

$\frac{1}{3}$ whorl, producing a lateral twist to the shell. Operculum leaf shaped, nucleus terminal. Radula of the duplex type (Figure 57).

Discussion: *Gibbaspira* is the only subgenus of *Crassispira* with a marked twist to the mature aperture and two prominent tubercles bordering the sinus.

In addition to the type species, which ranges from Mazatlan, Mexico, to Ecuador, the subgenus is represented in the Caribbean by *Crassispira dysoni* (Reeve, 1846) which is particularly common on the Caribbean coast of Panama. It has a brown rather than the gray ground color of *C. rudis*, with more numerous and finer tubercles across the base.

The name is taken from a manuscript label of Bartsch in the National Museum, derived from Latin, *gibber*—hunch-backed.

Doxospira McLean, gen. nov.

Type Species: *Doxospira hertleini* Shasky, 1971 (described elsewhere in this issue of The Veliger).

Diagnosis: Shell relatively large, fusiform, with high spire and moderately elongate anterior canal; shoulder concave and smooth, lacking a subsutural cord except for a trace on the early whorls. Protoconch of 4 smooth whorls with deeply impressed sutures, gradually changing to mature sculpture. Axial sculpture of massive rounded ribs, crossed by numerous fine spiral cords. Sinus broad and deep, U-shaped, bordered within by a large parietal callosity extending forward into a spur, as in *Hindsiclava*. Lip not greatly thickened, not preceded by a massive axial rib; stromboid notch shallow. Operculum leaf shaped, nucleus terminal. Radula of the duplex type (Figure 73).

Discussion: *Doxospira* is monotypic. In profile it resembles a number of other fusiform genera in different subfamilies. It resembles *Hindsiclava* in sinus structure, duplex radula, and lack of a thickened rib on the back of the last whorl, but does not have the flat sided whorls and reticulate sculpture of that genus. It recalls *Carinodrillia adonis* but has a different radula (compare Figures 73 and 81). It also resembles the zonulispirine genera *Compsodrillia* and *Ptychobela*, differing in sinus structure and radula.

Maesiella McLean, gen. nov.

Type Species: *Maesiella maesae* McLean & Poorman, 1971 (described elsewhere in this issue of The Veliger).

Diagnosis: Shell small to medium sized, whorls rounded, shoulder not deeply concave, subsutural cord a narrow raised thread. First 2 nuclear whorls smooth, rounded; strong diagonal axial ribs arise on the third nuclear whorl, persist for $\frac{1}{2}$ turn and abruptly cease, replaced by weaker vertical ribs and spiral cords. Mature sculpture of sinuous axial ribs (obsolete on final whorl in some species), crossed by spiral cords and microscopic spiral striae. Sinus deep, the opening nearly obstructed by downward growth of the lip between the sinus and body whorl. Lip thickened by a massive varix, stromboid notch shallow, aperture elongate but not drawn into an anterior canal. Operculum with terminal nucleus. Radula of duplex type (Figures 77 to 78).

Discussion: In addition to the type species the other members of the genus are *Maesiella hermanita* (Pilsbry & Lowe, 1932) and *M. punctatostriata* (Carpenter, 1865).

Maesiella is related to *Lioglyphostoma* and *Miraclathurella*, genera characterized chiefly by the greatly thickened final lip varix. *Maesiella* shares with *Lioglyphostoma* a tendency toward obstruction of the sinus resulting from a downward growth of the lip, a trait not shown in *Miraclathurella*. *Maesiella* differs from *Lioglyphostoma* in having strong axial ribbing between the protoconch and the mature sculpture, a shorter anterior canal, more laterally directed sinus, more prominent stromboid notch, and lacking the thin leading edge of the lip.

The species of *Maesiella* are characteristic of gravel bottoms near rock, while those of *Lioglyphostoma* and *Miraclathurella* are characteristic of soft, offshore bottoms.

SHUTO (1969: 202–209) placed some Neogene species from the Philippines in the genus *Euclathurella* Woodring, 1928, using subgenera *Miraclathurella* Woodring, 1928, *Thelecythara* Woodring, 1928, *Euclathurella*, s.s., and *Thelecytharella* Shuto, 1969. None of the species discussed by Shuto meet the criteria of the Woodring genera as used by McLEAN (in KEEN, 1971). *Thelecytharella* has the appearance of a crassispirine genus related to *Maesiella*, but having a broadly open rather than constricted sinus.

