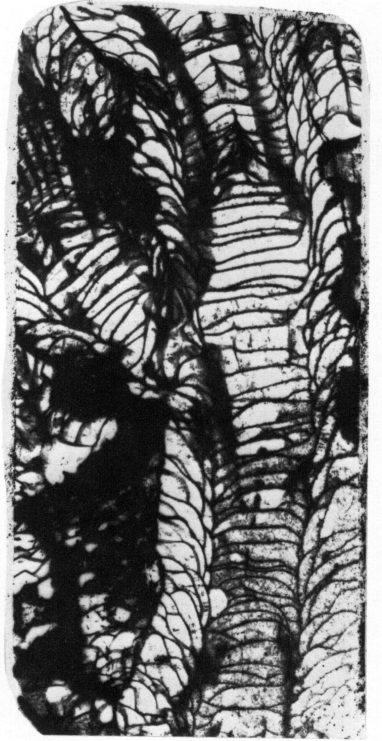
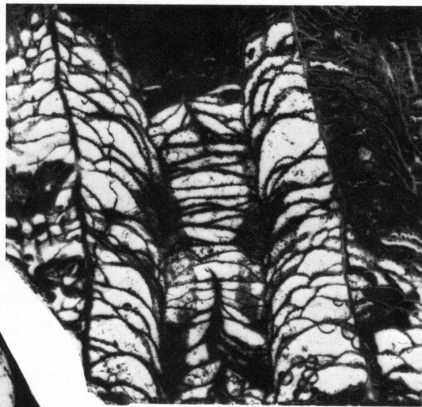


