

ANNALS
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1.—*On some Fishes from the Lower and Middle Karroo Beds.*—By
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WITH the exception of a couple of species of *Atherstonia*, described by Smith Woodward, almost nothing has been known of the fishes of the Lower and Middle Karroo. The fishes of the Burghersdorp beds and of the Cave sandstone have been dealt with by Smith Woodward and by myself, and a good many forms are now known. The fishes of the older rocks, though less varied than those of the upper, are nevertheless interesting. The types of the following specimens are in the collection of the South African Museum.

PALÆONISCIDAE.

PALÆONISCUS CAPENSIS, sp. nov.

This new species is founded on three specimens from the Hantam Mountains, 12 miles west of Calvinia, and from beds which are probably Upper Dwyka, and thus of Lower Permian age. The specimens unfortunately are all of the posterior part of the fishes—one shows almost all except the head, but the other two only the tail halves. The preservation of the specimens is marvellously perfect.

The total length of the specimen was probably 300 mm., and the greatest depth of the body about 75 mm.

The dorsal fin is placed more anteriorly than in *Palæoniscus macropomus*, and the distance between the pectoral and pelvic fins is also less. The front of the dorsal fin is opposite the point midway between the front of the pectoral and pelvic fins. The dorsal fin has 38 rays, of which the 9th is the longest. Distinct fulcra are present. All the rays are jointed. The anterior short rays and the first three of the long ones are undivided, but the later rays are all bifurcated at their tips.

The structure of the pectoral and pelvic fins cannot be very clearly made out. The rays are jointed and apparently bifurcated.

The anal fin is of moderate size. It consists of 52 rays, all jointed, and the posterior ones bifurcated distally. There are well-developed fulcra.

The caudal fin is large and deeply bifurcated. The lower lobe is smaller than the upper.

The scales on the anterior part of the body are ornamented by a series of obtuse ridges. On the upper part of the scale the ridges run backwards a short distance, then curve downwards and run parallel to the posterior border of the scale. From the anterior border of the scale other ridges run backwards, stopping at the point where the descending ridges would meet them. On the posterior scales there are only a few transverse blunt ridges on the anterior part of the scale. The scales on the ventral surface between the pectoral and pelvic fins are considerably enlarged. Between the pelvic and anal fins are a number of enlarged scales. Two moderately large scales are placed on either side just in front of the anal fin, and in front of these two is a much larger median scale. Enlarged median scales are also placed over the upper lobe of the tail—largest at its base.

ELONICHTHYS WHAITSI, sp. nov.

This very fine fish was discovered by the Rev. J. H. Whaits on the farm Droogvoets, Fraserburg District. The specimen is nearly complete, only a portion of the upper border being lost. The head is crushed and not well preserved.

The total length of the type is 280 mm., and the greatest depth of the body is probably 80 mm.

The fins are large and powerful. The dorsal is situated about the middle of the body, and the anal begins a little in front of the posterior part of the dorsal.

The most of the front of the dorsal fin is missing, but there are

30 rays behind the 1st long ray. There are well-developed fulcra. All the rays are jointed, and all except perhaps the first two long ones are branched.

The pelvic fin has 27 rays, all jointed, and the posterior rays branched.

The anal fin is very large. It has 48 rays, of which the first nine are short. All the rays are jointed, and the short anterior rays and the first six of the long rays are unbranched. All the posterior rays are bifurcated.

The caudal fin is very powerful and deeply bifurcated. The lower lobe is quite as large as the upper. All the rays are branched, but most only bifurcated.

The scales of the anterior part of the body are rhombic, with feeble transverse irregular ridges and denticulate posterior margins. The posterior scales are unornamented.

Some very large scales are situated in front of the anal fin, and large ridge scales are also above the root of the tail.

ATHERSTONIA CAIRNCROSSI, sp. nov.

This new species of *Atherstonia* is founded on the greater part of a fish found by Mr. J. L. Cairncross at Coleskop in 1906, and presented by him to the South African Museum. It was regarded at the time as a small specimen of *Atherstonia scutata*, S.-W., but on comparing it with undoubted specimens of the type species in the Albany Museum it is seen to be a different species.

It differs from *A. scutata* in being relatively shorter and deeper. In *A. scutata* the length from the clavicle to the base of the tail is about 200 mm., and the greatest depth of the body about 75 mm.; in this new species the length from the clavicle to the base of the tail is 117 mm., and the greatest depth 57 mm. In other words, the depth of the body in the new species is half the length without the head and tail; in *A. scutata* the depth is only a little more than $\frac{1}{3}$ the length.

The dorsal fin has a long base and is powerful. It begins nearer to the clavicle than to the base of the tail, and not as in *A. scutata* nearer to the tail. The enlarged ridge scales do not strengthen the front of the fin so markedly as in *A. scutata*, and the fulcra are very rudimentary. There are about 43 rays, which are jointed but not bifurcated.

The pelvic fin is in front of the dorsal, ending opposite the point where the dorsal begins. It has about 25 jointed rays.

The anal fin is about the same size as the dorsal, and begins opposite the point of union of the latter and middle thirds of the dorsal. It has about 36 jointed but unbranched rays. The fulcra are rudimentary.

The caudal fin is very imperfectly preserved.

There is, as in *A. scutata*, a row of ridge scales both in front of and behind the dorsal fin. Those between the dorsal and tail are very large and only feebly ornamented. Those in front of the dorsal are smaller, thinner, and more distinctly striated. The body scales are obliquely striated and posteriorly feebly but distinctly denticulated.

FAMILY PLATYSOMATIDAE.

CARUICHTHYS ORNATUS, g. et sp. n.

The type of this species is a single specimen found at Doorn River, in the Cradock district, and most probably from beds of the *Lystrosaurus* zone.

A small portion of the front of the head is missing, and the whole of the tail from behind the dorsal fin.

The trunk is deeper than in *Eurynotus*, but not so deep as in *Platysomus*. The head is large and deep, somewhat resembling the head of *Platysomus*, but with relatively much more powerful jaws and with the branchiostegal rays large and extending much below the mandibles. The teeth are small and styliform. The dorsal margin curves up and back above the head and then passes nearly directly backwards to the dorsal fin. Along this dorsal margin are a series of enlarged much ornamented scales. At the commencement of the dorsal fin the line of the body margin abruptly passes downwards and backwards as in *Platysomus*.

The pectoral fin is large and possibly not unlike that in *Eurynotus*. It is too imperfectly preserved to show its structure. Only the anterior part of the dorsal fin is preserved. There are a series of 9 or 10 short but gradually lengthening rays in front of what is probably the longest ray of the fin. These short rays are jointed but unbranched. In front of the first long ray are feeble fulcra. The later rays of the fin are long and much feebler than the anterior. They are jointed and unbranched. The pelvic fin is much larger than that in *Eurynotus*. It has about 40 rays—all jointed and unbranched. The posterior part of the fin is distinctly

in front of the beginning of the dorsal. No parts of the anal or caudal fins are preserved.

The scales are very narrow and deep and much imbricated. Each is ornamented by numerous irregular prominent transverse ridges. The rows of scales below the dorsal fin are smaller, and the scales immediately above the pelvic fin are small.

The length from the snout to the front of the dorsal is 140 mm. The whole length of the fish is probably about 210 mm. The greatest depth of the body is 100 mm.



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