Maesiella is dedicated to Virginia Maes, who first examined the radula of two of the species.

Subfamily STRICTISPIRINAE McLean, subfam. nov.

(Figures 86 to 88)

Diagnosis: Dark colored shells of moderate size, sculpture both axial and spiral, shoulder concave, with a well marked subsutural cord. Sinus deep, laterally directed; parietal callus well developed. Operculum leaf shaped,

nucleus terminal. Radular ribbon relatively large, rows of teeth numerous; marginal teeth only, solid and massive, lacking a smaller limb, elbow shaped, with a projecting collarlike flange on the inner side.

Discussion: Two new genera with a distinctive and hitherto unrecorded radular pattern are here grouped as a subfamily. The collarlike flange on the inner side of the marginal tooth is unique. The radula most resembles that of the Pseudomelatominae, although the rachidian of that group is lacking. The collarlike structure could be inter-

preted as a thickening at the point of contact of adjacent teeth.

On the basis of shell characters, however, affinity to the Crassispirinae is suggested, particularly in the surface texture and presence of well developed parietal callus about the sinus.

Study of the anatomy and functional morphology should eventually reveal the true affinity of this group. I am much indebted to Virginia Maes for an exchange of ideas concerning the group, of which she has for some time been aware.

Plate Explanation

Subfamily Borsoniinae

Figure 109: *Borsonella (Borsonella) bartschi* (Arnold, 1903). AHF 981-39, Santa Barbara Island, California, 76 to 78 fathoms.

Figure 110: *Borsonella (Borsonella) galapagana* McLean & Poorman, 1971. Paratype, LACM 1526, Isla Santa Cruz, Galápagos Islands, 93 to 110 fathoms (ANSP, slide).

Figure 111: *Borsonella (Borsonellopsis) callicesta* (Dall, 1902). Holotype, USNM 109030, off Acapulco, Guerrero, Mexico, 660 fms.

Figure 112: ^T*Borsonella (Borsonellopsis) erosina* (Dall, 1908). Holotype, USNM 123106, Gulf of Panama, 1672 fathoms.

Figure 113: *Cruziturrucula arcuata* (Reeve, 1843). AHF 448-35, Secas Islands, Panama, 12 fathoms.

Figure 114: *Suavodrillia willetti* Dall, 1919. LACM 66-66, Graham Island, Queen Charlotte Islands, British Columbia, 30 fathoms.

Figure 115: ^T*Suavodrillia kennicotti* (Dall, 1871). Holotype, USNM 206201, Unga Island, Aleutian Islands, Alaska, 6 fathoms.

Figure 116: ^T*Ophioderrella ophioderma* (Dall, 1908). AHF 1165-40, San Pedro, California, 14 fathoms.

Subfamily Mitrolumninae

Figure 117: ^T*Mitromorpha carpenteri* Glibert, 1954. USNM 153445, San Pedro, California.

Subfamily Clathurellinae

Figure 118: *Clathurella rigida* (Hinds, 1843). LACM 66-15, Rancho El Tule, Baja California.

Figure 119: ^T*Nanodiella nana* (Dall, 1919). USNM 211485, off La Paz, Baja California.

Figure 120: *Glyphostoma (Glyphostoma) pustulosa* McLean & Poorman, 1971. LACM, Santiago Island, Galápagos Islands, 17 fathoms.

Figure 121: ^T*Glyphostoma (Euglyphostoma) candida* (Hinds, 1843). AHF 941-39, Gulf of Dulce, Costa Rica, 19 to 49 fathoms.

Figure 122: *Glyphostoma (Euglyphostoma) immaculata* (Dall, 1908). Holotype, USNM 123115, Gulf of Panama, 153 fathoms.

Figure 123: ^T*Strombinoturris crockeri* Hertlein & Strong, 1951. AHF 948-39, Bahía Honda, Panama, 30 to 35 fathoms.

Figure 124: ^T*Crockerella crystallina* (Gabb, 1865). USNM 109302, Catalina Island, California, 50 fathoms.

Subfamily Mangeliinae

Figure 125: *Glyptaesopus oldroydi* (Arnold, 1903). USNM 110611, Ballenas Bay, Baja California.

