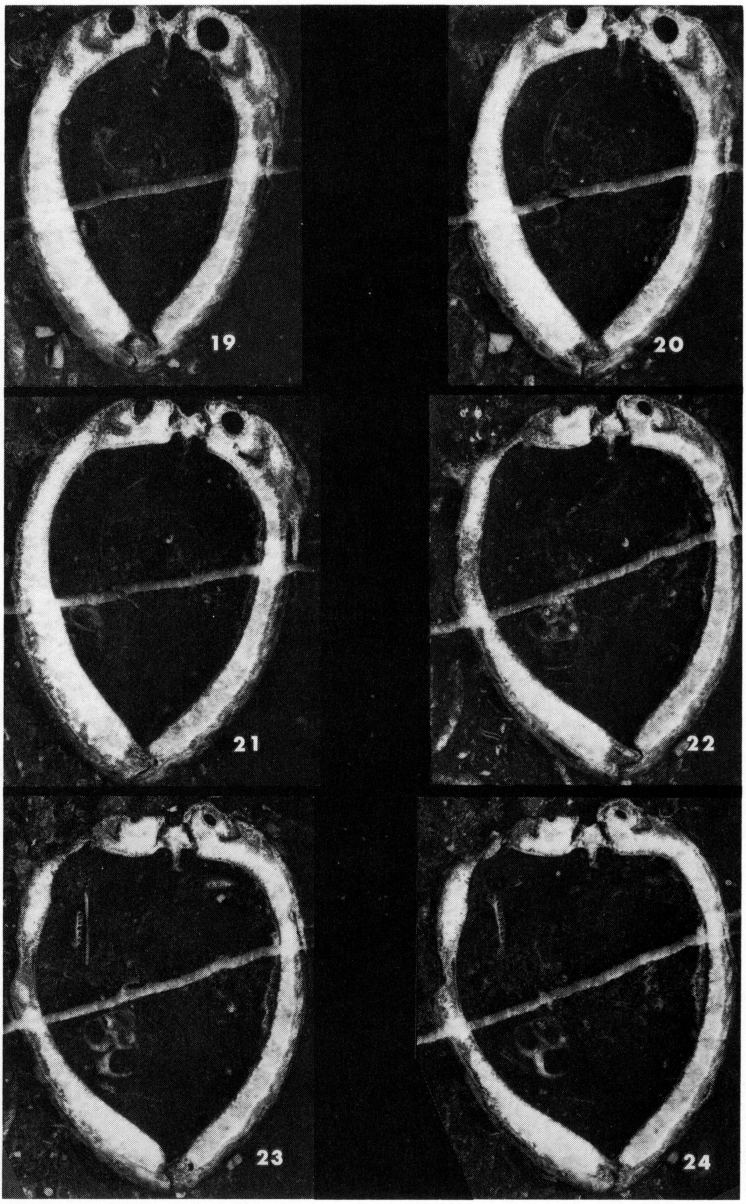
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mian (Wolfcampian) age. It seems clear, therefore, that the interval of the McCloud Limestone from which *C. langenheimi* was collected is definitely occupied by Lower Permian Series, Wolfcampian Stage rocks.

Diagnosis: *C. langenheimi* can be separated readily from most other species because it lacks a carina on the posterior part of the main body of the shell. It is also larger than most species and the anterior "auricle" is proportionately longer in relation to the rest of the shell than in many other species.

Discussion: *C. langenheimi* resembles closely only *C. ouralicum* (Verneuil, *in* Murchison, Verneuil, and Keyserling, 1845, p. 301, pl. 20, figs. 11a, 11b) from Upper Carboniferous rocks of the Ural Mountains. Both species lack posterior carinae and have elongate anterior "auricles." However, *C. ouralicum* is smaller (length 36 mm) and has an anterior "auricle" that is much more elongate in proportion to its height than that of *C. langenheimi*. Internal structures and shell microstructure of *C. ouralicum* are unknown as yet.

The microstructure of *C. langenheimi* apparently lacks "roofed-over pits" like those figured by Pannella and MacClintock (1968, pl. 8, fig. 5) in *C.* sp. from Upper Pennsylvanian rocks of Oklahoma. The "outer complex-prismatic shell layer" shown by Pannella, MacClintock, and Thompson (1968, fig. 1A) of *C. herculeum* Konick from Lower Carboniferous rocks of Belgium resembles a similarly positioned layer in *C. langenheimi*, but lacks the reflected tips that are present in the latter species.

The presence of complex internal structures in *Conocardium* was early reported by Hind (1900, p. 451, pl. 51, fig. 11a) in some detail, although he apparently worked from specimens somewhat worn internally. Curiously, no further refined work on them seems to have been published, although Dechaseaux (1952, p. 319, fig. 162a) and Branson, LaRoque, and Newell (1969, p. 859, fig. G1) cursorily discussed and figured some internal characters. Future workers should examine the internal structure of specimens of *Conocardium* with great care.

I have tried to find clues that would help determine the habitat and functional morphology of *C. langenheimi*. The associated fossils show that the salinity of the water must have been whatever was normal for the open oceans in Permian time. Permian near-shore faunas with restricted access to the sea in western North America generally lacked corals and fusulinids, both of which

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Figures 25-29. *Conocardium langenheimi* sp. n. Continuation of sections of same specimen as figures 10-24, same magnification; (25) dorsal ridge shorter but horizontal expansions of distal end still present, dorsal tube openings smaller (not seen in valve at left), some of dorsal part of valve at right shows erosion; (26) dorsal tube moves inward and *downward*, dorsal ridge shortens, distal expansions disappear, erosion of both valves and distortion of valve at left apparent; (27) continuation of movements seen in figure 26; (28) continuation, myostracum (?) rod (dark chevron) shows beside eroded tube in valve at right; (29) dorsal tubes move ventrally, hinge line plate broadens.