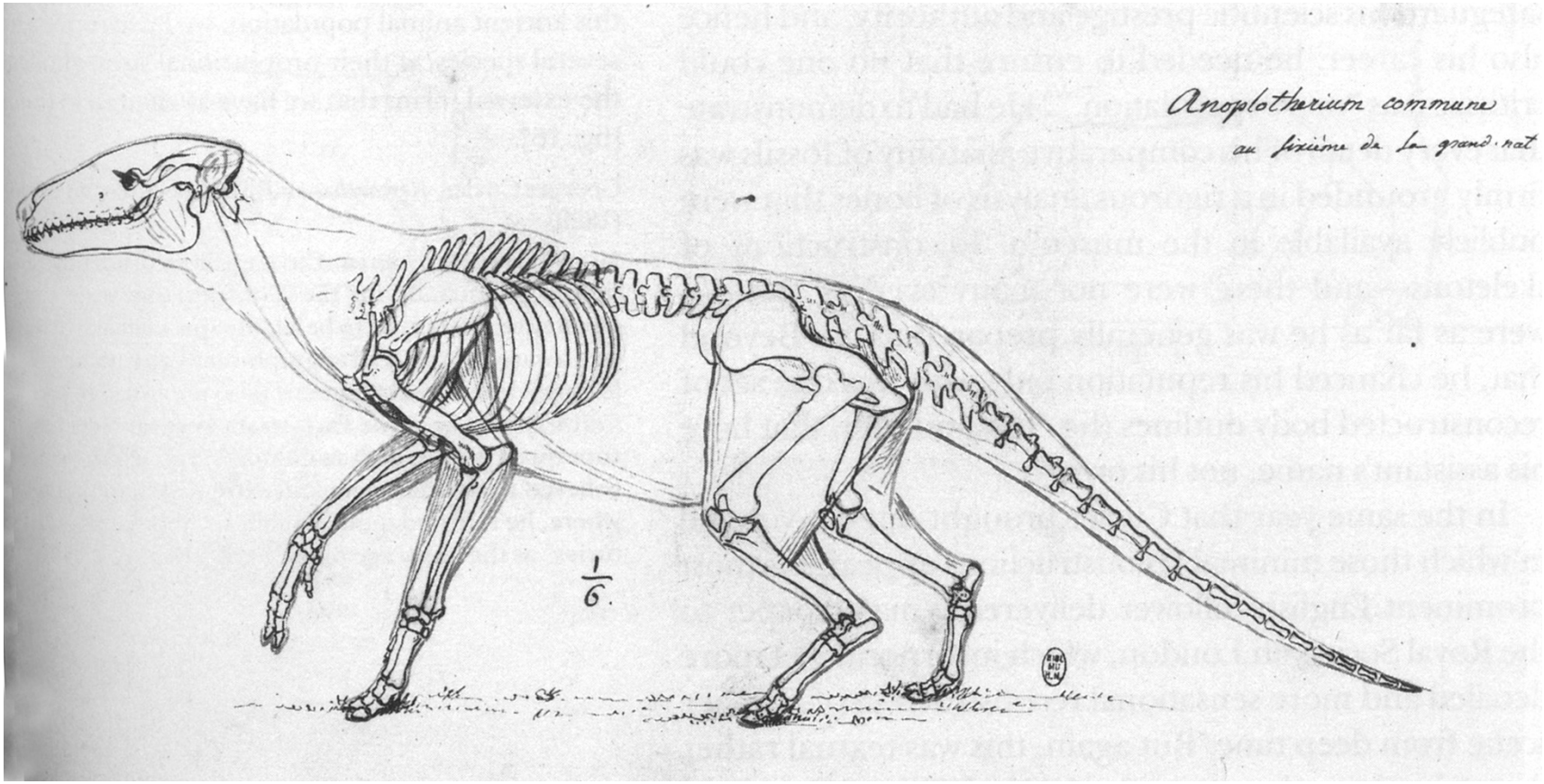


Cuvier's illustration of the "Ohio Animal," which he named "mastodon."