Figure 126: *Kurtziella (Kurtziella) plumbea* (Hinds, 1843). USNM 206548, Monterey Bay, California, 13 fathoms.

Figure 127: *Kurtziella (Kurtzina) cyrene* (Dall, 1919). USNM 331706, off Baja California (USFC sta. 2828), 10 fathoms.

Figure 128: ^T*Kurtzia arteaga* (Dall & Bartsch, 1910). USNM 211605, Barclay Sound, Vancouver Island, British Columbia, 8-34 fms.

Figure 129: *Pyrgocythara danae* (Dall, 1919). USNM 266350, Agua Verde Bay, Baja California.

Figure 130: "*Clathromangelia*" *fuscoligata* (Dall, 1871). USNM 56213, San Diego, California.

Figure 131: "*Clathromangelia*" *nitens* (Carpenter, 1864). USNM 334446, San Pedro, California.

Figure 132: *Euclathurella acclivicalis* McLean & Poorman, 1971. LACM, Isla Santa Cruz, Galápagos Islands, 82 fathoms.

Figure 133: ^T*Bellacythara bella* (Hinds, 1843). AHF 770-38, San Jose Point, Guatemala, 7 to 11 fathoms.

Figure 134: *Tenaturris verdensis* (Dall, 1919). LACM 66-19, El Pulmo, Baja California, 5 to 20 feet.

Figure 135: *Tenaturris janira* (Dall, 1919). USNM 127534a, San Diego, California.

Subfamily Daphnellinae

Figure 136: *Daphnella bartschi* Dall, 1919. USNM 267341, "Baja California."

Figure 137: *Rimosodaphnella deroyae* McLean & Poorman, 1971. Paratype, LACM 1544.

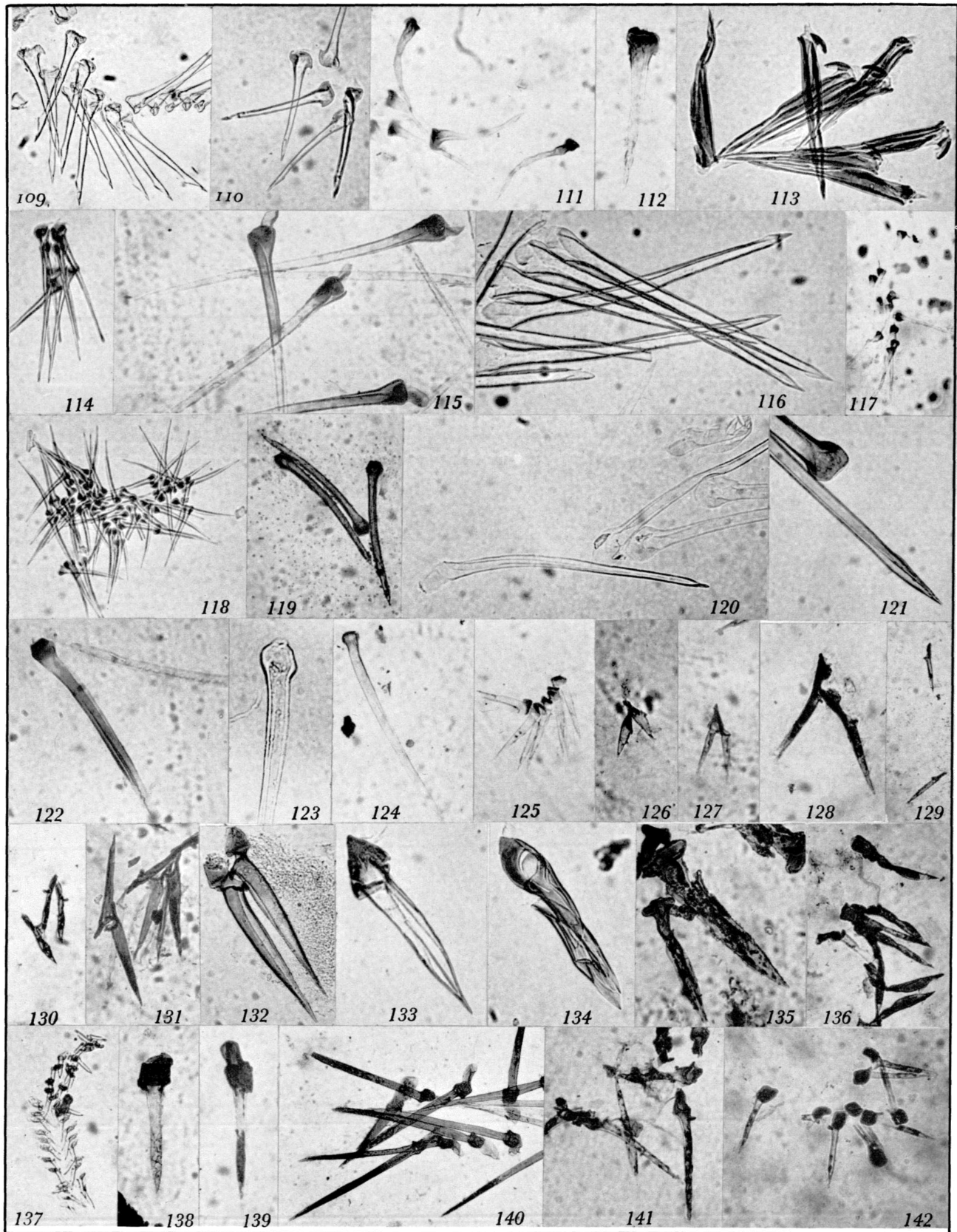
Figure 138: *Xanthodaphne agonia* (Dall, 1890). USNM 123136, Cocos Island, Costa Rica, 1010 fathoms.

