

DESCRIPTIONS OF NEW SPECIES OF MOLLUSCA FROM THE  
NORTH PACIFIC OCEAN IN THE COLLECTION OF THE  
UNITED STATES NATIONAL MUSEUM.

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INTRODUCTION.

In preparing a census of the shell-bearing Marine Mollusca of the west coast of North America from the Arctic Sea to San Diego, California, with the view of compiling a classified checklist of these animals, it became necessary to review the entire fauna of the west coast of both Americas, as it proved that the range of many species is far greater than had hitherto been assumed. The National Collection is probably the richest in the world for the region indicated, including the dredgings of the United States Bureau of Fisheries steamer *Albatross*, as well as the contributions of a multitude of collectors during nearly half a century. The presence of the types of species described by Gould, Carpenter, and Stearns among the earlier collectors has facilitated the accurate determination of many more or less obscure forms. Among the species examined, especially those from warmer waters and from depths not reached by private collectors, there were found many which seemed to be undescribed.

In order to avoid the publication in the checklist of manuscript names or the omission of species needed for completeness, it has seemed best to prepare diagnoses of such forms as appear clearly new. This has already been done in another publication for the group of Chitons and for the family of Turritidae (formerly known as the Pleurotomidae) and the latter difficult group fully illustrated. It is hoped that the other unfigured species may be illustrated later, but under present conditions the best that could be done was the preparation of full and exact diagnoses and measurements. The types of these new species are, with hardly an exception, preserved in the National Collection.

A thorough and exhaustive collection of the mollusca of the Panamic fauna is still a desideratum and can hardly fail, when made, to enormously increase the number of species known, especially among the minute forms. There are particular areas like the Gulf of Dulce in Central America and the St. Elena region on the north-

western coast of South America which promise rich returns to the explorer. From the latter region Cuming many years ago obtained material which kept the British naturalists, Broderip, Sowerby, and Reeve busy for a score of years describing and illustrating his harvest of new forms. And yet Cuming seems to have collected very few of the smaller species.

From California northward more exhaustive work has been done, though there are notable gaps, many miles in extent, where dredging has never been attempted and shore collections are practically unknown. The character of the coast does not, in such regions, lend itself to easy investigation. Nevertheless we may consider the general fauna as fairly well known, though still affording the prospect of many novelties.

If we regard that region where a given genus is represented by the greatest number of specific forms as being probably the center of origin for species of that group, the conclusion is quite obvious that the Oregonian fauna taken in its widest sense is the parental source of the greater part of the boreal mollusks of the world. On the other hand, if the meager fauna of the boreal Atlantic be taken as the focus of origin, the reverse would be true, and the differentiation of specific forms be greatest at the most distant area of migration, other things being equal.

The Tertiary faunas present much the same problem when analyzed, but in some instances suggest the possibility of reciprocal migration; particular types appearing later in America than in Europe, and the opposite. There can be no doubt, however, that migration of species in the boreal region between the two hemispheres was more easy and the routes more open in the Pliocene and late Miocene than at any subsequent period. In the tropical region, however, the reverse appears to be true, intercommunication between the two oceans having been finally interrupted at the end of the Oligocene period. In my report on the collections of the *Albatross* in the Panamic region I have called attention to the remarkable differences which have resulted from this cause in the composition of the Caribbean and Panamic mollusk faunas.

The explorations of the *Albatross* in the Okhotsk Sea and on the coasts of northern Japan and eastern Siberia, taken with those of the Canadian Arctic Expedition and others on the American side, have cleared up many obscurities in our conception of the geographical distribution of boreal mollusks. We know now that the Asiatic fauna, even near Bering Strait, notwithstanding its geographical approximation is measurably distinct from that of the American coasts, and that the latter on the Arctic shores extends without Greenlandic admixtures far to the eastward of the Mackenzie River delta. Of course there is the expected admixture of characteristically

polar forms at the west and a few species of the Oregonian fauna reach both coasts of the Pacific, but only sufficient to contrast with the body of the Asiatic fauna.

In the present paper the locality of the type specimen under description and the number of the type in the Museum Register is given; the entire range covered by the species as far as now known will appear in the Checklist when issued. The manuscript of the latter is ready for the printer and together with the already published Checklist of the bivalves will cover all the marine mollusca of the region specified except the Nudibranchs and Cephalopods which are referred to specialists.

The number of new forms described in the present paper is 222, of which 26 are from the region of the Gulf of California, 4 from the Panamic region, 9 from the Galapagos Islands, 18 from Japan and the adjacent Asiatic coast, and the remainder from San Diego, northward on the American coast to the Arctic Sea. Only the latter group will be included in the checklist, the others being extralimital.

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### DESCRIPTIONS OF THE SPECIES.

#### ACTEOCINA SMIRNA, new species.

Shell minute, white, with yellowish periostracum, of about four whorls with a very minute subglobular hardly projecting glossy nucleus; summit of spire with the whorl but little raised, flattish but not excavated between the suture and the bluntly rounded shoulder; shell in front of the shoulder subcylindric, with fine axial incremental lines; aperture narrow, outer lip thin, nearly straight, rounding in front into the rather wide, slightly excavated pillar which near the body carries a single strong plait; body with a thin coat of enamel, the umbilical region slightly impressed but imperforate; length, 4; diameter, 2 mm. U. S. Nat. Mus. Cat. No. 271492.

*Type-locality*.—San Diego, California, C. R. Orcutt. The range of this species extends southward to San Salvador.

#### ACTEOCINA MAGDALENENSIS, new species.

Shell small, slender, subcylindric, translucent white, polished, with four whorls, the nucleus minute, subglobular, transparent; suture distinct, more or less channeled, spire short but distinctly turritid aperture narrow, outer lip straight, rounding below into the thickened

pillar which has a strong plait with a groove behind it, the body with a slight glaze; length, 6.7; diameter, 2.5 mm. U. S. Nat. Mus. Cat. No. 218410.

*Type-locality*.—Magdalena Bay, Lower California, collected by C. R. Orcutt.

RETUSA XYSTRUM, new species.

Shell minute, white, subcylindric, the aperture as long as the shell, the whorls involved, with a deep pit at the apex, slightly wider in front; very little constricted around the middle; sculpture of extremely fine close longitudinal grooves covering the whole surface; the base produced, imperforate; the aperture very narrow, outer lip straight, as long as the shell, simple, sharp, rounding into the base; length of the shell, 3; maximum diameter, 1 mm. U. S. Nat. Mus. Cat. No. 273985.

*Type-locality*.—Dredged at San Diego, California, by C. R. Orcutt. Also found at San Pedro.

RETUSA PAZIANA, new species.

Shell minute, white, with an involved spire, above which is a rather large perforation; the general form is subcylindric, wider anteriorly, obscurely widely constricted about the middle of the shell, rounded at the summit, the aperture as long as the shell; sculpture wholly axial, of fine, sharp, close vertical grooving extending over the whole shell, with no perceptible spiral sculpture; aperture very narrow except at the base, rising somewhat above the summit of the shell; base rounded, pillar simple with no chink behind it; height, 3; maximum diameter, 1.4 mm. U. S. Nat. Mus. Cat. No. 211418.

*Type-locality*.—U. S. Fish Commission station 2823, off La Paz, Gulf of California, in 26 fathoms broken shell.

RETUSA GALAPAGANA, new species.

Shell minute, white, involved, with a deep pit at the apex, the aperture as long as the shell; form subcylindric, the diameter slightly larger anteriorly, the middle of the whorl feebly constricted, the whorl at the summit rounded; the entire shell axially closely sharply grooved; outer lip thin, sharp, aperture very narrow behind the base, pillar simple, rounding into the basal lip; height of shell, 3; maximum diameter, 1.5 mm. U. S. Nat. Mus. Cat. No. 194976b.

*Type-locality*.—U. S. Fish Commission station 2813, at the Galapagos Islands, in 40 fathoms, coral sand; temperature at surface, 81° F.

VOLVULELLA COOPERI, new species.

Shell subcylindric, white, in the young with a very short spine, the adult having the spine obsolete or even absent, involved, bluntly rounded at each extremity, the aperture as long as the shell; surface

entirely smooth; aperture parallel with the body, very narrow, body with no perceptible enamel, pillar very short, thickened, slightly reflected with a minute chink behind it; length of shell, 9.5; diameter, 3.6 mm. U. S. Nat. Mus. Cat. No. 105501.

*Type-locality*.—Scammon Lagoon, Lower California, collected by Henry Hemphill. Its range extends north to San Pedro, California.

This is larger, smoother, and less distinctly spinose in the adult than any other west coast species.

**VOLVULELLA CALIFORNICA, new species.**

Shell minute, polished, white, elongate-ovate, involved, with a short apical spine; axial sculpture of very faint incremental lines; spiral sculpture of microscopic striae near the anterior end; axis imperforate; aperture as long as the shell, outer lip reaching to the end of the spine, from which it is separated by a narrow groove, laterally straight, anteriorly rounding to the slightly thickened pillar; body with a coat of enamel which extends to the pillar and the spine; length, 4; diameter, 1.7 mm. U. S. Nat. Mus. Cat. No. 211303.

*Type-locality*.—U. S. Fish Commission station 2902, off Santa Rosa Island, California, in 53 fathoms sandy mud; the bottom temperature, 45° F.

**VOLVULELLA PANAMICA, new species.**

Shell small, involved, ivory white, smooth except for very faint incremental lines, apex with a small short sharp spine extending beyond the edge of the outer lip; form subcylindric, aperture very narrow with a deep apical sulcus, base rounded, pillar very short with a slight twist; length of shell, 4.25; diameter, 1.75 mm. U. S. Nat. Mus. Cat. No. 212654.

*Type-locality*.—Panama Bay at station 2799, in 29½ fathoms, U. S. Fish Commission.

**VOLVULELLA CATHARIA, new species.**

Shell small, plump, ovate, ivory white, involved, with a hardly perceptible point at the apex; surface polished; aperture almost or quite equal in length to the shell, narrow, wider in front, the outer lip nearly straight laterally; near the apex and at the pillar the enamel on the body is slightly reflected with a free edge; there are a few hardly perceptible spiral striae, with wider interspaces, near the anterior end; the shell, for so small a species, is relatively thick; length of shell, 2.75; diameter, 1.8 mm. U. S. Nat. Mus. Cat. No. 211784.

*Type-locality*.—U. S. Fish Commission station 2794, in Panama Bay, in 62 fathoms, sand; bottom temperature, 60° F.

**VOLVULELLA CALICERA**, new species.

Shell minute, involved, white, with a short spine at the apex, subcylindrical, almost equally attenuated at both ends, smooth and polished, the outer lip slightly falling short of the end of the spine, laterally straight, rounding gently into the pillar lip in front; aperture not quite as long as the shell, the body polished, a slight thickening on the pillar lip; length, 3.5; diameter, 1 mm. U. S. Nat. Mus. Cat. No. 194976b.

*Type-locality*.—U. S. Fish Commission station 2813, off the Galapagos Islands, in 40 fathoms, coral sand.

**SCAPHANDER WILLETI**, new species.

Shell small, yellowish white, of about four whorls, the apex sunken but exposed in a pit bounded by a sharp carina, the shell wider anteriorly; surface with faint incremental lines crossed obliquely by minute vermicular sculpture, which is more nearly spiral about the middle of the shell and visible only under a lens; aperture narrow behind, wider and produced in front, the edge of the outer lip produced to form the apical carina, laterally straight and rounded to the pillar in front; umbilical region covered with a smooth layer of enamel, pillar concave, axis twisted; height of shell, 12.5; maximum diameter, 7; diameter at apex, 2 mm. U. S. Nat. Mus. Cat. No. 216405.

*Type-locality*.—Forrester Island, Alaska; George Willett.

**DIAPHANA BRUNNEA**, new species.

Shell small, reddish brown, thin, with a small subglobular nucleus and about three whorls, separated on the flattish summit by a rather deep suture; the last whorl rather large, swollen, widest in front; surface smooth; aperture not quite as long as the shell, narrow behind, expanded in front; outer lip thin, nearly straight, rounding into the pillar lip which is reflected over but does not close a narrow umbilical chink; inner lip thinly glazed, the axis not gyrate; height of shell, 5; diameter, 3.5 mm. U. S. Nat. Mus. Cat. No. 208718.

*Type-locality*.—Harbor of St. Paul, Kodiak, Alaska; in 15 to 20 fathoms, gravelly bottom. Collected by W. H. Dall.

**DIAPHANA CALIFORNICA**, new species.

Shell translucent and whitish, thin, the brown soft parts showing through, subcylindric, the nucleus minute, globular, with about three subsequent whorls; the spire blunt with the whorls rounded narrowly above a deep suture; surface smooth except for faint incremental lines, polished; aperture as long as the shell, posterior sulcus small, outer lip thin, sharp, straight, axis imperforate, pillar lip thin, body hardly glazed; height, 4.5; diameter, 2.5 mm. U. S. Nat. Mus. Cat. No. 130561.

*Type-locality*.—Long Beach, California; collected by Miss Shepard, now Mrs. Oldroyd.

*CYLICHNELLA (BULLINELLA) DIEGENSIS*, new species.

Shell small, thin, cylindrical, white, with a pale straw-colored periostracum with reddish brown spiral lines on the base and near the apex; whorls involved, the apex exhibiting a funicular depression ending in a minute perforation; the surface smooth and polished except for faint incremental lines; aperture very narrow, the outer lip thin, straight, recurving deeply around the apex, at the base receding and rounding into the simple, thickened pillar lip; body with a slight glaze; length of shell, 8; diameter, 3.5 mm. U. S. Nat. Mus. Cat. No. 209071.

*Type-locality*.—U. S. Fish Commission station 4359, off Point Loma, San Diego County, California, in 98 to 191 fathoms, muddy bottom.

*BULLARIA QUOYANA*, new name.

This is *Bulla quoyi* A. Adams, 1850, but not of Gray, 1843. The species ranges from Catalina Island, California, to Acapulco, Mexico.

*HAMINOEA OLGAE*, new species.

Shell large, thin, very light yellowish green or reddish brown, inflated, with the outer lip rising high above the sunken and impervious spire; the apical depression not carinate, the axis gyrate and widely pervious; outer lip arcuate, thin, sharp, rounding into the pillar below; axial sculpture confined to low narrow irregular wrinkles, stronger distally; spiral sculpture of minute, close-set, slightly wavy striae over the whole surface; the inner lip with a thin coating of whitish enamel; height of shell, 27; diameter, 16 mm. U. S. Nat. Mus. Cat. No. 216812.

*Type-locality*.—Sandspit, Peavine Pass, Olga, Washington, collected by C. C. Engberg. The species ranges to Lower California, at San Quentin Bay.

The nearest relative of this species is *H. vesicula* Gould, which is uniformly smaller, paler, with a shorter body and wider axial gyration.

*PHILINE BAKERI*, new species.

Shell minute, translucent, of two or more whorls, enfolded, except the subglobular nucleus by the last whorl; apex blunt; last whorl narrow, obliquely expanded in front; sculpture of numerous fine incised punctate spiral lines with wider interspaces; axis gyrate, pervious; aperture as long as the shell, narrow behind with a very slight sulcus, but widely expanded in front; outer lip thin, sharp, straight, inner lip hardly glazed; height, 2; diameter, 1.25 mm. U. S. Nat. Mus. Cat. No. 225194.



*Type-locality*.—Off the South Coronado Island in 3 to 6 fathoms; collected by Dr. Fred Baker.

PHILINE HEMPHILLI, new species.

Shell small, greenish-white, thin, of about three whorls, the last enveloping the others, the axis gyrate, widely pervious; apex depressed, not perforate, bluntly rounded; aperture as long as the shell; surface smooth, except for a few microscopic spirals near the summit and faint incremental lines; outer lip thin, a deep sulcus between it and the spire; the middle part of the lip much produced, the anterior part receding and curving roundly into the thin pillar lip, the body hardly glazed; height, 5; diameter, 3 mm. U. S. Nat. Mus. Cat. No. 211753.

*Type-locality*.—U. S. Fish Commission station 2936, off Cape San Quentin, Lower California, in 359 fathoms; bottom temperature, 49° F.

CRYPTOGEMMA EIDOLA, new species.

Shell small, white, covered with an olivaceous periostracum, and with four whorls exclusive of an apical whorl or two (which in the specimens is always eroded), suture distinct, the edge of the whorl in front of it slightly thickened; spiral sculpture on the upper whorls of a somewhat blunt peripheral keel, undulated more or less toward the apex and obsolete on the last whorl; other sculpture of minute, broken, irregular, more or less oblique, usually punctate impressed lines; aperture simple, the outer lip sharp, the body erased, white, the canal short, somewhat recurved; height of four whorls, 15; of last whorl, 10; diameter, 7 mm. U. S. Nat. Mus. Cat. No. 212336a.

*Type-locality*.—Off San Diego, California, in 822 fathoms, mud; U. S. Fish Commission.

CRYPTOGEMMA OREGONENSIS, new species.

Shell small, white, with a pale olivaceous periostracum, and more than four whorls, the apex always eroded, the suture distinct, the whorl in front of the suture as far as the shoulder flattish; shoulder of the whorl strongly marked, angular, coronated by the ends of (on the penultimate whorl about 25) straight, protractively oblique narrow ribs with subequal interspaces, becoming obsolete on the base of the last whorl; incremental lines more or less distinct but not regular; spiral sculpture of one or two feeble impressed lines on the whorl above the shoulder, and three or four widely spaced threads on the base, though the region of the canal is free from spiral sculpture; aperture narrow, anal sulcus wide and shallow, outer lip produced, thin, body and pillar erased, canal rather short, axis pervious; height of four whorls 11; of last whorl, 7; diameter, 5 mm. U. S. Nat. Mus. Cat. No. 214243.

*Type-locality*.—U. S. Fish Commission station 3346, off Tillamook Bay, Oregon, in 786 fathoms, ooze; bottom temperature, 37.3° F.

*BORSONELLA CIVITELLA*, new species.

Shell fusiform, elongate, acute, of a pale buff color, of eight or more whorls, the nucleus defective, the suture distinct, not appressed; axial sculpture of (on the penultimate whorl, 9) short prominent ribs conspicuous only on the periphery and obsolete on the later part of the last whorl, the incremental lines are also rather conspicuous; there is no spiral sculpture except a few faint lines on the anal fasciole which is adjacent to the suture; in addition to the above there are minute oblique striae often punctate, with wider interspaces which cross the incremental lines almost at right angles; these, hardly visible except under a lens, give the surface a vermiculate aspect; aperture rather narrow, the anal sulcus wide and shallow, the outer lip strongly protractively arcuate, thin, simple; inner lip with a thin wash of callus, pillar straight with a single plait, throat yellowish, canal wide, straight; height of shell, 19; of last whorl, 11.5; of aperture, 8; diameter, 6.5 mm. U. S. Nat. Mus. Cat. No. 209034.

*Type-locality*.—U. S. Fish Commission station 4310, off Point Loma, California, in 71 to 75 fathoms sandy mud.

The plait on the pillar is invisible from the aperture.

*LORA FIORA*, new species.

Shell small, grayish white, acute, with a small subglobular nucleus and six subsequent whorls moderately rounded and with a slight shoulder; suture distinct, not appressed; spiral sculpture of (on the penultimate whorl in front of the shoulder about 6) incised lines, with wider interspaces, overrunning the ribs; on the last whorl this sculpture extends to the canal; axial sculpture of (on the last whorl about 17) short rounded ribs extending from the shoulder, where they are most prominent, over the periphery and obsolete on the base; there are also fairly distinct incremental lines; aperture short, wide, with a feeble anal sulcus and hardly differentiated canal; outer lip thin, simple, inner lip erased; throat whitish; height of shell, 9.75; of last whorl, 6; of aperture, 4; diameter, 4 mm. U. S. Nat. Mus. Cat. No. 220399a.

*Type-locality*.—Adakh Island, Aleutians, in 15 fathoms, mud and sand; collected by W. H. Dall.

*LORA CASENTINA*, new species.

Shell small, white, with about five whorls, the nucleus decorated, the whorls with a subangular shoulder in front of the anal fasciole; axial sculpture of (on the penultimate whorl about 20)

low, thread-like ribs extending from the shoulder to the succeeding suture, but more or less obsolete on the last whorl; spiral sculpture of faint feeble striae on the fasciole, in front of the shoulder of numerous close-set flattish small threads, extending uniformly to the canal; anal sulcus shallow; outer lip slightly arcuate, inner lip erased; pillar short, straight; canal hardly differentiated; height of shell, 9; of last whorl, 7; diameter, 5 mm. U. S. Nat. Mus. Cat. No. 209257.

*Type-locality*.—U. S. Fish Commission station 4538, off Point Pinos Light, Monterey Bay, California, in 795 to 871 fathoms, sand.

LORA GALGANA, new species.

Shell white, under a yellowish periostracum, of six or more obtusely shouldered whorls, the apex decorticated, the suture appressed; axial sculpture on the earlier whorls of about 18 protractively oblique rounded ribs, slightly angulate at the shoulder, feeble on the fasciole and crossing the whorls except on the last whorl where they gradually become obsolete; the whole surface is spirally sculptured with fine close-set threads, here and there one a little more prominent than the rest, others near the canal coarser; anal sulcus wide and shallow; outer lip arcuate, inner lip erased; canal moderately long, slightly recurved; height of shell, 15; of last whorl, 11; diameter, 6 mm. U. S. Nat. Mus. Cat. No. 214173.

*Type-locality*.—U. S. Fish Commission station 3330, Bering Sea, north of Unalaska in 351 fathoms, sand.

LORA AMIATA, new species.

Shell elevated, rugose, white under a pale yellow periostracum, with six subtabulate whorls, the nucleus decorticated, suture obscure, closely appressed; spiral sculpture of an angle at the shoulder, between which and the suture are four or five close-set small equal threads; in front of the shoulder is a constriction beyond which are about a dozen deep grooves with wider rounded interspaces which are finely spirally striated; on the canal there are crowded small threads; axial sculpture of about 15 short ribs extending from the shoulder, which they nodulate, to the periphery only; aperture narrow with a shallow anal sulcus; outer lip thin, inner lip erased, canal straight and short; height of shell, 15; of last whorl, 10.5; of aperture, 8; diameter, 7 mm. U. S. Nat. Mus. Cat. No. 214219.

*Type-locality*.—Off Belkoffski, Alaska, in 15 to 75 fathoms, shelly bottom; collected by W. H. Dall.

LORA RASSINA, new species.

Shell small, white, with a small (decorticated) nuclear whorl and five subsequent slightly shouldered whorls; suture distinct, not

appressed; axial sculpture of (on the last whorl about 20) narrow rounded ribs extending from the suture over the periphery but more or less obsolete on the base; the interspaces wider; spiral sculpture of numerous close-set rounded threads over the whole surface but not nodulating the ribs; anal sulcus very shallow, outer lip thin, nearly straight, inner lip erased, canal very short, hardly differentiated from the aperture; height of shell, 10; of last whorl, 7; diameter, 5.5 mm. U. S. Nat. Mus. Cat. No. 214224.

*Type-locality*.—U. S. Fish Commission station 3305, in Bering Sea, southwest of Hagmeister Island in 23 fathoms, mud; bottom temperature, 41.8° F.

PHILBERTIA CAPANIOLA, new species.