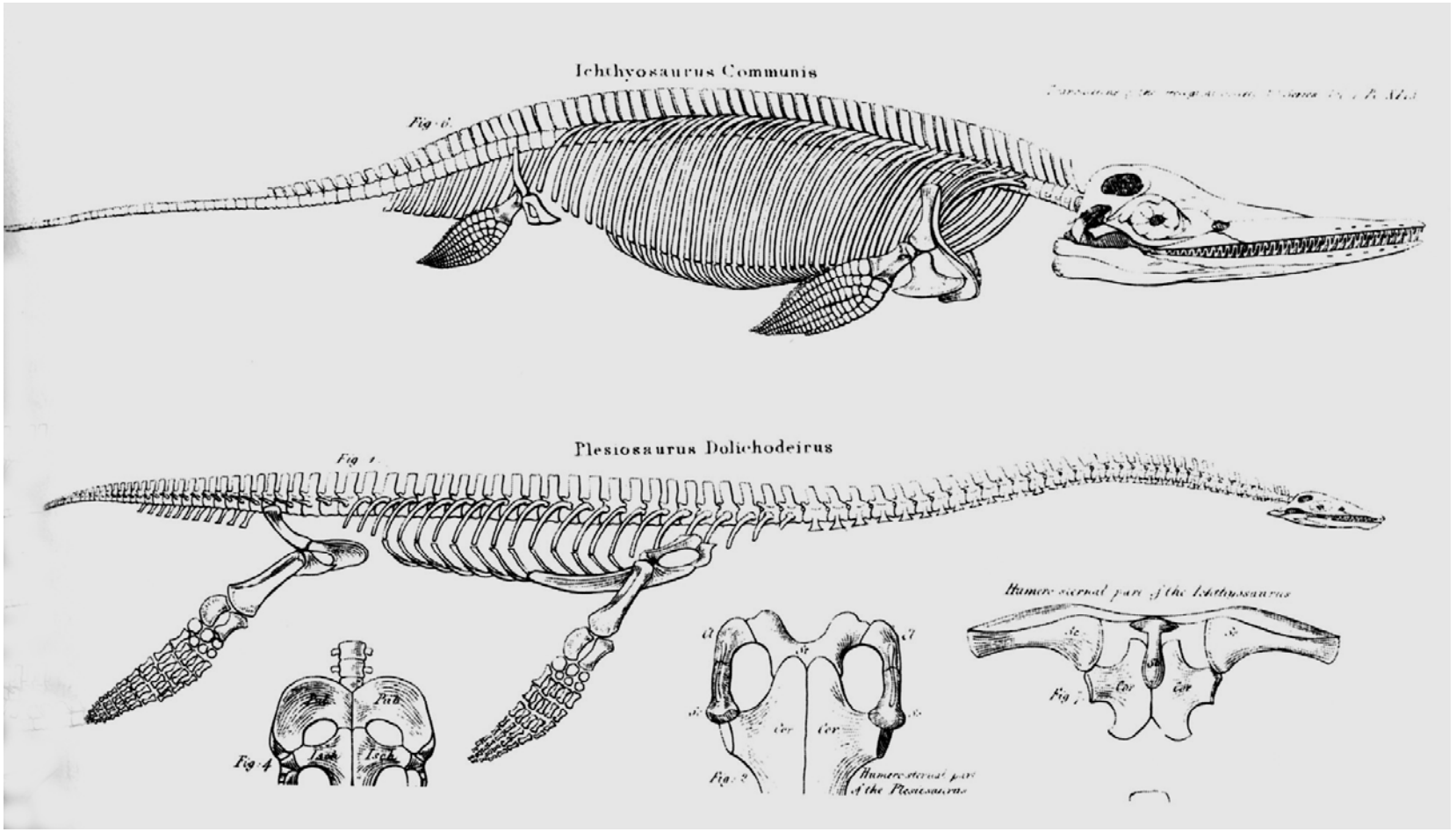

American mastodon
(*Mammut americanum*)
woolly mammoth
(*Mammuthus primigenius*)
African savanna elephant
(*Loxodonta africana*)