Figure 139: *Xanthodaphne argeta* (Dall, 1890). Holotype, USNM 96552, Galápagos Islands, 812 fathoms.

Figure 140: *Xanthodaphne egregia* (Dall, 1908). Holotype, USNM 110610, off Peru, 2222 fathoms.

Figure 141: *Xanthodaphne imparella* (Dall, 1908). Holotype, USNM 123114, Gulf of Panama, 1270 fathoms.

Figure 142: *Pleurotomella orariana* (Dall, 1908). Holotype, USNM 123117, Gulf of Panama, 1270 fathoms.



Strictispira McLean, gen. nov.

Type Species: *Crassispira ericana* Hertlein & Strong, 1951.

Diagnosis: Shell medium sized, uniformly dark brown or black, subsutural cord prominent, midway on the concave shoulder slope. Protoconch of 2½ smooth, rounded whorls. Sculpture of narrow axial ribs crossed by spiral cording that increases in strength toward the base. Sinus deep, laterally directed, parietal callus of mature specimens projecting down to nearly seal the entrance to the sinus. Lip edge not greatly thickened, stromboid notch shallow, lip preceded by a thickened rib ⅙ turn back, anterior canal short, not deeply notched. Operculum leaf shaped, nucleus terminal. Radula of the elbow type, marginal teeth only, with an inner flange, outer profile with a 90° curve close to the base of the tooth (Figures 86 to 87).

Discussion: The shell differs from that of subgenera of *Crassispira* in having a deep, laterally directed sinus, the parietal callus curved and projecting down to nearly seal the entrance.

The type species, *Strictispira ericana*, occurs offshore from the head of the Gulf of California to Santa Elena Bay, Ecuador, and attains a length of 22 mm. Additional members of the genus are *S. stillmani* Shasky, 1971, a shorter, more robust species characterized by a blue-gray periostracum, and the Caribbean *S. ebenina* (Dall, 1890). Two of the "*Crassispira*" species described by WOODRING (1928: 150; pl. 4, figures 9–10) from the Jamaican Miocene, *C. ponida* and *C. lomata*, are probable members of the genus, since they appear to have the characteristic sinus structure.

Cleospira McLean, gen. nov.

Type Species: *Monilispira ochsneri* Hertlein & Strong, 1949 (Synonym: *Pleurotoma bicolor* Sowerby, 1834, not Risso, 1826).

Diagnosis: Shell medium sized, dark colored with a yellow peripheral band; shoulder concave, with a prominent subsutural cord and fine spiral striae. Protoconch of 2 smooth, rounded whorls. Axial ribs numerous on early whorls, rising to a strong peripheral angulation, crossed by broad spiral cords separated by deep grooves across the base; spiral cords crenulate the lip. Sinus deep, laterally directed, parietal callus downward projecting but not obstructing the sinus entrance. Lip edge not greatly thickened, stromboid notch moderately deep, lip preceded by a slightly thickened axial rib; anterior canal short, not

deeply notched. Operculum leaf shaped, nucleus terminal. Radula of marginal teeth only, of the elbow type with an inner flange, the outer profile with a curve amounting to about 45° (Figure 88).

