

**SUPPLEMENTARY NOTES ON SOME SPECIES OF MOLLUSKS OF
THE BERING SEA AND VICINITY.**

By **W. H. DALL.**

(With two plates.)

In the American Journal of Conchology for 1871 (pp. 93-160, pl. 13-16) the writer described a number of species from Bering Sea and the adjacent Arctic region, a part of which were figured; and from 1871 to 1873 a number of additional species were characterized, and some of them figured, in the Proceedings of the California Academy of Sciences. The working up of the whole northern collections obtained by the writer from 1865 to 1874, with additions made by himself in 1880, and by many others between 1874 and 1886,* has been an immense task, as yet only partially accomplished. Meanwhile the briefly characterized species have been referred to by several authors and not always definitely understood. For this reason it has seemed well to add some additional notes and figures, without waiting for the complete presentation of the final report.

In 1878 a series of the more critical species was taken by me to Europe and compared with typical specimens in the public museums of Bergen, Christiania, Stockholm, Göteborg, Copenhagen, Berlin, and London, together with specimens in the hands of Messrs. Friele, G. O. Sars, von Maltzan, Hanley, Jeffreys, Boog-Watson, Marshall, and other gentlemen interested in the Arctic fauna, to all of whom and to the gentlemen in charge of the official collections in the cities above mentioned, especially Professors Lovén, von Martens, Lütken, E. A. Smith, and Steenstrup, my sincere and hearty thanks are due. Careful notes were made at the time of comparison, so it is evident that these specimens have a peculiarly typical and standard character after having been submitted to such expert criticism. The figures herewith are taken from those specimens; the specimens themselves, with many others, form part of the collection of the U. S. National Museum. The present article may be regarded as a first instalment, related to the two which precede it, but also having probable successors, as time permits the discussion of the material.

Cancellaria (Admete?) middendorffiana Dall.

Admete middendorffiana Dall. Proc. U. S. Nat. Mus., 1884, p. 524, Sept., 1884.

In the above-mentioned proceedings reference was made to a figure of Middendorff (Mal. Ross., ii, pl. ix, figs. 13-14) of a shell from the Arctic part of Bering Sea, which I took to be intended to represent a species

*Including the annual expeditions of the revenue cutters Corwin and Rush, the collections of Messrs. Fisher, of the U. S. Coast Survey; Turner, Stejneger, Murdoch, and others, of the Signal Service; and of Stoney, Nichols, and other naval officers.

obtained in the same region by myself and by the Point Barrow expedition, and which I regard as distinct from *Admete viridula* of authors. My friend, Dr. Krause, in his paper on the mollusks of Bering Sea (Arch. f. Naturg., 1885, p. 273), regards this figure as intended to represent *A. viridula* var. *levior* Leche. In the light of this criticism, and with the aid of specimens of that variety submitted by Dr. Krause, I have reviewed my material, consisting of some hundreds of specimens of all varieties of the *Admete* from all parts of the coasts of Alaska and Bering Sea, as well as various parts of the Arctic Ocean. I conclude that, whatever Middendorff's figure may be intended to represent, the species I referred to it is distinct from *Admete* and perhaps a typical *Cancellaria*. Its external appearance is certainly very similar to the variety *levior*, from which, however, it differs in the following particulars: The shell is stout and heavy, not thin, as *Admete* invariably is; the proportions and sculpture in a large series are extremely uniform, while the *Admete* is very variable; the columella has a distinct siphonal fasciole, wanting in *Admete*; the interior of the aperture is periodically thickened and furnished with eighteen or twenty strong liræ which do not reach, but are separated by a smooth space from, the outer lip and have no connection with the external grooved sculpture; the sculpture is stronger and more uniform, the revolving ribs flatter than in *Admete*, and there is an absence of the tendency in the latter to intercalary finer threads. Its claim to specific rank was not disputed by any of the experts to whom it was submitted.

An examination of several hundred *Admetes* does not show a single specimen with the raised liræ. The *Cancellaria* is a strictly Arctic shell, and has not been found south of the northern end of Nunivak Island by any one, while the *Admete* is common everywhere among the Aleutian Islands, and in all its varieties, *levior* included.

Cancellaria middendorffiana is of a chalky or porcelanous white, with a pale yellow epidermis. An average specimen has five whorls with a length of shell of 17.5, of aperture of 10.0, and a greatest total breadth of 10.5^{mm}. It has a general resemblance (such as an arctic shell may have to a tropical one) to *C. sinensis*, as figured by Reeve, except that the spiral ridges on the columella, generally two or three, are obscure and not sharp.

