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NEW PALAEOZOIC FISH REMAINS FROM SOUTHERN AFRICA

by

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INTRODUCTION

The fossil fish record of southern Africa is both sparse and spotty and the only group with a relatively complete record is the Actinopterygii; indeed several of the major fish groups have not so far been described from the African Continent.

The Palaeozoic rocks of southern Africa have yielded an even more restricted fish fauna (Gardiner 1962; 1969). However, an accumulation of new, but fragmentary, material from several localities has shown the undoubted presence of two groups, coelacanths and acanthodians, hitherto unrecorded from the Palaeozoic strata of southern Africa.

SYSTEMATIC DESCRIPTIONS

Coelacanthus dendrites sp. nov. (Plate 1, fig. 1)
1907 Woodward, A.S., p.101, pl.10, figs 8 and 9.

Diagnosis

A coelacanth in which the scales are fairly large and rather thin. The scale is a little longer than high with the exposed part distinctly higher than long and ornamented with numerous ridges of enamel which converge towards the middle point of the posterior margin, to give a peculiar branched tree effect. The overlapped portion of the scale is marked by a few shallow furrows which radiate from the centre to the somewhat truncated anterior border.

Holotype

P.10510, in the British Museum (Nat. Hist.), scales from the Coal Measures of Somkele, South Africa, Lower Beaufort?

Remarks

The Somkele coal field is believed to be Upper Ecca/Lower Beaufort in age and thus Middle to Upper Permian.

Identical scales occur in the Madumabisa Shales, Rhodesia (B.M.N.H. p.27563–5 from the Chimwar Ranch, Gwacei Valley, Rhodesia). These Madumabisa Shales are also believed to be equivalent to the Lower Beaufort (Bond, 1967).

Similar scales have also been recorded from nodules well below the White Band in the lower part of the Dwyka sediments at Klipneus in the Warmbad basin, South West Africa (I. McLachlan and A. Anderson pers. comm.). The Upper Dwyka Shales were in the past regarded as wholly of Uppermost Carboniferous age (du Toit, 1954) but the whole of the Dwyka Series is now considered by at least one worker to be Lower Permian in age (Barry, 1970).

Historical Note

Woodward (1891) and Moy-Thomas & Westoll (1935) classified all the previously described Permian species of coelacanth into the single species *Coelacanthus granulatus* Agassiz. The scales of this essentially European species are ornamented with slightly elongated tubercles, totally unlike the scales of *C. dentrites* n.sp.

The other coelacanths recorded from southern Africa are all lower Triassic in age and include *C. africanus* Broom from the Caledon River, South Africa, *C. madagascarienis* Woodward, *Whiteia woodwardi* Moy-Thomas and *W. tuberculata* Moy-Thomas from the Malagasy Republic. The ornamentation of the scales in all of these forms (with the exception of *W. tuberculata* where it is tuberculate) normally consists of parallel ridges of enamel on the exposed portion and never shows the branched condition so characteristic of *C. dendrites.*

Like *C. granulatus, C. dendrites* would appear to be restricted to the Permian.

Acanthodes sp. (Plate 1, fig. 2)

Occurrence

Three specimens in the collection of the Geological Survey of South Africa, Pretoria; portion of bodies from the Upper Witteberg series of Strydomsvlei (Theron 1962), Lower Carboniferous.

Remarks

This is the first recorded acanthodian from the African continent. Unfortunately owing to the poor preservation it is not possible to assign the specimens to any species. The genus *Acanthodes* ranges from the Lower Carboniferous to the Lower Permian.

Acanthodian spine (Plate 1, fig. 3)

Occurrence

A single specimen in the collection of the Geological Survey of South Africa, Pretoria; a spine collected by P. J. Rossouw in the Upper Witteberg Shales, 9,6 km SSE of Laingsburg (du Toit, 1954: 271), Lower Carboniferous.

Remarks

The spine has several grooves running along its length and thus does not belong to the genus *Acanthodes*. Further it does not belong to either *Gyracanthus* or *Gyracanthides* and may possibly represent a new form.