Discussion: *Cleospira* is represented only by the type species, which is not uncommon in shallow water at the Galápagos Islands.

On radular characters, the affinity of *Cleospira* is with *Strictispira*, but on shell characters the resemblance is with the zonulispirine genus *Pilsbryspira*. Unlike most of the zonulispirine species, the axial ribs of *Cleospira* tend to be numerous and flat sided on the early whorls, in this respect resembling the pseudomelatomine genus *Tiari-turris* and the turriculine genus *Pyrgospira*.

Subfamily ZONULISPIRINAE McLean, subfam. nov.

(Figures 89 to 108)

Diagnosis: Medium to large sized shells having a narrow, projecting subsutural cord, sculptured with axial ribs and spiral cords, the spiral sculpture usually more strongly developed than the axial sculpture across the base; mature lip preceded by a thickened rib. Protoconch initially smooth whorled or subcarinate, often followed by a whorl of narrow axial riblets. Sinus bordered by well developed parietal callus. Operculum leaf shaped, nucleus terminal. Basal membrane of radula relatively strong, marginal teeth only, hollow, not cylindrical, somewhat inflated away from the tip, some barbed at the tip, others unbarbed, base swollen, recurved.

Discussion: This group differs from other toxoglossate subfamilies in having a relatively strong basal membrane of the radula and in having a fully developed operculum. As in *Crassispira*, the mature lip is preceded by a thickened axial rib, but the zonulispirine genera may usually be recognized in having a more laterally directed sinus and in having spiral sculpture more prominent than axial sculpture across the base.

POWELL (1966) placed the genera grouped here in the Clavinae, on the basis of shell characters.

The genus *Zonulispira* Bartsch, 1950, lacks axial ribbing on the early whorls. *Compsodrillia* Woodring, 1928, has strong axial ribbing on early whorls and is used for fusiform species previously assigned to *Carinodrillia*, the type species of which proved to be crassispirine. *Pilsbryspira* Bartsch, 1950, although described originally as a subgenus of *Crassispira*, is used for the brightly colored "*Crassispira*" species assigned by previous authors to *Monilispira*, another group proving to be crassispirine. The type species of *Pilsbryspira* is *P. pilsbryi* Bartsch, 1950, thought to

have been from the eastern Pacific, but proving to be a synonym of the common Caribbean species *P. albomaculata* (Orbigny, 1842). The species of *Zonulispira*, *Compsodrillia*, and *Pilsbryspira*, s.s., have a similarly shaped sinus that is laterally directed and somewhat constricted by parietal callus. The new subgenus *Nymphispira* differs in sinus structure from *Pilsbryspira*, s.s.

Radulae of most of the eastern Pacific species in the subfamily are illustrated in Figures 89 to 108. No generic differences are apparent. Some species in each group apparently lack barbs, while others clearly show a single barb. Examination under high power is necessary to detect the barb. The illustrated slides considered to show barbed teeth are those of *Zonulispira chrysochildosa*, *Compsodrillia alcestis*, *C. bicarinata*, *C. excentrica*, *C. olssoni*, *C. undatichorda*, *Pilsbryspira aureonodosa*, and *P. collaris*. Lacking barbs are those of *Zonulispira grandimaculata*, *Compsodrillia albonodosa*, *C. gracilis*, *C. haliplexa*, *C. jaculum*, *C. opaca*, *C. thestia*, *Pilsbryspira albinodata*, *P. aterrima*, *P. garciacubasi*, *P. bacchia*, and *P. nymphia*. Additional radulae of each species should be examined before a species is definitely characterized as to the possession of a barbed tooth.

(*Nymphispira*) McLean, subgen. nov.
(of *Pilsbryspira* Bartsch, 1950)

Type Species: *Crassispira nymphia* Pilsbry & Lowe, 1932.

