



of *Monilispira*, which has been used for species here placed in *Pilsbryspira* Bartsch, 1950, a toxoglossate group.

Other Crassispirine genera represented in the eastern Pacific are *Hindsiclava* Hertlein & Strong, 1955; *Doxospira*, new genus; *Buchema* Corea, 1934; *Lioglyphostoma* Woodring, 1928; *Maesiella*, new genus; *Miraclathurella* Woodring, 1928; and *Carinodrillia* Dall, 1918.

Radulae of most of the eastern Pacific species of *Crassispira* are shown in Figures 44 to 71. Of particular interest is the presence of a rachidian tooth in both species of the new subgenus *Crassiclava* (Figures 48 to 49), the only crassispirine group known to have a rachidian tooth. Particularly small ribbons are found in three species of the subgenus *Striospira* (Figures 64 to 65, 67). Two species allocated to the subgenus *Crassispirella*, *C. discors* (Figure 53) and *C. rustica* (Figure 56) have teeth most resembling those of *Pyrgospira obeliscus* (Figure 33), in which the secondary limb is reduced.

*Lioglyphostoma* (Figures 75 to 76) and *Miraclathurella* (Figures 79 to 80) have been regarded by previous authors as related to the toxoglossate genus *Glyphostoma*, but are, in fact, operculate with duplex dentition. The genus *Carinodrillia* (Figures 81 to 85) has a marginal tooth with a long, flattened main member and a much reduced (if detectable at all) secondary limb, thereby resembling the marginal of the Clavinae. However, on shell characters *Carinodrillia* is allocated to the Crassispirinae and the modified lateral tooth interpreted as a duplex derivative.

(*Glossispira*) McLean, subgen. nov.  
(of *Crassispira* Swainson, 1840)

**Type Species:** *Pleurotoma harfordiana* Reeve, 1843 (Synonym: *Crassispira adamsiana* Pilsbry & Lowe, 1932).

**Diagnosis:** Shell relatively large and high spired; subsutural cord raised, weakly noded, shoulder concave below; periostracum thin, light brown; color gray with irregular white mottling. Protoconch white, whorls 2, smooth. Mature sculpture of narrow axial ribs and spiral cords, coarsely beaded at intersections; entire shell finely spirally striate. Sinus relatively shallow, entrance narrow, posterior part of aperture narrowed above the sinus into a vertical slot; lip edge forming a projecting tongue between the sinus and vertical slot. Lip edge thin, strengthened behind by a massive axial rib, stromboid notch shallow. Anterior canal short, deeply notched, inner lip callus slightly raised above the siphonal fasciole. Operculum leaf shaped, nucleus terminal. Radula of the duplex type (Figure 45).

**Discussion:** The infolded tonguelike extension of the lip between the sinus and the sutural slot is the characteristic feature of *Glossispira*. The subgenus *Crassispira*, s.s., seems to be the most closely related. It has a sutural slot, but the sinus entrance is broad and the infolded extension of the lip is lacking. The surface of *Crassispira*, s.s., differs in having a glossy, closely adherent dark periostracum. In surface texture, *C. (Glossispira) harfordiana* most resembles *C. rudis*, which has a different sinus structure.

*Glossispira* is monotypic; living or fossil congeners are as yet unknown.

(*Crassiclava*) McLean, subgen. nov.  
(of *Crassispira* Swainson, 1840)

**Type Species:** *Pleurotoma turricula* Sowerby, 1834 (Synonyms: *P. corrugata* Sowerby, 1834; *P. sowerbyi* Reeve, 1843).

**Diagnosis:** Shell relatively large, high spired, aperture elongate, subsutural cord weakly noded, shoulder concave below; periostracum thin, dark colored, color yellowish brown beneath, darker along the axial ribs. Protoconch whorls 2½, smooth, rounded, axial sculpture of strong, narrow ribs arising at the periphery and extending across the base; spiral sculpture of fine cording, increasing in strength toward the pillar, slightly nodulous on crossing the axial ribbing. Sinus broad at the entrance, deep, U-shaped, bordered on the inside by a massive pad of parietal callus. Lip edge thin, crenulated by the spiral sculpture, stromboid notch relatively shallow, lip preceded by a thickened axial rib ¼ turn back. Anterior canal broad, deeply notched, inner lip raised. Operculum leaf shaped, nucleus terminal. Radula with a unicuspid rachidian tooth on a broad rectangular base, marginal teeth of modified wishbone or duplex type (Figures 48 to 49).

