

XI.—ADDITIONS TO THE SHALLOW-WATER MOLLUSCA OF CAPE HATTERAS, N. C., DREDGED BY THE U. S. FISH COMMISSION STEAMER "ALBATROSS," IN 1883 AND 1884. BY KATHARINE J. BUSH.

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THE following list is intended to include only species not previously recorded from the region off Cape Hatteras, between low-water mark and 50 fathoms; although in one or two instances recorded species are mentioned, where there is some variation from the original description, or doubt as to their identity. It is by no means complete, as there are still a number of species which have not been satisfactorily identified. There is also a large amount of fine shell-sand, which has not yet been assorted.

The lists used for comparison are "Mollusca of Beaufort, N. C.," by Dr. Wm. Stimpson, published in the American Journal of Science, vol. xxix, p. 44, 1860; "Natural History of Fort Macon, N. C., and Vicinity (No. 2), by Dr. Elliott Coues, published in Proc. Acad. Nat. Sci. Philadelphia, p. 120, July, 1871; "American Marine Conchology," by Geo. W. Tryon, Jr., 1873; and "Natural History of Fort Macon, N. C., and Vicinity" (No. 5), by Drs. Elliott Coues and H. C. Yarrow, published in Proc. Acad. Nat. Sci. Phila., p. 1, August, 1878.

At the end, a list is given of deeper-water species, found in not less than 40 fathoms, many of which have not before been found so far south. Such northern species have an *n* before them.

To Prof. A. E. Verrill my thanks are especially due for valuable advice in the preparation of this paper and for kindness in furnishing books of reference.

GASTROPODA.

TOXOGLOSSA.

Conus Delessertii (?) Recluz.

Conus Delessertii Recluz, Magasin de Zoologie, pl. 72, 1843.

Kiener, *Conus*, p. 156, pl. 23, fig. 2.

Chenu, Manuel de Conchyliologie, vol. i, p. 345, fig. 1476, 1859.

Bush, Report U. S. Com. Fish and Fisheries, p. 77, for 1883, 1885.

? *Conus Floridanus* Gabb, Amer. Journ. Conch., vol. iv, p. 195, pl. 15, fig. 4, 1868.

A single living specimen (No. 35,676) taken at station 2108, in 48 fathoms, although agreeing closely with the description and figure of

the above species, as given by Kiener, is referred to it with considerable doubt, as it is recorded by him as having been found only in the southern part of the Red Sea.

This species agrees also, in most respects, with *C. Floridanus* Gabb, from Tampa Bay, Fla., but differs in having the outline of the

List of shallow-water stations in the vicinity of Cape Hatteras, N. C., occupied by the Albatross in 1883 and 1884.