Diagnosis: Shell medium sized, dark colored with nodes or tubercles of yellow or orange; shoulder concave, subsutural cord moderately strong, smooth or noded; shoulder finely striate. Protoconch of 2 smooth, dark whorls, followed by ½ whorl with axial ribbing. Mature sculpture of moderately strong axial ribs terminating in nodes at the periphery, crossed by nodular spiral cords on the base. Sinus deep, laterally directed, bordered on the inside by a pad of parietal callus and an open slot directed toward the suture. Lip not greatly thickened, stromboid notch relatively shallow; lip preceded by a slightly thickened axial rib; anterior canal short, not deeply notched. Operculum leaf shaped, nucleus terminal. Radula of hollow marginals, with recurved base, lacking barbs (Figures 107 to 108).

Discussion: (*Nymphispira*) differs from *Pilsbryspira*, s.s., in having a sinus with an open slot leading toward the suture, tending also to have more pronounced development of the axial ribbing across the base.

Two additional species are assignable: *Pilsbryspira arsinoe* (Dall, 1919) and *P. bacchia* (Dall, 1919), both of which differ from the type species in exhibiting stronger development of the parietal callus and having a heavier

rib back of the lip. *Pilsbryspira nymphia* is seldom found with a mature lip, but is the abundant member of the group and is therefore designated the type species.

Pilsbryspira bacchia and *P. nymphia* lack barbs on the marginal teeth, but this may not be significant, since some species of *Pilsbryspira*, s.s., also lack barbs.

Subfamily BORSONIINAE Bellardi, 1875

(Figures 109 to 116)

Diagnosis: Medium to large sized shells, fusiform in outline, anterior canal moderately long, slightly twisted to the left; lip thin, arcuate, stromboid notch lacking. Columella smooth or with 1 to 3 plicae. Sinus occupying the shoulder slope, broad, U-shaped, not bordered by heavy parietal callus. Operculum lacking, vestigial, or fully developed. Basal membrane of radula weak, marginal teeth hollow, expanded basally, straight or slightly curved, minutely barbed or smooth at the tip.

Discussion: POWELL'S (1966) concept of the group included only genera having some indication of columellar plicae, for the most part inoperculate, and having a radula as defined above. The concept of the group is here enlarged to include genera lacking columellar plicae and often having fully formed opercula. The degree of development of the columellar plicae varies within genera and there are genera exhibiting partially developed or vestigial opercula. The subfamily is here envisioned as including fusiform shells having a broad shoulder sinus, lacking strong parietal callus, and having toxoglossate dentition.

Borsonella Dall, 1908, is strongly plicate and typically inoperculate; marginal teeth lack barbs, although there is an angular projection near the tip (Figures 109 to 110). The new subgenus *Borsonellopsis* is weakly plicate and has a vestigial operculum; the teeth lack barbs (Figures 111 to 112). The fully operculate *Cruziturracula* Marks, 1951, represented by the single Recent species *C. arcuata* (Reeve, 1843), has a tooth with a small barb near the tip and another lower on the shaft (Figure 113). Two operculate genera that lack columellar plicae occur in the northeastern Pacific, *Ophioderrella* Bartsch, 1944, and *Suavodrillia* Dall, 1918, the radulae of which (Figures 114 to 116) are long and slender, lacking barbs.

(*Borsonellopsis*) McLean, subgen. nov.
(of *Borsonella* Dall, 1908)

Type Species: *Leucosyrinx erosina* Dall, 1908.

Diagnosis: Shell moderately large and high spired, aperture plus canal about $\frac{1}{2}$ the length of the shell; shell yellowish under an adherent olivaceous periostracum. Whorls angulate, with a flat or concave shoulder, immediate subsutural area faintly swollen. Sculpture of spiral cords and axial ribs, obsolete in some species, but nodular upon the angulate periphery. Sinus on the shoulder slope, broad, U-shaped, parietal callus lacking. Lip arcuate, stromboid notch lacking, anterior canal short, broadly open, twisted to the left; columella faintly plicate or smooth, columellar area broad, not raised above the pillar. Operculum small, rounded, with apical nucleus. Radula of hollow marignal teeth only, base expanded, shaft relatively short, lacking barbs (Figures 111 to 112).

Discussion: *Borsonellopsis* differs from *Borsonella* in attaining a larger size, having weaker columellar plicae, and possessing a small operculum, at least in the type species. None of the available specimens have complete protoconchs.

Three eastern Pacific species occur at depths of several hundred fathoms to abyssal depths: *Borsonella erosina* (Dall, 1908); *Borsonella callicesta* (Dall, 1902); and *Borsonella diegensis* (Dall, 1908). Numerous taxa described by Dall in various genera are tentatively regarded as synonyms of the latter two species, pending further study.