In this connection it may be observed that the original type of *Tritonium viridulum*, O. Fabr., as well as the *Defrancia viridula* of Möller, founded on the same specimen, is a *Bela*, like *B. exarata*, and not an *Admete* at all. This has already been mentioned by Mörel, and was confirmed by an examination of the shell at Copenhagen. The earliest identifiable name of the *Admete viridula* of authors is *Cancellaria buccinoides* of Couthouy (Feb., 1838); but there being already a *Cancellaria* of that name, Dr. Jay in 1839 named it *Admete couthouyi*. This specific name was adopted by Gould in 1841 and has several years priority over Möller's *Admete crispa* (1842). In accordance with

the rules of nomenclature we should not return to Couthouy's original specific name, but adopt the specific name which was rightfully in use when the genus *Admete* was erected upon it. Hence the name will be *Admete couthouyi* Jay, sp.

Mangilia levidensis Carpenter.

M. levidensis Cpr. Suppl. Rep., 1863, p. 658.

M. funebre Dall. Am. Journ. Conch., l. c., p. 100, 1871.

The types of Carpenter's species in the National Museum are so rough, worn, and dilapidated that it was only by the accident of having a badly worn specimen of *funebre* to identify that I was enabled to discover their identity. A fresh specimen which Dr. Carpenter examined was returned by him to the geological survey of California, to whom it belonged. The name *funebre* should be cancelled.

Mangilia? *aleutica* Dall. (Pl. III, fig. 6.)

M. aleutica Dall, l. c., p. 99, 1871.

This form was regarded as nearest to *Bela angulosa* (G. O. Sars, 1878), which differs from it by being shorter and yet having one more whorl. *B. angulosa* is also generally more uniformly and sharply sculptured.

Bela sculpturata Dall. (Pl. IV, fig. 7.)

Shell seven-whorled, turreted, white, with strong waxen yellow epidermis; thin, with strong sculpture; transverse sculpture of, on the last whorl, ten strong squarish ribs and numerous fine and occasionally impressed lines of growth; longitudinal sculpture of a distinct angulation of the whorl, in front of the anal fasciole, which on the transverse ribs develops into stout swellings, which in the earlier whorls are connected by an obscure rib; the whole surface of the whorl is covered with rather wide and shallow grooves and their even wider interspaces; the grooves are closest and finest on the canal and behind the angulation, and faintest or nearly absent on the periphery; anal notch very shallow, fasciole nearly obsolete. Operculum short, triangular, yellowish brown. Greatest length of shell 12.3, of aperture 5.5; greatest width of shell 4.5^{mm}. Habitat: Aleutian region, Chiachi Islands, etc., to the Queen Charlotte Islands and Vancouver district.

This shell can only among European species be compared with Sars's *angulosa*, than which it is more coarsely and rudely sculptured (the figure does not show this feature with sufficient emphasis), the transverse ribs less or not at all flexuous, the longitudinal sculpture less fine and much less uniformly distributed. The Alaskan shell is also somewhat stouter in the same length than the Norwegian one.

Bela alaskensis Dall. (Pl. IV, fig. 3.)

Mangilia? *alaskensis* Dall, l. c., p. 98. 1871.

Bela alaskensis Krause, Wiegmann Arch., l. c., p. 279, pl. xviii, figs. 5, 17, 1885.

Dr. Krause has figured a particularly smooth and white specimen, but I have found since my original description was published that the

shell varies much in strength of sculpture, and in color from dark red-brown to white. I therefore figure one of the original types to show the range of variation.

I would note that the second part of Vol. VII of the Am. Journal of Conchology, in which my descriptions were published, was issued November 2, 1871, though the fourth part did not appear until 1872; therefore the quotation of the species should take the date of their effective publication and not of the subsequent completion of the volume.

Bela lævigata Dall. (Pl. III, fig. 7).

B. lævigata Dall, l. c., p. 98, pl. 16, fig. 7, 1871.

This species has been identified by Prof. Sars with *B. gigas* Verkrutzen (= *arctica* A. Ad. = *simplex* Midd. and perhaps = *Defrancia Beckii* Möller,* from an inspection of his type). Though the conclusions of so eminent a naturalist are not to be treated lightly, I cannot, after study of abundant material, feel entirely satisfied that the Norton Sound shell is the same as the very much larger form to which it has been referred. The specimens were found abundantly, were uniform in size, and present every aspect of adult shells. The length of the type specimen, which agrees with the others, is 7.0^{mm}. The average length of specimens of *B. simplex* or *gigas*, of the same number of whorls, is 9.0^{mm}, and adult specimens are from 18–20.0^{mm} in length. Both forms have a microscopic striation, stronger in the young shells. If the two are identical, *lævigata* is rather a dwarf variety than a merely young stage of the species. Between *B. simplex*, *arctica*, and *gigas*, allowing for the ordinary individual variation, there is no difference whatever, and the impression left on my mind, after examining the type specimen of *B. Beckii* of Möller, was that it was rather an immature specimen of the same species, which I noted at the time. To assist in clearing up the question I give an enlarged figure of the type specimen of *B. lævigata*.

