

**Article XXVII.—FOSSIL FISHES COLLECTED BY THE
AMERICAN MUSEUM CONGO EXPEDITION.¹**

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PLATE LXXXVIII.

Among the materials collected by the American Museum Congo Expedition there is a small series of fossil fishes from two localities. One of these, Mission St. Gabriel, does not seem to have been previously known as a locality for fossils. The other, Landana (a Paleocene horizon), has already yielded invertebrates, fishes and the remains of a turtle.

I. SPECIMENS FROM MISSION ST. GABRIEL.

The Mission of St. Gabriel is situated on the right bank of the Congo, a few miles below Stanleyville. The bank of the river here consists of pale olive-colored shales, formerly quarried for building purposes; and which contain fossil fishes. During a short visit to this locality in April, 1915, Mr. Herbert Lang, the senior member of the expedition, collected a small lot of fragments of the rock bearing scales, head-bones, fin-rays, etc. The specimens apparently represent several fishes of different sizes, but all pertaining to a single species, an undescribed *Lepidotus*.

***Lepidotus congolensis* n. sp.**

Cotypes.—(1) Disarranged scales on a piece of rock (Plate LXXXVIII, Fig. 8). (2) Left premaxilla, in inner view, on a piece of rock (Text Fig. 1). (3) Impression of outer face of the left suboperculum (Text Fig. 4). (4) Fragment of a head-bone, showing ornamentation (Plate LXXXVIII, Fig. 6).

Horizon.—Lualaba beds (probably Upper Triassic).

Locality.—Shores of the Congo, at Mission St. Gabriel, a few miles below Stanleyville.

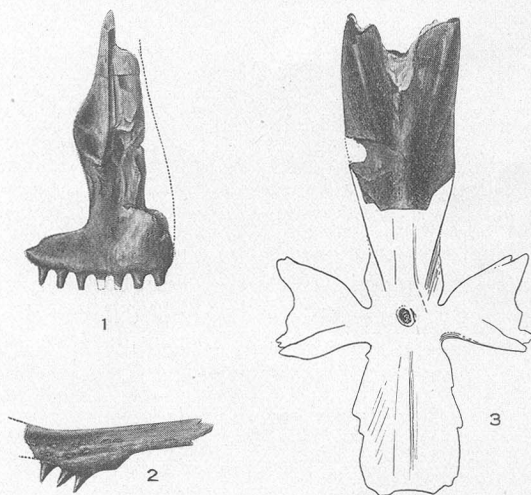
Diagnosis.—A species reaching a length of half a meter, known at present by detached head-bones, jaw elements and scales. Head-bones ornamented with small round tubercles, few and widely spaced in some places, numerous and densely crowded in others. Suboperculum elongate triangular (exclusive of vertical process), its depth, at $\frac{1}{3}$ the distance from the anterior margin, contained $1\frac{2}{3}$ in its length; exposed part with little ornamentation, only a few tubercles along inferior margin and vague suggestions of rugæ on middle portion; flange for overlap by operculum a little less than one-fourth the greatest depth of entire element. Marginal teeth of jaws elongate-

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conical, rather robust, smooth. Premaxilla with seven teeth. Scales smooth, their posterior margins entire, or, in some of the principal flank scales, with two tooth-like processes, one at the inferior angle, the other a short distance above it. Scales immediately behind pectoral arch $1\frac{2}{3}$ times as deep as wide (exposed portion). Fingulera large.

This is the first species of *Lepidotus* to be described from the Congo region. A single scale referable to this genus was figured by Leriche (1911, pl. x, fig. 2), from a locality named Kindu. This scale was about as large as the flank scales here described, smooth, and with two small tooth-like processes along the lower portion of the posterior margin. Very probably it belongs to the species here described.

Lepidotus congolensis differs from the other species of *Lepidotus* dis-



Figs. 1-3. *Lepidotus congolensis* n. sp. 1. Left premaxilla, in inner view. Cotype, nat. size. 2. Anterior extremity of a maxilla, the teeth restored from counterpart. Nat. size. 3. Fragment of parasphenoid. $\times \frac{1}{2}$.