Shell small, strongly sculptured, yellowish white, elevated, with about six whorls, including the smooth minute nucleus of about one whorl; suture distinct, rather deep, whorls well rounded; axial sculpture of (on the last whorl 11, omitting the final varix) narrow rounded ribs with a slight shoulder, extending to the canal, with wider interspaces, both crossed by the spirals but without nodulation; spiral sculpture of (on the spire in front of the shoulder about 4) well-defined cords with narrower interspaces, which become more or less obsolete on the last whorl; aperture narrow, the anal sulcus shallow, and producing no very marked fasciole; outer lip infolded, thick, with a varical swelling behind it, simple within; body erased, pillar short, straight; canal hardly differentiated; height of shell, 6.5; of last whorl, 4; of aperture, 3.5; diameter, 3 mm. U. S. Nat. Mus. Cat. No. 150992a.

*Type-locality*.—Near San Diego, southeast of Point Loma, in 12 to 15 fathoms; collected by Dr. Fred Baker.

MANGILIA (KURTZIELLA) ALESIDOTA, new species.

Shell small, yellowish, with on the last whorl a faint dark band in front of the suture and an obscure dark line at the periphery, with a dark flush on the canal; with six whorls, including a minute smooth nucleus followed by a minutely reticulated second whorl, and then by the adult sculpture; suture distinct, slightly appressed, the anal fasciole occupying the space between it and an angular shoulder; axial sculpture of (on the penultimate whorl, 15) narrow, sharp, arcuate ribs extending from the suture over the periphery, with wider interspaces; there are also minute incremental lines roughening the spirals; spiral sculpture of numerous minutely channeled grooves with wider flattish interspaces (the latter sometimes with a smaller median groove) covering the whole surface; aperture narrow, with a wide very shallow anal sulcus; outer lip thin, sharp, body erased, pillar straight, axis pervious, gyrate; canal hardly differentiated;

height of shell, 7.5; of last whorl, 5.2; of aperture, 3.5; diameter, 3 mm. U. S. Nat. Mus. Cat. No. 56913.

*Type-locality*.—Catalina Island, California; W. H. Dall.

MANGILIA (KURTZIELLA) TERSA, new species.

Shell small, thin, slender, acute, yellowish with a narrow peripheral brown band, which on the spire lies just behind the suture; with seven and a half whorls, including the polished nucleus, which begins with a small coil then becomes more inflated and finally presents a peripheral keel before the normal adult sculpture begins; axial sculpture of (on the last whorl about 13) narrow rounded ribs with much wider interspaces, extending over the base on the last whorl and most prominent at the periphery on the spire; there are also fine incremental lines which in unworn specimens make the sculpture minutely imbricated; suture distinct, appressed, and more or less undulated by the ribs; anal fasciole wide, constricted, forming a slight shoulder to the whorl in front of it; spiral sculpture of fine close scabrous revolving threads over the whole surface; aperture narrow, outer lip thin, simple, with a wide shallow anal sulcus, the body erased, the pillar straight, attenuated in front, canal short, hardly differentiated; height of shell, 11; of last whorl, 6.5; of aperture, 5; diameter, 3.5 mm. U. S. Nat. Mus. Cat. No. 133910.

*Type-locality*.—San Diego, California; Miss J. M. Cooke.

AGATHOTOMA POMARA, new species.

Shell small, fusiform, solid, with six moderately convex whorls, the nucleus small, subglobular, smooth (slightly decorticated); axial sculpture of (on the penultimate whorl 11, on the last whorl 9) prominent, slightly shouldered ribs with wider interspaces, the ribs undulating the appressed suture; spiral sculpture of close-set alternated threads over the whole surface except between the shoulder and the suture, which is arcuately striated by the incremental lines; aperture narrow, straight, the anal sulcus moderate, the outer lip thickened, simple, the inner lip with a wash of enamel; the canal hardly differentiated; height of shell, 7; of aperture, 4; diameter, 3 mm. U. S. Nat. Mus. Cat. No. 152746.

*Type-locality*.—San Pedro, California; H. Lowe.

The shell is discolored so the normal color can not be determined.

ZETEKIA CURTA, new species.

Shell, small, short, solid, inflated, of a brownish color, nucleus minute smooth, succeeded by about three subsequent strongly sculptured whorls; suture distinct; axial sculpture of (on the penultimate whorl about 15) narrow, sharp, similar riblets with wider interspaces, this sculpture extending over the base; spiral sculpture of (on the

last whorl about 16) even regular similar threads with subequal interspaces which pass over but do not nodulate the ribs; aperture narrow, outer lip thickened, crenulate by the sculpture, not reflected; anal sulcus shallow but conspicuous; pillar lip smooth, the pillar with a layer of enamel with a raised edge, canal short, deep, but hardly differentiated. Height 2.3; diameter 1.5 mm. U. S. Nat. Mus. Cat. No. 214266.

*Type-locality*.—Panama Bay in 29 fathoms, U. S. Bureau of Fisheries, Station 2799.

Genus CANCELLARIA Lamarck, 1799.

After a careful examination of the literature, including the arrangement by Dr. Jousseau, I have come to the conclusion that the Californian species of the genus *Cancellaria* in its wider sense can not properly be included in any of the groups into which it has been hitherto divided. I have therefore proposed<sup>1</sup> for them the subgeneric name of *Progabbia* in honor of William M. Gabb, an indefatigable worker in recent and fossil Conchology and one of the earliest paleontologists on the west coast. The type is *Cancellaria cooperi* Gabb, one of the finest and probably the largest species of *Cancellaria* living. The hirsute species like *C. crawfordiana* Dall may be regarded as forming a section *Crawfordina*.

ADMETE RHYSSA, new species.

Shell small, white, with an olivaceous periostracum, a loosely coiled (decorticated) nucleus, and about four subsequent whorls separated by a distinct suture; axial sculpture of (on the last whorl a dozen) rather narrow, nearly vertical ribs, which extend from suture to suture on the spire and from the suture to the margin of the base in the last whorl, with wider interspaces; incremental lines rather marked; spiral sculpture of (on the spire four, on the last whorl eight) prominent threads with wider interspaces, overriding the ribs and coming to a node when they intersect them; the base nearly smooth except for one or two minor threads near the canal; aperture semilunate, the outer lip thin, body with a thin layer of enamel; pillar with three oblique plaits, canal shallow, short, with a faint fasciole; height of shell, 7; of last whorl, 5; diameter, 4.5 mm. U. S. Nat. Mus. Cat. No. 211241.

*Type-locality*.—U. S. Bureau of Fisheries station 4343, off the South Coronado Island, in 155 fathoms, sandy bottom.

MARGINELLA ALBUMINOSA, new species.

Shell large, creamy white, thin for its size, brilliantly polished, with a translucent yellowish depressed nucleus of two whorls and

<sup>1</sup> Proc. Biol. Soc. Wash., vol. 31, p. 138, Nov. 29, 1918.

three subsequent whorls; spire low, covered with a thin coating of enamel which partly obscures the sutures; last whorl plump, with a tinge of yellow outside the varix and around the siphonal fasciole; outer lip with a narrow external thickening, internally quite smooth; inner lip with four prominent thin plaits with wider interspaces, counting the elevated edge of the pillar; height of shell, 27; of last whorl, 25; diameter, 17 mm. U. S. Nat. Mus. Cat. No. 101068.

*Type-locality*.—West Mexico, received from Prof. Alfred Dugès. This belongs to the group of *M. curia* Sowerby, but is a much thinner and more elegant shell.

MARGINELLA POLITULA (COOPER MS.), new species.

Shell minute, translucent white, of about two and a half whorls, the spire evident but covered with transparent enamel; it is widest posteriorly but does not attenuate rapidly enough to become pyriform; the aperture is nearly as long as the shell, the outer lip thickened, internally smooth, nearly straight; inner lip polished with three oblique plaits; height of shell, 3; maximum diameter, 1.5 mm, U. S. Nat. Mus. Cat. No. 23240.

*Type-locality*.—Catalina Island, California, in 30 fathoms, collected by J. G. Cooper.

The differences which separate these small Marginellidae are not great but appear to be constant enough to take specific rank. The present species has long been known among collectors by Doctor Cooper's manuscript name, but so far as I have discovered has never been described, although it was collected by Colonel Jewett in 1849.

MARGINELLA EREMUS, new species.

Shell small, white, smooth, solid, with about four whorls, the nucleus, as in most abyssal species of the genus, being subglobular and relatively large; suture appressed, rather obscure, general form of the shell not unlike that of *M. yucatecana* of the West Indies, but more slender and much smaller; outer lip thickened, especially near the posterior commissure, near which is a single denticle on the inner side of the lip; in front of this a few obscure low nodulations; inner lip with four subequal plaits, including that at the edge of the pillar; height of shell, 5; of last whorl, 4; diameter, 2.4 mm. U. S. Nat. Mus. Cat. No. 207622.

*Type-locality*.—Near the Galapagos Islands, at U. S. Fish Commission station 2808, in 634 fathoms, sand; bottom temperature 39.9° F.

MARGINELLA ANTICLEA, new species.

Shell minute, smooth, evenly spindle shaped, glistening milk white, with about four whorls, including a moderately large blunt nucleus; suture obscured by a thin coat of enamel; aperture narrow, outer lip

thin, with no internal denticulations; pillar with four plaits, including the thickened edge, the two posterior plaits larger than the others; general form not unlike that of *eremus*, but more slender; height of shell, 3.5; of last whorl, 2.8; diameter, 1.6 mm. U. S. Nat. Mus. Cat. No. 194986.

*Type-locality*.—U. S. Fish Commission station 2813, among the Galapagos Islands, in 40 fathoms, coral sand.

**HYALINA MYRMECCON, new species.**

Shell minute, white, smooth, polished, with about three whorls forming a blunt spire, widest near the posterior commissure of the aperture, attenuated in front, sides moderately convex; suture obscure; aperture narrow, outer lip straight, slightly thickened; body with a wash of enamel, pillar with three plaits; height, 3.3; maximum diameter, 1.6 mm. U. S. Nat. Mus. Cat. No. 9440.

*Type-locality*.—San Diego, California (Brannan), Stearns Collection.

**Genus BOREOMELON Dall, 1918.**

*Type*.—*Scaphella stearnsii* Dall, 1872.

The fortunate receipt of some ovicapsules of this species shows that the larval specimens have a smooth, shelly nucleus, so that it must be removed from the Caricellinae, to which it has hitherto been referred, and placed under *Fulgoraria* in the Volutinae. In the absence of the nuclear characters the writer formerly placed this species with *Adelomelon*, though with some doubts.

**Genus PHENACOPTYGMA Dall, 1918.**

Shell fusiform, with transverse and axial sculpture, elongated canal and apparently simple pillar; the axis in the upper whorls with two well-marked plications.

*Type*.—*Surculina coriezi* Dall, 1908.

This shell has the appearance of a Pleurotomoid, with the whorl constricted and appressed near the suture and a feeble incurvation of the margin of the lip at the constriction. By grinding away a portion of the apical whorls it was revealed that the axis is furnished with plications which extend to the beginning of the penultimate whorl. It is probably a member of the Volutidae, which family is known to include several genera in which the plaits become obsolete before reaching the aperture, or even, as in *Halia*, completely disappear.

**STRIGATELLA (ATRIMITRA) CATALINAE, new species.**

Shell solid, black, fusiform, with about seven whorls exclusive of the (lost) nucleus; suture depressed, not deep, the whorls only moderately convex and polished; axial sculpture of extremely fine hardly perceptible incremental lines; spiral sculpture of about four fine in-



conspicuous minutely punctate incised lines, only strong on the very early whorls, obsolete on the last whorl, with wide interspaces crossed by almost microscopic spiral striae; aperture narrow, the canal hardly differentiated, the enamel very dark, only the plaits whitish, the anterior plait feeble, only distinct in the completely adult shell, the other three conspicuous and strong. Height of shell, 29; of last whorl, 20; of aperture, 15; diameter, 11 mm. U. S. Nat. Mus. Cat. No. 219648.

*Type-locality*.—San Pedro, California, Mrs. Baldrige.

No special name having been applied to the group of black *Strigatellas* of the Pacific coast, although their similarities are so striking, I have proposed the designation *Atrimitra* (1918).

STRIGATELLA (ATRIMITRA) DIEGENSIS, new species.

Shell small, blackish brown, slender, with a whitish nucleus of about three whorls and four subsequent whorls; the initial part of the nucleus very small and forming a blunt apex, the whole nucleus smooth and changing suddenly to the normal sculpture; the latter begins with four rounded, somewhat undulated strong spiral cords with narrower interspaces; on the next whorl the cords have flattened out and the much narrower interspaces are channeled; on the subsequent whorls the cords become still flatter and wider and the interspaces narrow grooves, occasionally punctate from the intersection of incremental lines otherwise hardly visible; on the last whorl the grooves are obsolete on the middle of the whorl, but there are half a dozen feeble threads on the base and canal; the suture is closely appressed; aperture narrow, simple, outer lip hardly thickened, body erased, pillar with two prominent and one obscure plait; canal not differentiated; height of shell, 14; of last whorl, 11; of aperture, 8 mm.; diameter 5.5 mm. U. S. Nat. Mus. Cat. No. 252998.

*Type-locality*.—San Diego, California; White Collection.

STRIGATELLA (ATRIMITRA) MEXICANA, new species.

Shell large, solid, originally black, but the type-specimen is now decorticated and has lost its nucleus; spire acute, of more than seven moderately rounded whorls, the apex defective; spiral sculpture on the early whorls of half a dozen feeble flattish cords with narrower interspaces, stronger near the preceding suture, absent on the anterior part of the whorl; these continue but less obviously on the last whorl and similar but stronger cords appear on the base, the peripheral region remaining smooth; the canal hardly differentiated but slightly recurved, forming a well marked fasciole; pillar with three strong plaits about midway of the aperture; length of shell, 72; of last whorl, 48; of aperture, 35; maximum diameter, 24 mm. U. S. Nat. Mus. Cat. No. 274124.

*Type-locality*.—U. S. Fish Commission station 3011, off Guaymas, Mexico, in 71 fathoms, sand.

**VOLUTOPSIUS ROTUNDUS**, new species.

Shell large, slender, rather thin, with a distinct almost constricted suture and more than five rounded whorls (the extreme apex defective); white or pinkish with a thin deliscent pale straw-colored periostracum; axial sculpture on the apical whorls of a few, irregular, low plications, mostly with narrower interspaces; on the rest of the shell only irregular incremental rugosities; spiral sculpture on the last whorl behind the base, of half a dozen obscure low cords with wider interspaces; on the base these cords number about 15, becoming more regular and close anteriorly; the canal is still more finely and closely threaded; aperture elongate, outer lip thin, body and pillar erased; canal short and wide. Height of four whorls, 105; of last whorl, 75; diameter, 40 mm. U. S. Nat. Mus. Cat. No. 206350.

*Type-locality*.—Kodiak Island, Alaska; Fisher.

This is also rather common in Cook's Inlet, and may prove to be a *Beringius*.

**VOLUTOPSIUS FILOSUS**, new species.

Shell small, solid, fusiform, of a livid flesh color with grayish white outer coat and deliscent olivaceous periostracum and about six whorls, the nucleus decorticated; suture distinct, rather deep; sculpture of uniform fine flattish threads, close-set, about two to a millimeter, covering the whole surface, with axial sculpture of fine inconspicuous incremental lines; whorls evenly rounded but not inflated; aperture elongate, the outer lip thickened and slightly reflected; the body and rather straight pillar thickly enameled; canal short and wide, slightly recurved, with a feeble fasciole; the operculum is brown, narrow, parallel-sided, with the nucleus at the right-hand corner. Height of shell, 64; of last whorl, 52; diameter, 30 mm. U. S. Nat. Mus. Cat. No. 223055.

*Type-locality*.—U. S. Fish Commission station 3283, off the Khudubine Islands, Bering Sea, in 39 fathoms, sand; bottom temperature, 40.3° F.

**VOLUTOPSIUS MIDDENDORFFII**, new variety **EMPHATICUS**.

Shell smaller than the average typical *middendorffi*, with the fine spiral striae and threadlike incremental lines emphasized so as to form a fine cloth-like reticulation on the surface. A female specimen measures, height of shell, 92; of last whorl, 70; diameter, 50 mm. U. S. Nat. Mus. Cat. No. 205368.

*Type-locality*.—U. S. Bureau of Fisheries station 4982, in the Japan Sea, in 390 fathoms, mud; bottom temperature, 32.7° F.

## VOLUTOPSIS DIMINUTUS, new species.

Shell small for the genus, pale flesh color, with six whorls, of which about two (decorticated) belong to a swollen nucleus apically blunt; the spire is rather attenuated, the whorls moderately rounded, the suture narrow and deep; surface in front of the suture smooth halfway to the periphery on the last whorl then spirally sculptured with numerous shallow grooves, with much wider flat interspaces, the grooves almost punctuate by the incremental sculpture which also gives them a more or less minutely irregular course and transversely striates the interspatial surfaces; aperture lunate, the outer lip somewhat expanded and thickened, the body and pillar callous, the canal short and wide, a little recurved; height of shell, 42; of last whorl, 31; diameter, 21 mm. U. S. Nat. Mus. Cat. No. 206829a.

*Type-locality*.—U. S. Bureau of Fisheries station 4844, in the Japan Sea, in 116 fathoms.

## BERINGIUS CREBRICOSTATUS, new variety UNDATUS

Specimens (mostly young) differing from the typical form in having about 17 arcuate rounded ribs extending from the constricted suture to the periphery and obsolete on the base; there are also more numerous (about 18) spiral ridges, smaller and of course much closer together than in the case of the typical form. The apex of the largest specimen (about two-thirds grown) is defective, but there are five completed whorls, measuring 78 mm. long and with a diameter of 35 mm. U. S. Nat. Mus. Cat. No. 223031.

*Type-locality*.—U. S. Bureau of Fisheries station 4224, at Cygnet Inlet, Boca de Quadra, Alaska, in 160 fathoms, mud; bottom temperature, 43.7° F.

## BERINGIUS KENNICOTTII, new variety INCISUS.

Shell resembling the typical form but more slender and with the spiral sculpture very sharply emphasized, the striae becoming grooves and the base coarsely threaded. Height of immature shell, 75; of last whorl, 50; diameter, 35 mm. U. S. Nat. Mus. Cat. No. 110488.

*Type-locality*.—U. S. Bureau of Fisheries station 4779, on Petrel Bank, Bering Sea, in 54 fathoms, gravel.

In a large series of the typical *B. kennicottii* I find the axial ribs varying in number on the last whorl from 9 to 19; the specimens with the more numerous ribs and inflated whorls, being usually females who have to carry the material for the large ovicapsules.

## BERINGIUS MARSHALLI, new species.

Shell large and thin, livid flesh color, with a dehiscent, thin, pale brownish periostracum; suture distinct, constricted, the whorl slightly flattened in front of it; spire attenuate with seven whorls

exclusive of the (lost) nucleus, the apical whorls feebly irregularly axially plicate, the others with only rather conspicuous silky incremental lines; at the shoulder on the last whorl are developed low oblique, irregular ridges with wider interspaces; a few also appear near the periphery; on the base there are about eight low obscure ridges with wider interspaces; aperture ovate, pinkish brown within, outer lip thin, body and pillar with a thin layer of enamel, the pillar nearly straight, as is the wide short canal; the operculum large, black, with apical nucleus. Height of shell, 144; of last whorl, 100; diameter, 54 mm. U. S. Nat. Mus. Cat. No. 224077.

*Type-locality*.—U. S. Bureau of Fisheries station 3549, in Bering Sea, off Unalaska, in 78 fathoms, sand; bottom temperature, 40.1° F.

Named in honor of Mr. W. B. Marshall of the National Museum staff and well known as a student of fresh water mollusca.

BERINGIUS INDENTATUS, new species.

Shell large, short-spined, acute, solid, livid whitish, with a thin dehiscent pale brownish periostracum and six shouldered whorls exclusive of the (lost) nucleus: axial sculpture of (on the penultimate whorl, 14) rounded, arcuate ribs, with wider interspaces, most prominent at the shoulder but extending over the periphery almost to the canal, though somewhat irregularly disposed; other axial sculpture of rather conspicuous crowded incremental lines; spiral sculpture none, on and near the periphery of the last whorl are a few more or less obsolete irregularly divergent raised lines; aperture wide, white, throat pinkish, outer lip thin, expanded, body and pillar thickly enameled, pillar straight, canal short, shallow, wide, hardly recurved; operculum dark brown, chrysodomoid, the scar of attachment relatively small. Height of shell, 110; of last whorl, 78; diameter, 58 mm. U. S. Nat. Mus. Cat. No. 213315.

*Type-locality*.—U. S. Fish Commission station 3282, off the Khudubine Islands, Bering Sea, in 53 fathoms mud; bottom temperature, 38.2° F.

This belongs to the group of *B. kennicottii*.

ANCISTROLEPIS EUCOSMIUS, new variety BICINCTUS.

Shell resembling typical *eucosmius*, but with, on the spire, only two strong spiral ridges, equidistant from the sutures, and on the base three more adjacent, smaller, and diminishing in size and separation toward the canal. The surface is covered with a delicately reticulated, velvety periostracum of a pale olive color over white shelly matter. The operculum is normal. Height, 28; diameter, 17 mm., the apex slightly eroded. U. S. Nat. Mus. Cat. No. 122673.

*Type-locality*.—U. S. Fish Commission station 3337, southeast of Unalaska, Alaska, in 280 fathoms, mud.

## ANCISTROLEPIS CALIFORNICUS, new species.

Shell of moderate size, solid, white, with an olivaceous periostracum, with about seven whorls, excluding the (defective) nucleus, with the sutural channel almost obliterated; apical whorls with two, later whorls with three strong but not sharp carinae, revolving nearly equidistant between the sutures, the posterior carina slightly smaller than the others; on the base are about half a dozen similar carinae beside the small spiral threads on the canal; other spiral sculpture of minute striae and threads pretty uniform over the surface, with an occasional stronger intercalary thread; axial sculpture of faint irregular incremental lines on which the periostracum is sometimes raised; aperture white, internally reflecting the stronger sculpture; outer lip thin, not reflected, body erased, pillar short, strong, sharply twisted, with a short wide canal. Height of shell, 46; of last whorl, 33; diameter, 30 mm. U. S. Nat. Mus. Cat. No. 122667.

*Type-locality*.—U. S. Fish Commission station 2919, in 984 fathoms, mud, near the Cortez bank off the coast of southern California.

This is a larger and more conic shell than *A. eucosmius* and has fewer keels.

## ANCISTROLEPIS BERINGIANUS, new species.

Shell large, solid, livid whitish, with a long acute spire, the apex defective, but the shell had more than six whorls, separated by a very narrow deep suture and covered by a very thin pale olivaceous periostracum; whorls well rounded, with four or five nearly obsolete flattish spiral ridges between the base and the shoulder, with wider interspaces, the base delimited by a stronger cord, in front of which are eight or ten similar flattish spirals more closely set. There is also a very minute scratchy spiral striation; axial sculpture only of rather rude incremental lines; aperture short and wide, the outer lip thin, not expanded, the body erased, the pillar short, white, twisted, the axis not quite pervious, and with a feeble fasciole. Height of five whorls, 98; of last whorl, 66; of aperture and short wide canal, 51; diameter, 52 mm. U. S. Nat. Mus. Cat. No. 205401.

*Type-locality*.—U. S. Bureau of Fisheries station 4794, in western Bering Sea, off Starichkoff Island, in 58 fathoms, gravel.

## ANCISTROLEPIS TROCHOIDEUS Dall.

Shell small, short, wide, white, with about five whorls, the nucleus eroded, white, with a pale olive, minutely laminate periostracum; upper whorls with two later with four angular keels, with smaller intercalary cords, the base with seven strong rounded cords with equal interspaces; axial sculpture of fine incremental lines on which at regular intervals the periostracum is laminar; aperture wide,

white, the body and pillar with a thick coat of enamel, the pillar short, twisted, with a wide canal. Height, 30; height of last whorl, 24; diameter, 20 mm. U. S. Nat. Mus. Cat. No. 205098.