Bela albrechti Krause. (Pl. IV, fig. 1).

B. albrechti Krause, l. c., p. 276, pl. xviii, figs. 3, 11.

I add a figure taken from a fine specimen taken at Port Clarence, Bering Strait, in 1866, having a length of 11.2^{mm}. This is a strictly arctic species. It is quite distinct from any other species. Mine are pure white, with a gray-green thick epidermis.

Bela harpa Dall. (Pl. IV, fig. 2.)

B. harpa Dall. Proc. U. S. Nat. Mus., 1884, p. 523.

I add a figure of this remarkably clearly cut species, taken from the type specimen 17.0 millimeters in length. The longitudinal sculpture, on the whole, is more pervasive than shown in the figure, where only the stronger grooves are represented. The shell has a reddish tinge,

*Mörch (Moll. Grönl., 1875, p. 128) regards this as a variety, *ventricosa* Mörch, of *B. violacea* Mighels. But it seems to me that the *violacea* series is entirely distinct from the *lævigata* series.

with the color fading into white toward the apex. This shell is rare, and also strictly arctic. Professor Sars and Mr. Friele, to whom it was submitted, in 1878, considered it a good species. Its nearest relative would seem to be *B. plicifera* S. Wood, which differs, being larger, with fewer ribs, and without the sharp spiral grooves which are the most salient character of *B. harpa*. It is also differently proportioned, with a relatively longer spire and smaller aperture.

Bela krausei Dall. (Pl. IV, fig. 4.)

I have a third species to add to the group to which the two previously mentioned forms belong, and which is characterized by a fine, sharp, but peculiarly appressed, sculpture. The present shell is the smallest of the three.

Shell small, elongate, ovate, compressed, with about six whorls and a rather large smooth nucleus; tranverse sculpture of, on the last whorl, about twenty-six broad flattened waves, strongly flexed, most elevated over the fasciole, and becoming narrower and less prominent anteriorly; the outer angle of the anal notch is rather prominent and makes an angulation especially of the earlier whorls, which fall away in a peculiarly flattened manner to the suture; longitudinal sculpture of fine sharp grooves, which pass uniformly over the ribs and interspaces, are somewhat stronger on the earlier whorls and very uniform, only a little coarser on the canal. The notch is more marked than usual in *Bela*; the shell is pure white and the epidermis grayish yellow and quite strong; length of shell 9.0, of aperture 4.7, width of shell 3.2^{mm}.

I am pleased to name this species, which has been in my hands some twelve years, under a manuscript name which is now otherwise occupied, to Dr. Arthur Krause, whose excellent work on the Bering Sea mollusca is well known. This species is extremely rare; the specimen figured came from Port Etches, Alaska, where it was dredged on a muddy bottom in fifteen fathoms, in 1874.

Bela solida Dall. (Pl. III, fig. 4.)

Shell solid, short, stout, with five strongly sculptured whorls and a small smooth nucleus; color a faint blush of salmon covering the white; epidermis very thin, smooth, and adherent; transverse sculpture of, on the last whorl, thirteen stout, shouldered, prominent, rather sharply rounded ribs, which pass over the periphery and disappear at the anterior third of the whorl; they cross the anal fasciole with but little flexure, but curve forward from the angulation (generally more decidedly than the figure indicates), at which they are somewhat swollen, with about equal interspaces; longitudinal sculpture of numerous equal uniform grooves, with convexly rounded subequal interspaces, faint on the anal fasciole, but covering the rest of the shell with remarkable uniformity, averaging five or six to the space of a millimeter; one or two stronger ones follow the angulation of the whorl, but not prominently; pillar stout, white; anal notch obsolete; operculum short, broad, thin, yellow-

ish. Greatest length of shell 13.0, of aperture 8.0; greatest breadth of shell 7.0^{mm}.

This very characteristic species seems to have no analogue in European seas. It is found abundantly in the western Aleutians, generally in about ten fathoms, and especially on a sandy bottom. It does not go into truly arctic waters and varies less than most of the genus. The type figured came from the harbor of Kyska.

There are a large number of undetermined species of *Bela* from Bering Sea in the collection, some of which will probably prove new, but I have thought best to refer only to those about whose novelty there seemed to be no question. The group is one of the most difficult to determine on account of the variability of some of the species, many of which have also well-defined large and small races, otherwise similar in all respects.

Sipho martensi Krause.

S. martensi Krause, l. c., p. 287, pl. xviii, fig. 18, 1885. Dall, l. c., p. 525, 1884.
Fusus (Euthria) conulus Aurivillius, Vega Exp. vet. arb., iv, p. 354, pl. 13, fig. 6, 1885.