**Discussion:** *Crassiclava* is unique in the subfamily in having a well formed rachidian tooth. The sinus is unlike that of other subgenera of *Crassispira* in having a strong parietal tubercle bordering the broad sinus entrance. Yet on all other shell characters the group seems closely related to other subgenera of *Crassispira* such as *Crassispira*, s.s., *Crassispirella*, *Burchia*, and *Gibbaspira*.

In addition to the type species, *Crassispira cortezi* Shasky & Campbell, 1964, is referred. It differs in having a narrower sinus, weaker spiral sculpture, and attains a smaller size, but otherwise strikingly resembles the type species. The radula (Figure 48) is similar.

(*Gibbaspira*) McLean, subgen. nov.  
(of *Crassispira* Swainson, 1840)

**Type Species:** *Pleurotoma rudis* Sowerby, 1834 (Synonym: *Drillia albovallosa* Carpenter, 1857).

**Diagnosis:** Shell relatively large, the subsutural cord swollen and bluntly noded, shoulder concave below; ground color dark, periostracum thin. Protoconch of 2 smooth, dark whorls, followed by a whorl with slanted

axial ribs. Mature sculpture of minute spiral striae throughout, base with strong axial and spiral sculpture, noded at intersections; axial sculpture terminating above in white-tipped nodes at the periphery. Sinus deep, entrance narrow, bordered by prominent callus tubercles on the parietal wall and outer lip. Lip edge not thickened, preceded by a massive thickened axial rib  $\frac{1}{6}$  turn back, stromboid notch only weakly indicated. Anterior canal short, deeply notched, inner lip callus raised. The suture descends on the final whorl and then rises on the final

### Plate Explanation

#### Subfamily Crassispirinae (continued)

- Figure 72: <sup>†</sup>*Hindsiclava militaris* (Reeve, 1843). LACM 65-16, Banderas Bay, Nayarit, Mexico, 10 to 15 fathoms.  
 Figure 73: <sup>†</sup>*Doxospira hertleini* Shasky, 1971. AHF 941-39, Gulf of Dulce, Costa Rica, 19 to 48 fathoms.  
 Figure 74: *Buchema granulosa* (Sowerby, 1834). AHF 209-34, Santa Elena Bay, Ecuador, 8 to 10 fathoms.  
 Figure 75: *Lioglyphostoma ericea* (Hinds, 1843). AHF 1055-40, Angel de La Guarda Island, Gulf of California, 57 fathoms.  
 Figure 76: *Lioglyphostoma rectilabrum* McLean & Poorman, 1971. Holotype, LACM 1512, Guaymas, Sonora, Mexico, 40 to 125 fathoms (ANSP, slide).  
 Figure 77: *Maesiella hermanita* (Pilsbry & Lowe, 1932). LACM 65-16, Banderas Bay, Nayarit, Mexico (ANSP, shell and slide).  
 Figure 78: <sup>†</sup>*Maesiella maesae* McLean & Poorman, 1971. Paratype, LACM 1514, Guaymas, Sonora, Mexico (ANSP, slide).  
 Figure 79: *Miraclathurella bicanalifera* (Sowerby, 1834). LACM, Guaymas, Sonora, Mexico, 20 to 40 fathoms.  
 Figure 80: *Miraclathurella mendozana* Shasky, 1971. LACM, Gulf of Tehuantepec, Chiapas, Mexico, 40 fathoms.  
 Figure 81: *Carinodrillia adonis* Pilsbry & Lowe, 1932. AHF 1733-49, Cabo Pulmo, Baja California, 18 to 21 fathoms.  
 Figure 82: *Carinodrillia dichroa* Pilsbry & Lowe, 1932. LACM 68-27, Guaymas, Sonora, Mexico, 30 to 60 feet.  
 Figure 83: <sup>†</sup>*Carinodrillia halis* (Dall, 1919). LACM 66-22, Muertos Bay, Baja California, 10 to 20 fathoms.  
 Figure 84: *Carinodrillia hexagona* (Sowerby, 1834). LACM 65-17, La Cruz, Banderas Bay, Nayarit, Mexico, 12 feet.  
 Figure 85: *Carinodrillia lachrymosa* McLean & Poorman 1971. Paratype, LACM 1516, Cuastecomate Bay, Jalisco, Mexico, 15 to 65 feet (ANSP, slide).