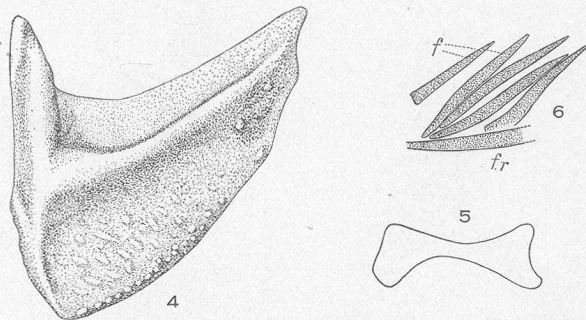
covered within the past few years in Central Africa — *L. manni* (Hennig, 1913) from Adamaua, Kamerun, and *L. minor* Ag. from Tendaguru, East Africa (Hennig, 1914). As far as may be judged from the remains available for comparison, the species is close to *L. latifrons* Woodward (1893), from the Oxford Clay.

As to the geological horizon of the specimens: *Lepidotus congolensis* is evidently derived from the Lualaba formation, the middle one of the three formations or stages recognized in the Congo basin (J. Cornet, 1893-94). This is shown by the similarity of the matrix and by the apparent specific

identity of the specimens with the scale referred to above as described by Leriche from Kindu, which locality is known to be a Lualaba horizon; also from the fact that the Lualaba beds are well developed within a few miles of Mission St. Gabriel, *e. g.*, at Stanleyville (Cornet, 1908-9), and at Stanley Falls (G. Passau, 1908-9). The Lualaba formation has been correlated with the Upper Triassic (see especially Leriche, 1911, p. 195), so that we may provisionally regard that as the horizon of *L. congolensis*.

We may now comment briefly on some of the morphological features of the specimen.

Head Plates.—A complete cranial plate, probably a parietal, and a fragment of another are preserved. They are figured (Plate LXXXVIII, Figs.



Figs. 4-6. *Lepidotus congolensis* n. sp. Nat. size. 4. Left suboperculum. Cotype. Drawn from wax squeeze of the impression in matrix. 5. Outline of one of pelvic basalia. 6. Fulcræ (*f*) attached to a front fin-ray (*f. r.*), somewhat disarranged.

6, 7) to illustrate the ornamentation of the head-bones in the species. The complete element probably belongs to a young fish as shown by the pointed, unworn condition of the tubercles, while the fragment represents a head-bone of a larger individual.

The left suboperculum is represented by a very perfect impression of its outer face. Fig. 4 is drawn from a wax squeeze of this impression. The element resembles the one figured by Woodward (1893, pl. 1, fig. 1) in that remarkable naturally disarticulated head of *Lepidotus latifrons* upon which our knowledge of the cranial morphology of the genus so largely rests. The element is somewhat less than half the size of that of *L. latifrons*. It is 45 mm. in length by 26 mm. in depth (measured on a line parallel to the anterior margin and at a point where the opercular overlap flange is deepest). The overlap flange is 7 mm. at its widest part and proportionally not as deep as in *L. latifrons*. The exposed portion of the plate bears very

little ornamentation, merely a few tubercles in a row along the lower margin, and vague suggestions of rugæ on the middle of the plate. In *L. latifrons*, on the other hand, the plate is densely covered with tubercles.

Besides the suboperculum there is present half of a preoperculum, probably the upper arm of that of the left side (Plate LXXXVIII, Fig. 8, *p. op*).

In Fig. 3 is shown a portion of a parasphenoid. It is completely out of matrix and agrees, as far as it goes, with the one figured by Woodward in the specimen already referred to (1893, fig. 3), differing only in the fact that the lateral margins do not converge as rapidly as in that form.

Jaw elements.—One of the premaxillæ is preserved (Fig. 1); it is one of the most perfect specimens of the kind ever described, and shows prettily the structure of this bone in *Lepidotus*. A careful comparison with its

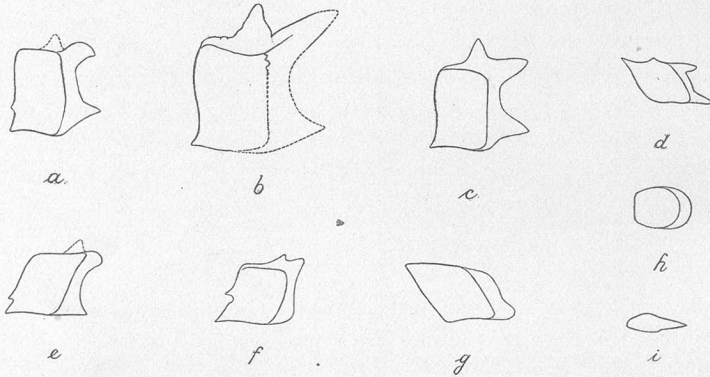


Fig. 7. *Lepidotus congolensis* n. sp. Scales from different parts of fish, some of them (*a*, *e*, *f*) showing the two processes along posterior margin. Natural size. *a*, deepened flank scale from behind pectoral arch. *b*, one of the largest flank scales found. *c*, deepened scale without posterior denticles from a row further back than that of *a*. *d*, scale from anal region. *e*, flank scale showing well the two posterior denticles. *f*, scale from lateral line, as shown by the semicircular excavation of hinder margin. *g*, scale from anal region. *h*, from median line of back. *i*, biserial fulcral scale from base of one of unpaired fins.