The name is taken from a manuscript label of Bartsch in the collection of the U. S. National Museum.

Subfamily MITROLUMNINAE Sacco, 1904

(Figure 117)

Diagnosis: Relatively small shells, anterior end usually truncate, axial and spiral sculpture of nearly equal strength; columella with folds or plicae that may be pronounced or faint. Protoconch paucispiral, two whorled, tip usually inrolled. Sinus either not apparent or consisting of a shallow indentation next to the suture. Operculum wanting. Basal ribbon of radula weak, marginal teeth hollow, expanded at the base, lacking barbs, slightly constricted below the tip.

Discussion: POWELL (1966) segregated the genera here grouped and several others as the "mitromorphid genera," in the subfamily Borsoniinae. They differ from Borsoniinae in lacking a deep U-shaped sinus; they are usually smaller, the sculpture tending to be clathrate, and they are characteristic of shallower water. These differences are afforded subfamily recognition.

The subfamily name Mitrolumninae Sacco, 1904, is utilized. Diptychomitridinae Bellardi, 1889, is rejected, since *Diptychomitra* Bellardi, 1889, is regarded as a syno-

nym of *Mitrolumna* and the name has not come into general use.

The typical genus and several others in the group have frequently been regarded as mitrid because of the characteristic columellar plicae and lack of a defined sinus (see CERNOHORSKY 1970: 63-64).

Genera represented in the eastern Pacific are *Mitrolumna* Bucquoy, Dautzenberg & Dollfus, 1883 (Synonym: *Arielia* Shasky, 1961); *Mitromorpha* Carpenter, 1865; *Cymakra* Gardner, 1937; and *Diptychophlia* Berry, 1964. Previous authors have used *Mitromorpha* for species better placed in *Cymakra*. *Mitromorpha* has a narrow aperture, lacks columellar plicae, and has spiral sculpture only. *Cymakra* differs in having an oval aperture, columellar plicae, and both axial and spiral sculpture.

The toxoglossate teeth of *Mitromorpha carpenteri* are illustrated (Figure 117). EMERSON & RADWIN (1969) figured the radula of their species *Mitrolumna keanae*.

Subfamily CLATHURELLINAE McLean, subfam. nov.

(Figures 118 to 124)

Diagnosis: Small to moderately large shells lacking a subsutural fold, sculpture both axial and spiral. Protoconch usually small tipped, developing a pronounced medial carination, or paucispiral with rounded outline. Sinus broad and deep, encircled with heavy callus; anterior canal moderately elongate, deeply notched; inner and outer lips smooth or heavily denticulate. Operculum wanting. Basal ribbon of radula weak, marginal teeth long and slender, slightly curved, unbarbed, base evenly swollen.

Discussion: The clathurelline genera, traditionally placed in the Mangeliinae, are grouped here as a subfamily on the basis of shell and radular characters. Distinctive shell characters are the carinate protoconch of most members, the deep subtubular sinus, of a breadth and depth equivalent to that of the anterior canal, and the deep notch of the anterior canal. Mangeliine genera do not have deeply notched anterior canals. Species of some clathurelline genera such as *Glyphostoma* and *Strombinoturris* reach moderately large sizes, while mangeliine species are characteristically small. Clathurelline radular teeth are more akin to those of some borsoniine genera, being long and slender, with evenly swollen bases.

Eastern Pacific genera having a marked carinate phase of the protoconch are *Clathurella* Carpenter, 1857; *Nanodiella* Dall, 1919; *Glyphostoma* Gabb, 1872 (and subgenus *Euglyphostoma* Woodring, 1970); and *Strombinoturris* Hertlein & Strong, 1951. The southern Californian genus *Crockerella* Hertlein & Strong, 1951, differs in having a paucispiral protoconch.

Toxoglossate teeth of the clathurelline genera are illustrated (Figures 118 to 124). Noteworthy are the relatively large teeth of *Nannodiella nana* (Figure 119) and the serrated edge near the tip of the tooth in *Glyphostoma immaculata* (Figure 122).