SUMMARY

The peculiarly restricted fish fauna of the Upper Witteberg series of South Africa has now been shown to contain acanthodians as well as the previously described palaeoniscids, while that of the Upper Dwyka Shales has been shown to contain coelacanths in addition to the palaeoniscids. Coelacanth remains are also reported from the Lower Beaufort of South Africa and from the Madumabisa Shales of Rhodesia.

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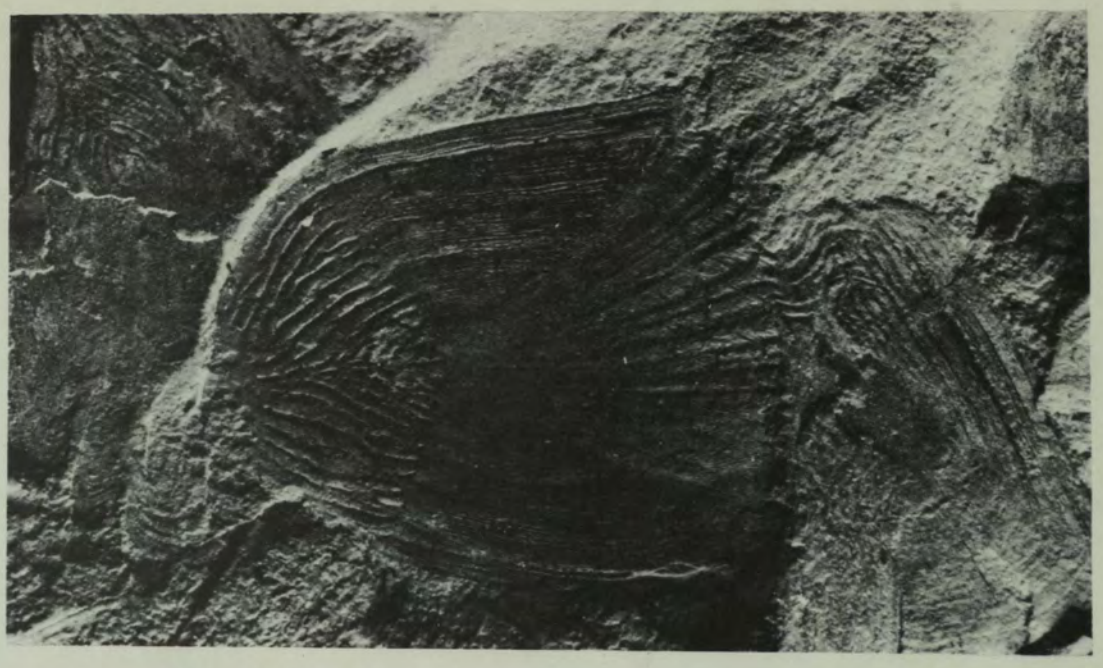
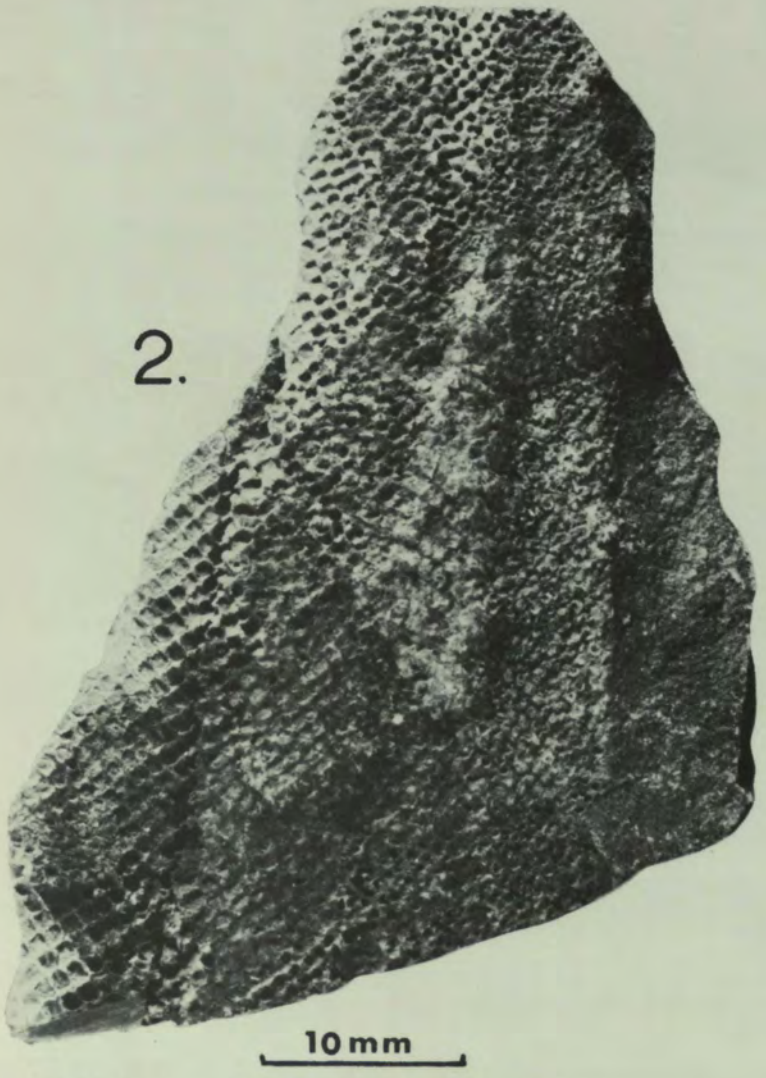