homologue in *Amiatus* proves it to be that of the left side, shown in inner view. The tooth margin is 19 mm. in length and bears seven teeth. These are elongate-conical in form, like those of *Amiatus*, but more robust. A few of them which appear as if broken, are really worn down by use, thus proving that the element comes from an old individual.

The anterior extremity of a maxilla with the three anteriormost teeth is also preserved (Fig. 2). The teeth are like those on the premaxilla.

Pelvic arch.—A noteworthy element present is one of the pelvic basalia, shown in outline in Fig. 5. It is a very thin bone, 23 mm. in length, and of the same general form as that of *Amiatus*. This seems to be the first time that this element has been noted in *Lepidotus*.

Scales and Fulcra.—A number of scales from different parts of the body are well shown in one of the cotypes (Plate LXXXVIII, Fig. 8). Those of the rows immediately behind the pectoral arch are about one and two-thirds as deep as wide. The exposed or enameled surface is in all cases perfectly smooth. In Fig. 7 a number of scales are shown to illustrate especially the posterior margin. In some this margin is entire; in others, the postero-inferior angle is drawn out to a sharp tooth-like process, with, in some cases, a second small cusp a short distance above it. The scales with the two tooth-like processes resemble a scale of *Lepidotus unguiculatus* Agassiz, figured by Woodward (1890, pl. iii, fig. 8) from the Great Oolite (Bathonian) near Oxford. But in the latter the denticles on the posterior margin are much longer and more acute. In most specimens of *L. unguiculatus*, moreover, there are three or more denticulations, whereas in *L. congolensis* there seem never to be more than two.

Some of the scales of the median line of the back (Fig. 7h) are present as well as some groups of fulcra from the margins of the fins. In Fig. 6 is shown a group of fin-fulcra as preserved in connection with a front fin-ray and only a little shifted from their natural positions. This shows clearly that the species had large fulcra, the larger ones like strong fin-spines.

II. SPECIMENS FROM LANDANA.

Landana is a post situated on the coast, about 65 miles north of the mouth of the Congo. Mr. James P. Chapin obtained a few shark teeth and fish fragments here, among them the first indication of teleosts in the formation.

Five species of fishes, all elasmobranchs, are already known from this formation (Leriche, 1913), namely: *Hypolophites mayombensis* n. sp., *Myliobatis dispar* n. sp., *Ginglymostoma* sp., *Odontaspis macrota* and *Lamna appendiculata*. This is hardly more than an earnest of what is to be expected when the beds come to be carefully searched for fossils. But these species are a sufficient key to the age of the formation, and Leriche (1913a) concluded from them that it is Paleocene, and correlated approximately with the Montien stage of northern France and Belgium.

The species collected by Mr. Chapin are the following:

Odontaspis macrota (*Agassiz*).

Plate LXXXVIII, Figs. 1, 1a.

One tooth, from the front part of the jaw; height, 19 mm. The tooth is subulate, sigmoidal in side view, and with sharp lateral keels. The

inner face bears faint, somewhat undulating, vertical striæ, most prominent near the base. There is a pair of minute lateral denticles which are broader than high.

It is somewhat difficult to distinguish single teeth of this species from *Odontaspis elegans*. But the present tooth agrees well with the one from the same beds figured by Leriche under the above name (1913, p. 78, pl. x, fig. 2) except that it is smaller and more pointed.

Lamna appendiculata (*Agassiz*).

Plate LXXXVIII, Figs. 2, 2a, 3, 3a.

Two teeth; one 22 mm. in height, from the front half of the jaw, and one, an oblique tooth, 11 mm., from the angle of the jaw. They agree well with the diagnosis of this species given by Woodward (Catal. Fos. Fishes, vol. 1, p. 393).

Rhinoptera sp.

Plate LXXXVIII, Figs. 4, 4a.