This fine species has received two names, almost simultaneously. I am not aware which has precedence, but the species was referred to, under the name of *martensi*, by me before either description was published, as above mentioned. It seems to be a strictly Arctic species, and was obtained by the Vega off Cape Shelagaskoi in twelve fathoms, and southwest of St. Lawrence Island, in Bering Sea, in fifty-five fathoms. I obtained it in the Arctic Ocean, north of Bering Strait, in twenty fathoms, mud, in 1880. Notwithstanding the shape of the shell I doubt its being a typical *Euthria*, none of which are known from northern seas.

Trophon muriciformis Dall. (Pl. IV, fig. 6.)

Trophon Dalli Kobelt, Mon. *Trophon*, Mart. & Chemn. Neueste ausg., q. v.

This fine shell has been renamed by my friend Dr. Kobelt on account of the existence of a shell, which he refers to *Trophon*, but which American conchologists refer to Stimpson's genus *Eupleura*, namely, the *Buccinum muriciforme* of King and Broderip (*Zool. Journ.*, v, p. 348). The *T. muriciformis* has not been well figured, the only specimen I had to spare Dr. Kobelt being worn and discolored by a growth of *Halisarca*, while that figured by Aurivillius is evidently somewhat worn.

In the colored copies of Tryon's Manual I find it figured of a dull green, perhaps copied from Kobelt's figure, but when in good condition the shell itself is of a creamy translucent white, with a chalky superficial stratum. In some specimens the triangular spines are continuous, with hardly raised lamellæ; but in the original type the lamellæ are hardly visible, and the spines, showing somewhat translucent, project from the opaque white surface as if they had been stuck on artificially. It is a native of the Arctic coast of Alaska, and very rare. The Vega

dredged two somewhat worn specimens in Bering Sea, southwest from St. Lawrence Island, in fifty-five fathoms.

A similarly coronated species, but of very much smaller size, is in the British Museum from New Zealand, acquired with the Cumingian Collection, and was the type of *Trophon coronatus* Adams (P. Z. S., 1862, p. 429). Similar specimens were obtained by the Challenger in those seas in very deep water. In the British Museum I found a specimen labelled *Trophon goodridgii* Forbes, 1852, from the Herald voyage, which appears to be identical with an adolescent stage of *T. muriciformis*. It would seem, however, that this name was never published, and I have not found any reference to it in any publication I have been able to consult. From a remark of Forbes in the Annals and Magazine of Natural History, 1852 (vol. x, pp. 305-6), it is probable that this specimen came from Cape Kruzenstern, Kotzebue Sound.

The death of Forbes occurred in 1854, when only the vertebrates of the zoology of the Herald voyage, which he edited, together with two short papers in the Proceedings of the Zoological Society, with preliminary descriptions of a few mollusks, had been published. This probably accounts for the absence of the report on the invertebrates which he was so well qualified to prepare.

In this connection it may be noted that *Trophon stuarti* Smith (P. Z. S., 1880, pl. xlvi, fig. 6, p. 481), from Vancouver Island, is a fine pale specimen of the Alaskan and Oregonian *T. orpheus* Gould, and the *T. maltzani* of Kobelt seems very likely to prove one of the numerous varieties of *T. tenuisculptus* Cpr., itself close to *craticulatus* Fabr.

Genus STROMBELLA Gray.

It is generally acknowledged that, as between a generic name properly characterized and one which is a mere naked interjection into literature, that which is characterized should stand, and especially when it is anterior in date, though it has the right to stand apart from the question of date. Of course a naturalist having the benefit of science at heart would not intentionally duplicate names, but would adopt and characterize the one already given if determinable. But most naturalists are content to go by habit or custom, and in doubtful points accept without verification very doubtful or inadequate determinations. In the case of the present genus such an instance exists. There is, in a catalogue by Schleuter, the name *Strombella* without any means of identification whatever, and were it correctly identified with a type which has been assigned to it, it would still be a synonym. For us, therefore, the name *Strombella* Schleuter is an echo of vacancy, a nothing. Gray characterized briefly, but sufficiently, his genus *Strombella* at a later day, and shortly after this Mörch injected a "catalogue name," *Volutopsius*, into his list of Greenland mollusca, which was only characterized by him much later, and amended to *Volutopsis* by

others. Yet this name has attained general currency, because (probably) of an attempt of the brothers Adams in their "Genera" to treat *Strombella* Schleuter as having entered into nomenclature.

In the *Annales de la Société malacologique de Belgique* (iv, 1869, p. 20) Mörch cites "*Fusus* (*Pyrolofusus* Beck) *deformis*" from Spitzbergen. But Beck's name does not appear in any publication previously, and is not defined or characterized here or elsewhere by himself or by Mörch. In April, 1873, the writer characterized the subgeneric group, which includes *Neptunea harpa* Mörch and *Fusus deforme* Gray, under the name of *Heliotropis*, with the first-mentioned species as type. If he had known of Mörch's citation of Beck's manuscript name, he would have adopted it, not because it had any right to stand, but to save a synonym.