Station.	Locality.		Fath.	Bottom.	Temp. F.		Hour.	Date.
					Bot- tom.	Sur- face.		
	N. Nat.	W. Long.						1883.
2007	35° 17' 00"	75° 13' 00"	15	fne. S.	68	56	8.00 A. M.	Apr. 27
2108	35 16 00	75 02 30	48	bu. M., crs. S.	66	78½	-----	Nov. 9
2112	35 20 50	75 18 00	15½	S., bk. Sp.	73½	70	-----	" 10
2113	35 20 30	75 19 00	15	M., bk. S.	72½	70	-----	" 10
2114	35 20 00	75 20 00	14	"	72	70	-----	" 10
								1884.
2269	35 12 30	75 05 00	48	crs. G.	76	75	8.46 A. M.	Oct. 19
2270	35 14 15	75 07 00	32	fne. gy. S.	--	75	9.40 "	" 19
2271	35 16 00	75 09 00	26	-----	--	75	10.45 "	" 19
2272	35 20 10	75 14 00	15	S. bk. Spk.	--	75	11.57 "	" 19
2273	35 20 30	75 17 30	17	"	72	72	12.45 P. M.	" 19
2274	35 20 35	75 18 05	16	"	--	71	1.22 "	" 19
2275	35 20 40	75 18 40	16	"	--	71	1.43 "	" 19
2276	35 20 45	75 19 15	16	"	--	71	2.08 "	" 19
2277	35 20 50	75 19 50	16	"	--	71	2.21 "	" 19
2278	35 20 55	75 20 20	16	"	--	71	2.45 "	" 19
2279	35 20 55	75 20 55	16	"	--	71	3.36 "	" 19
2280	35 21 00	75 21 30	16	"	--	70	4.15 "	" 19
2281	35 21 05	75 22 05	16	"	--	70	4.35 "	" 19
2282	35 21 10	75 22 40	14	bk. S.	--	70	5.13 "	" 19
2283	35 21 15	75 23 15	14	gy. S.	--	70	5.41 "	" 19
2284	35 21 20	75 23 50	13	crs. gy. S.	--	70	6.09 "	" 19
2285	35 21 25	75 24 25	13	"	--	70	6.40 "	" 19
2286	35 21 30	75 25 00	11	"	--	70	7.13 "	" 19
2287	35 22 30	75 26 00	7	"	--	69	6.15 A. M.	" 20
2288	35 22 40	75 25 30	7	S., brk. Sh.	--	69	6.45 "	" 20
2289	35 22 50	75 25 00	7	"	--	69	7.15 "	" 20
2290	35 23 00	75 24 30	10	"	--	69	7.45 "	" 20
2291	35 25 30	75 20 30	15	"	--	69	8.45 "	" 20
2292	35 27 20	75 16 30	17	"	--	70	9.32 "	" 20
2293	35 29 10	75 12 30	18	crs. S.	--	71	10.25 "	" 20
2294	35 31 00	75 08 30	19	crs. gy. S.	--	71	11.18 "	" 20
2295	35 32 41	75 04 30	22	"	--	73	12.03 P. M.	" 20
2296	35 35 20	74 58 45	27	"	--	71	1.15 "	" 20
2297	35 38 00	74 53 00	49	M., brk. Sh.	--	73	2.18 "	" 20
2302	35 14 00	75 03 00	49	S., C.	71	77	6.45 A. M.	" 21
2303	35 17 00	75 01 00	41	fne. S.	--	77	7.11 "	" 21
2304	35 19 00	74 58 00	37	"	--	77	7.40 "	" 21
2307	35 42 00	74 54 30	43	gy. & bk. S.	57	70	4.11 P. M.	" 21
2308	35 43 00	74 53 30	45	"	--	71	5.17 "	" 21

whorls concave with rounded angles, and in its coloring, the characters which Mr. Gabb mentions as belonging especially to *C. Desertii* Recluz. Both may be only variations of the same species.

Shell of medium size. Spire elevated, one-third the length of the shell, turreted, abruptly tapered to a small, very acute apex. Whorls nine (tip broken), concave, distinctly angulated just above the suture, forming a prominent, rounded keel, which is nodulous on the upper whorls, becoming smooth on the lower ones. The broad, concave, subsutural band is crossed by numerous, very fine, very much curved lines of growth and several unequal, and unequally separated, impressed, revolving lines and microscopic striæ. Body-whorl long, diminishing regularly toward the anterior end, and nearly straight along the sides, angulated considerably below the suture with a prominent, rounded keel, above which there is a wide, concave subsutural band, corresponding to that of the whorls of the spire. There are about twelve broad, deep, revolving grooves near the anterior end of the whorl, the spaces between them decreasing anteriorly; the rest of the surface is covered by unequal, wavy, impressed, revolving lines and microscopic striæ, crossed by the fine, flexuous lines of growth. Aperture narrow, of nearly uniform width; outer lip thin, very much curved forward from the broad, deep, posterior sinus. Interior glossy, bluish white, the exterior coloring showing distinctly along the edge. Epidermis light yellowish brown, raised in small, distinct scales along the lines of growth. Color light yellow, banded with white and marked with irregular chestnut-brown spots. On the body-whorl, commencing at the shoulder, there are three broad light yellow bands, ornamented with irregular, longitudinal, chestnut-brown spots, alternating with white bands, ornamented with three or four rows of smaller chestnut-brown, rounded and quadrangular spots. On the spire, the shoulder of the whorls is white, and with the subsutural band is ornamented with irregular, transverse spots of chestnut-brown.