*Type-locality*.—Off Yokohama, Japan, in 600 fathoms.

This is *Chrysodomus trochoideus* Dall, 1907.

**PLICIFUSUS (RETIFUSUS) INCISUS, new species.**

Shell of moderate size, whitish, with a yellowish brown periostracum and about seven well-rounded rapidly increasing whorls, the nucleus eroded; suture distinct, deep; axial sculpture of numerous retractively arcuate small plications with subequal interspaces, extending from suture to suture, but becoming obsolete on the last part of the last whorl; the incremental lines evident but not conspicuous; spiral sculpture of (on the penultimate whorl about 8) flattish pairs of spirals divided by a shallow groove and the pairs separated by deeper, narrower, somewhat channeled grooves; between these and the preceding suture is a narrow band of closer threads; the former sculpture extends to the canal with much uniformity; aperture rather wide, the outer lip arcuate thin simple; the body with a thin layer of callus; the pillar straight; the canal short, wide, recurved; the operculum normal, with a glazed border on the inner side. Height of shell, 38; of last whorl, 26; of aperture, 19; diameter, 18 mm. U. S. Nat. Mus. Cat. No. 225614.

*Type-locality*.—U. S. Fish Commission station 3643, in the western Bering Sea, in 100 fathoms, sand; bottom temperature, 31.7° F.

**PLICIFUSUS (RETIFUSUS) OCEANODROMAE, new species.**

Shell of moderate size, bucciniform, acute, white, of about seven whorls, moderately rounded, the suture distinct, not appressed; axial sculpture of (on the last whorl about 22) narrow, rounded, retractively arcuate ribs, with subequal interspaces, extending from the suture to the base; the incremental lines not prominent; spiral sculpture of close-set flattish threads of somewhat irregular strength, often medially grooved, and having a tendency to associate in groups of two or three, these cover the whole surface; aperture buccinoid, retractively conspicuously waved near the suture, protractively arcuate beyond; throat white, body with a glaze, pillar slightly arcuate, canal wide, recurved; operculum with apical nucleus; height of shell, 34; of last whorl, 25; of aperture, 17; diameter, 16 mm. U. S. Nat. Mus. Cat. No. 205923.

*Type-locality*.—U. S. Fish Commission station 4777, on Petrel Bank, Bering Sea, in 52 fathoms, gravel.

**COLUS (LATIFUSUS) PHARCIDUS, new species.**

Shell of moderate size, white under an olivaceous periostracum, with six well-rounded whorls exclusive of the (lost) nucleus; suture dis-

tinct, deep; axial sculpture of faint incremental lines; spiral sculpture of a very few hardly visible lines in front of the suture on the upper whorls and near the canal; beside these there are irregular divergent raised lines on the periphery, such as have been noted in a number of species but which are doubtfully normal; aperture semilunate, outer lip thin, sharp, slightly arcuate, inner lip erased, pillar short, twisted, attenuate in front, axis pervious; canal wide, short, strongly recurved; height of shell, 30; of last whorl, 22; of aperture, 15; diameter, 15 mm. U. S. Nat. Mus. Cat. No. 205243.

*Type-locality*.—U. S. Bureau of Fisheries station 5015, in the Sea of Okhotsk, in 510 fathoms, green mud; bottom temperature, 35.9° F. The operculum is normal.

**COLUS (AULACOFUSUS) NOBILIS, new species.**

Shell large, regular, acute, whitish, with a warm yellow-brown persistent periostracum with eight whorls, exclusive of the very minute (lost) nucleus, separated by a very sharply defined suture, and elegantly rounded; spiral sculpture of (on the penultimate whorl about 15) flattened revolving close-set cords either in pairs or medially grooved for the most part, practically uniform over the whole shell; axial sculpture only of fine silky incremental lines; aperture rather wide, the outer lip expanded, thin, more or less crenulated internally by the effect of the external sculpture; body and pillar with a thick, continuous coat of enamel; canal distinct, short, slightly recurved; operculum solid, blackish, with apical nucleus. Height of shell, 85; of last whorl, 55; of aperture, 43; diameter, 38 mm. U. S. Nat. Mus. Cat. No. 222983.

*Type-locality*.—U. S. Fish Commission station 3484, in Bering Sea, near the Pribilof Islands, in 60 fathoms, mud; bottom temperature, 37.4° F.

**COLUS (AULACOFUSUS) OMBRONIUS, new species.**

Shell of moderate size, white with a dull olive gray periostracum, of more than six well-rounded whorls, the nucleus missing, the aperture longer than the spire; suture distinct; not appressed; axial sculpture of rather strong, regular and regularly spaced incremental lines which minutely corrugate the spirals; spiral sculpture of (on the penultimate whorl about a dozen) flattish cords, equal and equally spaced with much narrower interspaces; on the last whorl, especially near the periphery, these cords have a tendency to become keeled and the interspaces wider; aperture ovate, simple, the outer lip slightly expanded and reflecting the external sculpture, throat white, inner lip enameled, pillar twisted, almost pervious; canal two-thirds as long as the rest of the aperture, well recurved, height of shell, 50; of last whorl, 37; of aperture, 30; diameter, 21 mm. U. S. Nat. Mus. Cat. No. 213239.

*Type-locality*.—U. S. Fish Commission station 3252, in Bering Sea, between Bristol Bay and the Pribilof Islands, in about 30 fathoms, mud; bottom temperature, 44.8° F.

COLUS (AULACOFUSUS) ADONIS, new species.

Shell small, bulimiform, thin, whitish with a pale olive periostracum, with about six whorls exclusive of the (lost) nucleus, with a very narrowly channeled suture and moderately rounded whorls; spiral sculpture of narrow equal flat threads (about three to a millimeter) with very narrow interspaces over the whole shell, though the interspaces are a little wider on the apical whorls and the spirals under-run there by thread-like axial sculpture, giving a somewhat punctate appearance under magnification; aperture elongate, rather narrow, the outer lip thickened, not reflected, with traces of liration near the inside margin; the body and pillar with a continuous layer of enamel; canal short, wide, with no siphonal fasciole. Height of shell, 37; of last whorl, 25; diameter, 15 mm. U. S. Nat. Mus. Cat. No. 205212.

*Type-locality*.—U. S. Bureau of Fisheries' station 5053, in Suruga Gulf, Japan, in 503 fathoms, mud; bottom temperature, 34.9° F.

The operculum is Chrysodomoid, but the liration is almost unique in the group and derives from the external sculpture.

COLUS (AULACOFUSUS) BEISTOLENSIS, new species.

Shell small, white under an olivaceous periostracum, with six rounded whorls and a very minute (decorticated) nucleus; suture distinct, not appressed; spiral sculpture of (on the penultimate whorl about 14) shallow grooves, becoming fainter on the last whorl, with much wider flat interspaces; axial sculpture of faint incremental lines; aperture wide, semilunate, the outer lip sharp, thin, arcuate; body with a thin coat of whitish enamel; pillar short, twisted, attenuated in front; canal short, wide, recurved; height of shell, 23.5; of last whorl, 18; of aperture, 13; diameter, 11.5 mm. U. S. Nat. Mus. Cat. No. 213254.

*Type-locality*.—U. S. Fish Commission station 3252, in Bering Sea, between Bristol Bay and the Pribiloff Islands, in 29½ fathoms, mud; bottom temperature, 44.8° F.

COLUS (AULACOFUSUS) BARBARINUS, new species.

Shell small, solid, pale gray, of about six whorls, the nucleus compressed axially and rather acute, suture distinct, not appressed, whorls conspicuously rounded: there is no axial sculpture except faint incremental lines, the apical whorls are decorticated; spiral sculpture of incised lines with slightly rounded wider interspaces, about a dozen on the penultimate whorl, quite uniform over the whole of the last



whorl; aperture ovate, outer lip thin, sharp; inner lip erased, white; pillar short, twisted; canal short, rather wide, somewhat recurved. Height of shell, 20; of last whorl, 14; of aperture, 10; diameter, 9 mm. U. S. Nat. Mus. Cat. No. 334438.

*Type-locality*.—U. S. Fish Commission station 3282, off Khudubine Island, Bering Sea, in 53 fathoms; bottom temperature, 38.2° F.

The operculum is normal and rather large for the size of the shell.

COLUS (AULACOFUSUS) SAPIUS, new species.

Shell small, thin, the apical whorls eroded, but six prominently rounded turns remain; suture distinct, not appressed, the whorl in front of it flattened and without spiral sculpture for a short distance; the shell is white with a straw-colored periostracum; axial sculpture of faint incremental lines; spiral sculpture of (on the penultimate whorl about eight) strong squarish cords with subequal rather deep, channeled interspaces, both slightly wrinkled by the incremental lines and obsolete on the canal; there are a few minor spirals behind the posterior cord; aperture roundly ovate, outer lip thin, simple, inner lip erased, pillar white, twisted, axis pervious; canal rather long, narrow, well defined, somewhat recurved; height of shell, 22; of last whorl, 15; diameter, 11 mm. U. S. Nat. Mus. Cat. No. 122597.

*Type-locality*.—U. S. Fish Commission station 2859, southwest of Sitka, Alaska, in 1,569 fathoms, ooze.

COLUS (AULACOFUSUS) CALATHIUS, new species.

Shell small, thin, white under a straw-colored periostracum, with more than six well-rounded whorls, the apex defective; suture distinct, not appressed; axial sculpture of faint incremental lines; spiral sculpture of (on the penultimate whorl 13) fine rounded low subequal cords with narrower interspaces, the cords at and below the periphery a little more close-set, this sculpture covering the whole shell very evenly; aperture wide, the outer lip thickened and slightly crenulated by the external sculpture, body erased; pillar short, attenuated in front; canal short, wide, slightly recurved; height of shell, 26; of last whorl, 18; of aperture, 12; diameter, 13 mm. U. S. Nat. Mus. Cat. No. 106864.

*Type-locality*.—U. S. Fish Commission station 2853, near the Shumagin Islands, Alaska, in 159 fathoms, sand.

COLUS (AULACOFUSUS) CAPPONIUS, new species.

Shell of moderate size, the spire longer than the aperture, white, with a thin polished, olivaceous periostracum, and more than five whorls (the apex defective); whorls moderately rounded, suture distinct, deep; axial sculpture of fine silky incremental lines, sometimes with a tendency to cause wrinkles near the suture; spiral sculpture

of (on the penultimate whorl about 17) regular narrow rather deep grooves with much wider flattish interspaces, uniformly covering the whole surface of the shell; aperture about twice as long as wide, outer lip retractively arcuate behind and protractively anteriorly, not reflected; pillar lip with a thin glaze, pillar white; canal short, wide, hardly reflected; height of shell, 40; of last whorl, 27; of aperture, 18; diameter, 18 mm. U. S. Nat. Mus. Cat. No. 108980.

*Type-locality*.—Bering Strait, near Port Clarence, W. H. Dall.

**COLUS (AULACOFUSUS) HALIDONUS, new species.**

Shell of moderate size, short, stout, white with an olivaceous periostracum, with about six whorls, the apex defective, suture distinct, not appressed; axial sculpture of fine, equal, close-set incremental lines; spiral sculpture of (on the penultimate whorl about 16) fine channeled grooves with wider flat interspaces, of which two behind the suture are wider than the others; on the base the posterior edge of these interspaces is raised and the anterior lowered to the level of the bottom of the grooves giving the effect of narrow threads with much wider intervals; these two varieties of sculpture cover the whole shell; aperture wide, the outer lip somewhat reflected, body erased, pillar short, gyrate, axis pervious; canal short, very wide, recurved and flaring anteriorly; operculum normal; height of shell, 35; of last whorl, 27; of aperture, 20; diameter, 20 mm. U. S. Nat. Mus. Cat. No. 213250.

*Type-locality*.—Off Destruction Island, Washington, in 516 fathoms.

**AULACOFUSUS (LIMATOFUSUS) PULCIUS, new species.**

Shell of moderate size, of about six rounded whorls, the apex eroded, shell substance of a pale livid brown, covered by an olivaceous periostracum, the suture distinct and deep; axial sculpture of uniform fine silky incremental lines; spiral sculpture of uniform flattened spirals separated by narrow grooves, about 27 to 30 spirals on the penultimate whorl; aperture ovate, outer lip thin (immature?) slightly crenulated by the external sculpture, inner lip erased, brownish, pillar white, straight; canal short, wide, deep, forming a well marked fasciole; height of shell, 38; of last whorl, 26; of aperture, 18; diameter, 17 mm. U. S. Nat. Mus. Cat. No. 223799.

*Type-locality*.—Arctic Ocean, north of Bering Strait, collected by Capt. M. A. Healy of the revenue marine steamer *Corwin*.

Operculum normal, dark brown.

**AULACOFUSUS (LIMATOFUSUS) TIMETUS, new species.**

Shell small, thin, with a thin pale olive periostracum, and five or more whorls, the apex eroded; suture distinct, not appressed; axial sculpture none; spiral sculpture of (on the penultimate whorl about

33) fine regular sharp striae with wider flat interspaces, for the most part uniform, but near the periphery tending to be wider, this sculpture covering the whole surface; aperture wide, semilunate, outer lip gently arcuate, thin, inner lip erased, white, pillar straight, attenuated in front, canal wide, deep, very short, with a well-marked siphonal fasciole; height of shell, 30; of last whorl, 22; of aperture, 15; diameter, 16 mm. U. S. Nat. Mus. Cat. No. 213337.

*Type-locality*.—U. S. Fish Commission station 3333, off Iliuliuk Harbor, Captains Bay, Unalaska, Aleutian Islands, in 19 fathoms, mud; bottom temperature 43.9° F.

**AULACOFUSUS (LIMATOFUSUS) TROPHIUS, new species.**

Shell of moderate size, short, white, with a pale olivaceous periostracum with more than five well-rounded whorls, the apex eroded; suture distinct, not appressed; axial sculpture of faint concavely arcuate incremental lines; spiral sculpture of (on the penultimate whorl about a dozen) sharp narrow channeled grooves, with considerably wider flat interspaces, which, on the last whorl, are more or less divided by a shallow median groove; this sculpture is practically uniform over the whole surface; aperture wide, simple, white within; outer lip slightly reflected, thin, body erased; pillar short, straight; axis pervious; height of shell, 32; of last whorl, 26; of aperture, 21; diameter, 19 mm. U. S. Nat. Mus. Cat. No. 122628.

*Type-locality*.—U. S. Fish Commission station 3071, in 685 fathoms, mud, off Sea Lion Rock, coast of Washington.

**AULACOFUSUS (LIMATOFUSUS) MORDITUS, new species.**

Shell small, solid, polished, of about seven whorls, the apex decorticated, rather acute, the whorls moderately rounded, the suture distinct, not appressed; axial sculpture of feeble incremental lines, their intersections slightly punctating the grooves; spiral sculpture of numerous shallow grooves with much wider flattish interspaces over the whole surface; outer lip thin, sharp, arcuate; inner lip erased, pinkish, pillar white, attenuated in front; canal wide, distinct, short, slightly recurved; height of shell, 28; of last whorl, 20; of aperture, 15; diameter 13 mm. U. S. Nat. Mus. Cat. No. 222599.

*Type-locality*.—U. S. Fish Commission station 4198, in the Gulf of Georgia, in 200 fathoms, mud; bottom temperature, 48.6° F.

There are numerous irregular branching grooves on the surface, like the burrows of *Cliona*, but I regard them as abnormal and probably due to some parasite. The operculum is normal.

**AULACOFUSUS (LIMATOFUSUS) DIMIDIATUS, new species.**

Shell small, white, with a pale olivaceous periostracum, with five or more rounded whorls (the apex defective and the specimens not quite mature) separated by a rather deep suture; spiral sculpture

peculiar, consisting of numerous crenulated grooves with much wider slightly concave interspaces disposed without regularity but on the last whorl numbering over 30, the interspaces widest near the periphery; the crenulation of the grooves is probably due to incremental lines not elsewhere especially noticeable; aperture elongate, outer lip (immature) thin, sharp; body and pillar erased; canal rather long and recurved; axis pervious; operculum thin, the nucleus apical, somewhat curved to the left; height of shell, 16; of last whorl, 12; diameter, 8 mm. U. S. Nat. Mus. Cat. No. 213338.

*Type-locality*.—U. S. Fish Commission station 3346, off Tillamook Bay, Oregon, in 786 fathoms, ooze; bottom temperature, 37.3° F.

The sculpture is different from that of any other of the group I have been able to examine.

**AULACOFUSUS (LIMATOFUSUS) SEVERINUS, new species.**

Shell small, white, covered with a straw-colored periostracum, with about six rounded whorls, the apex eroded, the suture distinct, not appressed; axial sculpture of obscure incremental lines; spiral sculpture of slightly irregular flattish cords separated by narrower channeled grooves; on the penultimate whorl there are 15 to 17 of these cords; beside these the surface is profusely scored with incised, more or less oblique, sometimes divaricate grooves, which I take to be abnormal; aperture wide, outer lip convexly arcuate, slightly expanded and thickened; inner lip with a layer of white enamel, pillar short; canal very short, wide, deep, recurved; operculum normal, dark brown; height of shell, 33; of last whorl, 25; of aperture, 17; diameter, 18 mm. U. S. Nat. Mus. Cat. No. 225225.

*Type-locality*.—U. S. Fish Commission station 3669, Bay of Monterey, California, in 278 fathoms, sand; bottom temperature, 42.7° F.

**AULACOFUSUS (LIMATOFUSUS) HALIMERIS, new species.**

Shell small, whitish with a yellow-brown periostracum and five whorls, including a swollen subglobular nucleus, spire otherwise rather acute, the whorls moderately rounded; suture distinct, not appressed; spiral sculpture of numerous fine shallow squarish grooves, separated by wider flattish interspaces, these covering the whole surface; axial sculpture of faint incremental lines; aperture ovate, outer lip thin, simple, body erased, pillar short and twisted; canal short, wide, recurved; height of shell, 21; of last whorl, 15; of aperture, 11; diameter, 10 mm. U. S. Nat. Mus. Cat. No. 207192.

*Type-locality*.—U. S. Fish Commission station 4248, in Eastern Passage, near the Stikine River, southeastern Alaska, in about 70 fathoms, mud; bottom temperature, 42.8° F.

The specimen may not be completely adult.

## AULACOFUSUS (LIMATOFUSUS) TROMBINUS, new species.

Shell small, short, rotund, with about five whorls, the apex eroded, white with a pale olivaceous dull periostracum; suture distinct, not appressed; axial sculpture of fine, regular, almost microscopic, incremental lines crossing the outer sculpture but hardly visible except with a lens; spiral sculpture of (on the penultimate whorl about 10, on the last whorl about 25) narrow, almost channeled grooves, with slightly rounded broader interspaces, sometimes divided by a smaller groove, and feebler near the suture and on the canal; outer lip thin, sharp, arcuate; inner lip erased, pillar white, short, twisted; canal short, wide, distinctly recurved; operculum normal, rather short and wide, in harmony with the aperture; height of shell 16; of last whorl, 14; of aperture, 11; diameter, 10 mm. U. S. Nat. Mus. Cat. No. 213332.

*Type-locality*.—U. S. Fish Commission station 3253, in Bering Sea, off the Pribiloff Islands in 36 fathoms; bottom temperature, 35° F.

## COLUS (LATISIPHO) ERRONES, new species.

Shell of moderate size, dark reddish brown, acute, with six rapidly increasing moderately convex whorls and a glassy subglobular smooth nucleus of about one whorl; suture distinct, not appressed; periostracum polished; axial sculpture of faint incremental lines; spiral sculpture of the early whorls of numerous fine striae, covering the whole surface with wider flat interspaces; this sculpture continues, becoming less and less evident until except under a lens the surface appears to be smooth except on the canal; aperture semilunate, outer lip thin, simple, sigmoidly arcuate; throat whitish, body with a thin callus, pillar straight, attenuated in front; canal short, wide, strongly recurved; height of shell, 47; of last whorl, 32; of aperture, 23; diameter, 22 mm. U. S. Nat. Mus. Cat. No. 226227.

*Type-locality*.—Bering Sea, U. S. Fish Commission.

## COLUS (LATISIPHO) CLEMENTINUS, new species.

Shell small, white, with a greenish olive periostracum, and more than five rounded whorls, the apex decorticated; suture distinct, not appressed; axial sculpture of irregularly prominent incremental lines; spiral sculpture of a few irregular interrupted spiral threads, probably accidental, and some feeble grooves near the canal; surface practically smooth, almost polished; aperture semilunate, the outer lip thin, arcuate, body with a coat of white enamel, the pillar white, short, twisted, attenuate in front; canal wide, short, slightly recurved; height of shell, 21; of last whorl, 15; of aperture, 11; diameter, 10 mm. U. S. Cat. Mus. Cat. No. 208912.

*Type-locality*.—U. S. Fish Commission station 4405, between Santa Catalina and San Clemente Islands, California, in 654 to 704 fathoms, mud; bottom temperature, 39.4° F.

COLUS (LATISIPHIO) DALMASIUS, new species.

Shell of moderate size, acute, white, covered with a dark reddish brown periostracum with a subglobular polished nucleus of about one whorl and six subsequent well-rounded, rapidly enlarging whorls; suture distinct, not appressed; axial sculpture of feeble incremental lines; spiral sculpture of numerous flattened threads with narrow obscurely channeled interspaces, coarser on the canal; aperture wide, outer lip thickened, arcuate, slightly expanded; body with a thin white layer of callus, pillar short, twisted; canal wide, short, strongly recurved; height of shell, 35; of last whorl, 25; of aperture, 18; diameter, 20 mm. U. S. Nat. Mus. Cat. No. 122631.

*Type-locality*.—U. S. Fish Commission station 2862, off the coast of British Columbia, in 238 fathoms, sandy bottom.

This is a dwarfish imitation of *L. erroneus*.

CHRYSODOMUS SMIRNIUS, new species.

Shell of moderate size, acute, livid purple-brown, with a semitranslucent whitish overlayer, and a thin dehiscent olivaceous periostracum; nucleus small, irregularly swollen, of about one whorl, with about five subsequent whorls; the earlier two or three whorls have four or five low, wide, flat spiral cords with obscurely channeled interspaces, these rapidly become obsolete and the last whorl appears quite smooth except for fine silky incremental lines; suture distinct, somewhat appressed; aperture wide, ovate, angular behind, the outer lip expanded, white, the throat dark brown, the body with a thin glaze which extends to the pillar, which is twisted and attenuated; the canal short, wide, somewhat recurved; operculum normal. Height of shell, 50; of last whorl, 39; of aperture, 30; maximum diameter, 26 mm. U. S. Nat. Mus. Cat. No. 130418.

*Type-locality*.—U. S. Fish Commission station 3461, in the Straits of Fuca, in 114 fathoms, sand, bottom temperature 44.2° F. The species ranges northward to Bering Sea. The type-specimen is a female.

CHRYSODOMUS NUCEUS, new species.

Shell small for the genus, solid, yellowish, rather acute, with six whorls exclusive of the (lost) nucleus, suture distinct, narrow, deep; spiral whorls flattish behind the periphery at which there is an obscure angle; in front of this are a few obscure spirals, indicated by color rather than elevation in the type-specimen; incremental lines inconspicuous, rather rude; aperture white, outer lip sharp, slightly expanded; body and pillar with a thick white enamel; canal short,

recurved, with a strong fasciole. Height of shell, 62; of last whorl, 50; diameter, 35 mm. U. S. Nat. Mus. Cat. No. 151429.

*Type-locality*.—Cook's Inlet, Alaska; Arnheim.

This species ranges to the Arctic Ocean.

