

the tidal currents in bringing up the cold bottom waters of the ocean is perhaps a cause sufficient to produce most of the coldness of the water in this region.

#### ON *DINOCERAS MIRABILIS* (MARSH)

A SHORT time ago we gave a note respecting one of the recently-discovered gigantic fossil mammals from the Eocene of Wyoming in the region of the Rocky Mountains; the accompanying woodcut, copied from a paper by Prof. Marsh, on this extraordinary extinct animal, named by him *Dinoceras mirabilis*, will further assist in making its peculiarities easily understood.

The animal must have been nearly as large as the elephant, to which its limb-bones were very similar. The only teeth it possessed in the upper jaw, were a pair of well-developed canine tusks, and six pairs of small molars, whose crowns were formed of two transverse ridges, separated externally, but meeting at their inner extremi-

ties. The frontal region of the skull was concave, on account of the lateral projection-upwards of a bony ridge or crest on each side, which posteriorly developed into a large osseous process that may have been a horn core but perhaps was only covered with thick skin, and acted like the fibrous pads on the cheeks of the wart-hog, to shield the thinner skull from direct blows. Behind these the crest extended back beyond the level of the occipital condyles. The maxillaries each bore a conical process, which in a profile view is evidently seen to be directly above the root of the canine tusk, and supported it; it probably carried a horn. At the anterior extremities of the nasals were also two smaller horn cores. The horns must have been of a character very different from those in the rhinoceros, in which animal, however long they may be, they are only supported on a roughened surface of bone; if they resembled those of the cavicorn ungulata, from analogy we must suppose that they were small, for in those animals there is a close relation between the size of the core and that of the horn which it carried.

There were no postorbital processes to the frontal bones. The zygoma was completed in front by the malar, the lachrymal was large, and formed the anterior border

of the orbit; its foramen was exerted. The infraorbital foramen must have been behind the zygomatic ridge, as it does not appear in any of the drawings. The premaxillaries did not carry teeth; they sent forward two branches, which partially enclosed the sides of the external nares; the upper branch joined the nasal, and the lower, as in the Ruminants, continued free, and probably carried a pad. Prof. Marsh gives no illustration of the mandible, and only remarks of it that "the lower jaw was slender and the tusks small." The limbs were short, the fore limbs shorter than those behind. The radius did not cross the ulna so obliquely as in the elephant. In the head of the femur there was not any pit for the insertion of the round ligament. The great trochanter was flattened and recurved; the third trochanter was absent. The tail was short and slender. The ribs had rudimentary uncinatæ processes.

Prof. Marsh feels justified in placing *Dinoceras* in an order *Dinocerata*, distinct from the *Proboscidea*, on account of the absence of upper incisors; the presence of canines and horns; the absence of large cranial air cavities; the malar forming the anterior portion of the zygoma; the absence of a proboscis, which could not have been necessary in an animal that could easily touch the ground with its nose, and other less important differences.

This *Dinoceras* of Marsh is the *Eobasileus* of Cope and the *Uintatherium* of Leidy. The shortness of the published descriptions prevents us saying more about it at present.

#### THE TROGLODYTES OF THE VEZÈRE \*

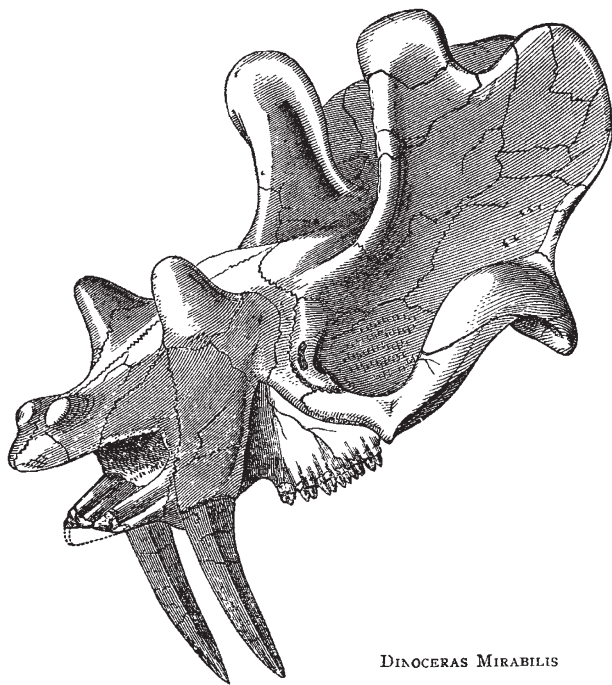
##### III.

Our Troglodytes of the latest epoch had, in fishing, another resource unknown to their predecessors. Their different stations contain a large number of fish bones; but it is remarkable that all these fish were salmon. Now the salmon in these days neither frequent the Vézère nor the part of Dordogne where that river joins the sea. At some leagues below the confluence, not far from Lalinde, in the centre of Dordogne, there is a bank of rocks, which, at high water, forms a rapid, and at low water a regular fall, called, The Leap of the Gratusse. The salmon do not pass this boundary, and, as it did not stop them at the epoch of the Troglodytes, we must conclude that, since that time, the level of the Dordogne has fallen, either by hollowing out its bed so as to lay bare the bank of rocks, or by losing part of its volume of water. We are led to believe that the fishermen of that time did not use nets, for with a net could be caught fish of all sizes. We thus understand why they could only catch large fish, and why they chose, among these, the kind they preferred. Had they any fishing boats? We have as yet found no proof of such. And besides, the Vézère is sufficiently enclosed for the large fish to swim along the banks within reach of the harpoons.

The harpoon of our Troglodytes was a small dart of deer-horn, very similar to the large barbed arrows, except that it was only barbed on one side. A little notch at the base enabled the fisherman to secure the cord which he held in his hand (see above, Fig. 10). The barbs are intended to secure the fish which it has struck. Why are these barbs all placed on the same side? Is it to diminish the width of the dart and make it more penetrating? This I cannot venture to affirm.†

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† One of my colleagues of the French Association, M. Lecoq de Boisbeaudrau, who did me the honour of being present at this lecture, communicated, the following day, to the Section of Anthropology, a very interesting note on the mode of action of the unilateral barbs of the harpoon. While the harpoon is traversing the air, these barbs cannot make it deviate sensibly; but directly it enters the water, the unequal resistance it meets there must necessarily change its direction. It seems, then, that the fisherman who aims straight ought the most frequently to miss his aim. But M. Lecoq de Boisbeaudrau reminds us of the well-known experiment of the straight



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