ON THE REMAINS OF A SELACHIAN FROM THE EDMONTON CRETACEOUS OF ALBERTA.*

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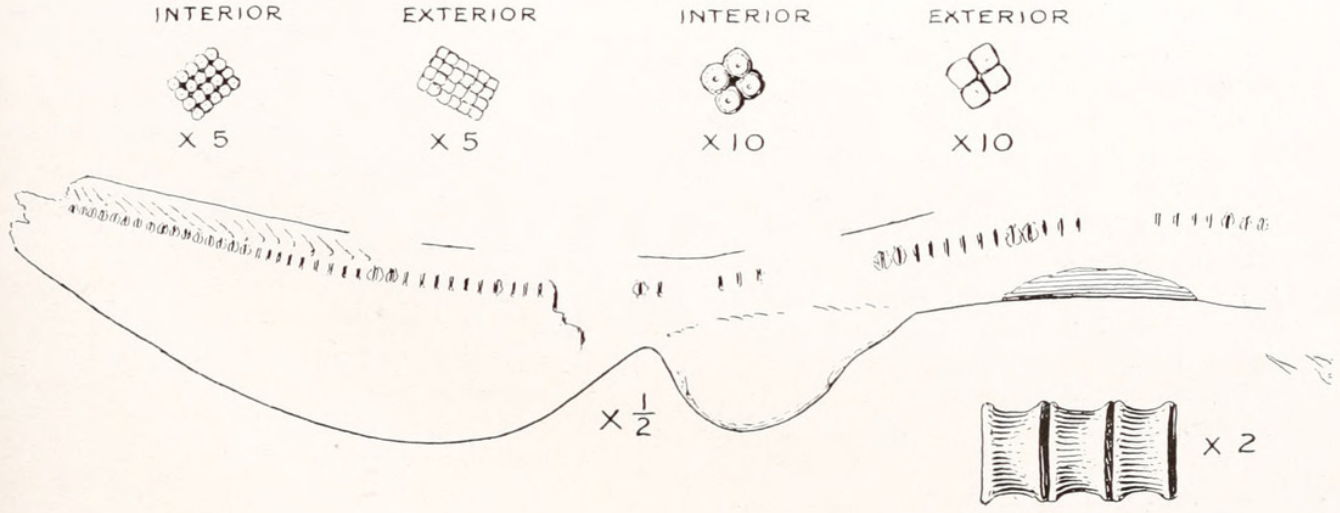
The subject of the following remarks consists of the caudal and hinder abdominal regions of a selachian tentatively referred to the genus *Palaeospinax* of the family *Cestraciontidae*.

The specimen (field No. 5) is included in the Geological Survey collection of 1915 from the Edmonton formation on Red Deer river, Alberta, and was obtained on the east side of the river, three miles north of Tolman, at about 350 feet above the river level. Its discovery was made by Mr. George F. Sternberg in charge of the Vertebrate Palæontological field party working in the beds of the above formation during the season of 1915.

These remains of a small shark occur on the weathered surface of a thick layer of hard grey sandstone. About half the length of a slender fish is represented, from the neighbourhood of the pelvic fins to near the end of the tail, the tip not being preserved. About 80 vertebræ had been present, following each other in natural sequence in a lengthened sigmoid curve, 245 mm. long, but only 30 of them now partially remain; many of the remainder are represented merely by their impressions, and of some no trace is left. The vertebræ extended throughout the length of the specimen. See text figures.

The outline is well preserved below, especially along the lobe of the tail where it is clear and sharp. It continues forward to near the anterior end of the specimen where it is lost. Above it is clearly indicated at intervals in the caudal region and for some distance in advance of it, but is not seen farther forward.

The tail occupied about one-half the length of the specimen and was preceded closely by the anal fin of which the outline is clearly shown. At the extreme anterior end of the specimen inferiorly there are obscure indications of the pelvic fins and certain fragments that may be the remains of claspers, but they are too indefinite to allow of a satisfactory conclusion being reached as to their nature.



Central figure.—Outline of type of Palaeospinax ejuncidus from the Edmonton formation of Alberta. One-half natural size.
Upper figures.—Shagreen granules; interior and exterior surfaces. Five and ten times natural size.
Lower figure.—Restoration of three vertebrae from front half of specimen to shew general proportions only. Twice natural size.