CHRYSODOMUS PRIBILOFFENSIS, new species.

Female shell, rather thin, inflated, short spired, with about six whorls exclusive of the (lost) nucleus; the suture distinct with a flattish or slightly excavated space on the whorl in front of it, beyond which the whorl is evenly rounded; the color is a warm buff, increasing to orange on the enamel of the pillar; axial sculpture of fairly obvious, fine, incremental lines; spiral sculpture of a strong cord at the shoulder, 2 on the apical whorls, 3 on the penultimate whorl, 8 or 10 on the last whorl, of which that at the shoulder is the strongest; between these cords are three to five flattish, less elevated close-set threads, except on the canal, where the spirals are wider, flatter, and more or less obsolete; aperture broad, outer lip thin, sharp, body and pillar with a layer of enamel, the pillar short, strongly twisted; the canal rather wide with no marked fasciole; the operculum black, rather wide, ovate with apical nucleus bent to the left. Height of shell, 94; of last whorl, 77; diameter, 60 mm. U. S. Nat. Mus. Cat. No. 225603.

*Type-locality*.—Off the Pribilof Islands, Bering Sea, in 50 to 100 fathoms.

CHRYSODOMUS VINOSUS, new species.

Shell thin, with acute spire, of a pinkish flesh color intensified to vinose near the apex, the nucleus bulbous, swollen, of one whorl, with five subsequent rapidly increasing whorls; suture distinct, deep, very narrow, the whorl in front of it flattish or slightly concave to a prominent darker stronger cord at the shoulder, which on the apical whorls is peripheral; the suture is laid against a weaker cord, the remainder of the surface, obsoletely minutely spirally striated; axial sculpture of rather regular silky incremental lines; aperture wide, the outer lip sharp, body and pillar with a thin layer of enamel; the pillar twisted, the axis pervious, the canal wide and strongly recurved, but showing no fasciole. Operculum black with apical nucleus. Height of shell, 90; of last whorl, 70; diameter, 49 mm. U. S. Nat. Mus. Cat. No. 225608.

*Type-locality*.—Western Bering Sea and Avacha Bay, Kamchatka, in 16 fathoms.

CHRYSODOMUS SATURUS Martyn, new variety TABULARIS.

Shell of moderate size, very heavy and solid, the six whorls flatly tabulate in front of the suture, rude, of a grayish color, the nucleus lost; the suture distinct, not appressed; the apical whorls finely

spirally closely threaded, but the rest of the shell without sculpture except rude incremental lines; aperture rounded, outer lip heavy, body and very short pillar with a thick coat of enamel; canal short, very narrow and deep, recurved, with wide umbilical cavity between a very prominent fasciole and the enamel of the pillar. Height of shell, 62; of last whorl, 50; diameter, 44 mm. U. S. Nat. Mus. Cat. No. 31350.

*Type-locality*.—Bering Sea, near Nunivak Island.

All the specimens seen of this singular variety are much worn and mostly somewhat imperfect, so that the complete lengths would probably be greater than those given.

CHRYSODOMUS HYPOLISPUS, new species.

Shell small, yellowish under an olivaceous periostracum, with about five whorls, including a swollen subglobular nucleus wider than the succeeding whorl; suture distinct, not appressed; whorls rapidly enlarging; axial sculpture only of faint incremental lines; spiral sculpture of, on the spire, faint irregular low threads, finer in a band near the preceding suture; on the last whorl these become more evident, though not strong, and extend to the canal; the interspaces are shallow narrow grooves; aperture rather wide, the outer lip thin, sharp; the body erased, the pillar short, twisted; the canal short, wide, recurved. Height of shell, 43; of last whorl, 32; of aperture, 24; diameter, 22 mm. U. S. Nat. Mus. Cat. No. 205246.

*Type-locality*.—U. S. Bureau of Fisheries station 4991, in the Japan Sea, in 325 fathoms, mud.

The operculum is normal. It is probable that the specimen is not full grown.

BUCCINUM TENNE Gray, 1849.

From the original type of Gray, as determined by Stimpson, various derivatives may apparently be traced, most of which have secured specific rank, while other still exhibit connecting links. Among the latter is a large rude form with much emphasized more or less broken irregular ribs (Cat. No. 224069) and a conspicuous reddish brown periostracum, with more than seven whorls, a deep suture, and cream-colored enamel. The type-specimen measures 89 mm. in length with a diameter of 40 mm. For this form the varietal name of *rhodium* is now proposed. Another form from the eastern coast of Kamchatka in 100 fathoms (Cat. No. 225611) has a strongly constricted suture and about six rotund whorls, with the axial sculpture largely obsolete and the periostracum a very dark olive; this is 52 mm. long and 32 mm. in diameter. In its other characters it agrees with the normal type of the species. I propose for this variety the name of *lyperum*.



## BUCCINUM SOLENUM, new species.

Shell of moderate size, acute, white under a dehiscant straw-colored periostracum, with a strongly constricted suture and about six slightly shouldered somewhat rotund whorls, exclusive of the (lost) nucleus; the whorls of the spire are numerous ribbed (about 20 on the penultimate whorl), with slightly oblique riblets most emphatic on the shoulder, obsolete at the periphery and on the last whorl; the incremental lines are prominent, close, and threadlike; spiral sculpture of very minute, closely undulated, close-set striae, which gave a somewhat granular or punctuate aspect to the intervals between the axial threads; on the periphery of the last whorl are a few obsolete, stronger spirals; aperture wide with a conspicuous gutter somewhat in front of the shoulder in the outer lip; a glaze of enamel on the body and pillar, a short shallow recurved canal, and a well-marked siphonal fasciole; the operculum nearly circular, laminose externally, with central nucleus. Height of shell, 47; of last whorl, 34; diameter, 30 mm. U. S. Nat. Mus. Cat. No. 222485.

*Type-locality*.—U. S. Fish Commission station 3518, off Nunivak Island, Bering Sea, in 36 fathoms, mud; bottom temperature, 40° F. Also off Unimak Island in 46 fathoms.

This is nearest to some mutations of *B. polare* Gray, 1839.

## BUCCINUM CHARTIUM, new species.

Shell of medium size, white, with a very pale olive-gray, thin, dehiscant periostracum, with about eight gradually increasing whorls (the nucleus defective) separated by a well-marked suture: spiral sculpture of three rather prominent subequal cords, one at the shoulder, one at the periphery, and one midway between the others, the interspaces equal, wider and carrying two or three intercalary alternating threads; on the last whorl in the type-specimen, in front of the periphery, are about 20 subequal and equally spaced flattish threads with narrower very shallow interspaces; the canal has no spiral sculpture; axial sculpture of fine vertical threads with wider interspaces; aperture more or less sinuous behind, slightly reflected; body white, erased, pillar nearly straight; canal short, wide, recurved with a feeble fasciole; operculum small, smooth, concave, with the nucleus somewhat to the left of the center. Height of shell, 60; of last whorl, 32; diameter, 44 mm. U. S. Nat. Mus. Cat. No. 226270.

*Type-locality*.—U. S. Bureau of Fisheries station 3709, off Honshu Island, Japan Sea, in 260 fathoms, muddy bottom.

The specimen is a female.

## BUCCINUM PEMPHIGUS, new variety MAJOR.

Male shell, large, thin, inflated, white with an adherent olivaceous periostracum, with seven whorls exclusive of the minute (eroded)

nucleus; suture distinct, spiral sculpture of a low narrow keel at the shoulder and numerous flattish, close-set, usually paired or duplex threads, uniformly covering the whole surface; incremental lines inconspicuous; aperture wide, white, the outer lip thin, narrowly reflected; body and pillar with a glaze of enamel; pillar short, straight; canal wide, short, somewhat recurved, with a moderate fasciole; operculum large, rounded triangular with subcentral nucleus. Height of shell, 86; of last whorl, 64; of aperture, 50; diameter, 55 mm. U. S. Nat. Mus. Cat. No. 225248.

*Type-locality*.—U. S. Fish Commission station 3643, in the western part of Bering Sea, in 100 fathoms, gravel; bottom temperature, 31.7° F.

Some of the specimens are destitute of the keel at the shoulder.

BUCCINUM PLANETICUM, new species.

Female shell of moderate size, acute, with a distinct not constricted suture and seven rounded whorls exclusive of the (lost) nucleus; shell of a warm buff color, the thin periostracum dehiscent; axial sculpture of, on the upper whorls, about a dozen low obscure ribs only apparent behind the periphery and absent on the last whorl; the lines of growth are hardly perceptible; spiral sculpture of very fine close threads, raised slightly into fasciculate bands of five or six threads, the interspaces more distinctly defined on the base than behind the periphery; this sculpture covers the whole shell; the aperture wide, the margin in the type-specimen deeply sulcate behind, hardly reflected, patulous in front; body erased, pillar nearly straight; canal very short, wide, sharply recurved, with a feeble fasciole; height of shell 65; of last whorl, 45; diameter, 35 mm. U. S. Nat. Mus. Cat. No. 223098.

*Type-locality*.—U. S. Fish Commission station 3305, southwest of Hagmeister Island, eastern Bering Sea, in 23 fathoms, sand; bottom temperature, 41.8° F.

This species seems common to the eastern littorale of Bering Sea, from Nunivak Island to Bristol Bay, and recalls *B. tenebrosum* Hancock.

BUCCINUM RONDINUM new species.

Shell small, pale straw color, thin, with about five well-rounded whorls, the nucleus eroded; suture distinct, not appressed; axial sculpture of fine close minute incremental lines on which the periostracum rises in minute, equal lamellae; spiral sculpture of low minute equal threads with equal or wider interspaces, over the whole surface; aperture with outer lip simple, arcuate, with the extreme margin slightly expanded; inner lip white, erased; pillar short, thin, twisted; canal wide, deeply excavated, hardly differentiated; height of shell, 20; of last whorl, 16; of aperture, 11; diameter, 11 mm. U. S. Nat. Mus. Cat. No. 110534a.

*Type-locality*.—U. S. Fish Commission station 2853, off Alaska Peninsula in 159 fathoms, sand, bottom temperature, 44.8° F.

BUCCINUM CASTANEUM Dall, 1877.

This remarkable species was originally described from an apparently smooth but very minutely spirally striated specimen from the Shumagin Islands. Later I named a variety with three very prominent spiral cords on the last whorl variety *tricarinatum*. I find, however, that Bruguière named a (*Nassa*) *Buccinum tricarinatum*, so I propose for this variety the designation of *triplostephanum*. As the collection has increased, other specimens of this rare species have come to hand extending the limits of its variability. A form without spiral cords but with (on the last whorl about 10) somewhat irregularly arcuate coarse ribs, and larger than the original type, was collected at the island of St. George (Cat. No. 217152) in Bering Sea, at a depth of 30 fathoms; for this the varietal name *fluctuatum* is now proposed. Still another form from the Unimak Pass, Aleutian chain, in 56 fathoms (Cat. No. 213159) is smaller than the original type and has (on the last whorl about 19) more numerous smaller ribs, which on the periphery are more or less broken up into nodules, and has the fine spiral striation fasciculated by the presence at irregular intervals of deeper spiral grooves; for this form the name *incisulum* is now proposed. In the thickening and arcuation of the outer lip all these forms agree, as well as in the other general characters of the type. It would not be surprising if, when a large number of specimens from different localities are brought together, other combinations of the sculptural characters should be revealed.

BUCCINUM ROSSELLINUM, new species.

Shell small, very thin, of a dull dark olive color, the suture deep, not appressed; with about six well-rounded whorls, the apex eroded; axial sculpture of fine, close, even, silky incremental lines; spiral sculpture of fine, close, equal flattish threads on the spire which later take on the aspect of rather wide flat interspaces between shallow grooves, here and there with a slightly more elevated spiral thread; aperture ovate, outer lip thin, sharp, perhaps not quite mature; inner lip white, erased, pillar short, twisted; canal very short, slightly recurved, wide, with a faint siphonal fasciole; height of shell, 27; of last whorl, 21; of aperture, 14; diameter, 16 mm. U. S. Nat. Mus. Cat. No. 206449.

*Type-locality*.—U. S. Fish Commission station 3340, southeast of Chirikoff Island, Alaska, in 695 fathoms, mud, bottom temperature, 36.8° F.

The operculum is subcircular, thin and normal.

## BUCCINUM PHYSEMATUM, new species.

Female shell rather large, thin, inflated, acute, whitish, whorls rapidly enlarging, about six and a half in number, the nucleus decorticated, the suture deep, not channelled; spiral sculpture of very numerous somewhat irregular, fine threads, mostly with narrower interspaces and with little or no tendency to fasciculation, an angle at the margin of the base; penultimate whorl with about 16 narrow, retractively arcuate ribs, extending from suture to suture with wider interspaces but obsolete on the last whorl; aperture wide, cream colored, the outer lip thin, arcuate, reflected, the body erased, the pillar short, slightly twisted, with a wide, very short canal and moderate fasciole. Height of shell, 60; of last whorl, 47; diameter, 40 mm. U. S. Nat. Mus. Cat. No. 122555.

*Type-locality*.—U. S. Fish Commission station 3253, in Bering Sea, in 29½ fathoms, mud.

This has the aspect of a very large thin *B. angulosum*, but the minor sculpture is quite distinct.

## BUCCINUM ANGULOSUM, new variety CNISMATOPLEURA.

Shell thin, white, variable in height, the type-specimen short, acute, with five whorls exclusive of the (lost) nucleus, separated by a distinct suture; axial sculpture of (on the penultimate whorl 11, on the last whorl 8) stout ribs with equal (on the spire) or wider (on the last whorl) interspaces; on the spire these extend from suture to suture without special prominence on any one part of the whorl, but on the last whorl they are obsolescent near the suture and on the base, but on the periphery are very prominent, as if pinched and pulled out, rudely and irregularly; the incremental lines are inconspicuous; the spiral sculpture is like that of the typical form, fine similar uniform striae now and then fasciculated by deeper grooving; aperture wide, outer lip flexuous, thin; body erased, pillar short straight, canal wide, deep, recurved with a strong fasciole. Height of shell, 48; of last whorl, 40; diameter, 36 mm. Another specimen measures—height of shell, 47; of last whorl, 35; diameter (not quite mature), 26 mm. U. S. Nat. Mus. Cat. No. 332759.

*Type-locality*.—Point Barrow, Arctic coast of Alaska, on the beach. The second specimen, from between Cape Beaufort and Cape Lisburne, has on the penultimate whorl 9 and on the last whorl 11 ribs. This variability is common in this species and isolated individuals are often very unlike.

## BUCCINUM ANGULOSUM, new variety TRANSLIRATUM.

Shell of moderate size, thin, somewhat inflated, with about five whorls exclusive of the (lost) nucleus; the suture gently appressed;

spiral sculpture in minor particulars like that of *B. angulosum*, but with four strong rounded cords, with much wider subequal interspaces on the last whorl and eight or more irregular feeble ribs obsolete in front of the suture also on the base; other axial sculpture of very fine hardly visible incremental lines; aperture creamy white, the outer lip thin, hardly reflected, the body glazed, the pillar slender, arcuate, short, with a deep short, rather wide canal and a strong siphonal fasciole; the periostracum thin, pale yellowish, smooth. Height of shell, 46; of last whorl, 36; diameter, 28 mm. U. S. Nat. Mus. Cat. No. 221455.

*Type-locality*—Point Belcher, Arctic coast of Alaska, on the beach: collected by W. H. Dall.

CANTHARUS EXANTHEMATUS, new species.

Shell small, brownish, with a smooth turbinate rapidly enlarging nucleus of three and a half whorls and three and a half subsequent whorls; suture obscure, somewhat undulate; axial sculpture of (on the penultimate whorl about 18) obscure vertical ribs with somewhat narrower interspaces, extending on the last whorl to the base, and cut by the spiral sculpture into conspicuous nodules; there are also fine slightly raised close-set, incremental lines most conspicuous in the interspaces; the spiral sculpture consists chiefly of a pair of peripheral threads conspicuously nodulating the ribs and another similar thread in front of the suture; as the shell grows, intercalary not nodulous small threads appear in the interspaces, and on the last whorl a few still smaller intercalaries begin; this sculpture also is found on the base; aperture semilunate, simple, body erased; pillar short, canal short, slightly recurved; the interior of the outer lip has five short prominent lirations, similar and subequally spaced; height of shell, 8.5; of last whorl, 6; diameter, 4.2 mm. U. S. Nat. Mus. Cat. No. 96771.

*Type-locality*—U. S. Fish Commission station 2837, off Lower California in 23 fathoms, sand.

This belongs to the group of *C. orbigny* Payraudeau.

ANACHIS PHANEA, new species.

Shell small, acute, slender, white, with six flattish whorls exclusive of the smooth glassy nucleus of about one whorl; suture distinct; the first two whorls flat and smooth, the subsequent whorls with (on the last whorl about 14) nearly vertical narrow, straight, rather sharp ribs with shallow much wider interspaces extending over the periphery; surface polished, base attenuated, smooth, aperture narrow, outer lip simple, body erased, pillar short, axis pervious; canal short, deep, wide, with a marked siphonal fasciole bordered behind with a brown line; there are a few feeble spiral striae on the

back of the canal; height of shell 9; of last whorl, 6; of aperture, 4; diameter, 3.5 mm. U. S. Nat. Mus. Cat. No. 219671.

*Type-locality*—Salina Cruz, Mexico; C. R. Orcutt.

It is quite probable that a series would show variations of color.

ALIA CALLIMORPHA, new species.

Shell small, yellowish, with brown mottlings under a thin brownish periostracum, with about five whorls; including a small smooth nucleus; suture obscure, whorls only slightly convex on the spire; surface smooth except for a few spiral striae on the canal; aperture narrow, with a rather wide commissure at the posterior junction of the lip and body; outer lip slightly thickened, with four or five denticles on the inner face; body polished, pillar short; canal short and wide; height of shell 5; of last whorl, 3.5; diameter, 2.5 mm. U. S. Nat. Mus. Cat. No. 271491.

*Type-locality*.—San Diego, California, C. R. Orcutt.

This belongs with the group of *A. californiana*, from which it differs by its much smaller size, relatively more slender form, and less pronounced coloration.

ALIA XENIA, new species.

Shell large for the genus, acute, waxen white, with abundant reddish brown painting—clouds, streaks, or ocellations—with about nine rather flat-sided whorls, exclusive of a swollen smooth nucleus of about one whorl more; suture distinct, not appressed; surface smooth and polished, except for half a dozen spiral grooves on the canal; aperture narrow, the outer lip thickened with a slight varical swelling behind it; internally adults have about eight denticulations; body enameled, pillar also with a few obscure nodulations; canal short, slightly recurved; height of shell, 18; of last whorl, 10; diameter, 6 mm. U. S. Nat. Mus. Cat. No. 59370.

*Type-locality*.—Cape San Lucas; W. H. Dall.

This species is more nearly related by its shell characters to Australian species like *Columbella intertia* Gaskoin than to the usual West American types.

ALIA CASCIANA, new species.

Shell small, yellowish, acute, with a three-whorled smooth nucleus beginning with a very minute apex and five flattish subsequent whorls; suture distinct, minutely channeled; axial sculpture of faint incremental lines; spiral sculpture of very faint striae on the whorls behind the periphery, and a few stronger grooves near and on the canal; base subangular at the periphery, flattened in front; aperture narrow, simple, body slightly glazed, pillar short with a strong keel at its anterior border; canal short, deep; height of shell, 9; of last whorl, 6; of aperture, 3.5; diameter, 4 mm. U. S. Nat. Mus. Cat. No. 209456.

*Type-locality*.—U. S. Fish Commission station 4322, off La Jolla, San Diego County, California, in 110 to 199 fathoms, shelly mud.

This species when fully adult probably has a few denticulations on the inside of the outer lip, and in fresh specimens the color may be variable. All those obtained at this station were "dead" shells.

ASTYRIS AMIANTIS, new species.

Shell small, pure white, solid, with seven moderately-rounded whorls exclusive of the (lost) nucleus; suture distinct, not appressed; axial sculpture of more or less evident incremental lines, sometimes so strong as to suggest riblets; spiral sculpture of fine threads, almost obsolete on most of the shell but coarser and more evident near the canal, covering the whole surface with narrower interspaces; aperture semilunate, outer lip simple, body erased, pillar very short, canal hardly differentiated; height of shell, 13; of last whorl, 8; of aperture, 4; diameter, 6 mm. U. S. Nat. Mus. Cat. No. 221008.

*Type-locality*.—Beach at Kiska Harbor, Aleutians, station 1026; W. H. Dall.

? NITIDELLA LUTULENTA, new species.

Shell small, pale, with pale variations of brown or none, covered with a fibrous pale brownish periostracum; with about six whorls, including an extremely minute smooth nucleus; suture distinct, not appressed; surface of the whorls moderately convex; axial sculpture none but faint incremental lines; spiral sculpture only of a few spiral grooves on the back of the canal; aperture simple, the outer lip thin, not lirate within, body with a slight glaze, pillar thickened with an obvious keel on its anterior edge; canal short, wide; operculum normal: height of shell, 7; of last whorl, 5.5; diameter, 3.5 mm. U. S. Nat. Mus. Cat. No. 211068.

*Type-locality*.—U. S. Fish Commission station 3180, in the Gulf of the Farallones, off San Francisco, in 24 fathoms; bottom temperature, 50.7° F.

This may prove to be an *Alia*.

AMPHISSA VERSICOLOR, new variety INCISA.

Shell varicolored, acute, solid, with a thin brownish fibrous periostracum, with about eight whorls, including the smooth nucleus of about one whorl, the rest of the shell strongly sculptured; spiral sculpture of (on the spire about 6, on the last whorl about 16) strong, low, rounded, equal, and equally spaced cords, except one in front of the almost channeled suture, which is slightly more prominent than the others, separated by much narrower deep grooves; the spirals not nodulous when they cross the ribs; axial sculpture of (on the penultimate whorl about 14) obliquely protractive rounded ribs with subequal interspaces, somewhat obsolete near the aperture,

which is semilunate; outer lip hardly thickened, whitish, lirate within; body and pillar with a layer of whitish enamel; canal short, deep, slightly recurved; height of shell, 13.5; of last whorl, 10; of aperture, 6.5; diameter, 7 mm. U. S. Nat. Mus. Cat. No. 12285.

*Type-locality*.—Laguna Beach, California; Stearns collection. Differs from the typical *versicolor* by the strength of the sculpture, deep grooving, and generally by the duller color.

AESOPUS ARESTUS, new species.

Shell small, thin, slender, suffused with yellowish and white or ocellated somewhat like *Nitidella ocellata* with pale brown on a white ground, with six subcylindric whorls including a smooth swollen nucleus of about one whorl; suture distinct, not appressed; axial sculpture of numerous narrow nearly obsolete vertical riblets on the upper part of the spire, which are absent from the last whorl, except in the form of feeble vertical wrinkles; spiral sculpture none; aperture short, simple, outer lip thickened, not reflected, body with a layer of enamel, pillar lip thickened, slightly twisted, shorter than the outer lip; canal very short and deep; height of shell, 7; of last whorl, 3.8; diameter, 2 mm. U. S. Nat. Mus. Cat. No. 217928.

*Type-locality*.—Magdalena Bay, Lower California; collected by C. R. Orcutt.

MUREX (ALIPURPURA) RHYSSUS, new species.

Shell elongate, trialate, white, with a rasplike surface, a dark brown nucleus of two whorls, and five subsequent whorls, with a narrow shoulder in front of an obscure appressed suture; axial sculpture beside the three varices and the minute imbricate surface includes a nodulous rib between each pair of varices; the latter are slightly recurved with a prominent spinosity at the shoulder, about six major the same number of minor, and numerous smaller imbricate intercalary riblets in the last varix, which extends nearly to the end of the long closed canal; aperture ovate, white, simple, entire; operculum normal, brown; height of shell, 62; of last whorl, 47; of aperture, 12; maximum diameter, including the varix, 27 mm. U. S. Nat. Mus. Cat. No. 160500.