Against this case is a similar one, which should meet with the same treatment whatever may be the decision. In 1879 there were distributed to all persons known to be interested in northern mollusks a set of plates belonging to my report (unavoidably delayed in MSS.) on the *Buccinidae* of the Alaskan fauna, some fifty copies in all, properly lettered with the names of the species by the engraver. I had found on dissection that the rhachidian tooth of the radula in *Chrysodomus crebricostatus* Dall (1877) was smooth and flat (as in *Liomesus*), and intercalated in the legend of the plate the subgeneric name *Beringius* for this species, in recognition of this feature, which was fully characterized and figured in my manuscript. Subsequently my friend, Mr. Friele, in his researches on the mollusca of the Norwegian North Atlantic Expedition, discovered the same peculiarity in *Fusus turtoni*, which he accordingly separated under the name of *Jumala*.

Now, I am far from claiming that if the other characters coincide *Beringius* should take precedence of *Jumala*; on the contrary, I believe it should not, and that Mr. Friele's name should stand; but it would seem as if one rule should apply to all cases of the kind, and that the unrecognizable names of Schleuter and the undefined catalogue entries of later writers, such as *Pyrolofusus* and *Volutopsius*, should not be quoted to the discomfiture of more conscientious or more thorough workers, or gain, by their mere existence, any standing in nomenclature.

Cerithiopsis (*stejnegeri*, var. ?) *truncatum*, n. s. (Pl. IV, fig. 5).

Among the small shells inhabiting the canals of *Cliona* and other "bread-sponges," and not found elsewhere, was detected at Unalaska a small *Cerithiopsis* very similar in sculpture to *C. stejnegeri*, but distinguished by a remarkable peculiarity not noticed in any other species of the genus known to me. The nuclear whorls, amounting to one and a half, were of a (for the species) very large size and of a soft, almost fleshy, consistency; in drying, this broke up spontaneously and disappeared. The first shelly whorl is about the size of the fourth whorl in

C. stejnegeri, and from this point the shell is subcylindrical, strongly decussately sculptured, with the same number of revolving and transverse threads as in *C. stejnegeri*; but the sculpture is less flattened and at the intersections forms a node; the base is faintly or not at all sculptured; the specimens, none of which seemed quite mature, had about four whorls after the truncation; the color, a pinkish, very light brown, differs from that of *C. stejnegeri*, which is deep wine color, and has a glassy gloss, while *C. truncatum* is dull-surfaced. I have had a doubt as to whether the peculiarity might not be pathological, but the number of similar specimens observed seems too great. Lon. of shell, 3.3; lat., 2.0^{mm}. Habitat, Unalashka and Chica Islands, in sponges at low-water mark, 1874.

The *C. stejnegeri* has been collected from the Shumagins to Bering Island. The only other species of the group yet found in Alaska, so far as I know, are dead specimens of a large form resembling *C. emersonii* or *tuberculata*, which have been found very rarely at Sitka, and once at Unalashka, from low-water mark to 12 fathoms.

Velutina conica, n. s. (Pl. III, fig. 10).

Shell solid, strong, white, with an imperceptible or extremely thin epidermis; finely striate in each direction, four-whorled, the last much the largest; suture narrow, but channeled; aperture oblique; axis within the columella not pervious to the eye; columella narrow, strong, with a light wash of callus, and no umbilical chink; alt. of shell, 10.0; of aperture (parallel to the axis), 7.5; max. lat. of shell, 7.6^{mm}.

Found at Unalashka, Kadiak, and other places in the Aleutian region; not uncommon at depths of 5–15 fathoms. Specimen figured, from Unalashka.

This species differs from its relatives in the same region by its want of a perceptible epidermis, its solidity, its conical shape, in wholly containing the soft parts without any exceptional contraction by the animal, and in its narrow columella. There is no closely analogous European species, nor is this one yet reported from the Oregonian region. The fine wavy longitudinal striæ are not perceptible without a glass; to the eye, except for lines of growth, it appears smooth.

Family RISSOIDÆ.

This group is very sparsely represented in these seas—a fact which may be contrasted with the abundance of individuals and even of species on either side of the North Atlantic in the same latitude. The only form which was found anywhere abundantly was the *Cingula robusta*, and even in that case the abundance was but relative. A résumé of the principal forms collected, with figures, may be of use. Several of them appear closely related or identical with forms of north European waters.

Cingula robusta Dall.

