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Two Alga-like Fossils from Brazil

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Araripe of Ceara State, in the northeastern part of Brazil, is known for the abundant occurrence of well-preserved fish fossils. The Brazilian fish fossils were studied by SILVA SANTOS and VALENÇA (1968), JORDAN and BRANNER (1910), SCHAEFFER (1947) and others, and more than ten species have been recorded, including *Aspidorhynchus comptoni* AGASSIZ belonging to Holostei and *Calamopleurus brama* (JORDAN & BRANNER) belonging to Elopidae. Although a list of fish fossils has been published, a detailed study of the specimens is yet to come.

The geology of the Araripe area is not very clear either, but the fossil-yielding bed is tentatively correlated with the middle of Upper Cretaceous. Fossils are found only in hard sandstone nodules.

The alga-like fossil specimens to be described here came from the same locality in Araripe. One of the specimens was presented to the author by Dr. Hiroshi OZAKI, former Head Curator of Department of Geology, National Science Museum. The other specimen was obtained by Dr. Yoshikazu HASEGAWA of the National Science Museum at the time of his visit to Brazil, and is now kept in the depository of the same Museum.

The author is indebted to Dr. OZAKI who kindly offered the fossil for study, and to Dr. Kazuo ASAMA of the National Science Museum who readily permitted the author to study the specimen. The author's sincere thanks are extended to the late Dr. Yukio YAMADA, Professor Emeritus of Hokkaido University, for his kind guidance and discussion on fossil and living Fucaceae, and to Dr. Teruya UYENO of the Nippon Luther Shingaku Daigaku for his valuable help with literature and reference materials.

As the specimens are both fragmentary, the complete form of frond and details of stem, rhizoid and receptable remain unknown.

Description

Fucus sp.

(Pl. 1, fig. 1)

The main stem is 12.5 cm long, about 1 cm wide, and gives off columnar lateral branches at intervals of 1–1.5 cm. The branches further put out small short node-like

offshoots. The lateral branches are 1–1.5 cm long, 3.5–5 mm wide, diverging from the main stem at an angle of about 30°. They are somewhat flat on the whole, and their tip is rounded. They seem to have the midrib but without vesicle.

Remarks. This problematical fossil is just an impression left on the sandstone, so its internal structure is unknown. Though it is still indeterminable whether this fossil is an alga or not, the specimen bears a close resemblance to a protion of the upper frond of *Fucus evanescens* AG. or *Pelvetia wrighti* (HARV.) YENDO, in its manner of branching and the shape of the tip of branches. If the specimen is an alga, it must be either one of the above species belonging to Fucaceae, or some allied species. Should the specimen be some other thing than alga, trace fossils known as chondrites are a possibility. Chondrites are tunnels dug in the ground under water, that is, subsurface traces of creeping marine animals. They are of different geological ages and their shapes are also variable. They have been called by such names as *Fucoides, Buthotrephis, Clematischnia,* etc. The characteristic common to them is a regular branching by which they are easily distinguished from other subsurface traces. According to HÄNTZSCHEL (1962) they are probably dwelling burrows or feeding burrows of marine worms. The specimen illustrated in fig. 1 is parallel to the bedding plane, and with no thickness at all. It shows no trace of boreholes, and is unique in having short node-like offshoots. So, the author tentatively assigns it to an alga belonging to *Fucus*.

Desmarestia? sp.

(Pl. 1, fig. 2)

The total length of the main stem is 32 cm, the width is about 1.5 cm which is almost uniform throughout, and the lateral branches that grow in opposition are given off at intervals of 1.5–2 cm. The branches are long and band-like, more than 10 cm in length; their width is about 1 cm, but narrows at the base where they diverge from the main stem, and their tip is also tapering away. No midrib is observed. Vescicle is also absent.

Remarks. The specimen is imperfect, lacking the lateral branch in the central portion, and the midrib is indistinct. Nevertheless, the shape on the whole is closely similar to living *Desmarestia ligulata* LAMOUROUX. Although the main stem and branches are much wider than the said species, it is likely that the body which was once columnar might have been compressed in the process of fossilization, as the whole specimen looks flattened.

This specimen is quite unique, like the one shown in Fig. 1, and whether this is a real alga or not is still open to discussion. For convenience, however, the author assigns the both specimens to brown algae.

The specimen is kept at the Department of Paleontology of the National Science Museum, Tokyo, reg. no. NSM-PP15150.

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Explanation of Plate 1

Fig. 1. *Fucus* sp. ×1. Ceara, Brazil.
Fig. 2. *Desmarestia*? sp. ×1/2. NSM-PP15150, Ceara, Brazil.

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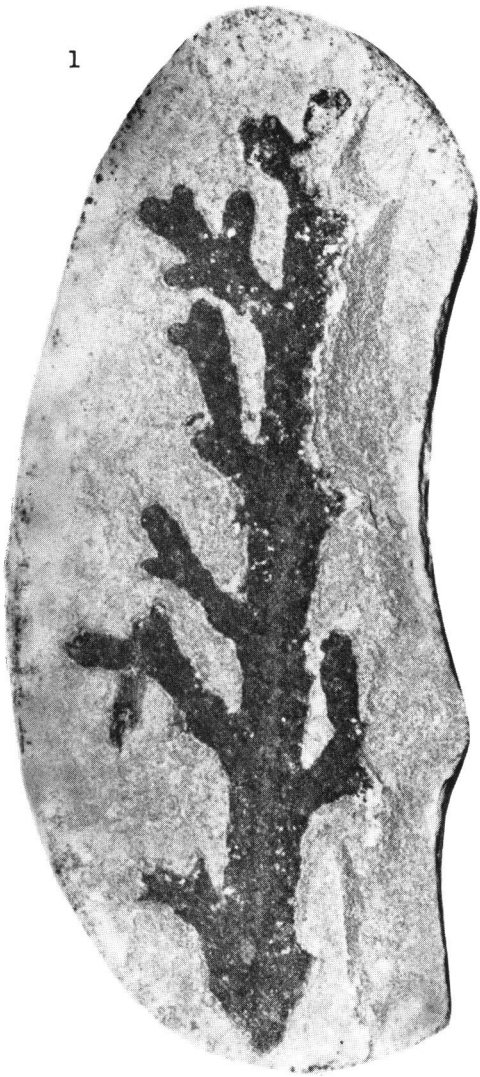

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