*Type-locality*.—San Pedro, California; collected by Mrs. Oldroyd.

PURPURA NUTTALLII Conrad, 1838.

There are two color varieties which seem worthy of distinction, one completely white or yellowish white, which may take the name of *P. nuttallii albescens*, and another, which, generally preserving the usual brownish color, has a broad white band, making it very conspicuous, about the middle of the shell, and one on the canal, which may be called *P. nuttallii albofasciata*. These color-varieties appear to be unusually constant and are found chiefly in the southern



range of the species from San Pedro, California, to Scammon Lagoon, Lower California. The specimens which may be regarded as types bear the museum catalogue numbers 252894 and 181827, respectively, and were collected by W. L. Chambers at San Pedro and by Henry Hemphill at San Diego, California.

TRITONALIA GRACILLIMA, new variety OBESA.

*Tritonalia gracillima*, var. *obesa* (Stearns MS.) in collection.

Shell resembling *T. gracillima* in most respects but notably wider. The coloration is yellowish, with brown flecks, especially on the prominences. The canal is closed. The aperture is bluish white, with four strong denticles on the anterior two-thirds of the inner lip. Height of shell, 19; of aperture and canal, 8; diameter, 7.5 mm. U. S. Nat. Mus. Cat. No. 228722.

*Type-locality*.—Laguna Beach, California; received from C. F. Baker.

TRITONALIA LURIDA Middendorff, new variety ROTUNDA.

Shell small, short, much inflated, solid, with four or more whorls, the apex eroded; suture appressed, obscure; axial sculpture incremental, irregular, sometimes rising to lamellae, forming pits in the interspaces of the spiral sculpture; the latter comprises (on the penultimate whorl 5 or 6, on the last whorl about 14) strong, elevated, blackish brown, more or less undulated and transversely striated squarish ribs with narrower interspaces, covering the whole whorl; aperture ovate, purplish when fresh, fading to light pink in the cabinet; outer lip strong, erenate by the sculpture, internally thickened and with six prominent denticles; inner lip erased, pillar short; canal very short, but distinctly recurved; height of shell, 16.5; of aperture, 12.5; diameter, 13 mm. U. S. Nat. Mus. Cat. No. 208495.

*Type-locality*.—Moss Beach, Halfmoon Bay, California; collected by F. L. Button.

TRITONALIA FUSCONOTATA, new species.

Shell solid, light yellow brown, with spiral bands of dark brown spots between the ribs, usually one at the periphery and another at each end of the whorl, but sometimes missing; whorls four or five exclusive of the (lost) nucleus, rather inflated; suture distinct, constricted, the whorl in front of it appressed and gathered into short, minute, vertical wrinkles; axial sculpture otherwise of six or seven prominent vertical ribs extending across the whorls and rather sharp elevated incremental lines; spiral sculpture of (on the last whorl about 24) subequal spiral cords with narrower channelled interspaces, covering the whorl; aperture rather wide, white; outer lip somewhat expanded, internally denticulate; body and pillar erased; canal short, closed in the adult, with a marked siphonal fasciole;

height of shell, 26; of last whorl, 20; diameter, 15 mm. U. S. Nat. Mus. Cat. No. 46729.

*Type-locality*.—Monterey, California, Stearns.

TRITONALIA CIRCUMTEXTA, new variety CITRICA.

This is a variety which, when fresh, presents a ground color of lemon or orange yellow instead of the usual grayish white, while the brown bands are much less emphatic and the shells are usually smaller than those of the type. Museum specimens, number 56747 from Catalina Island, may be regarded as the types.

TRITONALIA INTERFOSSA, new variety CLATHRATA.

This is a short and stout form with very prominent rectangular clathration and flatly turritid spire, which was distinguished by Dr. R. E. C. Stearns in manuscript many years ago but never published. The specimen from Avalon, Catalina Island, numbered 177995 in the museum series, may be taken as type. Height, 13; diameter, 7 mm.

TRITONALIA INTERFOSSA, new variety MINOR.

This is a pale dwarf, slender form, also from Catalina Island, number 56912, which seems nevertheless to have reached maturity. It is strongly clathrate and measures in height 7, and in diameter 3.5 mm.

TRITONALIA INTERFOSSA, new variety ATROPURPUREA.

This form resembles *clathrata*, but is more elongated and much less distinctly turritid. The color when fresh is a purplish black, which, however, fades in the cabinet to a more or less ruddy brown, after some years. It was discriminated in manuscript half a century ago by Dr. P. P. Carpenter, and has been sent out by that name to collectors, but so far as I know has not yet been published.

Specimens from Neeah Bay, Washington, numbered 155286 in the museum collection, may serve as types. Height, 19; diameter 7 mm.

TRITONALIA SCLERA, new species.

Shell of moderate size, yellowish, flushed with more or less dark brown, with six well-rounded whorls exclusive of the (lost) nucleus; suture obscure, undulated; axial sculpture of (on the last whorl 8, on the penultimate whorl 10) low inconspicuous rounded ribs extending more or less distinctly to the canal with continually wider interspaces; also low sharp incremental lines minutely imbricating the whole sculpture; spiral sculpture of (on the penultimate whorl about 7, on the last whorl about 25) strong prominent cords with wider interspaces usually showing an intercalary thread which on

the last whorl becomes nearly as strong as the others; aperture rounded, outer lip simple, periodically varicose; body erased, pillar straight; canal distinct, open, narrow, slightly recurved; height of shell, 29; of last whorl, 21.5; of aperture and canal, 15; diameter, 16 mm. U. S. Nat. Mus. Cat. No. 222569.

*Type-locality*.—U. S. Fish Commission station 4205, near Port Townsend, Washington; in 20 fathoms, hard bottom; temperature, 50.8° F.

The operculum is purpuroid and dark brown.

TRITONALIA EPIPHANEA, new species.

Shell small, dark brown, acute, with an angular shoulder, slender, with six whorls exclusive of the (lost) nucleus; suture distinct, slightly wrinkled and more or less appressed; spiral sculpture of (on the penultimate whorl six above and seven below the shoulder) strong equal threads with narrower interspaces, the whole slightly imbricated and covering the entire surface in a regular manner; axial sculpture of (on the last whorl seven) strong rounded ribs most prominent at the shoulder and with much wider interspaces, the spire deeply constricted at the suture; aperture oval, the outer lip thickened but not reflected, internally white with six equal and equally spaced denticulations, the body and arcuate short pillar with a layer of white enamel; the canal long, closed near the aperture, with a narrow fasciole and slightly recurved; height of shell, 25; of last whorl, 18; of aperture and canal, 13; diameter, 11 mm. U. S. Nat. Mus. Cat. No. 216809.

*Type-locality*.—San Pedro, California, collected by Dr. Tremper.

TRITONALIA TRACHEIA, new species.

Shell small, solid, rough, of a greenish gray color, of about five strongly shouldered whorls, the nucleus lost; the suture obscure, not appressed; axial sculpture of (on the penultimate whorl 9, on the last whorl 6 or 7) strong ribs, subspinose at the shoulder, and extending to the base; beside these there are rude incremental lines; spiral sculpture on the spire of two strong cords at the periphery, nodulous where they cross the ribs; on the last whorl below the periphery there are three strong cords with narrower deep interspaces, then a wider gap and two more on the canal; aperture subcircular, dark green, with an entire simple margin, the operculum muricoid; canal short, solidly closed, straight, with an imbricate siphonal fasciole; height of shell, 11.5; of last whorl, 8; diameter, 8 mm. U. S. Nat. Mus. Cat. No. 207084.

*Type-locality*.—Sitka, Alaska, in 15 fathoms, mud, dredged by W. H. Dall.

## TRITONALIA TURRITA, new species.

Shell large, solid, short in proportion to its width, of four or more whorls, the apex defective; white with strong brown spiral cords; suture strongly appressed, with a whitish band in front of it, undulated by the ribs; axial sculpture of eight strong short ribs beginning at the shoulder and extending over the periphery, but stronger at the shoulder, the whorl being somewhat constricted behind them; spiral sculpture of (on the last whorl nine) strong, dark brown spiral cords, undulated by the ribs and minutely lamellose; there may be also some lesser intercalary threads; aperture rounded, outer lip much thickened, internally white with half a dozen denticulations within; inner lip white, concavely arcuate, erased; pillar short, thick; canal short, open, slightly recurved, with an obvious fasciole. Height of shell (decollate), 34; of last whorl, 28; of aperture, 20; diameter at decollation, 4; maximum diameter, 21 mm. U. S. Nat. Mus. Cat. No. 34517.

*Type-locality*.—San Quentin Bay, Lower California; collected by L. Belding.

Though the specimens are worn this is clearly distinct from the known species. The late Dr. R. E. C. Stearns proposed the above name but never described the shell.

## Genus TROMINA Dall, 1918.

This name was proposed for the curious little shell from the Magellanic region named in 1868, by Philippi, *Fusus unicarinatus*. This has the nucleus of a *Trophon* and is probably related to the austral Trophons, but the soft parts are not known. It is more fully discussed in my paper of 1902.<sup>1</sup>

## Genus NEPTUNEA (Bolten) Dall, 1902.

I showed in 1902<sup>2</sup> while discussing the synonymy of the genus *Chrysodomus* that the latter genus was named and a type designated many years before anyone attempted to restrict and name a type for the heterogeneous collection included under the name *Neptunea* by Bolten. Herrmannsen, in 1847, correctly indicated *Trophon* (in the wide senso of that day) as the equivalent of *Neptunea* but named no type. Typical *Trophon* had been segregated by Montfort in 1810, the only other *Trophon* in Bolten's list is the type of Sars' *Boreotrophon (clathrus)* 1878. It is therefore obvious that *Neptunea* must be restricted to the boreal Trophons and Sars's name be relegated to synonymy, as I showed by the method of elimination in 1902.

<sup>1</sup> Proc. U. S. Nat. Mus., vol. 24, No. 1264, p. 536, March, 1902.

<sup>2</sup> Idem, pp. 520-521.

## NEPTUNEA TOLOMIA, new species.

Shell small, short, inflated, white, with an angular shoulder near the periphery on the spire, with more than four whorls (the apex defective), the suture distinct, not appressed: axial sculpture of (on the last whorl about 35) sharp ribs, regularly spaced, with wider interspaces, extending from the suture over the base; these ribs only become lamellose with senility: the canal is axially striated and the incremental lines visible; on the upper spire the intersection of the ribs and shoulder angle tends to become nodulous; aperture rounded, simple, body erased, canal narrow, a little recurved; height of shell, 19; of last whorl, 15; of aperture, 10; diameter, 10 mm. U. S. Nat. Mus. Cat. No. 222441.

*Type-locality*.—U. S. Fish Commission station 2896, off San Miguel Island, California, in 376 fathoms, mud; bottom temperature, 43° F.

## NEPTUNEA APOLYONIS, new species.

Shell small, white, subturritid, with more than four whorls, the apex eroded, the suture distinct: axial sculpture of (on the last whorl 13 to 15) sharp low varices with wider interspaces, sometimes feebly angular at the shoulder on the spire but on the last whorl the angle is blunted or obsolete; there is no spiral sculpture and the incremental lines are not conspicuous: aperture rather wide, ovate white, the outer lip reflected at the varices: body and pillar with a coat of white enamel: canal narrow, slightly recurved, rather long; the base of the last whorl gently constricted. Height of three whorls, 21; of last whorl, 17; diameter, 10 mm. U. S. Nat. Mus. Cat. No. 209303.

*Type-locality*.—U. S. Bureau of Fisheries station 4423, in the vicinity of the Santa Barbara Islands, California, in 216 to 339 fathoms, sand.

This is much like *N. toloimia* in general form but has fewer varices and no spiral cords.

## NEPTUNEA ITHITOMA, new species.

Shell elongated, slender, acute, with a yellowish tinge, with eleven varices, spinose at the shoulder, with five or more whorls, the apex decorticated; suture distinct, more or less undulated by the sculpture; the varices sharp and imbricating; sculpture only of obvious incremental lines and here and there a minute vermiculation; aperture elongate-oval, outer lip thin, sharp; body erased; pillar arcuate, twisted; canal long, narrow, curved: height of shell, 38; of last whorl, 29; of aperture and canal, 25; diameter, 16 mm. U. S. Nat. Mus. Cat. No. 222623.

*Type-locality*.—U. S. Fish Commission station 4255, in Taiya inlet, southeastern Alaska, in 253 fathoms, rocky bottom: temperature, 36.8° F.

The operculum is dark brown and normal.

NEPTUNEA STAPHYLINA, new species.

Shell white, slender, subturritid, of five or more whorls, the apex lost; suture distinct; axial sculpture of (on the last whorl seven) sharp-edged varices, prominent only at the shoulder where they are produced into a small spine; there is no spiral sculpture except the angle at the shoulder; aperture obovate, simple; canal long, narrow, recurved; the body with a coat of enamel, the pillar very short; operculum normal; height of spire, 9; of aperture, excluding the canal, 5.5; the canal, 6.5; diameter, 8 mm. U. S. Nat. Mus. Cat. No. 209947.

*Type-locality*.—U. S. Fish Commission station 4415, off Santa Barbara Island, California, in 302 to 638 fathoms, mud.

NEPTUNEA CALLICERATA, new species.

Shell small, white, with a smooth nucleus of one and a half whorls and five subsequent whorls; suture distinct, not appressed; varices sharp, a spine rising nearly vertically from the shoulder, guttered and slightly recurved, nine on the penultimate, eight on the last whorl, and extending from the suture to the base; spiral sculpture of extremely close fine striation on the whorls above the base and in front of the shoulder; aperture semilunate, body erased, pillar long and attenuated; canal long, slender, slightly curved; height of shell, 16; of last whorl, 12; of aperture and canal, 9; diameter, 6 mm. U. S. Nat. Mus. Cat. No. 209914.

*Type-locality*.—U. S. Fish Commission station 4356, off Point Loma, California, in 120 to 131 fathoms, muddy bottom.

NEPTUNEA (TROPONOPSIS) LASIA, new species.

Shell fusiform, slender, white, with a dingy brownish periostracum and more than five whorls, the apex defective; suture distinct, the whorls prominently rounded; axial sculpture of numerous elevated incremental lines which imbricate or nodulate the spiral sculpture at their intersections; spiral sculpture of (on the early whorls 4, on the penultimate whorl by intercalation 8, on the last whorl about 25) narrow cords with wider or subequal interspaces, increasing by intercalation until on the last whorl they become practically equal and mostly minutely imbricated: aperture ovate; outer lip thin, simple; body erased; canal long, narrow, recurved; axis minutely perrivous, pillar short, gyrate; height of shell, 30; of last whorl, 24; of aperture and canal, 19; diameter, 10.5 mm. Operculum normal. U. S. Nat. Mus. Cat. No. 210087.

*Type-locality*.—U. S. Fish Commission station 4515, off Point Pinos, California, in 198 to 495 fathoms mud and shell.

This is closely related to *N. tenuisculpta* Carpenter.

TYPHIS LATIPENNIS, new species.

Shell large for the genus, solid, heavy, with four varices to a whorl, the tubes retractive, nearer the preceding varix, and about six whorls, the nucleus rounded, small; suture obscure, the spaces between it and the shoulder excavated; sculpture of a keel at the shoulder and lines of growth elsewhere; terminal varix wide, with a prominent retractive spine at the shoulder and the outer edge recurved; aperture ovate, entire, canal (defective) closed, not very long; height of shell (estimated), 30; of spire, 8; of aperture, 7; maximum diameter, 24 mm. U. S. Nat. Mus. Cat. No. 96653.

*Type-locality*.—U. S. Fish Commission station 2822, off Lower California, in 21 fathoms, sand.

Although the specimen is defective about the end of the canal, it is obviously distinct from either of the species yet described from this region.

CORALLIOPHILA STEARNSIANA, new species.

Shell large, solid, white, of about six very rapidly enlarging whorls, with an acute apex, the nucleus decorticated; suture distinct, very deep and narrow, but not channelled; axial sculpture of about 16 rounded ribs with subequal interspaces, chiefly prominent on the periphery, much obscured by the spiral sculpture and obsolete on the last half of the last whorl; spiral sculpture of (on the last whorl) in front of the suture about 15 close-set small cords not undulated by the ribs, next follow 10 or more much coarser ribs of irregular prominence with subequal interspaces carrying each an intercalary thread, all with the rasp-like lamination peculiar to the genus and extending to the verge of a narrow, axially striated umbilicus; aperture wide, rounded, the outer lip simple, the body with a lamina of white enamel, the pillar lip short, with a *Trichotropis*-like notch at its base; height of shell, 23; of last whorl, 18; of aperture, 15; diameter, 24 mm. U. S. Nat. Mus. Cat. No. 46377.

*Type-locality*.—Lower California; Stearns Collection.

CORALLIOPHILA (PSEUDOMUREX) KINCAIDI, new species.

Shell fusiform, dirty white, with about six shouldered whorls, the nucleus decorticated, the suture deep, very narrow; axial sculpture of nine rather sharp vertical ribs extending from the suture to the canal with wider interspaces; spiral sculpture of (on the penultimate whorl eight) strong subequal cords, with narrower deep interspaces covering the whole shell, all furnished densely with short guttered lamination as usual in the genus; aperture ovate, outer lip simple,

fringed by the external sculpture, inner lip glazed with white enamel; canal rather long, bent to the left, narrow, open, with a strong laminose fasciole; height of shell, 30; of last whorl, 21; diameter, 15 mm. U. S. Nat. Mus. Cat. No. 183067.

*Type-locality*.—Puget Sound, Prof. Trevor Kincaid. This has somewhat the aspect of a *Tritonalia*.

CORALLIOPHILA (PSEUDOMUREX) ORCUTTIANA, new species.

Shell white with a pinkish flush in the aperture, of about six whorls, the nucleus defective, suture distinct, slightly appressed; axial sculpture of (on the last whorl 10) vertical rounded ribs extending to the canal, with equal or narrower interspaces and overrun by the spirals; spiral sculpture on the penultimate whorl of one strong peripheral cord, a secondary smaller cord on each side of it, carrying a smaller thread in the interspaces; between the suture behind and the first secondary cord are three threads and this part of the whorl is slightly flattened; on the last whorl beside the peripheral one there are about a dozen secondary cords and as many intercalary threads, all sculptured with small close-set arched lamellae; aperture rather small, outer lip striated within at certain stages, inner lip with rosy white enamel; canal long, narrow, with a well marked fasciole; height of shell, 22; of last whorl, 17; of aperture and canal, 13; diameter, 11 mm. U. S. Nat. Mus. Cat. No. 217869.

*Type-locality*.—Magdalena Bay, Lower California; C. R. Orcutt.

EPITONIUM (ASPEROSCALA) TINCTORIUM, new species.

Shell small, white with a narrow purple-brown spiral line in front of the suture, of six or more whorls excluding the (lost) nucleus; the whorls adjacent, the axis imperforate, with 11 to 12 continuous varices which about half encircle the spire; the varices smooth, slightly reflected, wider where they cross the rather deep suture; there are no varical angles or spines; the whorls are uniformly finely spirally striated; aperture rounded; there is no basal cord or disk; no operculum was taken with the specimen; height of shell, 7; of last whorl, 3; diameter, 3 mm. U. S. Nat. Mus. Cat. No. 218100.

*Type-locality*.—Magdalena Bay, Lower California; collected by C. R. Orcutt. The colored line probably fades in time in the cabinet, like that of the Californian *tincta* Carpenter, which is a larger shell.

EPITONIUM (ASPEROSCALA) KERATIUM, new species.

Shell small, white, with 13 or 14 varices and 8 rounded whorls exclusive of the (lost) nucleus; suture distinct, axis imperforate; varices concentrically striated on the anterior face, not coronate or angular, continuous up the spire, which they about one-third encircle; spiral sculpture of, on the early whorls, fine close threads, which gradually



become feeble and on the last whorl entirely absent; aperture rounded with a slight angulosity at the anterior end of the pillar lip, forming a strong wrinkled fasciole behind that lip; there is no basal disk or ring; height, 10; diameter, 4.5 mm. U. S. Nat. Mus. Cat. No. 217878.

*Type-locality*.—Magdalena Bay, Lower California; collected by C. R. Orcutt.

EPITONIUM (ASPEROSCALA) CANNA, new species.

Shell small, white, shading to yellowish on the spire, with six whorls excluding the (lost) nucleus, imperforate, with a deep suture and six strong varices, continuous up the spire which they about one-fourth encircle; the varices are concentrically striated on the anterior face, are very solid, and have no angulation at the shoulder; spiral sculpture of on the base of the last whorl numerous minute sharp threads with intercalary fine striae occupying the wider interspaces; this sculpture becomes obsolete at or behind the periphery; there is no basal cord or disk; height, 9; maximum diameter, 5 mm. U. S. Nat. Mus. Cat. No. 218099.

*Type-locality*.—Magdalena Bay, Lower California; collected by C. R. Orcutt.

EPITONIUM (NITIDOSCALA) BARBARINUM, new species.

Shell small, imperforate, white, with 11 varices continuous up the spire which they one-third encircle; anterior surface of the varices flattish, smooth; the shoulder is not angular or spinose; there are six whorls exclusive of the (lost) nucleus; suture deep; base rounded without a basal cord or disk; aperture subovate, the inner lip thickened; height of shell, 19; of last whorl, 7.5; of aperture, 4; diameter, 6.5 mm. U. S. Nat. Mus. Cat. No. 46229.

*Type-locality*.—San Diego, California, Stearns collection.

EPITONIUM (NITIDOSCALA) PHANIUM, new species.

Shell small, white with a flesh-colored upper spire, with seven or eight nearly vertical continuous varices, and somewhat more than eight whorls, including a smooth white nucleus of two whorls; suture distinct, deep; axis imperforate; surface smooth except for faint incremental lines, the varices smooth without angles or spines; base rounded with no basal disk or cord; aperture oval, simple; height of shell, 8; of last whorl, 4; of aperture, 1.5; diameter, 3 mm. U. S. Nat. Mus. Cat. No. 218095.

*Type-locality*.—Magdalena Bay, Lower California; collected by C. R. Orcutt.

EPITONIUM (NITIDOSCALA) CALLIPEPLUM, new species.

Shell small, lilac color on the spire, paling into white on the last whorl, with about eight whorls exclusive of the (lost) nucleus, imper-

forate; suture deep; axial sculpture of very faint incremental lines and 11 thin, low, narrow, continuous varices, dipping into the suture which encircle less than a quarter of the circumference of the spire; surface polished, aperture obliquely ovate; height of shell, 9; of last whorl, 5; diameter, 4 mm. U. S. Nat. Mus. Cat. No. 218096.

*Type-locality*.—Beach at Magdalena Bay, Lower California; collected by C. R. Orcutt.

GRAPHIS SHEPARDIANA, new species.

Shell minute, slender, translucent yellowish, with about nine whorls, including the rather blunt smooth apical nucleus; suture constricted, distinct, coils of the spire rather lax; axial sculpture of minute, close-set plications which start from the suture and become feeble on the base; these are crossed by minute close spiral striae most evident near the periphery, and under the lens showing an inconspicuous reticulation; base imperforate, rounded, and somewhat produced; aperture ovate, the margin thin, not reflected, interrupted by the body, produced anteriorly; height of shell, 3.7; diameter, 1 mm. U. S. Nat. Mus. Cat. No. 107276.

*Type-locality*.—San Pedro, California; collected by Miss Ida Shepard, now Mrs. Oldroyd.