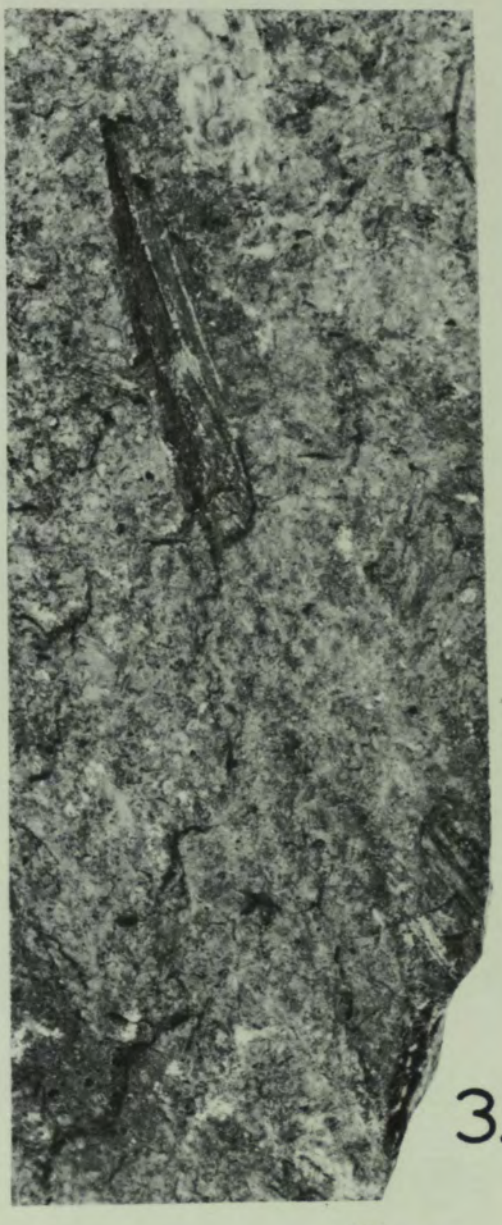
1.

2mm



2.

10 mm



3.

10 mm

Fig. 1. *Coelacanthus dendrites* sp. nov. Holotype.
Fig. 2. *Acanthodes* sp.
Fig. 3. Acanthodian spine.