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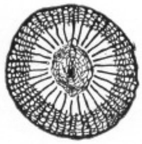
BY GEORGE H. FRAUNFELTER

REPORT OF INVESTIGATIONS NUMBER THIRTY TWO 1965
MISSOURI GEOLOGICAL SURVEY AND WATER RESOURCES
WILLIAM C. HAYES · STATE GEOLOGIST AND DIRECTOR



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STATE OF MISSOURI
Department of Business and Administration

Division of
GEOLOGICAL SURVEY AND WATER RESOURCES
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A New Pennsylvanian Dibunophyllid Coral from Missouri

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ABSTRACT

Dibunophyllum missouriensis, a new species, is described from the Higginsville Formation, Desmoinesian, of central Missouri.

INTRODUCTION

The genus *Dibunophyllum* consists of solitary rugose corals which occur in the Lower Carboniferous of Europe, North Africa, and North America and in the Middle Carboniferous of the Carpathians and Japan according to Hill (1956). Jeffords (1948) listed the occurrence of *Dibunophyllum* as Mississippian (Lower Carboniferous) to Permian in Europe, Asia, and North America. Only a few corals from the Pennsylvanian have been assigned to this genus.

Even though the genus *Dibunophyllum* occurs not infrequently and is locally abundant in the Pennsylvanian of the Mid-Continent area, it has received little study.

Early workers apparently referred the North American dibunophyllid corals to the genus *Axophyllum*. Most subsequent workers have adopted a very broad interpretation of dibunophyllid species. This broad interpretation resulted from the use of specific characters based largely on external form. The latter is, of course, highly variable, and hence; its morphological characters are not in themselves a reliable basis for speciation. Because of this broad species interpretation, Pennsylvanian dibunophyllid corals have been considered to be long-ranged specifically.

Newell (1935) described a species of *Dibunophyllum, D. valeriae,* from the Middle Pennsylvanian Eudora Shale Member of the Stanton Formation, Missourian Series, of southeastern Kansas. Moore and Jeffords (1945) described *D. ? inauditum* from the Lower Pennsylvanian Hale Formation, Morrowan Series, of northeastern Oklahoma. In 1948 Jeffords described two species of *Dibunophyllum, D. moorei,* from the Pennsylvanian Oologah Formation, Desmoinesian Series, of northeastern Oklahoma and *D. exigum* from the Pennsylvanian Dover Formation, Virgilian Series, of central eastern Kansas.

Moore and Jeffords (1945) and Jeffords (1948) placed the genus *Dibunophyllum* in the family Clisiophyllidae, while Hill (1956) assigned the same genus to the family Aulophyllidae.

Jeffords (1948) stated that *Dibunophyllum* was locally abundant only in limestones and calcareous shales. This seems to be true in Missouri also. The Higginsville Formation, for example, is a limestone.

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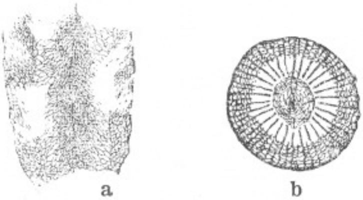
The stratigraphic usefulness of a fossil genus depends in part on the number of described species. The description of a new species from the Pennsylvanian of central Missouri will, hopefully, increase the stratigraphic value of the genus *Dibunophyllum.*

The two syntypes were collected by Karl Looff, who also provided the locality data. These type specimens and additional study specimens are in the paleontological collections of the University of Missouri; Cat. No. 16127.

Family AULOPHYLLIDAE Dybowski, 1873

Genus DIBUNOPHYLLUM Thomson and Nicholson, 1876
Jeffords, R.M., 1948, Journal of Paleontology, vol. 22, no. 5, pp. 617-618.