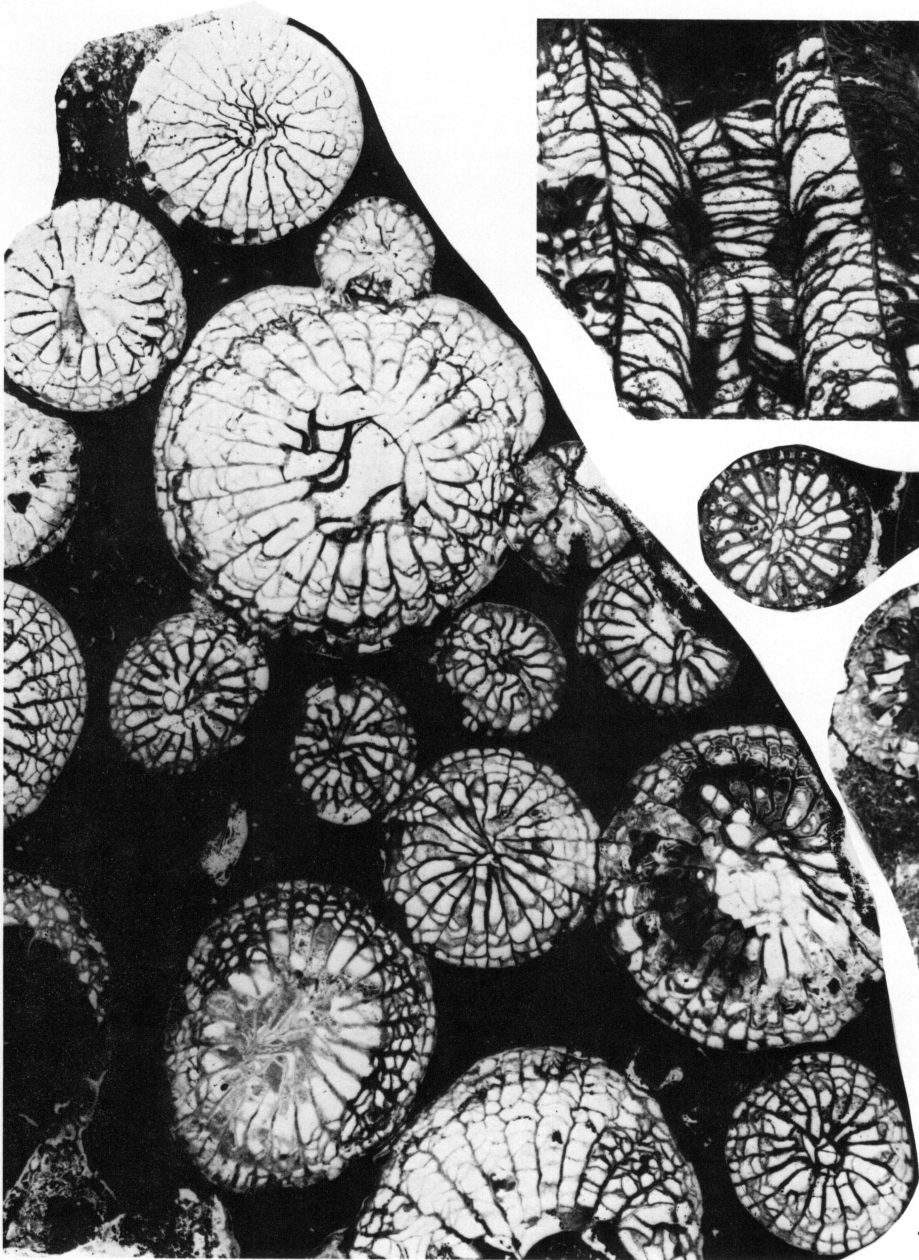
1



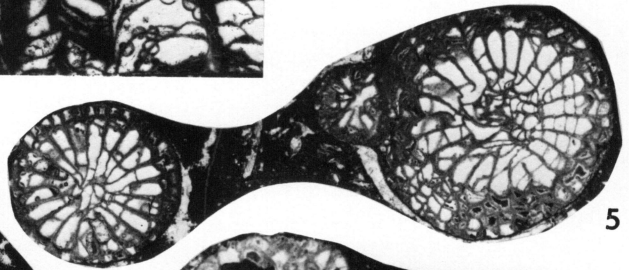
3



2



4



5



6

accurately from their figures because the scale cited ($\times 2$) is clearly incorrect and perhaps should be nearer $\times 4$. At any rate, the Peruvian corallites seem somewhat larger than those of the type series, attaining a maximum corallite diameter of 18 mm, although generally 10–15 mm in diameter. The chief characteristic of this unique species, a general suppression of the axial structure, is very apparent. As in the type series, that axial structure is aulophylloid where present.

DURHAMINA PANDOLFI n. sp.
Figures 9.5, 9.6, 10.1–10.6

Diagnosis.—A species of *Durhamina* characterized by relatively small corallite diameters, moderately few septa, minor septa generally confined to the dissepimentarium, and a loose aulophylloid axial structure generally in contact with numerous major septa.

External description.—Corallum phaceloid, hemispheroidal, maximum observed diameter 10 cm; corallites to 11 cm diameter, touching to 1 cm apart; undoubted epitheca and calices not observed.

Transverse section description.—Corallites circular to subcircular, diameters 8–11 mm, closely spaced, touching to as much as 10 mm apart; septa of two orders, 18–24 each, straight to somewhat sinuous, generally thin in dissepimentarium, slightly dilate basally in tabularium, becoming attenuate axially; major septa 3–5 mm long, mostly touching axial structure in most corallites, about half are withdrawn slightly from axial structure in some corallites; minor septa well developed, 1–3 mm long, generally crossing dissepimentarium, rarely entering tabularium as nubs; false wall stereozone slightly developed in some corallites; axial structure generally aulophylloid, large, subcircular, 1–3.5 mm diameter, composed of asymmetrically arranged septal lamellae and axially tabellae (one corallite appears to have clisiophylloid axial structure and short cardinal septum like *Heritschioides*); corallite wall about 0.2–0.3 mm wide.

Longitudinal section description.—Dissepimentarium of 1–3 ranks of very steeply dipping, various sized dissepiments; tabellae of two zones, axial and periaxial; axial tabellae extremely variable in size, elongate to cystose, dipping inwards and upwards to axis; periaxial tabellae variously developed, 10–15 per cm, in 1–2 ranks, sloping inwards and upwards to axial tabellae.

Collections.—Holotype, LACMIP 8021; paratypes, LACMIP 8022–8026. Eight thin sections and 136 polished sections from six coralla from LACMIP locality 8688 were studied.

