



FIGURE 10—*Volutoderma* spp. from the Pacific slope of North America. 1–6, *Volutoderma magna* Packard, 1922; 1, 2, hypotype, LACMIP 13214, $\times 1.3$; 3, 4, hypotype, LACMIP 13212, $\times 0.69$; 5, 6, hypotype, LACMIP 13213, $\times 0.71$. 7, 8, *Volutoderma?* *antherena* n. sp., holotype, LACMIP 13226, $\times 0.85$.

junior synonyms of *V. averillii*; two species, *V. santana* Packard, 1922 and *V. magna*, are *Volutoderma*; and four species are not *Volutoderma*. Saul and Popenoe (1993) assigned *Volutoderma mitraeformis* (Gabb, 1869) and *V. (R.) dilleri* (White, 1889) to *Carota*, "*Volutoderma*" *crossi* Anderson, 1958 to the perissityid genus *Cydas* Saul and Popenoe, 1993, and "*V.*" *jacksonensis* Anderson, 1958, to the fasciolariid genus *Drilluta* Wade, 1916.

Characteristics of *Volutoderma* include an elongate fusiform shell, a flat to concave sloping ramp, and, in several species, a slight shoulder. The spire is shorter than the aperture. The body whorl is large and is either basally slightly contracted or passes with gradual slope into a relatively long anterior canal that is generally twisted to the left. The inner lip is expanded onto the

whorl face and forms a callus shield that, in most species, overlaps the previous suture, thus obscuring it. The outer lip (especially in mid-Campanian and younger species) commonly has an expanded rim to the lip edge. These barely flared lip-edges result in raised collabral ridges of variable prominence that are, perhaps, best preserved on the ramp and at the suture. Posterior to the sinus and the suture, a raised edge continues and joins the posterior extremity of the callus shield. These raised imbricate growth ridges give *Volutoderma* a corrugated subsutural collar similar to that of *Longoconcha*, but in *Volutoderma*, sculpture on spire whorls adjacent to the suture is obscured by deposits of the callus shield and the raised-growth ridges. The columella of *Volutoderma*, described as straight (e.g., Gabb, 1877; Dall, 1907; Sohl,