This shell was collected and named in 1895, but by some accident the diagnosis has remained unpublished. It may have been distributed under the generic name of *Stylopsis*.

CARINARIA LATIDENS, new species.

Animal slender and mostly translucent yellowish; the extreme tail for a short distance, the muzzle, and the liver contained chiefly in the shell, are dark purple; the crop or anterior food cavity is pinkish; the eyes very vivid black, contained in short subcylindric processes behind and a little outside of the short slender tentacles. The surface of the body is covered with small translucent acute pustules. The gills are small and protrude from the shell. The ventral fin is rounded quadrate, about one-third of the way from the muzzle to the tail. The shell and its included organs are about midway of the total length. The ventral sucker is small on the ventral and near the posterior edge of the fin. The dorsal fin halfway between the shell and the tail is lower, rounded triangular, diminishing in height backwards. The shell is small, with a minutely coiled apex, and the weight of the included organs causes the animal to swim permanently on its back. The radula is of the general type of that of *C. cristata*, but the rhachidian tooth is more than twice as wide proportionately and develops a small cusp at each anterior corner of the base—a feature not known in *C. cristata*. There are three slender laterals. Behind the eyes the body is gradually constricted

forming a sort of neck. The specimen (which was figured from life) was about 150 mm. in length; its greatest diameter just behind the ventral fin about 22 mm.

Collected on the surface of the North Pacific Ocean in latitude  $43^{\circ} 10'$  north, and longitude  $147^{\circ}$  west, by W. H. Dall, July 23, 1866.

SEGUENZIA CERTOMA, new species.

Shell small, trochiform, white, with a minute, smooth globular nucleus and seven subsequent strongly sculptured whorls; suture obscure: spiral sculpture of a small, closely beaded thread at the summit of the whorl, separated from a low, sharp carina by a wider, excavated interspace, and the latter from a more prominent peripheral carina by a still wider space; on the base are three sharp threads followed by three lower rounded threads, which approach the pillar; axial sculpture of fine, even, arcuate wrinkles, which, except where they bead the posterior thread, are chiefly visible in the interspaces; the suture is laid on the peripheral thread and between it and the outer lip at the aperture is a very deep sulcus; the outer lip is much produced and its edge modified by the external sculpture, so that there is a sulcus at the end of the peripheral keel, another at the middle of the base, and still another at the base of the pillar, which is arcuate and produced like a small plait; the base is imperforate, the body with no visible glaze; height, 5; diameter, 3.5 mm. U. S. Nat. Mus. Cat. No. 211167.

*Type-locality*.—U. S. Fish Commission station 4337, off Point Loma, California, in 565 to 680 fathoms, mud and gravel.

SEGUENZIA GIOVIA, new species.

Shell resembling the preceding species, but larger and differently sculptured; nucleus minute, smooth, subglobular followed by seven sculptured whorls; suture obscure, laid on the peripheral keel; spiral sculpture of four narrow prominent keels, of which the second is peripheral, the third marginates the base, and the fourth is on the base, the interspaces much wider and becoming narrower anteriorly; there are also seven closer even low threads on the base with subequal interspaces; the posterior wide interspaces are sculptured with close-set fine spiral threads; axial sculpture of numerous equal and equally spaced arcuate threads, with wide interspaces, which on the upper whorls bead the posterior carina, but later are chiefly visible in the interspaces and extend over the whole shell; the sulcus at the aperture next the body is shallow, the outer lip beyond it moderately produced and crenulate by the sculpture, the thin and arcuate pillar has a very small notch at its base, and there is a deep twisted perforate umbilicus and a thin layer of enamel on the body; height, 6; diameter, 5 mm. U. S. Nat. Mus. Cat. No. 209228.

*Type-locality*.—U. S. Fish Commission station 4408, off Catalina Island, California, in 104 to 118 fathoms, sand.

SEGUENZIA CERVOLA, new species.

Shell small, white, slightly depressed, with one small, smooth nuclear whorl and five subsequent whorls flattened a little in front of a distinct suture, separated by a somewhat convex smooth fasciole from a thread-like keel above the periphery; in front of this is a wide, smooth interval; on the base are about a dozen spiral threads with wider interspaces, and very faint microscopic spiral striae are visible in all the interspaces under a lens; on the upper whorls there is a small thread between the keel and the suture, and near the apex they become obsolete; at the aperture is a shallow sulcus between the keel and the suture and a smaller one at the middle of the base; there is a sharp notch below the end of the thin, arcuate projecting pillar, behind which is a moderately large twisted umbilicus; the body shows no glaze, the base of the shell is conspicuously convex; height, 4.5; diameter, 5 mm. U. S. Nat. Mus. Cat. No. 209229.

*Type-locality*.—U. S. Fish Commission station 4381, off North Coronado Island, in 618 to 692 fathoms.

SEGUENZIA CALIANA, new species.

Shell small, white, elevated, trochiform, with a minute glassy smooth nucleus and about five subsequent whorls; suture obscure, laid on the peripheral keel; spiral sculpture of, on the spire a single sharp prominent keel somewhat behind the central line between the sutures, and on the last whorl a similar peripheral keel with a wide excavated space on each side of it, the space behind the periphery wider; base with seven rather close-set squarish cords, those nearer the axis most adjacent to each other; axial sculpture of low thin sharp lamellae with wider interspaces, over riding the peripheral keel on the spire but not on the last whorl, prominent in the interspaces behind the base, retractively arcuate in the posterior interspace, and protractively arcuate in the others; they do not invade the somewhat flattish base; aperture with a very deep sulcus next the suture, the outer lip in front of it much produced, a feeble sulcus at the middle of the base, in front of the arcuate pillar a smaller rounded indentation; behind the pillar a deep groove ending in a minutely perforate umbilicus; body with no perceptible glaze; height of shell, 4.5; diameter, 3.2 mm. U. S. Nat. Mus. Cat. No. 207694.

*Type-locality*.—U. S. Fish Commission station 2928, off San Diego, California, in 417 fathoms sand and gravel; bottom temperature, 41° F. Also in more than 800 fathoms.

? CERITHIOPSIS SASSETTA, new species.

Shell small, slender, white with a pale olive periostracum, with more than seven whorls, the apex being eroded, the whorls moder-

ately rounded, the suture distinct, not appressed; spiral sculpture of (on the spire four, on the last whorl five) equal and equally spaced rounded cords with more or less intercalary minute threading, on the early whorls; the anterior pair of cords are somewhat more prominent than the others; the base is disk-like, flattish, with six or more feeble spiral threads between the carinate margin and the imperforate axis; axial sculpture of (on the penultimate whorl about 17) rounded retractively arcuate riblets, with wider interspaces somewhat nodulous at intersections with the spiral cords, and becoming obsolete on the last whorl, on the spire they extend from suture to suture and on the last whorl to the base; there is also irregular incremental threading; aperture ovate, lips simple, sharp, a shallow sulcus next the anterior end of the pillar lip; height, 6.5; diameter, 2.5 mm. U.S. Nat. Mus. Cat. No. 271062.

*Type-locality*.—U. S. Fish Commission station 4555, off Point Pinos, Monterey Bay, California, in 66 to 69 fathoms, green mud.

? *ALABINA CALENA*, new species.

Shell small, with a very pale olivaceous periostracum, acute, slender, with about eight rounded whorls, the apex eroded; suture distinct, deep, marked by a small thread against which it is laid; spiral sculpture of (on the spire three) flattish cords with subequal channeled interspaces, on the last whorl four, the third at the periphery largest; axial sculpture on the upper spire of obscure radials which undulate the cords but do not show in the interspaces, and later are obsolete; there are also very fine silky regular incremental lines; the base is discoid, slightly flattish, imperforate, the aperture ovate, simple, the outer lip thin sharp, the inner lip white, glazed; the pillar short, thick, and attenuated, the lip beyond it produced, patulous; height, 10; diameter, 4 mm. U. S. Nat. Mus. Cat. No. 271070.

*Type-locality*.—U. S. Fish Commission station 3195, off San Luis, Obispo Bay, in 252 fathoms, mud; bottom temperature, 43.2° F.

? *STYLIDIUM PAGANICUM*, new species.

Shell small, slender, dark reddish brown, more or less divided by paler spiral lines on the later whorls; smooth except for incremental lines, with more than six rather flattish whorls, the apex in every case eroded; suture distinct, not deep; base rounded, imperforate, the aperture ovate, the outer lip thin sharp, somewhat arcuate and produced anteriorly, inner lip erased, pillar lip slightly twisted, not thickened; operculum paucispiral; height, 8; diameter at truncation, 1.5; at base, 3 mm. U. S. Nat. Mus. Cat. No. 271078.

*Type-locality*.—U. S. Fish Commission station 4508, 9 miles off Point Pinos, Monterey Bay, California, in 292 to 356 fathoms, mud.

The lineate painting often shows through the shell at the inside of the aperture.

## PIRENELLA CYCLUS, new species.

Shell small, white mottled with brown, probably darker when fresh, with six flattish whorls (excluding the lost nucleus) separated by a rather obscure suture; spiral sculpture of (on the spire and the upper half of the last whorl three) rows of prominent hemispherical nodules, with subequal interspaces; on the lower half of the last whorl, four undulated or obscurely nodulose flattish cords with narrower interspaces; beside these there is fine spiral threading over the surface and in the interspaces; the nodules are arranged in vertical lines above one another and give the effect of ribs, but the ribs if any are very feeble and hardly perceptible in the interspaces; base rounded, aperture rounded, the outer lip slightly thickened, not internally lirate; body and pillar with a thick coat of enamel, pillar shorter than the aperture, with a sharp siphonal sulcus behind it. Height of shell, 6.5; of last whorl, 3.5; diameter, 3.5 mm. U. S. Nat. Mus. Cat. No. 215572.

*Type-locality*.—Laguna Beach, California; Mrs. Ball.

## CLAVA CALIFORNICA, new species.

Shell conic, slightly turrated, white with brown maculation on the spirals, or all brown, with more than six whorls (the apex defective) separated by an obscure more or less undulated suture; spiral sculpture on the spire of one strong beaded band in front of the suture and two subequal smaller ones in front of that, with narrower channeled interspaces, a narrow groove on each side of the floor of the interspace; on the rounded base are seven narrow grooves with wide flattish interspaces; last whorl suddenly enlarged with a strong rounded varix above the pillar and at the outer lip; aperture oblique, produced at the posterior commissure into a sort of channel; pillar very short, canal narrow, deep; the axis has a single sharp plait, hardly visible in the aperture but continuous up the spire, in addition to the sharp edge of the pillar; height of shell (six whorls), 28; of last whorl, 14; diameter, 13 mm. U. S. Nat. Mus. Cat. No. 264899.

*Type-locality*.—South end Tiburon Island, Gulf of California; Dr. Paul Bartsch. This is the first record of the genus on the west coast.

## TACHYRHYNCHUS EROSUS, new variety MAJOR.

Shell resembling *T. erosus*, but much larger and coarser, of eight or more whorls, the apex as usual much eroded; suture almost appressed, rather obscure; spiral sculpture of (between periphery and suture five) channeled grooves with low flattish wider interspaces; on the flattish base there are four more, closer and diminishing toward the axis; aperture rounded, outer lip thin, deeply widely, retractively arcuate, inner lip with a glaze of enamel, pillar lip slightly thickened and at the anterior end a little produced; the interior of the aperture

is smooth and there is no umbilicus. Height of (decollate) shell, 35; of last whorl, 14; diameter, 13 mm. U. S. Nat. Mus. Cat. No. 224134.

*Type-locality*.—U. S. Fish Commission station 3253, off the Pribilof Islands, Bering Sea, in 51 fathoms, mud; bottom temperature, 39.5° F.

? TACHYRHYNCHUS PRATOMUS, new species.

Shell small, yellowish white, acute, with a glassy swollen nucleus of about one whorl and six subsequent whorls; suture distinct, not deep, axis imperforate; early whorls moderately convex, the periphery nearer the succeeding suture, with numerous low rounded rather irregular ribs extending from suture to suture, with subequal interspaces; these ribs become gradually obsolete on the later whorls; spiral sculpture of low, irregularly distributed partially obsolete threads, with minute threadlets between them, this sculpture covers the entire whorl; base convexly regularly rounded with no umbilical depression; aperture ovate, simple, the lips sharp, with no callosities on the body; height, 10; diameter, 4mm. U. S. Nat. Mus. Cat. No. 219369.

*Type-locality*.—Semidi Islands, Alaska, at station 1152, in 20 fathoms, gravel, collected by W. H. Dall.

This is obviously not a typical *Tachyrhynchus*, but in the absence of the operculum and soft parts I am unwilling to refer it to a new group. It may be related to the New England *Couthouyella* or to *Bittium*.

? TACHYRHYNCHUS STEARNSII, new species.

Shell small, slender, acute, white or pale brownish, with a minute subglobular nucleus and about 10 subsequent well-rounded whorls, regularly increasing in size; suture distinct, not appressed; spiral sculpture of (on the spire three, on the last whorl four) low prominent lines about equally spaced above the base, and minute almost microscopic close-set spirals in the interspaces and on the convexly rounded base; axial sculpture not perceptible; aperture rounded, simple, the outer lip somewhat arcuate, the body thinly glazed; height of shell, 13; diameter, 4.5 mm. U. S. Nat. Mus. Cat. No. 74014.

*Type-locality*.—San Pedro, California, Stearns Collection.

This was regarded as a new species of *Mesalia* by Doctor Carpenter, but I have always had some (perhaps unwarranted) suspicion that the shell is exotic.

TURRITELLOPSIS (ACICULA variety) STIMPSONI, new name.

*Turritellopsis acicula* G. O. Sars, Moll. Reg. Arct. Norv., p. 186, pl. 10, fig. 14 a-b.; pl. 7, fig. 2 a-e; pl. 18, fig. 25, 1878; not of Stimpson, Shells of New England, p. 35, pl. 1, fig. 5, 1851.

A comparison of the figures of Stimpson and Sars, both elegant and accurate draftsmen, shows at once that there is a wide difference between them. *T. acicula* is more slender, with a looser coil and

a much more constricted suture. It has three strong spiral cords while *T. stimpsoni* has five to seven. The west coast specimens so far obtained are of the *stimpsoni* type, which is represented in the Jeffreys collection from Lofoten, Spitsbergen, and Maine. The original *acicula* type from Grand Manan; Portland, Maine; and Newfoundland. On the Pacific side we have the *stimpsoni* from Nunivak Island; Port Etches; Shoal Bay, British Columbia and San Diego, California.

? EGLISIA NEBULOSA, new species.

Shell with the apex and outer lip defective, about seven whorls remaining, white with yellowish brown clouding, whorls regularly, increasing, well rounded, with a rather constricted suture; spiral sculpture of (on the last whorl four) small threads with narrower interspaces, in front of which are six stronger threads with at the periphery an intercalary threadlet; behind the margin of the base on the last remaining whorl there is a constriction, the margin being formed by a stout cord on which the suture is laid; the base is flattish with spiral sculpture obsolete or absent; axial sculpture of very low thin sharp varices crossing the whorl and inconspicuous incremental lines; base imperforate, aperture rounded. Height of seven whorls, 18; of last whorl, 8; diameter, 6 mm. U. S. Nat. Mus. Cat. No. 120702.

*Type-locality*.—Cape San Lucas, Lower California.

This was pronounced to be a new species of *Eglisia* by the late Doctor Carpenter, but it lacks the channel in front of the suture in the typical species. It looks as if it were related to *Epitonium*, and from Edgar Smith's discussion of the genus I have no doubt it belongs to that family.

Genus LITTORINA Ferussac, 1822.

Type, *L. littoralis* Linnaeus.

Section ALGARODA Dall, 1918.

Type, *L. litorea* Linnaeus.

Section LITTORIVAGA Dall, 1918.

Type, *L. sitchana* Philippi.

Subgenus MELARAPHE (Mühlfeldt) Menke, 1828.

Type, *L. neritoides* Linnaeus.

Subgenus ALGAMORDA Dall, 1918.

Type, *A. newcombiana* Hemphill.

LACUNA MAEMORATA, new species.

Shell small, short, acute, dark brown (fading in the cabinet) of three or four rapidly enlarging whorls; suture distinct; surface, when un-



worn, with a fine spiral striation which is sometimes feeble; the last whorl has a marked keel at the margin of the base in most specimens, but this region is frequently more or less rounded, and is generally whitish with interrupted brown flecks, which painting occasionally spreads over the upper part of the whorl; a white band in front of the suture is common and on the base the white may be extended to a brown area bordering the umbilicus; height, 6; diameter, 5 mm. U. S. Nat. Mus. Cat. No. 47081.

*Type-locality*.—Monterey, California.

A variety is more elevated and acute, with a more pronounced keel and narrower umbilical groove, which may take the new varietal name of *olla*. U. S. Nat. Mus. Cat. No. 216895.

*Type-locality*.—Olga, Washington.

This was formerly known to collectors on the Pacific coast as *Lacuna unifasciata* Carpenter, but the type-specimens of the latter in the United States National Museum (Cat. No. 60675) are more acute, elevated, and slender, pale above and below with a continuous dark brown line at the keel; exactly the reverse of the present species, which, when fresh, is dark above with a white or whitish line at the keel, broken up by brown dots or flecks.

LACUNA, new variety PUTEOLOIDES (Carpenter MS.).

This form is represented in the collection by specimens from Lobitas, California, collected by Doctor Stearns and labeled by Doctor Carpenter (No. 46984). The only difference between it and the typical *L. porrecta*, to which Doctor Carpenter allied it as a variety, appears to be a considerably narrower pillar and consequently sharper and narrower umbilical groove in the variety. As far as I am able to discover Doctor Carpenter did not publish the name.

Genus BOETICA Dall, 1918.

Shell small, solid, subconic, few whorled, umbilicate, a groove at the commissure of the outer lip and body, a shallow sulcus at the anterior end of the pillar lip, the aperture without denticulation, the lip not reflected.

*Type*.—*Boetica vaginata* Dall.

BOETICA VAGINATA Dall, 1918.

Shell small, solid, conical, white, smooth except for faint incremental lines, of about five rapidly enlarging whorls including a minute subglobular smooth nucleus; suture distinct, not deep; base rounded, aperture subovate, a distinct sharp groove in the subsutural callus, the outer lip simple, thick; the body with a thick coat of enamel curving into the concavely arcuate pillar lip; umbilicus perforate, the area bounded by a thickened spirally striated ridge parallel with the

pillar lip, with the area between them excavated; at the anterior end of the pillar is a shallow, narrow sulcus, somewhat as in *Trichotropis*; height of shell, 4; of last whorl, 3; diameter, 2.5 mm. U. S. Nat. Mus. Cat. No. 209891a.

*Type-locality*.—U. S. Fish Commission station 4322, off La Jolla, San Diego County, California, in 199 fathoms, shelly mud.

The exact position of this genus awaits the discovery of the operculum and soft parts.

HALOCONCHA MINOR, new species.

Shell small, purple-brownish, trochiform, with about three and a half rounded, rapidly enlarging whorls including a minute glassy nucleus; surface smooth except for incremental lines, covered with a glossy olivaceous translucent periostracum; suture distinct and deep; base rounded with a moderately wide umbilicus; aperture ovate, body with a layer of enamel connecting the two lips; height, 5.5; longer diameter, 6; shorter diameter, 5 mm. U. S. Nat. Mus. Cat. No. 215073.

*Type-locality*.—English Bay, St. Paul Island, Pribilof group in Bering Sea, in the laminarian zone. Collected by G. D. Hanna and various others.

This resembles *Haloconcha reflexa* Dall, of the same region, but is uniformly smaller. That species seems confined to the Pribilof Islands, but *H. minor* ranges also through the Aleutian chain and eastward as far as Chirikoff Island.

FOSSARUS ANGIOLUS, new species.

Shell small, yellowish white, with a minute globular nucleus and about four whorls; the suture distinct, not appressed; surface dull; axial sculpture none; spiral sculpture on the upper whorls two, on the last whorl six strong elevated cords, with somewhat wider channeled interspaces; umbilicus perforate, the anterior cord forming its outer boundary; aperture circular, the outer lip thickened but not reflected, the inner lip thin, sharp; height, 2.25; diameter, 1.75 mm. U. S. Nat. Mus. Cat. No. 271503.

*Type-locality*.—Todos Santos Bay, Lower California, near San Diego; collected by C. R. Orcutt.

FOSSARUS LUCANUS, new species.

Shell small, whitish, depressed, with a very minute brown nucleus and about two and a half subsequent whorls, the last much the largest; suture distinct, the upper part of the last whorl flattish; spiral sculpture of two very strong keels near the periphery, and two less prominent on the base, with wider minutely spirally threaded interspaces; the top of the whorl is similarly threaded; base moderately rounded with a wide excavation behind the pillar lip leading to a small umbilicus; aperture semicircular, outer lip showing the ends

of the keels, pillar lip straight; height, 1.5; diameter, 2.5 mm. U. S. Nat. Mus. Cat. No. 59849.

*Type-locality*.—Cape San Lucas, Lower California; W. H. Dall.

Genus *ISELICA* Dall, 1918.

*Isapis* ADAMS, 1853, not of Westwood, 1851.

The generic name being preoccupied, I have proposed the above modification.

*ISELICA* *OBTUSA* Carpenter, new variety *LAXA*.

Shell much resembling *obtusa*, but having a longer and more acute spire, much feebler spiral sculpture, and the whorls more laxly coiled giving the suture a well-marked channel in adults. The color is grayish white, with a yellowish deliscent periostracum and the umbilicus is a narrow chink, partly covered by the reflected inner lip. Height of shell, 8.5; of last whorl, 6.5; diameter, 5 mm. U. S. Nat. Mus. Cat. No. 219754.

*Type-locality*.—Maple Bay, Vancouver Island; collected by Mr. Hanham; also not rare in Puget Sound.

? *CITHNA* *ORVIETA*, new species.

Shell minute, olive brown, thin, turbinate, of about three rounded whorls, the surface smooth, not polished, the suture distinct; the base convex, imperforate; the aperture subcircular, simple, a chink behind the inner lip, the peristome continuous; height, 0.75; diameter, 0.60 mm. U. S. Nat. Mus. Cat. No. 105466.

*Type-locality*.—San Diego, California, in sea moss at low water, Henry Hemphill. This species may perhaps be a Rissoid.

*CREPIDULA* *ORBICULATA*, new species.

Shell dextral, suborbicular, minutely concentrically wrinkled, white, covered with an olivaceous velvety periostracum; whorls about four counting the (lost) nucleus; the apex curved strongly to the right and elevated (in the type-specimen) about 4 millimeters above the basal margin; back evenly convex; interior subtranslucent white, the edge of the deck prominently produced at the left center with a deep sulcus at the left; there is no cavity under the spire between the deck and the margin; height, 26; length, 20; width, 17 mm. U. S. Nat. Mus. Cat. No. 31100.

*Type-locality*.—Royal Roads, Victoria, Vancouver Island, in 60 fathoms, on dead bivalve; W. J. Fisher.

This is a rather rare species of quite constant character, usually found in deep water, and ranging from Bering Sea to San Diego, California. The form of the deck approaches that of *Crepidatella*.

*CRYPTONATICA* *SALIMBA*, new species.

Shell small, smooth, except for faint incremental lines, yellowish white with a faintly darker band in front of the suture and another

between the periphery and the base; with four evenly rounded whorls slightly flattened in front of a somewhat appressed suture; base rounded, the umbilicus closed by a semilunar convex mass of callus not notched above; the aperture lunate, outer lip thin, the the body callous, the pillar lip somewhat thickened; the operculum is white, porcellanous, of about two whorls; height of shell, 14; of aperture, 10; diameter, 13.5 mm. U. S. Nat. Mus. Cat. No. 209295.