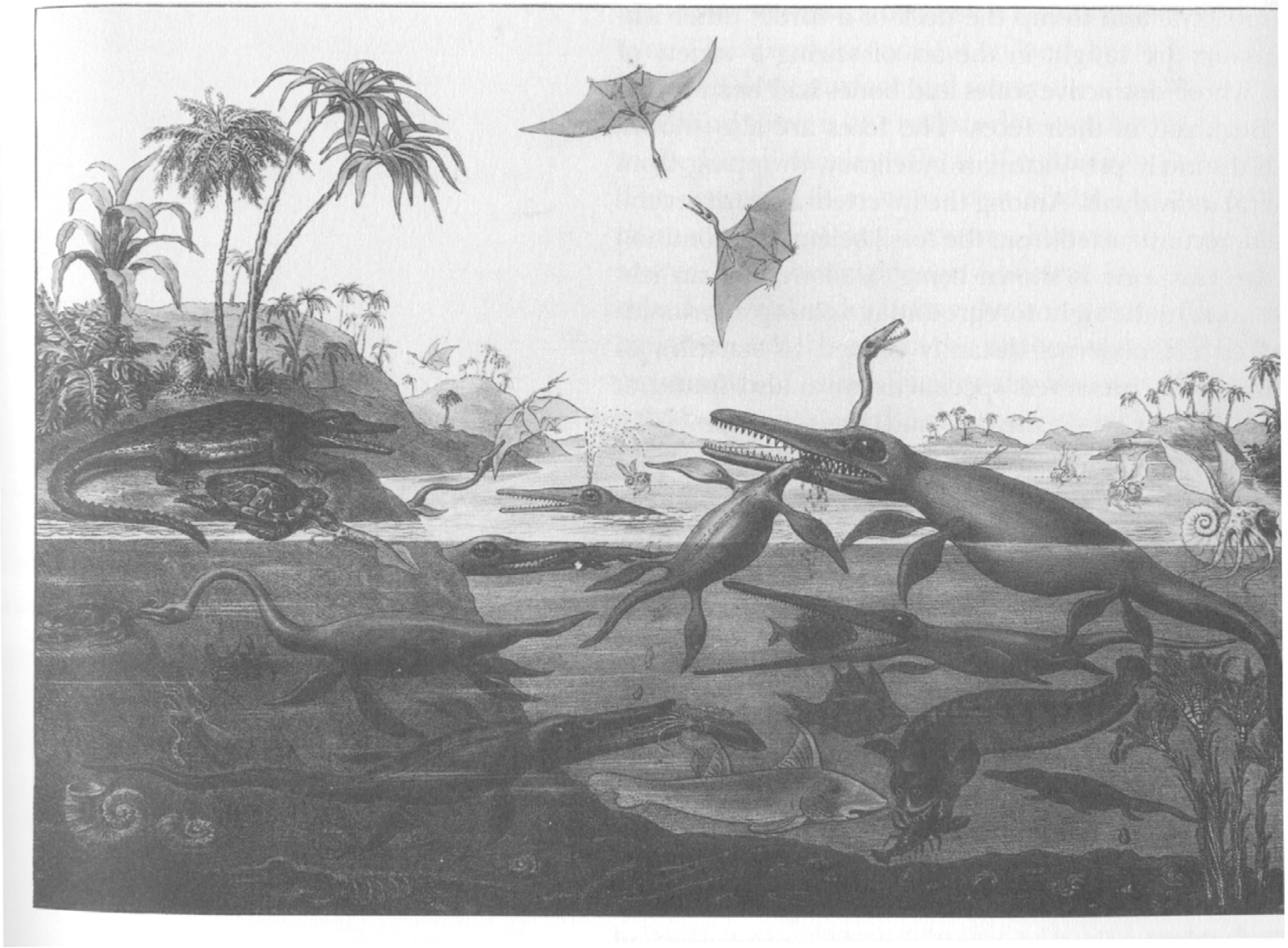
Megatherium (i.e., “large animal”), discovered in South America, described by Cuvier as an extinct creature similar to the modern sloth. Remains also found by Darwin during his work in Argentina.