Subfamily MANGELIINAE Fischer, 1887

(Figures 124 to 135)

Diagnosis: Small, slender shells; sinus shallow to moderately deep, outer lip usually with terminal varix; lip denticulate in some genera; anterior canal relatively short, not deeply notched. Protoconch smooth or variously sculptured. Operculum wanting in warm water genera, present in some boreal genera. Basal ribbon of radula vestigial, marginal teeth hollow, relatively short, rarely barbed, base of tooth with an irregular swelling, some resembling partially rolled leaves with an upcurved spur at the base.

Discussion: The subfamily concept of POWELL (1966) is employed, with the exception that the clathurelline genera are excluded. Form of the marginal tooth in the remaining genera still covers a broad range, but there are apparently no members with long, slender teeth having evenly swollen bases.

Cytharinae of THIELE (1929) is a synonym, although Thiele's concept included genera placed in the last 5 subfamilies utilized here.

Fourteen genera of Mangeliinae are recognized in the tropical eastern Pacific (see McLEAN in KEEN, 1971), but the genera pertaining to cool water eastern Pacific species are tentative at this point.

Radular characters are known for relatively few eastern Pacific genera and species. In *Glyptaesopus oldroydi* (Figure 125), the base of the tooth is flat, as in *Mitromorpha carpenteri* (Figure 117). Species of *Kurtziella*, *Kurtzia*, *Pyrgocythara*, and "Clathromangelia" (Figures 126 to 131) have the "hilted dagger" tooth described by Powell. *Euclathurella acclivicallis* (Figure 132) and *Bellacythara bella* (Figure 133) have angular bases to the teeth. In the genus *Tenaturris* (Figures 134 to 135) the shaft bears a prominent barb.

Bellacythara McLean, gen. nov.

Type Species: *Clavatula bella* Hinds, 1843.

Diagnosis: Shell moderately large for the subfamily, slender and fusiform, with rounded whorls and an elongate canal. Protoconch with small tip, second whorl rounded, third whorl with a moderately strong, nodose carination,

gradually changing to the rounded axial ribbing of later whorls. Axial sculpture of low rounded ribs crossed by numerous fine cords. Sinus shallow, on the shoulder slope, lip with a sharply pointed tubercle below the sinus. Operculum wanting. Marginal tooth relatively short and broad, tapered to a sharp point, base swollen, V-shaped (Figure 133).

Discussion: The sharp, pointed tubercle on the lip below the sinus and subcarinate phase of the protoconch are characteristic and not found in other mangeliine genera known to me. *Acmaturris* Woodring, 1928, is similar in size and sculpture. The two genera have a similar sinus structure; the sinus is broad and shallow, without parietal callus. *Bellacythara bella* is exceptionally large among eastern Pacific mangeliine species. It reaches a length of 15 mm and is thereby matched only by *Tenaturris verdensis* (Dall, 1919).

Subfamily DAPHNELLINAE Hedley, 1922

(Figures 136 to 142)

Diagnosis: Small to moderately large shells, sculpture usually cancellate. Protoconch tall, with several rounded, frequently diagonally cancellate whorls, sometimes with axial ribbing or cancellate sculpture. Sinus sutural, shaped like a reversed-L, parietal callus present in some; lip produced forward, edge thin or with terminal varix, lip denticulate in some, columella usually smooth. Operculum wanting. Basal membrane of radula vestigial, marginal teeth hollow, awl shaped, with cylindrically expanded bases, the tip usually constricted, resembling a candle flame.

Discussion: The concept of Daphnellinae utilized here follows that of POWELL (1966). The sutural sinus is characteristic of all genera and most have a diagonally cancellate protoconch, a feature not occurring in other subfamilies. Some genera have axial or cancellate sculpture on the protoconch. Such a difference in the protoconch is considered by Powell as of sufficient importance to warrant generic separation of groups otherwise having similar sculpture.

Shallow water eastern Pacific genera with diagonally cancellate protoconchs are *Daphnella* Hinds, 1844; *Rimosodaphnella* Cossmann, 1915; *Philbertia* Monterosato, 1884; and the new genus *Truncadaphne*. Genera with axial ribbing on the protoconch are *Kermia* Oliver, 1915; *Vepracula* Melvill, 1917; and the new genus *Microdaphne*. Deep water genera are *Xanthodaphne* Powell, 1942; *Pleurotomella* Verrill, 1873; *Phymorhynchus* Dall, 1908; and *Gymnobela* Verrill, 1884.