Discussion.—*Durhamina pandolfi* n. sp. is the only phaceloid rugose coral known from the Copacabana Limestone in Bolivia and is known only from the type locality. It is closest to the type species, *D. cordillerensis* (Easton, 1960) from the Lower Permian of east-central Nevada. *Durhamina cordillerensis* has a greater number of septa in some corallites (one unfigured corallite in the holotype corallum has 29 septa) and a much more lonsdaleoid dissepimentarium than *D. pandolfi*. *Durhamina hessensis* (Ross and Ross, 1962), from the Lower Permian of Texas, has larger corallites and more septa. Paratype 13972 of this species figured by Ross and Ross (1962, Pl. 163, fig. 1) belongs to another genus and was mistakenly refigured and cited as the holotype of *D. hessensis* by Minato and Kato (1965, p. 43, text-fig. 9). *Durhamina alaskaensis* Rowett, 1969, from the

Lower Permian of Alaska has longer minor septa as well as being somewhat greater in corallite diameters and having somewhat more septa. *Durhamina sutherlandi* Rowett, 1969, also from the Lower Permian of Alaska, has much greater corallite diameters and many more septa. *Durhamina sublaeve* (Meek, 1864), from the Lower Permian of California, is comparable in corallite diameters, septal numbers, and minor septal lengths, but the axial structures are smaller and less well developed and the major septa are more withdrawn from them. *Durhamina chocalensis* Rowett and Walper, 1972, from the Lower Permian of Guatemala and Peru is comparable in corallite diameters and septal numbers but differs in the near absence of an axial structure. Two species from the Lower Permian of Japan, *D. hasimoto* (Nagao and Minato, 1941) and *D. kitakamiensis* (Minato, 1955), both have larger corallite diameters and more septa and, because of the inadequacy of the figures, are not entirely convincingly referred to the genus.

In the Arcturus Formation of east-central Nevada, the type area of the type species of *Durhamina*, great beds formed largely of this coral occur. These assemblages could be studied profitably to determine whether or not the concept of the species should be broadened. A relationship of the Durhaminidae to the Heritschioididae Sando, 1985, might be established if coralla with true shortened cardinal septa and clisiophylloid axial structures could be firmly demonstrated as occurring in otherwise typical coralla of *Durhamina* there.

Etymology.—The species is named for Dr. John M. Pandolfi.

Subclass TABULATA Milne-Edwards and Haime, 1850
Order FAVOSITIDA Wedekind, 1937
Suborder FAVOSITINA Wedekind, 1937
Superfamily FAVOSITICAE Dana, 1846
Family MICHELINIIDAE Waagen and Wentzel, 1886
Subfamily MICHELINIINAE Waagen and Wentzel, 1886
Genus MICHELINIA de Koninck, 1841
MICHELINIA ESCOBARI n. sp.
Figures 10.7, 11.1–11.3

Diagnosis.—A species of *Michelinia* characterized by the combination of very large corallites, few mural pores, and the presence of both complete and incomplete tabulae.

External description.—Corallum cerioid, maximum observed diameter 7.0 cm, roughly hemispherical, calices and corallum wall not observed.

Transverse section description.—Corallites polygonal, 5–7 sided, 9.5–12.0 mm wide; mural pores uncommon, tunnel-like, about 0.2 mm diameter; combined thickness of two corallite walls 0.3–0.5 mm.

Longitudinal section description.—Tabulae complete and incomplete, irregularly spaced, much thinner than corallite walls, about 0.05 mm thick, 1.0–2.0 mm apart, generally domed upwards, rarely straight, sagging, or sinuous.

Collections.—Holotype, LACMIP 8027; paratypes, LACMIP 8028–8034. Five thin sections from seven coralla (holotype, six paratypes) from LACMIP locality 8693 and one corallum (paratype 8034) from LACMIP locality 8692 were studied.

Discussion.—Meyer (1914) described and figured a single corallum of *Michelinia* from the Copacabana Limestone at Cerro Lamarani, 43 km southwest of Cochabamba, Bolivia, which he

FIGURE 10—1–6, *Durhamina pandolfi* n. sp. 1, 2, transverse section and ink-and-bleach drawing from it, holotype, LACMIP 8022; 3, 4, transverse sections, holotype, LACMIP 8022, paratype, LACMIP 8023; 5, 6, longitudinal sections, holotype, LACMIP 8022. 7, *Michelinia escobari* n. sp., transverse section showing mural pore at arrow, paratype, LACMIP 8028. All figures $\times 3$.