*Type-locality*.—U. S. Fish Commission station 4423, between Santa Barbara and San Nicolas islands, California, in 216 to 339 fathoms, sand. A very neat and characteristic species, ranging from Esteros Bay to the Gulf of California in deep water.

**CRYPTONATICA ALEUTICA, new species.**

*Natica russa* DALL, Proc. Cal. Acad. Sci., vol. 5, p. 251, 1874, not of Gould, Proc. Boston Soc. Nat. Hist., vol. 7, p. 43, June, 1859.

This species was long supposed by me to be Gould's *russa*, but the fortunate recovery of Gould's type indicates that the large Aleutian species requires a name. The rhachidian tooth, like that of *Bulbus*, has a simple cusp, which establishes the subgenus founded on opercular characters.

**EUSPIRA ALGIDA Gould.**

*Natica algida* GOULD, Proc. Boston Soc. Nat. Hist., vol. 3, p. 73, Nov. 1848.

The fact that Gould's species was labeled "Rio Negro" has led to the supposition that it is a South American species, but the perfect agreement of Gould's type with an Alaskan and Puget Sound shell has led me to conclude that this locality, like so many other Exploring Expedition localities, is an error. There is, however a Brazilian form, quite similar, which has added to the confusion.

**EUSPIRA ACOSMITA, new species.**

Shell white with a minutely spirally banded yellow brown periostracum and about four whorls, the nucleus defective; suture distinct, the whorl in front of it a little impressed; axial sculpture of fine silky incremental lines; there is no spiral sculpture; aperture semilunar, oblique, the outer lip thin, the body with a coat of enamel reflected over the umbilical region in a flat pad as in *Cryptonatica*, the pillar lip somewhat thickened; height of shell, 16; of aperture, 13; diameter, 15 mm. U. S. Nat. Mus. Cat. No. 207218.

*Type-locality*.—U. S. Fish Commission station 3128, off Monterey Bay, California, in 627 fathoms, mud; bottom temperature, 38.9° F.

When the operculum is known this may perhaps turn out to be a *Cryptonatica*.

**EUSPIRA MONTERONA, new species.**

Shell of moderate size, of a dark greenish olive color with a whitish base; whorls about five, the nucleus decorticated; the surface smooth except for faint incremental lines, the suture distinct, not

appressed; base rounded, whitish, the umbilicus narrow, filled below with enamel with a minute perforation above forming a notch-like gap between the white enamel of the inner lip and that of the umbilicus; outer lip thin, sharp; body with a thick coat of enamel, pillar lip much thickened, white; operculum dark brown, of about two whorls; height 19; diameter 18 mm. U. S. Nat. Mus. Cat. No. 220856.

*Type-locality*.—Station 1199, Captains Bay, Unalaska, in 75 fathoms, mud and gravel; W. H. Dall.

**EUSPIRA POLITIANA, new species.**

Shell small, white, covered with a pale brown dehiscent periostracum; whorls four and a half, the nucleus decorticated, the specimen probably not quite adult; axial sculpture of retractively radiating grooves from the edge of a channeled suture nearly to one-fifth of the arch of the whorl, with wider interspaces, and faint incremental lines; there is no spiral sculpture; aperture ovate, outer lip thin, sharp, inner lip with a glaze of enamel, thicker under the suture and forming a convex mass over the wholly obliterated umbilicus; pillar lip slightly reflected, the periostracum on the base paler than elsewhere; height of shell, 16; of aperture, 13; diameter, 13 mm. Operculum thin, horny, of two whorls. U. S. Nat. Mus. Cat. No. 205653.

*Type-locality*.—U. S. Fish Commission station 4779, off Petrel Bank, Bering Sea, in 600 fathoms, sand and pebbles.

If it were not for the umbilicus and operculum, this species might be taken for a *Natica*.

**EUSPIRA CANONICA, new species.**

Shell small, white under a pale yellowish periostracum, with more than four whorls, the nucleus eroded; suture distinct, narrow, almost channeled; axial sculpture of incremental lines and numerous small irregular wrinkles radiating from the suture and extending on the average about halfway to the periphery; there is no spiral sculpture; base rounded with a small perforate umbilicus partly overshadowed by a narrow reflection of enamel from the pillar lip; aperture semilunate, simple, the body, pillar, and posterior commissure with a liberal coating of enamel; height of shell, 8; of aperture, 5; diameter, 7 mm. U. S. Nat. Mus. Cat. No. 209411.

*Type-locality*.—U. S. Fish Commission station 2923, off San Diego, California, in 822 fathoms, green mud; bottom temperature, 39° F.

**RUMA SUBFUSCA, new species.**

*Natica fusca* CARPENTER, 1864 (name only), not of Blainville, 1825.

Shell depressed conic, fuscous or livid above, whitish below, the wide umbilicus deeply fuscous stained, the aperture deep livid brown-

ish; nucleus minute, glassy, of about two depressed whorls, followed by three strongly appressed subsequent turns; periostracum thin, dehiscant, brownish; sculpture of fine faint incremental, and still fainter obsolete spiral striae; aperture very oblique, body with a heavy white callus, umbilicus wide, funicular, with a brown slightly convex marginal band; height, 31; height of aperture, 27; diameter, 24 mm. U. S. Nat. Mus. Cat. No. 46544.

*Type-locality*.—Panama, Thomas Bridges.

This species has generally been circulated under the name of *R. ovis* Broderip and Sowerby, but that designation has been used to cover a number of probably distinct forms.

**SINUM PAZIANUM, new species.**

Shell small, grayish white, depressed, with a translucent smooth nucleus of a whorl and a half and two subsequent whorls; suture distinct, outline oval, axial sculpture of faint incremental lines; spiral sculpture of fine incised lines, sometimes close, sometimes with wide interspaces, but barely perceptible except with a lens; last whorl produced, body with a slight glaze of enamel; pillar lip reflected with an umbilical chink behind the reflection, base slightly flattened; longer diameter, 9; shorter diameter, 7; height, 2.5 mm. U. S. Nat. Mus. Cat. No. 211406.

*Type-locality*.—U. S. Fish Commission station 2823, off La Paz, Lower California, in 26½ fathoms, shelly bottom.

This is next to the smallest of the group on the Pacific coast and ranges from Catalina Island, California, to Panama, usually in deeper water.

**SINUM KERATIUM, new species.**

Shell small, white, convex, suborbicular, with a minute subglobular nucleus and three subsequent whorls; suture distinct and deep; spiral sculpture of sharp, rather regular grooves with wider interspaces crossed by fine incremental lines, which in places give a punctate effect to the grooves under the lens; the grooves on the base closer and finer; pillar lip slightly reflected over an umbilical chink, body with a thin glaze; long diameter, 6.5; shorter diameter, 5; height, 3.5 mm. U. S. Nat. Mus. Cat. No. 206152.

*Type-locality*.—Catalina Island, California; collected by W. H. Dall.

This is the smallest Pacific coast species, relatively more convex, and more regularly sculptured than the preceding.

**ELACHISINA, new genus.**

Shell minute, elevated, with naticoid spiral sculpture, umbilicate.

*Type*.—*Elachisina grippi* Dall, new species.

**ELACHISINA GRIPPI, new species.**

Shell minute, having somewhat the aspect of a short *Cingula*, white, with a very thin periostracum, and four well-rounded whorls, exclusive

of a small glassy subglobular slightly depressed nucleus; the suture constricted but hardly appressed; spiral sculpture of fine uniform striae with slightly wider interspaces, covering the whole shell; aperture subovate, the outer lip thin, the body with a continuous coat of enamel, the pillar arcuate; the umbilicus naticoid, narrow, twisted, with an internal spiral ridge. Operculum? Height of shell, 3; of last whorl 2; diameter, 2 mm. U. S. Nat. Mus. Cat. No. 250230.

*Type-locality*.—Off San Diego, California, outside the kelp line, in 16 to 20 fathoms, C. W. Gripp.

The true place of the shell is in doubt. It most recalls a minute littoriniform *Eunaticina*.

VELUTINA GRANULATA, new species.

Shell small, white, naticoid, covered with a thin yellowish dehiscent periostracum, with a minute smooth nuclear and three subsequent rounded rapidly expanding whorls; suture distinct, not appressed; sculpture of quite evident but not elevated incremental lines and very minute granulation over the whole surface; aperture ovate, produced, simple; axis imperforate, twisted, the pillar lip hardly thickened, slightly reflected. Height, 5; diameter, 4.5 mm. U. S. Nat. Mus. Cat. No. 214455.

*Type-locality*.—U. S. Fish Commission station 4441, off Point Pinos, Monterey Bay, California, in 35 fathoms, sand.

This species seems to bridge the gap between species like *V. conica* Dall and the more encoiled *Lamellarias* as far as the shell is concerned.

TORELLIA AMMONIA, new species.

Shell large, cartilaginous or leathery, depressed, brown, of somewhat more than two whorls; the nucleus, comprising a little more than one whorl, has spiral elevated lamellae with wider interspaces, much as in the larval envelopes of *Lamellaria*, but on a larger scale; the remainder of the shell has close-set axial fringed lamellae; the suture is deep, the aperture entire, wider than high; the umbilicus is pervious, moderately wide, as in *Planorbis trivolvis*, the animal is distinctly Velutinoid, and carries no operculum. Height of dry shell, 12; greatest diameter, 24 mm. U. S. Nat. Mus. Cat. No. 111367.

*Type-locality*.—Southwest of Sannakh Islands, Alaska, at U. S. Fish Commission station 3213, in 41 fathoms, sandy bottom.

TORELLIA VALLONIA, new species.

Shell small, the earlier part of it with a calcareous lining under a leathery periostracum, the latter part entirely flexible; the general form and aspect that of *Vallonia gracilicosta* on a larger and somewhat less depressed scale; the color is yellowish brown, with about four whorls, the nucleus missing, the rest of the shell with elevated

axial lamellae regularly disposed with much wider interspaces; the aperture entire, with a simple, not thickened, margin; umbilicus open, moderately wide. Diameter about 4 millimeters, the height about 3 millimeters. U. S. Nat. Mus. Cat. No. 219130.

*Type-locality*.—Dredged in Nazan Bay, Atka Island, Aleutians, in 14 fathoms, sand; W. H. Dall.

This species is not unlike the typical species of the genus from northern Norway, but is more depressed, the whorls less rapidly enlarging and the umbilicus larger. Owing to the character of the nucleus I am led to believe that this genus is nearer to *Velutina* than to *Trichotropis*, the radula on its part showing no marked difference.

COCULINA CASANICA, new species.

Shell small, brownish or whitish, darker toward the apex, which is at the posterior third of the shell; both slopes slightly convex, the nuclear point always eroded; sculpture near the apex minutely equally reticulate, the sculpture coarser and the radial threads more prominent than the concentric ones toward the margin; interior polished, the muscular impression perceptible but not conspicuous. Length, 5.5; width, 4.5; height, 2.25 mm. U. S. Nat. Mus. Cat. No. 222069.

*Type-locality*.—U. S. Fish Commission station 4245, in Kasa-an Bay, Alaska, in 95 fathoms, mud; bottom temperature, 48.9° F.

ASTRAEA (PACHYPOMA) INAEQUALIS, new variety PACIFICA.

Shell of moderate size, of a reddish color, trochiform, carinate, of more than five flattish whorls, the apex defective; the carina overhangs a somewhat obscure suture; axial sculpture of numerous (on the last whorl about 70) obliquely protractive, close-set, rounded riblets, which are cut anteriorly into segments by three rather obscure grooves; these riblets bunched in pairs and swollen, undulate the carina, giving it a somewhat stellate profile; on the base from the carina to the umbilical callus are six deep channeled grooves separated by wider interspaces, which are crossed by numerous minute lamellae; the squarish interspaces obliquely nodulous; aperture diamond-shaped, simple, body with a glaze of enamel; pillar concavely arched, white, with a callous deposit on the umbilical area behind it. Height, 25; maximum diameter, 42 mm. U. S. Nat. Mus. Cat. No. 222320.

*Type-locality*.—Pacific Beach, San Diego, California; Miss J. M. Cooke.

Compared with the typical *inaequale* this form is much more finely and delicately sculptured, and the whorl is notably constricted above the peripheral keel.



## ASTRAEA (PACHYPOMA) BARBARENSIS, new species.

Shell of moderate size, trochiform, white, covered by a reddish-brown periostracum, with six or more flattish whorls, the nucleus defective; suture rather obscure, not appressed; axial sculpture of (on the last whorl about 30) rounded, protractively oblique ribs, with equal or wider interspaces, reaching from the suture to the periphery which they undulate; halfway from the suture to the periphery these are cut into segments by three deeply incised grooves; there may be, near the periphery, a few intercalary short ribs; there are also fine, close, inconspicuous incremental lines; on the base inside the undulate border are five strong regularly beaded cords with narrower channeled interspaces; aperture subquadrate, the upper part of the outer lip much produced; the body glazed, the pillar concavely arcuate, ending in a blunt projection, behind it a porcellanous white semilunar callus around the imperforate umbilical depression; height of shell, 26; of aperture, 12; diameter, 37 mm. U. S. Nat. Mus. Cat. No. 223819.

*Type-locality*.—U. S. Fish Commission station 2945, off Santa Cruz Island of the Santa Barbara group, California, in 30 fathoms, gravel, bottom temperature 56° F.

The operculum, blackish brown inside, of about two whorls, resembles that of *P. inaequale*, but is more slender and somewhat concave.

## ASTRAEA (PACHYPOMA) SPIRATA Dall.

*Pachypoma inaequale* var. *spiratum* DALL, Nautilus, vol. 24, p. 111, 1911.

Shell trochiform, elevated, solid, of a reddish color with nacreous substratum, of more than six carinated flattish whorls, the apex, eroded; suture obscure, slightly overhung by the carina which is blunt and undulated; axial sculpture of (on the penultimate whorl about 20) protractively oblique rounded irregular ribs extending from the suture to the edge of the carina with wider interspaces, and cut into nodules by three or four equally spaced spiral grooves; the evident, almost lamellose, retractively oblique incremental lines cross the ribs and interspaces almost at right angles; the flattish base has five sharp channeled grooves with regularly spaced wider squarish interspaces between the imperforate depressed umbilical area and the carina; aperture obliquely rhombic, simple, the body with a thin glaze, the pillar nacreous, concavely arcuate, the outer lip simple produced above; height of shell, 32; of last whorl, 19; of aperture, 11; maximum diameter, 31 mm. U. S. Nat. Mus. Cat. No. 222318.

*Type-locality*.—Gulf of California; Miss J. M. Cooke.

This is the most elevated and smallest of the subgenus in west American waters. The examination of a number of specimens

indicates that this is a distinct species, and as the original diagnosis was very brief, a full description is now supplied.

**LEPTOTHYRA JUANENSIS, new species.**

Shell solid, turbinate, very dark olive, with a very minute smooth nucleus and about five well-rounded whorls; suture obscure, not appressed; spiral sculpture of (on the penultimate whorl five, on the last whorl about a dozen) strong, undulate or beaded cords with wider rather deep interspaces; axial sculpture of close, oblique, rather prominent incremental lines; aperture oblique, internally nacreous, the outer lip thin, the body with a glaze of nacre, the pillar lip concave, white, nacreous with two rather formless nodulations anteriorly; height, 8; maximum diameter, 9 mm. U. S. Nat. Mus. Cat. No. 186070.

*Type-locality*.—Tia Juana, Lower California, near San Diego, California; collected by J. H. Paine.

This is the least attractive and one of the largest species of the genus on the west coast north of Cape San Lucas.

Dr. Paul Bartsch has proposed the varietal name *fenestrata* for a form of *Leptothyra paucicostata*, in which, under the strong spiral sculpture, there is visible in the interspaces a certain number of raised radial threads forming a more or less evident reticulation.

**LIOTIA SCITULA, new species.**

Shell minute, white with flecks of brown, of about four whorls, including a very minute smooth nucleus; spire flattened, suture distinct; axial sculpture of fine incremental lines, somewhat wrinkled in front of the suture and on the last whorl developing a narrow row of beads at the suture, and crenulating on the base the margin of the umbilicus; spiral sculpture of a very prominent, minutely crenulated keel at the periphery and a smaller one on which the suture is laid; the margin of the narrow umbilicus is also thread-like; aperture rounded except where modified by the external sculpture; the body with a glaze of enamel, the pillar lip somewhat thickened; height of shell, 1; maximum diameter, 2 mm. U. S. Nat. Mus. Cat. No. 194975.

*Type-locality*.—U. S. Fish Commission station 2813, among the Galapagos Islands, in 40 fathoms, coral sand.

The specimen may not be entirely adult and the aperture in the full-grown shell may be modified from the above description.

**MÜLLERIA DRUSIANA, new species.**

Shell minute, of two and a half rapidly enlarging whorls, whitish, covered with an olivaceous periostracum; suture distinct, rather deep; whorl section circular, surface smooth except for microscopic

incremental lines; base convex with a rather wide umbilicus; aperture circular, simple, sharp edged; operculum calcareous, multispiral, centrally depressed on the outer side; height, 1; larger diameter, 1.5 mm. U. S. Nat. Mus. Cat. No. 31117.

*Type-locality*.—Constantine Harbor, Amelitka Island, Aleutians, in seaweed at low water, W. H. Dall.

**CHLOROSTOMA GALLINA, new variety UMBILICATUM.**

Most of the specimens of *Chlorostoma gallina* are imperforate, some have the umbilical callus concave, forming a sort of pit, and a rare variety has an entirely open, narrow, deep umbilicus. The types of the latter are U. S. Nat. Mus. Cat. No. 152998, and while in other characters similar, are smaller than the average adult *gallina*, measuring, height 22 and diameter 25 mm. They were collected by Turrill at San Quentin Bay, Lower California. Other specimens have been found at San Diego, California.

**CHLOROSTOMA BRUNNEUM, new variety FLUCTUOSUM.**

The common form of *brunneum* has a nearly smooth surface or a surface affected by incremental rugosities, but there is another form rather widely spread which exhibits well-marked obliquely protractive ribs to the number of 18 or 20 on the last whorl, reaching from the suture nearly to the periphery with narrower interspaces. It is rather less elevated than the average of the typical *brunneum* and has a more depressed suture. The types of the variety are U. S. Nat. Mus. Cat. No. 60055 and come from Monterey, California.

**OMPHALIUS MARIANUS, new name.**

This is *O. coronatus* Pilsbry, 1889, not of C. B. Adams, 1852, and *O. turbinatus* Pease, 1869, not of A. Adams, 1851. A new name for the species being needed, the above is proposed. The *O. marianus* ranges from Santa Barbara, California, to Panama and Paita, Peru, and is U. S. Nat. Mus. Cat. No. 4033.

**CALLIOSTOMA COSTATUM, new variety CAERULEUM.**

Shell resembling the ordinary typical form except that the apex and part of the whorls in front of the suture are colored with bands of a brilliant mazarin blue when fresh, but which, unfortunately, fades after a few years in the cabinet. Fresh specimens have a very different aspect from the common shells carrying reddish spiral lines on a yellowish ground. Typical specimens in the National Collection come from Monterey, California, and bear the catalogue number 59808.

**CALLIOSTOMA COSTATUM, new variety PICTUM.**

These shells resemble the type except that on the periphery of the whorl, and sometimes on the whorl between the periphery and the

preceding suture, the shell is adorned with alternating light and dark patches or clouds of color. Typical specimens come from Neeah Bay, Washington, and bear the number 12612*a*.

**CALLIOSTOMA CANALICULATUM, new variety NEBULOSUM.**

Shell resembling the typical form except that the whorls are painted with small brown nebulous patches in a radial fashion; specimens of this kind from San Diego, California, illustrate the variety and are numbered 159251.

**CALLIOSTOMA CANALICULATUM, new variety TRANSLIRATUM.**

Another variation occurs in the northern part of the range of this species, from Sitka to the Straits of Fuca, in which the channels between the yellowish spiral cords are of a dark reddish brown, giving the shell a somber appearance, much in contrast with the light straw-colored type from southern California. Specimens of the former kind are in the collection from Biorka Island, Sitka Sound, and are numbered 160558.

A dark and comparatively small form of *C. gloriosum* Dall seems to be characteristic of specimens from the southern extreme of the range of this species, especially in the vicinity of San Diego.

**SOLARIELLA RHYSSA, new species.**

Shell small, trochiform, translucent, with four whorls, including a smooth nucleus of a whorl and a half; suture distinct; whorl-section circular; axial sculpture of (on the last whorl 35) narrow threadlike ribs, regularly spaced, uniform, the interspaces wider; extending from the suture to the verge of the umbilicus; spiral sculpture of minute spiral threads showing in the interspaces under a lens, but not modifying the axial ribs; umbilicus wide, funicular; aperture circular, simple, sharp edged; operculum brown, multi-spiral, horny; height, 1.7; longer diameter, 2 mm. U. S. Nat. Mus. Cat. No. 173803.

*Type-locality*.—Catalina Channel, California; collected by Prof. F. W. Kelsey. This shell is probably not quite adult.

**SOLARIELLA TAVERNIA, new species.**

Shell small, white, with a subglobular nucleus and three and a half subsequent whorls; suture distinct, deep; spiral sculpture on the spire of four or five equally distributed and subequal small threads with wider interspaces and a narrow flattish space in front of the suture; intercalary threads appear on the penultimate whorl and on the first half of the last whorl they become numerous, covering the whole surface uniformly, but a little coarser on the verge of the umbilicus which is moderately wide and deep; this sculpture becomes

obsolete and the last quarter of the last whorl is perfectly smooth and polished; axial sculpture of numerous retractively arcuate threads beginning at the suture and extending feebly to the periphery on the upper part of the spire, later becoming obsolete; base rounded, aperture subcircular, simple, sharp, the lips connected by a glaze on the body and not reflected; height, 3; greater diameter, 4 mm. U. S. Nat. Mus. Cat. No. 207625.

*Type-locality*.—Galapagos Islands, in 634 fathoms, sand; bottom temperature, 40° F.

**SOLARIELLA (SOLARICIDA) HONDOENSIS, new species.**

Shell of moderate size with six moderately inflated whorls, the nucleus lost, the color olivaceous, the suture distinct, not appressed; spiral sculpture of (on the upper whorls two, on the last two whorls three) sharp threads behind the periphery raised into rather sharp nodules at the intersections with the axial threads, and with wide interspaces between the suture, each other and the following threads, the first of which on which the suture is laid and three similar threads on the base are minutely beaded, while the last, at the verge of the funnel shaped axially striated deep umbilicus is more coarsely beaded; axial sculpture of fine sharp threads more or less obsolete in the interspaces but forming nodules at the intersections and between them finer sharp close threadlets; not nodulating the posterior spirals; base convex, aperture rounded, the pillar and outer lip continuous thin and sharp, the inner lip erased, pearly; operculum thin, multi-spiral; height of shell, 19; maximum diameter, 17 mm. U. S. Nat. Mus. Cat. No. 205778.

*Type-locality*.—U. S. Bureau of Fisheries station 4974, off Hondo, Japan; in 905 fathoms, mud; bottom temperature 36.6° F.

**SOLARIELLA DIOMEDEA, new species.**

Shell small, white with pinkish brown touches on the prominences and four or five brown radial flecks on the spire; whorls five exclusive of the glassy subglobular nucleus, flattened in front of the suture, otherwise well rounded; spiral sculpture on and near the periphery of five or six subequal cords with narrower interspaces; on the base are about eight finer closer threads extending to the verge of the funicular umbilicus within which are four stoutly beaded strong cords diminishing in strength inward; axial sculpture of numerous fine equal regularly spaced threads with wider interspaces, beading the posterior spiral and conspicuous on the flattish part of the whorl; aperture circular, hardly interrupted at the body, the margin thin, crenulated by the sculpture; operculum multi-spiral, concave, translucent; height of shell, 4; diameter, 5 mm. U. S. Nat. Mus. Cat. No. 194971.