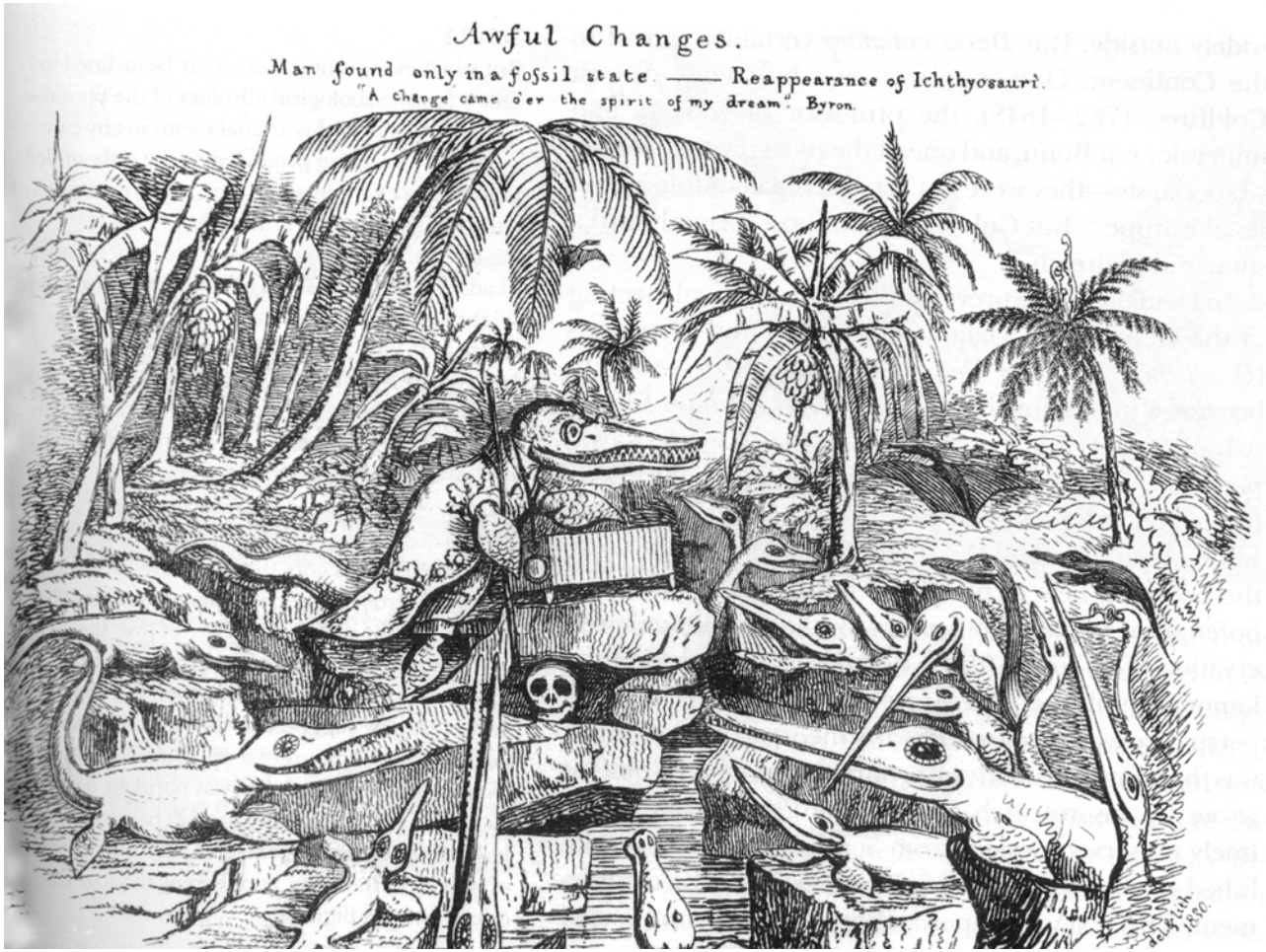
Cuvier's drawing of the fossil remains of a mammal he called Anoplotherium commune.