Length, 51^{mm}; breadth, 24^{mm}; height of spire, 18^{mm}; length of aperture, 38^{mm}; its breadth, 4^{mm}.

Mangilia psila, sp. nov.

PLATE XLV, FIGURE 2.

Shell of moderate size, slender, rather thick, very plain, yellowish white, with a dull, lusterless surface. Whorls about six and a half elongated, decidedly angulated, forming an elongated, blunt spire.

Suture defined by an indistinct, undulating line. A very few prominent, narrow, straight ribs (six on the body-whorl) cross the whorls from suture to suture, separated by very wide, concave interspaces; a single rounded thread revolves on the periphery at the shoulder of the whorls, scarcely visible on the interspaces, but forming conspicuous, oblong nodules on the ribs. On the body-whorl the ribs continue to the end of the canal curving in from its base, towards the aperture. On the ventral surface of the canal there are five or six very indistinct, oblique striæ. The surface is everywhere crossed by conspicuous, flexuous lines of growth. Nucleus rather large, composed of two and a half regularly coiled, nearly smooth, somewhat shining whorls, the second having a row of minute nodules or beads on the periphery. Aperture long, narrow, of nearly uniform width; outer lip thin, nearly straight, broadly rounded anteriorly, with a decided sinus just below the suture; within the aperture, underneath the first external rib, there is a line of small, oblong nodules. Inner lip continuous with the outer, with a thin, free edge. Columella very slightly curved, with a small horizontal fold or tooth about the posterior third.

Length, 6^{mm}; breadth, 2.5^{mm}; length of aperture, 3^{mm}; its breadth, about .8^{mm}. A single dead specimen (No. 44,756) was taken at station 2269, in 48 fathoms.

Mangilia eritima, sp. nov.

Shell large for the genus, composed of eight very angular whorls, which form a sharp pointed, regularly tapered, turreted spire. Nucleus very small, regularly coiled, consisting of two and a half shining, light yellow whorls in striking contrast to the dull, rough surface peculiar to the rest of the shell. The first one and a half turns are perfectly smooth, while the last one is crossed by minute, transverse riblets. Suture marked by a conspicuous, rounded, undulating cingulus or thread on the preceding whorl. The sculpture consists of prominent, straight, angular, alternating ribs (nine on the body-whorl), forming a conspicuous node at the angle, extending from suture to suture. These, with their deeply concave interspaces, are crossed by unequal, conspicuous, well-rounded, granulated cinguli and microscopic threads. The first cingulus, defining the shoulder of the whorls, is double with the upper, half slightly the larger, the sutural one is the next in size, while between these there are two still finer ones; these are unequally distant from each other, the first and second being much

closer together than the others, and the intervening surfaces are covered by unequal, microscopic threads. Above the angle of the whorls the threads alone occur and number about nine. This inequality in the spiral sculpture makes the edges of the transverse ribs very rough and jagged. On the body-whorl there are about thirteen cinguli below the shoulder, unequal in size and unequally separated, those on the canal larger and closer together than those just above it, while the fourth one below the angle is so prominent as to make a slight angle in the outline of the whorl. Below this angle the transverse ribs curve in toward the columella following the outline of the outer lip, and extend to the end of the canal, the curvature being most noticeable in a dorsal view. Very fine striae intersect the cinguli and the threads in the direction of the lines of growth, rendering them granular and give the appearance to the shell, when dry, of being covered with a fine, gray dust. Aperture long, narrow-ovate, with a moderately long, rather narrow canal. Outer lip not thickened, with a comparatively thin edge and a broad, moderately deep sinus extending from the suture to the angle. Columella slightly curved; inner lip marked by a narrow stripe of conspicuous red enamel. Color light yellow-brown; interior of aperture of the same conspicuous red color as the inner lip. In young specimens this coloring is wanting.

Length, nearly 8^{mm}; breadth, 3^{mm}; length of aperture, 3.5^{mm}; its breadth, 1^{mm}.

One adult and four young specimens were taken in 14 to 17 fathoms.

Mangilia ephamilla Bush.

Report U. S. Com. Fish and Fisheries, p. 78, for 1883, 1885.

