



Figures 59-72. Interiors of compartmental plates of *Cetolepas hertleini* gen. and sp. n., as shown and arranged in figures 47-58; (59) Paratype LACM 1225; (60) Paratype CAS 13171; (61) Holotype LACM 1230; (62) radial edge of Holotype LACM 1230; (63) Paratype LACM 1227; (64) Paratype CAS 13172; (65) Paratype CAS 13173; (66) Paratype LACM 1228; (67) Paratype CAS 13174; (68) Paratype LACM 1229; (69) Paratype CAS 13175; (70) Paratype CAS 13176; (71) radial edge of Paratype LACM 1226; (72) Paratype LACM 1226.

the sutural edge of *Coronula complanata*, thus suggesting derivation from the *Cetopirus* stock, but independently of the lineage that gave rise to *Cryptolepas*.

The most striking evolutionary clues are those provided by what are here interpreted as the older, eroded stages of growth in *Cetolepas hertleini*. In these stages the shell is reduced to a simple, transversely ringed cylinder with a broadly plicate basal margin. The inner row of horizontal septa are greatly reduced or lacking, leaving only the outer row of septa to form the sutural edge. The spaces between septa are unfilled, and the septa tend to branch towards the outer lamella.

Thus, the morphology of these older stages is that of a *Tubicinella*, differing only in the basal plications and the crenulations of the alar sutural edges. If the earlier stages of growth and especially the development of the radial buttresses were arrested, it would appear a simple matter to derive the shell of *Tubicinella* from a form similar to *Cetolepas hertleini*.

The derivation of *Tubicinella* from *Cetolepas* rather than from *Cryptolepas* is supported by a comparison with the growth stages seen in *C. rachi-anecti*. Pilsbry (1916, p. 280) recognized two growth stages: 1) a young stage with a thick disk, rounded periphery, and simple buttresses; and 2) an older stage in which the buttresses are longer and freely branched. If these are indeed growth stages of a single species, then their ages relative to each other should be reversed. In the freely branched stage the radial buttresses converge at the apex, are nearly parallel when viewed from the base, and the shell exhibits little or no wear dorsally. In the cylindrical stage the short, simple buttresses are nearly parallel both dorsally and ventrally, and the dorsal surface of the shell is clearly eroded. Thus, as in *Cetolepas hertleini*, the more complex growth form with convergent buttresses represents the younger stages in the development of the shell, which, as it grows and becomes progressively worn away dorsally, assumes a cylindrical form in which the buttresses cease to converge. Except for the reduction of the buttresses, these older stages retain the characteristics of the younger growth form, and exhibit no tendency to assume the features characteristic of *Tubicinella*.

The generic name is derived from a combination of *Cetopirus* and *Cryptolepas*. The species name honors Dr. Leo G. Hertlein.

Genus **Coronula** Lamarck, 1802

**Coronula barbara** Darwin, 1854 (?)

Figs. 73-77

*Coronula barbara* Darwin, 1854a, p. 421, pl. 15, fig. 6; 1854b, p. 38, pl. 2, figs. 8a-e; Alessandri, 1895, p. 72, pl. 3, figs. 8a-b; 1906, p. 317, pl. 18, fig. 12.

*Occurrence*: LACM Loc. 305.

*Range*: Pliocene and Early Pleistocene, Europe; (?) Late Pliocene, southern California.