#### Subfamily Strictispirinae

- Figure 86: <sup>†</sup>*Strictispira ericana* (Hertlein & Strong, 1951). LACM 66-22, Muertos Bay, Baja California, 10 to 20 fathoms.  
 Figure 87: *Strictispira stillmani* Shasky, 1971. Paratype, LACM 70-15, Venado Island, Panama Canal Zone.  
 Figure 88: <sup>†</sup>*Cleospira ochsneri* (Hertlein & Strong, 1949). AHF 167-34, Santa María Island, Galápagos Islands, 15 fathoms.

#### Subfamily Zonulispirinae

- Figure 89: *Zonulispira chrysochilidosa* Shasky, 1971. Paratype, LA CM 70-15, Venado Island, Panama Canal Zone.

- Figure 90: *Zonulispira grandimaculata* (C. B. Adams, 1852). LA CM 70-15, Venado Island, Panama Canal Zone.  
 Figure 91: *Compsodrillia albonodosa* (Carpenter, 1857). LACM, San Felipe, Baja California.  
 Figure 92: *Compsodrillia alcestis* (Dall, 1919). AHF 1087-40, Ensenada de San Francisco, Sonora, Mexico, 15 to 18 fathoms.  
 Figure 93: *Compsodrillia bicarinata* (Shasky, 1961). LACM 60-6, Espiritu Santo Island, Gulf of California, 40 to 90 fathoms.  
 Figure 94: *Compsodrillia excentrica* (Sowerby, 1834). LACM 70-15, Venado Island, Panama Canal Zone.  
 Figure 95: *Compsodrillia gracilis* McLean & Poorman, 1971. Paratype, LACM 1518, Isla Santa Cruz, Galápagos Islands, 55 to 110 fathoms.  
 Figure 96: *Compsodrillia haliplexa* (Dall, 1919). AHF 963-39, White Friars, Guerrero, Mexico, 20 to 25 fathoms.  
 Figure 97: *Compsodrillia jaculum* (Pilsbry & Lowe, 1932). AHF 763-38, Cabo Corrientes, Jalisco, Mexico, 5 to 10 fathoms.  
 Figure 98: *Compsodrillia olssoni* McLean & Poorman, 1971. Paratype, AHF 209-34, Santa Elena Bay, Ecuador, 8 to 10 fathoms.  
 Figure 99: *Compsodrillia opaca* McLean & Poorman, 1971. AHF 1253-41, 8 miles west of Cedros Island, Baja California, 64 to 65 fathoms.  
 Figure 100: *Compsodrillia thestia* (Dall, 1919). LACM, Puertocitos, Baja California.  
 Figure 101: *Compsodrillia undatichorda* McLean & Poorman, 1971. LACM, Isabela Island, Galápagos Islands, 41 to 55 fathoms (DeRoy Collection, shell).  
 Figure 102: *Pilsbryspira (Pilsbryspira) albinodata* (Reeve, 1843). LACM, 70-15, Venado Island, Panama Canal Zone.  
 Figure 103: *Pilsbryspira (Pilsbryspira) aterrima* (Sowerby, 1834). LACM, 70-15, Venado Island, Panama Canal Zone.  
 Figure 104: *Pilsbryspira (Pilsbryspira) aureonodosa* (Pilsbry & Lowe, 1932). LACM, 70-15, Venado Island, Panama Canal Zone.  
 Figure 105: *Pilsbryspira (Pilsbryspira) collaris* (Sowerby, 1834). LA CM, 70-15, Venado Island, Panama Canal Zone.  
 Figure 106: *Pilsbryspira (Pilsbryspira) garciacubasi* Shasky, 1971. LACM 69-13, Banderas Bay, Nayarit, Mexico.  
 Figure 107: *Pilsbryspira (Nymphispira) bacchia* (Dall, 1919). LA CM 68-27, Guaymas, Sonora, Mexico, 30 to 60 feet.  
 Figure 108: <sup>†</sup>*Pilsbryspira (Nymphispira) nymphia* (Pilsbry & Lowe, 1932). LACM 67-17, Libertad, Sonora, Mexico.