PLATE XLV, FIGURES 4, 4a.

Shell of moderate size, rather stout, with a regularly tapered, acute spire of about five sharply angulated whorls, besides the nucleus. Suture marked by a distinctly raised, rounded, undulating spiral thread. The nucleus is small, prominent, semi-transparent and glassy, composed of about two and a half turns. The apical whorl is small, rather prominent and with the second is very smooth; the third is crossed by delicate, curved, transverse riblets rendered somewhat nodulous by the intersection of a single, faint, revolving, median thread; on the other whorls there are about nine, broad, prominent, acute, straight, longitudinal ribs extending from suture to suture, and separated by deep, concave interspaces about equal in

width to the ribs. The whole surface is covered with distinctly raised, rounded cinguli and microscopic threads roughened by the fine lines of growth, and have the appearance, under the microscope, of being covered with minute grains of sand. The cingulus at the centre and defining the shoulder of the whorls is the most conspicuous; above this there are about five finer ones, and below, on the whorls of the spire, two or three, the number increasing to ten or twelve on the body-whorl. The aperture is a little less than half the length of the shell, narrow, oblong, broadest at its posterior third, pinched up anteriorly into a straight, slightly elongated canal. Outer lip thin, with a sharp edge and a shallow sinus just below the suture; inner lip inconspicuous. No operculum.

Color, in alcohol, deep yellow with white ribs and canal, changing in adult specimens to deep brown with yellow ribs and canal.

Length, 6.5^{mm}; breadth, 3^{mm}; length of aperture, 3^{mm}; its breadth, .5^{mm}.

Several specimens both living and dead, in 14 to 48 fathoms.

This species is closely allied to *M. cerina*, but differs in having a stouter form, more angularly shouldered whorls and especially in having acute, very prominent, straight ribs extending from suture to suture.

Mangilia ceroplasta, sp. nov.

Shell of medium size, stout, waxen-yellow, with an abruptly tapered, blunt spire, less than half the length of the shell, composed of six and a half well rounded whorls. Nucleus large, regularly coiled, rather blunt, somewhat lustrous, of two and a half whorls; the second is crossed by four unequal, equally distant, nodulous carinæ, the first, just below, and the fourth, just above the suture, are very fine and quite indistinct. Below this the whorls are crossed from suture to suture, by little elevated, rounded, straight ribs separated by intervals about equal to their own width; both of these are intersected by a distinct median carina and three or four less conspicuous equally distant ones below it. On the body whorl there are about sixteen smaller ones, somewhat crowded anteriorly. Very fine microscopic threads cover the intervening surface and all are roughened, or rendered granulous, by the intersection of the fine striæ in the direction of the lines of growth. Aperture broad-ovate; outer lip thin, broadly curved posteriorly, with a very slight inbending anteriorly. Columella slightly curved. Inner lip shown by a narrow strip of dark colored enamel. Color light yellow with a narrow band of dark red-

brown just below the suture, and a similar one on the middle of the body-whorl.

Length, 5.5^{mm}; breadth, 3^{mm}; length of aperture, 3^{mm}; its breadth, 1^{mm}.

A few dead specimens, in 10 to 17 fathoms.

Mangilia melanitica Dall, variety *OXIA* Bush.

Report U. S. Com. Fish and Fisheries, p. 78, 1883, for 1885.

PLATE XLV, FIGURES 3, 3a.

