36. *On the MAXILLA of IGUANODON.*

By J. W. HULKE, Esq., F.R.S., F.G.S. (Read May 12, 1886.)

[PLATE XIV.]

So few cranial remains of *Iguanodon* have been recorded in this country that two fine fragments representing nearly the entire left maxilla have seemed to me deserving of being brought under the notice of the Geological Society*. They derive an additional interest in having been found at Cuckfield, the locality rendered famous by Dr. Mantell's discovery there of a tooth†, the first of that grand series of remains on which, jointly with Dr. Melville, he established the genus. The combined lengths of the two pieces amount to 29 centim., but a small intermediate fragment is missing, and if we estimate this at 1 centim., the length of the entire maxilla will have been not under 30 centim. The maximum vertical measurement in the present state of the jaw is 6·2 centim. These proportions show the form of jaw to be relatively longer and more slender than that of *Hypsilophodon*, from which it also differs in the bluntly rounded, not tapering, shape of its posterior extremity.

The external surface of the jaw slopes outwards as it ascends towards the upper border, and in the articulated skull would overhang the outer alveolar margin. It is perforated by a series of conspicuous vascular foramina. The inner surface of the bone is nearly plane in its posterior, and gently concave in its anterior half. I do not find any indication of palatal expansions. The upper border, the stoutest part of the bone, exhibits a deep sunken groove, which begins in a shallow pit (prelacrymal fossa) opening on the outer surface of the maxilla at 4·5 centim. from its posterior extremity. This groove contracts at a short distance from the external opening, and then, dilating vertically, it passes forward along the bone, and becoming much wider and shallower in the anterior half seems to have led here into the nasal passages. I found indications of this canal in the maxilla of *I. Prestwichii*. Anteriorly the upper border becomes compressed and thinned, and there is evidence that, as in *Hypsilophodon*, the thinned bifid end was overlapped by the body of the premaxilla, an outer ascending or maxillary process of which was received in the wide shallow anterior part of the groove just mentioned. Posteriorly the upper border was overlapped by the outer border of the nasal, and behind this by the lacrymal bone, which contributed with the maxilla to form the prelacrymal opening.

The outer lip of the dentary bone is crenated by the openings of 19 alveoli; and assuming that the missing piece contained 3, the number of teeth in the working line would be 22, a number agreeing fairly with that in *I. bernissartensis*‡. The teeth exhibit the

* I offer my best thanks to Dr. Willett for most courteously affording me an opportunity of studying these fossils and bringing them under your notice.

† About the year 1820.

‡ Dollo, Quatrième note, in Bulletin du Mus. d'Hist. Nat. de Belgique, t. ii. (1883).

form, sculpture, and wear so characteristic of *Iguanodon*, and they illustrate the successive phases of its dentition, from the germ crown which has not yet descended to the level of the dentary border, through the fully protruded but unworn crown, to the almost final stage where the crown is nearly worn away and the root is being extruded from the alveolus.

From the relatively slender and graceful form of this maxilla, I am disposed to refer it to *I. Mantelli*, rather than to its more massive contemporary *I. bernissartensis*.

EXPLANATION OF PLATE XIV.

Fig. 1. Inner, and Fig. 2. Outer view of a left maxilla of *Iguanodon* from Cuckfield. (About nine tenths of the natural size.)

DISCUSSION.

Prof. FLOWER was glad to be able to announce that Mr. Willett contemplated presenting the specimen to the British Museum. Owing to the unworn character of some of the teeth and the peculiar form of wearing of others, it forms a very instructive example of the genus.

Prof. SEELEY said that, owing to the fragmentary character of specimens, English fossil reptiles had been very carefully studied in detail, and to this study Mr. Hulke had contributed many valuable additions. He asked what were the differences in proportion between this jaw and the typical Brussels skeleton. He remarked on the characters presented by the palate.

Mr. TOPLEY said the quarry at Cuckfield was not only that from which *Iguanodon* was first obtained by Mantell, but that from which almost all Mantell's Wealden specimens, recorded as from Tilgate Forest, were collected. Many fossils were obtained from the same quarry by William Smith.

The AUTHOR said he had nothing to add to what he had already stated. Mantell's species appeared to be slighter and more delicate than *I. bernissartensis*. The palate was very imperfectly known.

Fig. 1. Inner view.

Fig. 2. Outer view.