C. robusta (Dall MS.) Krause, *l. c.*, p. 270, t. xvii, fig. 1, *a-b*.

This species has been well figured by Dr. Krause, who kindly adopted the manuscript name under which I have sent out numerous specimens during the twelve years it has been in my collection. Since his paper was received I have been informed that the name *robusta* has been used for another species of the same group. Not having the means of verifying this statement at the present moment, I propose to figure the two extreme forms under which I have found this species at Kyska Harbor, Aleutian Islands, and to apply varietal names to them; the name referring to the stout variety to be adopted for the species in case it be found necessary to drop the name of *robusta*.

Cingula robusta var. *martyni* Dall (Pl. III, fig. 9).

This is the most common and apparently the normal form, collected by me in the Aleutians and by Krause at Plover Bay, Eastern Siberia. The specimen figured is 5.0^{mm} long. It is dedicated to the naturalist Martyn, whose beautiful figures in the *Universal Conchologist* gave the first adequate representation of some of our best known species from Northwest America.

Cingula robusta var. *scipio* Dall (Pl. IV, fig. 10).

This form is much rarer than the preceding, about 1 per cent. of those collected being of this sort, but with a certain number of intermediate grades. Should the differences be sexual, as in some *Hydrobiinæ*, these slender ones would be males. There seems to be no other difference than that of form, faint revolving lines being occasionally present in both; both are of the same reddish grape-color with whitish bloom, and whitish border to the aperture. The figures are on the same scale and show the proper relative proportions.

Onoba saxatilis Möller (Pl. III, fig. 8).

Rissoa (*Paludinella*) *saxatilis* Möller, *Ind.*, p. 9, 1842. (f. Friele.)

Rissoa arctica Loven (f. G. O. Sars, Friele).

? *Cingula leptalea* Verrill, *Tr. Conn. Acad.* VI, p. 182, pl. 32, fig. 10, 1884.

The specimens identified by both Sars and Friele with *saxatilis* of Möller have from four to five whorls and vary between 2.25 to 2.75^{mm} in total length. The Alaskan specimen above figured is full-sized, being 2.75^{mm} in length. The fine spiral sculpture is only feebly developed, and varies with different specimens of *saxatilis*. The outline, &c., agreeing so closely with Professor Verrill's figure, and the other characters being very much the same, I cannot help suspecting that his *leptalea* may prove to be only a finely developed *saxatilis*. The identification of the Norwegian form with *C. aculeus* Gould and both with *R. saxatilis* or *arctica*, as made by Prof. G. O. Sars, seems more than doubtful and requires confirmation, though both may be found on the Norwegian coast. The New England *aculeus* is certainly not the same as the arctic specimens from

Alaska or Greenland, which are not over one-half the size of *aculeus*, which is about 4.00 to 4.25^{mm} long. It is much nearer to *R. proxima* than to *R. striata*; indeed, it does not seem from my specimens especially close to *O. striata* as has been claimed.

The species is extremely rare in the Aleutian Islands, where a few specimens were obtained at Nazan Bay, Atka Island, from the ripple-marks on the sandy beaches.

Onoba cerinella Dall (Pl. IV, fig. 12).

This species is quite close in form to *O. proxima* Alder, as figured by Jeffreys and G. O. Sars. It differs from that species in the total absence of spiral striation, in having a less truncated apex and one less whorl in the same length, 3.0^{mm}. There is a slight chink behind the reflexed inner lip, the surface is smooth but not polished, the sutures distinct but not deep. A few specimens collected at Atka Island with the last specimens were regarded as distinct from *O. proxima* and other related European forms by those who examined them, in 1874.

Onoba aleutica Dall (Pl. III, fig. 11).

Shell resembling *C. minuta* Totten, but more slender and smaller; less slender and drawn out than *O. aculeus* Gould, and having no spiral lines like the latter; color light warm brown; surface smooth, with faint growth lines, no spiral sculpture; loosely coiled; the aperture simple, peritreme continuous, slightly reflexed, its edge black, inside whitish, hardly touching the body whorl and with a chink, or umbilical space extending far behind it, but not into the axis. Shell often eroded in spots, thin, with distinct sutures and neatly rounded whorls. Extreme length of specimen figured 3.5^{mm}. Very rare in ulvæ at Unalashka, Aleutian Islands, 1874.

Alvanea castanea Möller, var. *alaskana* Dall (Pl. IV, fig. 9).

? *Rissoa castanea* Möller, Index, p. 9, 1842. Sars, Moll. Reg. arct. Norv., p. 174, pl. 10, figs. 1a-b.

A shell found at Nunivak Island in 1874, and figured above, was referred to Möller's species by both Friele and Professor Sars. It differs from the typical form in having the same number of whorls in five-eighths the length of the former, in the greater prominence of the wrinkles extending forward from the sutures, and in being much thinner than the *castanea* generally is. I am informed that the *castanea* is a very variable form, and notwithstanding the typical *castanea* has not yet been found in Alaska, I prefer until the receipt of more information to refer this shell to it as a variety. The specimen figured is 2.5^{mm}, in length, and of a pink color, fading into white toward the apex, with traces of a pale thin smooth yellowish epidermis.