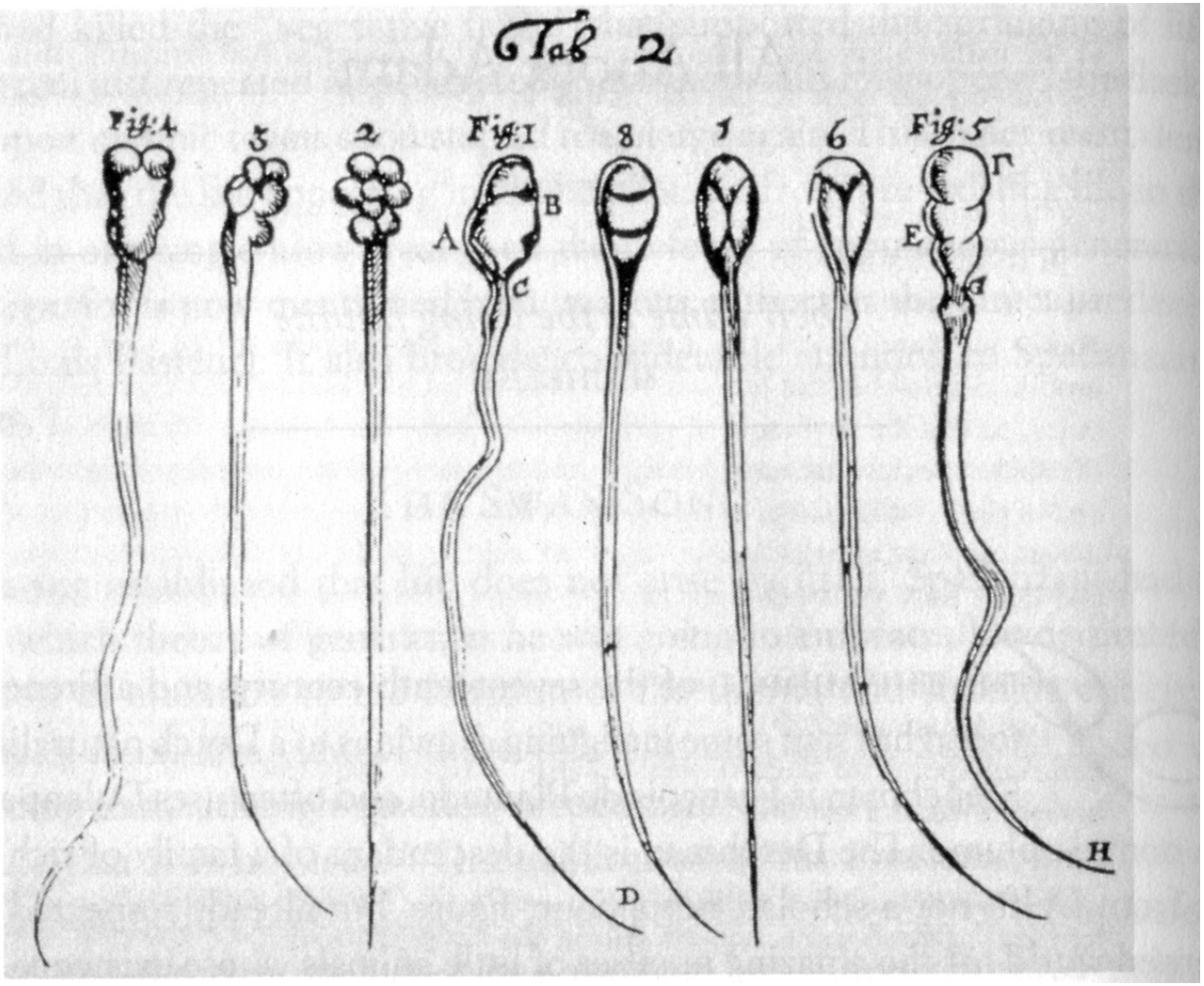
Illustrations of Ichthyosaurus (fish-like reptile) and Plesiosaurus (almost reptile), from Daniel Coynbeare (1787-1857) paper for the *Transactions of the Geological Society of London* (1824).



Thomas Henry De La Beche (1796-1855), sketch of life in ancient Dorset, 1830.



De La Beche's lampoon of Lyell (1830). Professor Ichthyosaurus is lecturing: "You will at once perceive," continued Professor Ichthyosaurus, "that the skull before us belonged to some of the lower order of animals: the teeth are very insignificant; the power of the jaws trifling; and altogether it seems wonderful how the creature could have procured food."