The body and fins were enveloped in shagreen of which the granules were minute. The shagreen is preserved throughout the tail except in its upper front portion. In advance of the tail its continuity is broken, but it is principally seen along the line of the vertebral column, and dorsally and ventrally defining the outline.

The specimen lies with its left side in the rock and it is the inner surface of the shagreen for the most part which is exposed to view, and on which the remains of vertebræ or vertebral impressions are left.

The vertebræ were apparently cyclospondylic in character. They were higher than long, cupped at either end, and constricted at the middle. The parts that have resisted erosion consist principally of the

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left rim of the ends; in no case is there anything remaining of the constricted middle portion, so that what is present is made up of a series of partial ends in couples, each pair being contributed to by an anterior vertebral end and a posterior end of the vertebra next in front. Where the vertebræ have been fully removed their impressions are left in the shagreen, or where erosion has been most severe the shagreen itself has disappeared.

Toward the anterior end of the series the vertebræ are about 5 mm. high, and 3.5 mm. long, with ten in a space of about 35 mm. There is a gradual diminution in size posteriorly in the series, until, in the hinder half of the tail, there are thirteen vertebral bodies in an equal space.

The granular shagreen tubercles are minute, of one size, nearly square with rounded angles, and fit closely together, four occurring in a space of 1 mm. As seen from within they are decidedly convex or tumid, and have the appearance of being nearly circular in outline. Each tubercle has, in this aspect, a central, circular opening or depression. In what appears to be an external view they are somewhat more regularly four-sided, convex, and apparently devoid of sculpture.

The anal fin is subtriangular in lateral aspect, nearly twice as long as deep, and broadly rounded below. In it the shagreen is preserved mainly along the basal line, and the free edges. The caudal lobe is long, with a maximum depth about equal to that of the anal fin. Its length is over five times its depth, and throughout the shagreen is present, sharply defining the sweeping curve of the lower margin. Above the base of the caudal lobe the shagreen in the specimen, passes up behind the spinal column and ends dorsally in a definite longitudinal line a short distance (about 6 mm. at the midlength of the tail) above the vertebræ. In the shagreen surface above the posterior caudal vertebræ obscure parallel markings, directed obliquely upward and backward, may indicate the presence of fin-supports, apparently one to each vertebra. Superiorly, above the anal fin, an indefiniteness in the dorsal outline suggests the possible position of a dorsal fin which might be expected in this neighbourhood. From slightly in advance of here to the forward end of the specimen the dorsal outline is not preserved.

This specimen has much the same size and proportions as *Palaeospinax priscus* (Agassiz) as described and figured by Smith Woodward from the Lower Lias of Dorset.* It differs from that species in having the anal fin close to the caudal, in the vertebræ being smaller, and the granules of the shagreen of one size only. For the very slender species represented the name *ejuncidus* is proposed.

In view of the fact that this interesting specimen supplies no information regarding the dorsal fins, and therefore as to whether they have spines or not, the assignment of the species to the genus *Palaeospinax* is a provisional measure only until we have further knowledge of its structure.

*Cat. Fossil Fishes Brit. Mus. pt. 1, 1889, p. 323, pl. VII, fig. 1.

UNUSUAL NESTING MATERIAL USED BY PURPLE MARTINS.

The birds, like human beings, have in their midst eccentric individuals that deviate from the path of custom to do the unusual. In some cases no doubt these unusual acts, induced by various causes, gradually become more usual and eventually customary. For instance, man-made sites, from being the unusual, have become the usual nesting places of the Purple Martins; and furthermore it appears that these birds are about to take another step in their evolution by adopting man-made nesting material. As evidence I submit the following list of material taken from one compartment of my martin house:

36 bits of window glass.
33 flat bits of rock.
9 pieces of clam shell.
4 scraps of tin roofing.
6 nails—1 to 4 inches.
1 slate pencil.
1 bit of dry orange peel.
1 safety pin.
1 pint of the usual twigs, dead grass and green leaves—elm in this case.

Probably one or both builders of this unusual nest had been hatched or had formerly nested in some congested city where the usual nesting material was not procurable, only such as listed above being available, and in spite of the fact that grass, twigs and green leaves were plentiful in my neighbourhood, this inherited or acquired conception of nest building had persisted.

The male bird of this 20th century couple, which built a home of stone and glass and furnished it with a safety pin and a slate pencil (evidently intended sending their "little troubles" to school), had not attained the age of purple plumage, still being light breasted.

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