Alvania castanella Dall. (Pl. III, fig. 5.)

The verdict on this species, after comparison with all those of North Europe and Greenland, was that it was nearest to but distinct from

castanea. It has about five whorls, spirally sculptured; the nucleus smooth and white, the rest waxen, with a pinkish or brownish flush; the surface when denuded of the thin epidermis appears vitreous. The sculpture is not of flattened threads, as in *castanea*, but of up to as many as twelve sharp ridges, separated by shallow channels or grooves, excavated as if made with a carpenter's gouge; there are sometimes as few as six or seven ridges on the body whorl, the others becoming obsolete. The peritreme is continuous, slightly thickened, with a chink in the umbilical region; the total length of the specimen figured is 2.7^{mm}. There is no transverse sculpture, except the faint markings due to lines of growth. The spiral sculpture grows stronger toward the shoulder of the whorl, as is generally the case, and this tends to give the shell a slightly turreted aspect.

Alvania aurivillii Dall. (Pl. IV, fig. 8.)

Shell waxen or yellowish, with five and a half or six whorls; nucleus, two whorls, white smooth and polished; remainder strongly sculptured with (on the last whorl) about eight strong revolving ridges, narrow but flat-topped, except in the very young shell, where they are sometimes almost sharp-edged; the anterior and posterior threads are generally the faintest, the others, except in the completely adult, angulate the outer lip at their intersection with it; the one just in front of the suture is sometimes a little nodulous in the early whorls. In the adult the peritreme is simple, continuous, and slightly thickened; there is a distinct though very small umbilicus; the total length of the specimen figured is 4.3^{mm}.

I have dedicated this species, the finest of the group in Alaska, to Mr. Carl Aurivillius, whose work on the gastropods of the Vega expedition has recently appeared. Its distinctness from other described northern species has been admitted by all those who have examined it. It seems to have no analogue in European or East American waters.

The *A. aurivillii* inhabits the Western Aleutians, where it seems rare. A few specimens were obtained at Adakh Island and one at Constantine Harbor, Amchitka Island, 1874. They were dredged in shoal water near low-water mark.

Macoma edentula Brod. and Sby. var. *middendorffii* Dall. (Pl. IV, fig. 11.)

M. var. middendorffii Dall, l. c., p. 347, 1884.

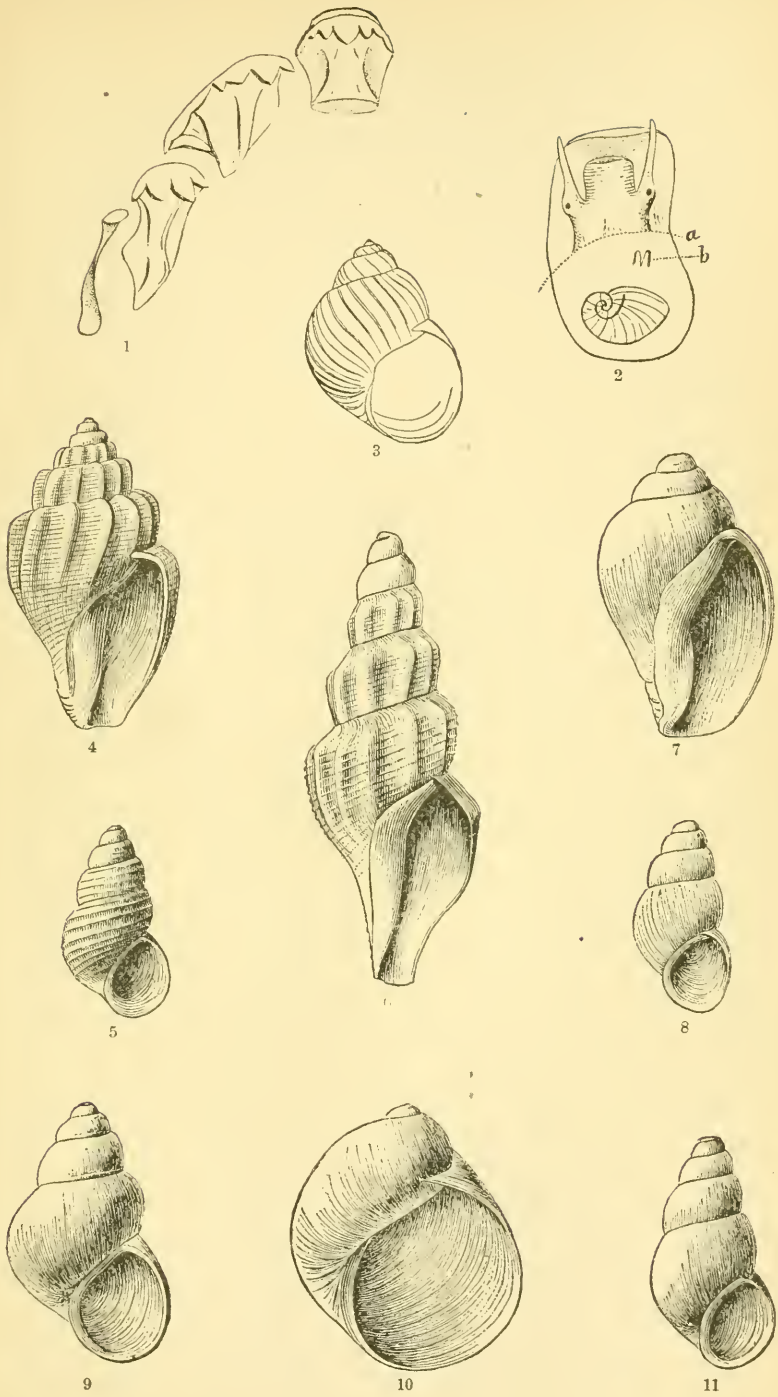
Since calling attention to the probable varietal distinctness of this singular form, I have made a more thorough examination of all the available material, leaving no doubt in my mind of its distinctness from the common *T. calcarea* Chemn. or *lata* Midd., a short broad form of which was described by Broderip and Sowerby as *T. edentula* and well figured in the zoology of the voyage of the Blossom (plate 41, fig. 5, and plate 44, fig. 7). *T. calcarea* is found all over the Alaskan region, and its variety *edentula* differs from the *middendorffii* in being of a dull calcareous or earthy gray or brown with a dark, fugacious epidermis, instead