*Type-locality*.—U. S. Fish Commission station 2813, at the Galapagos Islands, in 41 fathoms, coral sand.

This though much smaller, belongs to the type of *S. peramabilis* Carpenter.

*SOLARIELLA NYSSONA*, new species.

Shell small, white, prickly, with six well rounded whorls exclusive of the one-whorled glassy very minute nucleus; suture deep, almost channeled; spiral sculpture of a prominent line of sharp nodules at the shoulder of the whorl in front of which, between it and the base, are three widely spaced threads similarly but less prominently nodulate at intersections with the axial sculpture and with one or two fine intercalary threads in the much wider interspaces; on the base are four or more equal small beaded threads with wider interspaces to the verge of the funicular umbilicus which is marked by one or two rows of prominent sharp nodules; internally the umbilicus is axially striated; axial sculpture of numerous sharp, widely spaced, often broken, elevated lines sharply nodulose at the intersections; aperture subcircular, the margin thin, sharp, hardly interrupted by the body. Height, 6; diameter, 7.5 mm. U. S. Nat. Mus. Cat. No. 205799.

*Type-locality*.—U. S. Bureau of Fisheries station 3738, off Hondo, Japan, in 167 fathoms, mud; bottom temperature, 67° F.

*SOLARIELLA DELICATA*, new species.

Shell small, white, with about four well rounded whorls exclusive of the rather prominent minute glassy nucleus; suture distinct, almost appressed; spiral sculpture of a prominent thread at the shoulder, two with an intercalary smaller thread at the verge of the umbilicus and numerous feeble minute elevated lines under-running the axial sculpture; umbilicus narrow, deep; axial sculpture of very numerous, equal, regularly spaced low lamellae, with (on the last whorl) about equal interspaces, extending to the verge of the umbilicus and minutely beading the shoulder cord; aperture circular, hardly interrupted by the body, the margins thin and sharp; height, 7; diameter 6.5 mm. U. S. Nat. Mus. Cat. No. 205780.

*Type-locality*.—U. S. Bureau of Fisheries station 5050, near Hakodate, Japan, in 266 fathoms, sand; bottom temperature, 37.9° F.

This is one of the most elegant species of this very beautiful genus.

*SOLARIELLA KOREANICA*, new species.

Shell small, white, with four well rounded whorls exclusive of the minute glassy nucleus, and a distinct not appressed suture; spiral sculpture of a feeble thread at the base and two stronger, rather widely separated, sharper threads around the narrow umbilicus; spiral sculpture of (on the last whorl about 25) obliquely retractive

low folds which barely reach the periphery, with narrower interspaces, but are feebly and irregularly revived on the base, especially near the umbilicus; aperture subcircular, hardly interrupted by the body, with a sharp thin margin; height, 5; diameter, 4.5 mm. U. S. Nat. Mus. Cat. No. 205783.

*Type-locality*.—U. S. Bureau of Fisheries station 4852, off the coast of Korea (Chosen) in 568 fathoms, mud; bottom temperature, 36.6° F.

MARGARITES PAUPERULUS, new species.

Shell coarse, usually more or less eroded, of a yellowish white over a brilliant nacre, with five or more moderately rounded whorls, the nucleus eroded; suture distinct, not appressed; axial sculpture of numerous somewhat irregular narrow close-set wrinkles, extending over the whorl from the suture to the verge of the funicular umbilicus; spiral sculpture of a few spiral lines near the umbilicus; aperture subcircular, oblique, produced above, the lips joined over the body by a layer of enamel; the operculum dark brown, multispiral, with 8 or 10 turns; height of shell, 9.5; of aperture, 4.5; maximum diameter, 11 mm. U. S. Nat. Mus. Cat. No. 109457.

*Type-locality*.—Arctic Ocean, north of Bering Strait; collected by Capt. E. Everett Smith.

MARGARITES (PUPILLARIA) KAMCHATICUS, new species.

Shell large, solid, ashy gray, somewhat depressed, with six whorls exclusive of the (lost) nucleus; suture distinct, not appressed; axial sculpture of radiating threads near the apex, soon becoming obsolete and reduced on the last three whorls to somewhat rude incremental lines, slightly sharper and more regular on the base; spiral sculpture of two close and one larger peripheral cord between the sutures on the spire, on the last whorl these occupy the posterior half of the space between the suture and the periphery; in front of them is a space without spiral sculpture reaching to the periphery; on the base between the periphery and the verge of the umbilicus there are about a dozen spiral uniform threads with wider interspaces decussated only by the lines of growth; the interior of the rather wide umbilicus is axially striated; the periphery is rounded; aperture oblique, subquadrate, the margins thin, the body with a thin layer of nacre; the pillar is slightly concavely arcuate. Height of shell, 23; of last whorl, 18; diameter, 27 mm. U. S. Nat. Mus. Cat. No. 210275.

*Type-locality*.—U. S. Bureau of Fisheries station 3643, on the southeast coast of Kamchatka, in 100 fathoms sand; bottom temperature, 31.7° F.

MARGARITES (PUPILLARIA) HEALYI, new species.

Shell large, livid yellowish white, with a thin very pale periostracum and about six whorls including a smooth white turbinate nucleus

of two moderately rounded whorls; suture distinct, not appressed, the whorls between not inflated; axial sculpture of oblique quite evident incremental lines, occasionally developed into minute wrinkles; spiral sculpture of rather irregularly spaced low threads, about a dozen on the penultimate whorl, with wider interspaces; especially near the periphery on the spire; on the last whorl, including the base, they are more numerous and closer; base slightly flattened with a narrow, perforate umbilicus; aperture oblique; simple, nacreous; body with a coat of enamel; pillar straight, slightly callous, with no projection at the base; height of shell, 20.5; of last whorl, 15; maximum diameter, 20 mm. U. S. Nat. Mus. Cat. No. 223801.

*Type-locality*.—Arctic Ocean, north of Bering Strait, station 10, of U. S. S. *Corwin*, Capt. M. Healy.

MARGARITES (PUPELLARIA) SHANNONICUS, new species.

Shell large, thin, gray, with a dull surface, trochiform, with a minutely glassy globular nucleus and five subsequent whorls, suture distinct, deep; axial sculpture of prominent, almost lamellose close-set incremental lines, which near the apex of the shell develop as stronger wrinkles; spiral sculpture of (on the penultimate whorl four, on the last whorl between the suture and the base five or more) low keels, with much wider interspaces and occasional intercalary threads; just over the edge of the base and around the deep rather narrow umbilicus are other fine threads with a more or less smooth space between the two groups; aperture rounded, outer lip somewhat produced above, pearly, with a thin layer of enamel across the body; pillar lip thin, hardly reflected; larger diameter, 14; shorter diameter, 11.5; height, 13 mm. Operculum whitish, of about 10 turns, fringed externally at the suture. U. S. Nat. Mus. Cat. No. 219265

*Type-locality*.—Shannon Fiord, East Greenland, Doctor Pansch.

This recalls *M. striatus* Broderip and Sowerby, but is a thinner and more delicate shell with quite different minor characters. The ovicapsules attached by the base to the specimens are discoid and appear to hold only one or two eggs.

MARGARITES (PUPELLARIA) RUDIS, new species.

Shell of moderate size, white, with a pale olivaceous periostracum, a smooth nucleus of about one whorl and five subsequent whorls; spiral sculpture of two strong cords with wider interspaces and a third on which the suture is laid and which forms the margin of the base; there is also a small thread between the suture and the posterior cord and on the last whorl a similar thread in the interspaces; on the base there are six or seven smaller closer cords separated by obscurely channeled interspaces between the verge of a narrow umbilicus and the basal margin; axial sculpture of (on the penultimate whorl about 20) retractive riblets extending from suture to periphery, with wider



interspaces, slightly nodulous at the intersections with the spiral cords; there are also close obvious incremental regular lines over the whole surface; aperture rounded quadrate, simple, a glaze on the body, the pillar lip slightly thickened; operculum multispiral. Height, 12; diameter, 12.5 mm. U. S. Nat. Mus. Cat. No. 213951.

*Type-locality*.—Coal Harbor, Shumagins, Alaska, in 8 fathoms, mud; collected by W. H. Dall. Also Arctic and Kamchatka coasts.

MARGARITES (PUPILLARIA) ROSSICA, new species.

Shell large, solid, trochiform, of a pale gray color over a brilliant nacre; whorls eight, including a small pinkish nucleus of two whorls; spiral sculpture of (on the spire three) strong blunt keels, of which two near the periphery are the most prominent, with subequal wide interspaces; there is a fourth less prominent one on which the suture is laid which only shows on the last whorl; on the base there are about 10 smaller cords irregularly spaced; axis perforate by a narrow twisted umbilicus; axial sculpture of very fine close uniform sharp incremental lines; aperture rounded-quadrate, simple; outer lip thin, sharp, undulated by the sculpture; body lightly glazed; pillar lip slightly tortuous, hardly thickened, with a slight angle at the anterior end; height of shell, 32; of last whorl, 22; maximum diameter, 30 mm. U. S. Nat. Mus. Cat. No. 111046.

*Type-locality*.—U. S. Bureau of Fisheries station 5012, in Aniwa Bay, Sakhalin Island, in 40 fathoms, mud.

This appears to be the largest and finest species of the group.

MARGARITES (LIRULARIA) INFLATULA, new name.

*Margarites inflata* CARPENTER, Rep. Brit. Assoc. for 1863, p. 139, 1864, not of BROWN (as *Trochus*) Mem. Wernerian Society, vol. 8, pl. 1, fig. 10, 1839.—MORRIS, Cat. Brit. Foss., ed. 2, p. 257, 1854; nor of TOTTEN, 1834.

This species is incorrectly placed in the synonymy of *M. pupilla* Gould in Tryon's Manual. The type is from Puget Sound, collected by Dr. C. B. Kennerly. U. S. Nat. Mus. Cat. No. 4494.

MARGARITES (LIRULARIA) ALTHORPENSIS, new species.

Shell small, solid, trochiform, nacreous white, with a minute subglobular smooth nucleus and five subsequent whorls; spiral sculpture of five uniform prominent threads on the upper half of the last whorl and between the sutures on the spire, with wider interspaces; on the base the threads are more numerous, smaller and with subequal interspaces, extending from near the periphery to the umbilicus, which is perforate and not internally sculptured; axial sculpture of fine regular incremental lines not modifying the spirals; aperture rounded-quadrate, simple, sharp edged, the lips connected by a glaze on the body, not anywhere reflected; height, 3; larger diameter, 3.2 mm. U. S. Nat. Mus. Cat. No. 208559.

*Type-locality*.—Granite Cove, Port Althorp, Alaska, in 14 fathoms, gravel; W. H. Dall.

MARGARITES HELICINUS, new variety ELEVATUS.

Shell small, trochiform, polished, purple-brown, with a dark glassy nucleus and about five subsequent well-rounded whorls; suture distinct, rather deep; sculpture of evident incremental lines without any spiral striae; base rounded with a small umbilical chink; aperture simple, rounded, slightly angular at the suture, the body with a well-marked glaze uniting the outer lips with a rather wide, white, slightly reflected pillar lip; operculum brownish with about 10 turns; larger diameter, 9; shorter diameter, 7; height, 6.5 mm. U. S. Nat. Mus. Cat. No. 205833.

*Type-locality*.—Bear Bay, Baranoff Island, Alaska, collected by Mrs. Kate Stephens. This is closely related to the typical *M. helicinus*, but its form is more trochoid; it has a larger number of whorls and its aperture more nearly circular.

MARGARITES HELICINUS, new variety EXCAVATUS.

Shell small, depressed, thin, polished, lurid flesh color with a darker globular glassy nucleus, and about three subsequent whorls, on which a few spiral lines of obscurely lighter color are sometimes apparent; suture distinct, not appressed; surface with faint incremental lines as the only sculpture; base rounded with, in the adult, a widely excavated funicular umbilicus, aperture rounded, simple, more or less patulous when mature; inner lip with a moderate coat of enamel continued on to the pillar lip and slightly reflected there; larger diameter, 9; shorter diameter, 5.5; height, 3.5 mm. U. S. Nat. Mus. Cat. No. 219144.

*Type-locality*.—Constantine Harbor, Amchitka, Aleutian Islands, collected by W. H. Dall. Also at Middleton Island, Alaska.

MARGARITES PRIBILOFFENSIS, new species.

Shell small, solid, trochiform, pale straw color, with a small glassy nucleus and about five and a half subsequent well rounded whorls; suture distinct, slightly appressed; surface dull, with fine incremental lines crossed by extremely fine spiral striae; base well rounded with a deep, not funicular umbilicus, aperture rounded, simple, the outer lip produced at the suture and united with the pillar by a thin glaze of enamel over the body, the pillar lip a little thickened, not reflected; operculum brownish with eight or more turns; larger diameter, 8.5; shorter diameter, 7; height, 8 mm. U. S. Nat. Mus. Cat. No. 210130.

*Type-locality*.—U. S. Fish Commission station 3504, near the Pribilof Islands, Bering Sea, in 34 fathoms, sand; bottom temperature, 37.8° F.

This species resembles *M. marginatus* but is larger, more solid, not fluctuated, nor angular at the periphery, and with a different suture.

MARGARITES FRIGIDUS, new species.

Shell small, polished, conic, pale flesh color, of six whorls, including a minute subglobular nucleus; suture distinct, not appressed, whorls only moderately rounded; axial sculpture of faint incremental lines, spiral sculpture of a few very faint lines near the umbilical region; base rounded, imperforate; operculum pale brown with about 8 turns; aperture rounded, slightly angular above, outer lip simple sharp, body with a thin nacreous glaze, pillar lip rounded, broader than the rest; height of shell, 9; of last whorl, 6.5; of aperture, 3; diameter, 6 mm. U. S. Nat. Mus. Cat. No. 223423.

*Type-locality*.—Arctic Ocean north of Bering Strait; Capt. M. Healy of the U. S. R. M. steamer *Corwin*. This species occurs also as far south as Nunivak Island.

MARGARITES MARGINATUS, new species.

Shell small, thin, trochiform, pale gray or pink, with a minute glassy nucleus and about five subsequent whorls; suture distinct, rather deep, in front of it the last whorl is margined by a series of eight or more slightly arcuate broad convex waves with narrow interspaces, extending about halfway to the periphery which is somewhat angular though not distinctly keeled; other spiral sculpture of minute almost microscopic striae over the whole surface; base moderately convex with a narrow umbilicus; aperture rounded, simple, the margin not expanded, the body with a thin layer of enamel uniting the lips, the pillar lip not reflected, slightly thickened; the operculum pale with six or more turns; larger diameter, 6.5; shorter diameter, 5; height, 5 mm. U. S. Nat. Mus. Cat. No. 109464.

*Type-locality*.—Adakh Island, Aleutians, collected by W. H. Dall. It has also a wide range including the Arctic Ocean in both hemispheres. The wavy margin, though always indicated, is variable in strength in different individuals.

MARGARITES HYPOLISPUS, new species.

Shell small, solid, turbinata, pale flesh color, polished, smooth, with five well rounded whorls, including a minute subglobular nucleus; suture very distinct, not appressed; base rounded with a narrow deep perforate umbilicus; aperture subcircular, simple, the pillar lip hardly thickened, the body with a thin coat of enamel; height, 3.5; diameter, 4.5 mm. U. S. Nat. Mus. Cat. No. 274122.

*Type-locality*.—Arctic Ocean north of Bering Strait; Capt. M. Healy. This species was at first taken for the young of *M. frigidus*, but that is imperforate, more elevated, and with fewer whorls, and has less rotundity of the whorls.

? *CIRCULUS ROSSELLINUS*, new species.

Shell minute, white, solid, depressed turbinate, of two-and-a-half whorls, including the smooth nucleus; suture distinct; sculpture of numerous close-set spiral threads rather large for the size of the shell, crossed by microscopic incremental lines; base rounded, with a narrow deep umbilicus: aperture subcircular, the outer lip sharp, much produced above, pillar lip thickened, not reflected; height, 0.75; longer diameter, 2 mm. U. S. Nat. Mus. Cat. No. 223286.

*Type-locality*.—Off South Coronado Island, near San Diego, California, collected by Dr. Fred Baker, in three fathoms.

*GANESA (GRANIGYRA) PIONA*, new species.

Shell minute, white, of about three well-rounded whorls of which the smooth small nucleus forms one; suture deep; surface covered with a minute subgranular vermiculation, the incremental lines hardly perceptible; base evenly rounded, the umbilicus narrow; the aperture subcircular, the margin slightly thickened, not interrupted by the body; height, 2; diameter, 2 mm. U. S. Nat. Mus. Cat. No. 207624.

*Type-locality*.—U. S. Fish Commission station 2808, near the Galapagos Islands, in 634 fathoms, coral sand; bottom temperature, 39.9° F.

*GANESA (GRANIGYRA) FILOSA*, new species.

This species is much like the preceding one but with coarser sculpture in which the elevations take the form of somewhat irregular slightly retractive very narrow folds, stronger near the suture and on the base, less conspicuous on the periphery, and with a subsculpture of revolving striae which at times roughen the threadlike folds; the shell has one more whorl than *G. piona* but in all respects except those above noted is extremely similar; the operculum is horny, subtranslucent and multispiral; height, 2.3; diameter, 2.5 mm. U. S. Nat. Mus. Cat. No. 207602.

*Type-locality*.—This is the same as that of *G. piona*.

In her useful paper on *Cyclostrema*, *Adeorbis*, etc., in the Transactions of the Connecticut Academy of Sciences<sup>1</sup> Miss Bush proposes a new genus *Lissospira* with subordination of older names as subgenera or sections. The correct arrangement, however, would have been to accept *Ganesa* Jeffreys, 1883, as the genus, with *Granigyra* Dall, 1889, as subgenus and *Lissospira* Bush, 1897, as a section of the latter, with smooth or nongranular shell. From a smooth shell to one with granules and by coalescence of granules into vermiculation, and this into plications, is a series of steps not too difficult or important.

<sup>1</sup> Vol. 10, 1897, pp. 98-144.

## TEINOSTOMA (PSEUDOROTELLA) SAPIELLA, new species.

Shell minute, white, translucent, solid, of about two whorls, including a minute dark brown subglobular nucleus; suture distinct; surface glossy, smooth; last whorl only moderately enlarged and little produced at the aperture; base rounded, depressed in the center, with a pad of enamel leaving a slight chink but no perforation in the umbilical region; aperture subcircular, the outer lip thin, a thick callus on the body and a large ovate pad behind the pillar lip; height, 1; longer diameter, 2 mm. U. S. Nat. Mus. Cat. No. 127560.

*Type-locality*.—San Pedro, California, Mrs. Oldroyd.

## TEINOSTOMA (PSEUDOROTELLA) BIBBIANA, new species.

Shell minute, very similar to the preceding, but smaller, more depressed relatively, and more transparent and thin; aperture circular, with a thinner callus on the body, and only a small linguiform pad behind the pillar lip. Height, 0.75; longer diameter, 2 mm. U. S. Nat. Cat. No. 274123.

*Type-locality*—San Diego, California, Mrs. Oldroyd.

## TEINOSTOMA (PSEUDOROTELLA) SALVANIA, new species.

Shell small, translucent white, moderately depressed, smooth, of about three and a half whorls with a minute inflated nucleus; the only sculpture is a few faint incremental lines; base rounded, convex, imperforate, with a minute umbilical dimple, behind which is a small callus; aperture ovate, simple, the outer lip arcuate, simple, hardly produced except near the suture, with a retractive wave near the periphery; pillar thick with a small callus behind it; height, 1.2; larger diameter, 1.8 mm. U. S. Nat. Mus. Cat. No. 225190.

*Type-locality*—Off South Coronado Island, near San Diego, California, in 3 fathoms, Dr. Fred Baker.

## TEINOSTOMA (PSEUDOROTELLA) CECINELLA, new species.

Shell small, translucent white, glassy, smooth, of two and a half depressed whorls, the suture smoothly appressed and the apex not rising above the summit of the last whorl; last whorl produced at its extremity, the umbilical region covered with a smooth pad of enamel, the aperture subcircular with thick simple lips and a slight angularity at what would be the end of the pillar if there were a pillar; height, 2; longer diameter, 3.5 mm. U. S. Nat. Mus. Cat. No. 218341.

*Type-locality*—Magdalena Bay, Lower California; collected by C. R. Orcutt.

## SCISSURELLA CHIRICOVA, new species.

Shell small, white, trochiform, with a minute subglobular nucleus and about four and a half subsequent whorls; spiral sculpture of two sharp narrow peripheral keels, with a narrow interspace inclosing the anal sulcus and fasciole; on the outer side of each keel is a moderate constriction of the whorl; the suture is laid just below the anterior keel; there are also very minute spiral threads over the whole surface which do not reticulate the axial sculpture; the latter is composed of retractively arcuate, uniform, minute, close-set threads extending over the flattish upper surface of the whorls and the roundly convex base; axis perforate, the umbilicus small, the aperture rounded except the rather straight, somewhat reflected, short pillar lip; operculum multispiral, whitish, subtransparent; height, 2.5; diameter, 3 mm. U. S. Nat. Mus. Cat. No. 206509.

*Type-locality*—U. S. Fish Commission station 3340, southeast of Chirikoff Island, Alaska, in 695 fathoms, mud; bottom temperature, 36.8° F.

## SCHISMOPE CALIANA, new species.

Shell minute, translucent white, of three whorls and a minute glassy subglobular nucleus; suture distinct; last whorl with a keel halfway to the periphery, another at the periphery; half a whorl back from the aperture between these two is the oval perforation found in the genus; these interspaces are wide; a third keel is found nearer the second on the outer part of the base, and several finer ones on the base, which is funnel-shaped in the center, but forms merely a pit, the axis being imperforate; aperture wide the upper part of the outer lip protracted; the pillar lip thin, arcuate, the general form of the aperture rounded; height, 1 mm., maximum diameter, 1.5 mm. U. S. Nat. Mus. Cat. No. 198609.

*Type-locality*—San Diego, California, Professor Kelsey.

## HALIOTIS CRACHERODII, new form IMPERFORATA.

In the *Nautilus* for December, 1910 (p. 96), I described a unique form of this species which is entirely imperforate, never having had any perforations, but appears normal in every other respect. While this can hardly be termed a variety it seems well to give it a name in order that it may be kept in mind by those interested in teratology of mollusca. The specimen is U. S. Nat. Mus. Cat. No. 219850, and measures 100 mm. in length by 42 in height and 95 in width, and was collected on the coast of California not far from San Pedro.

## SPHENIA GLOBULA, new species.

Shell small, white, with a dehiscant brownish papery periostracum which extends beyond the shell at the siphonal end; almost

spherically inflated, short, truncate behind; beaks inconspicuous, situated about the middle of the valves; anteriorly the valves are rounded, behind they are compressed into a short rostrum about one-fourth the whole length; sculpture of rather rude lines of growth, the external layer obscurely granulose, especially in front; interior of the valves chalky white, the muscular impressions distinct, the pallial sinus rounded, slightly less than half the length of the valve its impression formed by two almost separate rather broad patches; hinge as usual in the genus. Length, 12; height, 9; diameter, 9 mm. U. S. Nat. Mus. Cat. No. 218977.

*Type-locality*—Baulinas Bay, California, Mrs. T. S. Oldroyd.

This is by far the most inflated and subspherical member of the genus from the west coast.