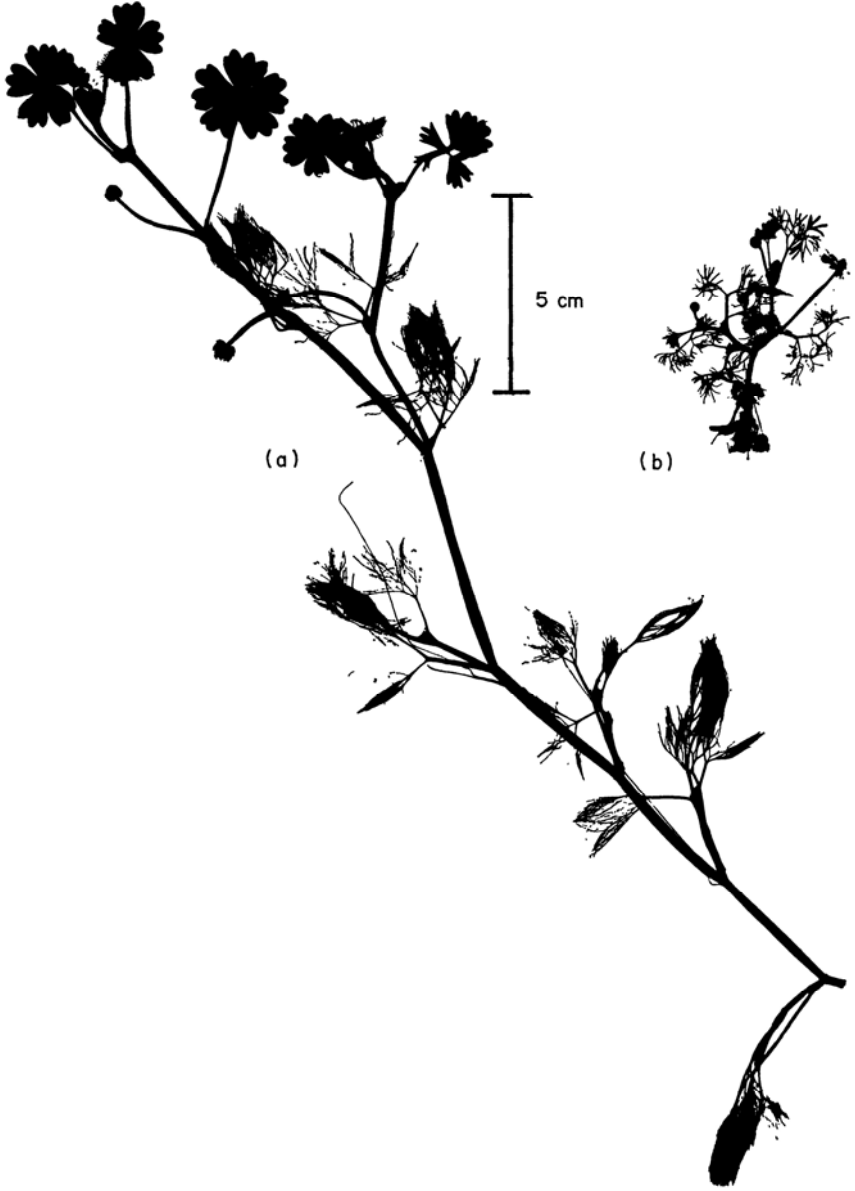
Antoni van Leeuwenhoek's (1632-1723) observation of small animals, animaculae, in the sperm of different animals; from *Philosophical Transactions of the Royal Society* (1679).

Illustration little man in male sperm by Nicolas Hartsoeker (1656-1725), in his Éssai de dioptrique, 1694.

Charles Bonnet (1720-1793), illustration of the Great Chain of Being.

Erasmus Darwin (1732-1802)

Jean-Baptiste de Lamarck (1744-1829)



Rununculus aquatis: a) grown in water, with leaves below underwater and leaves above in air; b) grown in the ground. From C. D. Cook, “On the Determination of Leaf Form in Ranunculus Aquatilis, *New Phytologist* 68 (1969): 469-80.

Flounder, a flatfish with eyes on the same side of body; when a fry, eyes are on either side and the fish swims vertically.