of porcelanous white and almost polished, with no visible epidermis as in fresh and living specimens of the latter shell; the variety *middendorffi* is shorter and higher and somewhat more inflated. In the alcoholic specimens the siphons of *middendorffi* are much longer than those of the ordinary form. The inner margin of the pallial sinus in the right valve is, in the specimen figured, nine millimeters distant from the anterior adductor scar; in the left valve they are only one and a half millimeters apart. This specimen is 40.0^{mm} high, 45.0^{mm} long, and 20.0^{mm} in greatest diameter. The figure is somewhat less than natural size. This variety is rare and probably a race due to some peculiar environmental conditions, such as, perhaps, a habitation in pure, clean, fine sand or other circumstance peculiarly favorable to fine growth, compactness of form, and hardness of shell. I have had it only from the southern part of Bering Sea, St. Paul Island, Bering Island, Hagmeister Island, and Nunivak Island, all localities where deep water and a clean sandy bottom are the rule. It may be that in muddier localities it develops into the *calcareo* or *lata*.

WASHINGTON, February 4, 1886.

EXPLANATION OF PLATE III.

- FIG. 1. *Aquilonaria turneri* Dall, dentition.
FIG. 2. *Aquilonaria turneri* Dall, animal, 6-1, page 204.
 a, line of margin of shell (removed), page 204.
 b, anal papilla, page 204.
FIG. 3. *Aquilonaria turneri* Dall, shell 4-1.
FIG. 4. *Bela solida* Dall, page 301.
FIG. 5. *Alvania castanella* Dall, page 307.
FIG. 6. *Mangilia aleutica* Dall, page 299.
FIG. 7. *Bela lævigata* Dall, page 300.
FIG. 8. *Onoba saxatilis* Möller, page 306.
FIG. 9. *Cingula* var. *martyi* Dall, page 306.
FIG. 10. *Velutina conica* Dall, page 305.
FIG. 11. *Onoba aleutica* Dall, page 307.



EXPLANATION OF PLATE IV.

- FIG. 1. *Bela albrechti* Krause, page 300.
 FIG. 2. *Bela harpa* Dall, page 300.
 FIG. 3. *Bela alaskensis* Dall, page 299.
 FIG. 4. *Bela krausei* Dall, page 301.
 FIG. 5. *Cerithiopsis* var. *truncatum* Dall page 304.
 FIG. 6. *Trophon muriciformis* Dall, page 302.
 FIG. 7. *Bela sculpturata* Dall, page 299.
 FIG. 8. *Alvania aurivillii*, Dall, page 308.
 FIG. 9. *Alvania castanea*, Möller, var. *alaskana* Dall, page 307.
 FIG. 10. *Cingula* var. *scipio* Dall, page 306.
 FIG. 11. *Macoma middendorffii*, Dall, page 308.
 FIG. 12. *Onoba cerinella* Dall, page 307.