DIBUNOPHYLLUM MISSOURIENSIS sp. nov.



a b

Fig. 1. *Dibunophyllum missouriensis* sp. nov. Occurrence: SW¼ SE¼ NW¼ sec. 5, T. 52 N., R. 15 W., Randolph County, Missouri. Fig. 1a, longitudinal section. Fig. 1b, transverse section. Scale: x2.5

This species consists of medium-sized, cylindrical corallites having relatively steep-sided and deep calices. The theca is thin with interseptal ridges, septal grooves, fine growth lines, and annuli of growth present exteriorly. Apex sharply twisted to one side.

In transverse section, one syntype measures 16.5 mm. in diameter, just below the base of the calyx. There are present 30 major and 30 minor septa, the former extending nearly to the axis. The counter septum is long and attached to the median lamella. The cardinal septum is shortened. Major septa are thin and zigzag in dissepimentarium, dilate in intermediate tabular zone and thin again in columnar area. Minor septa are thin, zigzag, confined to the dissepimentarium and thicken slightly toward the tabularium. Major and minor septa are well-developed and evenly disposed. A peripheral zone of relatively fine, irregular dissepiments extends less than half the distance from periphery to axis.

In longitudinal section, the other syntype measures 16.0 mm. in maximum diameter. The innermost dissepiments are slightly thickened, forming a distinct inner wall at the junction of the dissepimentarium and tabularium. Tabulae are tented over the axial column, which has prominent median lamella. Tabulae and tabellae are distinctly more closely-spaced in the area of the axial column; thus inner and outer zones are present in the tabularium. Dissepiments are strongly convex and steeply inclined towards the axis.

Discussion—Dibunophyllum missouriensis is similar to *D. moorei* Jeffords from the Marmaton of Oklahoma. It differs from that species in having a more tightly-developed, web-like pattern to the column in transverse section, in having more distinct inner walls and in that the dissepiments are more steeply inclined and more banded in disposition. On the average *D. missouriensis* has a few more major septa, but both have about 30. The corallites are more cylindrical in *D. missouriensis.*

D. missouriensis differs from *D. valeriae* Newell in possessing fewer major septa, 30 versus 34, on the average. Like *D. moorei* Jeffords, *D. valeriae* Newell exhibits thickened major septa which end some distance short of the central web-like column; whereas in *D. missouriensis* the thickened major septa extend to the edge of the columnar area. The shape of the corallites in *D. valeriae* Newell tends to be irregularly cylindrical rather than regularly cylindrical as in *D. missouriensis.* The latter species has a better-developed, more tightly knit column, which occupies a more constant and greater width of the tabularium than is true in *D. valeriae* Newell.

The major septa, and likewise the minor septa. become progressively longer when comparing *D. exigum* Jeffords, *D. valeriae* Newell, *D. moorei* Jeffords and *D. missouriensis. D.* ? *inauditum* Moore and Jeffords also has long major septa like *D. missouriensis,* but in the former the central column is very poorly developed, and therefore, a similar comparison cannot be made.

The development of the cobweb-like column ranges from loosely-developed and poorly-defined to tightly-developed and well-defined in comparing *D.* ? *inauditum* Moore and Jeffords, *D. exigum* Jeffords, *D. valeriae* Newell, *D. moorei* Jeffords and *D. missouriensis* in that order.

D. missouriensis differs from *D. ? inauditum* Moore and Jeffords, as indicated above, in possessing a much better-developed column and also in possessing a wider and better-developed dissepimentarium. Also *D. ? inauditum* Moore and Jeffords lacks the thickened major septa which characterize the other species of *Dibunophyllum* discussed here. Instead *D.* ? *inauditum* Moore and Jeffords possesses thickening of the dissepiments where the minor septa end and elsewhere.

Occurrence.—Lower Higginsville Formation, Marmaton Group, Desmoinesian Series, Pennsylvanian. All specimens studied, including the types, were collected from an exposure in the bed of a dirt road in the SW¼ SE¼ NW¼ sec. 5, T. 52 N., R. 15 W., Randolph County, Missouri.

Types.—University of Missouri no. 16127

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