A single tooth, 13 mm. wide and 4 mm. long. I refer it to *Rhinoptera* with some reservation, as possibly it may represent a juvenile specimen of *Myliobatis* of which one species has been recorded and there are probably also others in these beds.

Teleostean vertebra.

Plate LXXXVIII, Figs. 5, 5a.

A small biconcave vertebra, 8 mm. in diameter and 6 mm. in length. This is the first indication of teleostean fishes in the Landana beds.

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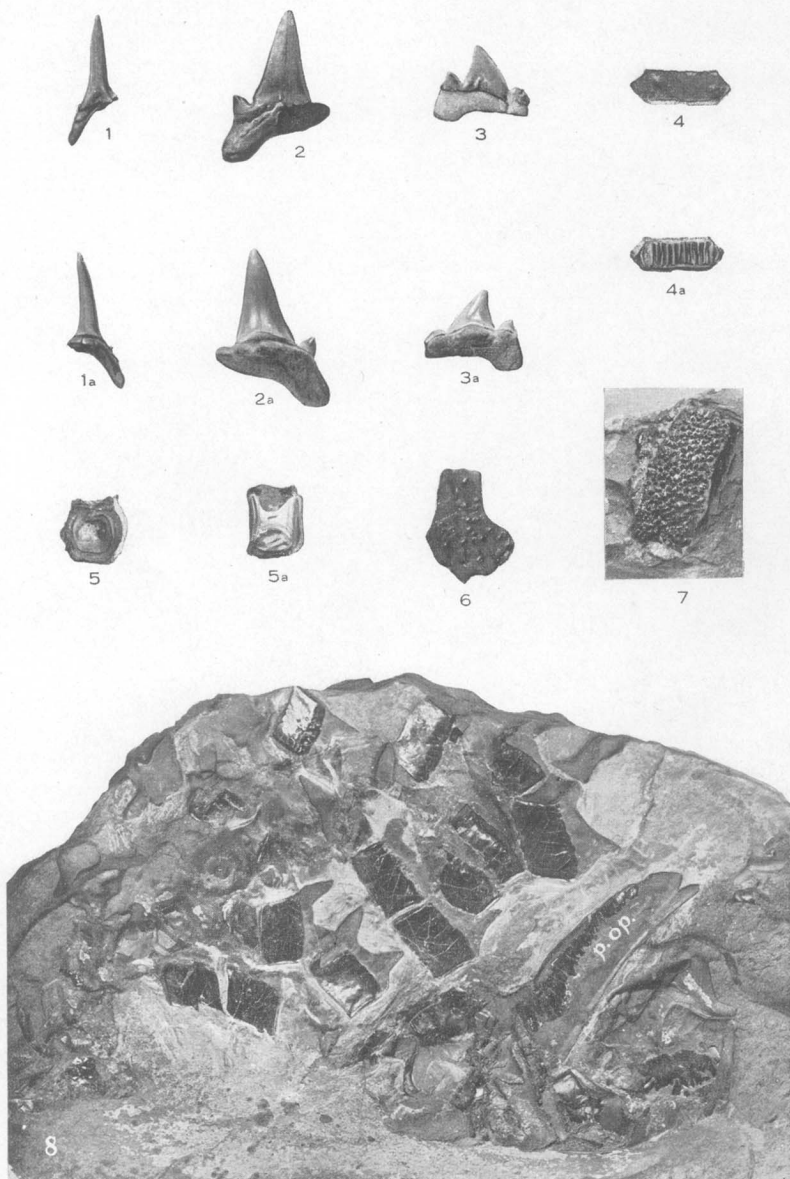
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EXPLANATION OF PLATE LXXXVIII.

- Figs. 1, 1a. *Odontaspis macroti* (Ag.). Outer and inner views.
 2, 2a, 3, 3a. *Lamna appendiculata* (Ag.). Outer (2, 3), and inner (2a, 3a) views.
 4, 4a. *Rhinoptera* sp.
 5, 5a. Teleostean vertebra, sp. indet.
 1-5a, Paleocene; Landana, Congo. Natural size.
- Figs. 6-8. *Lepidotus congolensis* n. sp.
 Lualaba beds (Upper Triassic); Mission St. Gabriel, Congo.
 6. Cotype. Fragment of cranial plate with characteristic ornamentation. Nat. size.
 7. Cranial plate (parietal?) of a smaller individual than preceding. Nat. size.
 8. Cotype. Scales and fragments of plates. *p. op*, part of a preoperculum. $\frac{1}{4}$.



FOSSIL FISHES FROM THE BELGIAN CONGO.