Shell small, slender, fusiform, lustrous, transparent, glassy, with a tall, regularly tapered, acute spire. Whorls eight slightly convex, angulated and carinated. Suture defined by a distinct, smooth, rounded thread. Nucleus large, acute, nearly smooth, of three and a half rapidly tapering coils, with a small, very prominent, decidedly upturned apical whorl; the two lower whorls have a distinct median keel. The sculpture consists of about seventeen very thin, slightly raised, strongly recurved riblets extending from suture to suture, rendered nodulous by the intersection of a rather broad, smooth, rounded, median carina. The greatest curvature of the transverse riblets is above the carina on the wide, slightly concave, subsutural band, which is crossed also by the lines of growth, and in some specimens, by numerous, microscopic, revolving striæ. On the body-whorl, from the posterior end of the aperture to the end of the canal, there are about twelve rather fine, smooth, rounded cinguli. The first, a little wider and more prominent than the others, situated just above the suture, is rendered nodulous by the crossing of the riblets at which they abruptly end, and is separated from the second by a quite wide, smooth space; the distance between the others decreases so that, on the canal, they are quite close together. On some of the specimens there is an additional line midway between the carina and the first cingulus; and three or four of the riblets, and rarely all of them, on the dorsal surface extend, as nearly straight lines, to the base of the canal. The aperture, in immature specimens, is rather broad-ovate, with a thin, slightly curved outer lip with a very shallow, wide posterior sinus and the columella has a slight, sigmoid curvature, while in more mature specimens the aperture is very narrow, oblong, with a very much thickened outer lip, forming a conspicuous varix with a thin, brown edge bending in, partly closing the aperture, and with a deep, narrow, oblique sinus considerably below the suture. The outer lip also increases posteriorly and joins the inner

lip a little below the suture, thus considerably shortening the aperture. Some specimens have about four smooth, raised, rounded, revolving threads on the interior of the aperture, which form, by their abrupt termination, conspicuous nodules within the margin of the outer lip. Columella, nearly straight, and has, just within the thin, free edge of the inner lip, a row of from four to six very minute, white crenulations. Canal very short, narrow at its base, but suddenly widened by the abrupt, outward turning of the lip.

Color of fresh specimens amber, with lighter tinted carina, and red-brown edged aperture; some specimens are irregularly spotted with red-brown.

Length of a medium sized mature specimen, 5^{mm}; its breadth, 2^{mm}; length of aperture, 1.75^{mm}; its breadth, .5^{mm}. A specimen of the same length without the thickened lip, has an aperture 2^{mm} long and nearly 1^{mm} broad.

Very abundant, both living and dead, in 7 to 48 fathoms.

Mr. W. H. Dall considers this shell identical with a species from Florida to which he has given the name, *melanitica* (MSS.), but admits a varietal difference.

Mangilia oxytata Bush.

Report U. S. Com. Fish and Fisheries, p. 80, for 1883, 1885.

PLATE XLV, FIGURE 1.

At station 2108, in 48 fathoms a single dead specimen (No. 35,395), somewhat resembling the preceding, was taken.

It consists of about eight whorls; those of the spire strongly angulated just below the middle, and ornamented with about nine rather prominent, straight, transverse ribs, commencing at the periphery and extending to the suture; these, with their wide, concave interspaces, are crossed by three rather strong, nearly smooth, rounded, equally distant carinæ, the third defining the suture. Smooth, oblong nodules are formed by the intersection of these with the ribs, those on the periphery being the most conspicuous, as the first carina is slightly wider than the other two. The subsutural band is wide, slightly concave, crossed by delicate, ex-curved, raised lines or riblets, extending from the suture to the median carina; and by three or four fine, slightly raised, equally distant, revolving threads. The nucleus is large, semi-transparent, shining, of four and a half turns, with a small, exceedingly prominent, decidedly upturned, apical whorl, which, with the two following, is smooth and glassy; the next two have a

fine, smooth, median carina. On the body-whorl the ribs continue nearly to the base of the canal and are crossed by small, nearly smooth, rounded, equally distant cinguli, which commence a little below the third principal carina and continue to the end of the canal. The entire surface is covered with very minute, microscopic granules. Aperture narrow-ovate, pinched up anteriorly into a short, rather narrow, straight canal. Outer lip very much thickened, with a conspicuous varix, and a thick, smooth, rounded, very irregularly curved, light brown edge, and a deep, narrow sinus considerably below the suture, at the angle of the shoulder; inner lip inconspicuous; columella slightly curved.

Color yellowish white, tinged with brown just below the suture, and on the anterior part of the body-whorl.

Length, 5^{mm}; breadth, 2.5^{mm}; length of aperture, 2^{mm}; its breadth, 1^{mm}.

This species, although closely resembling the preceding, is sufficiently characterized in having a much stouter form, more acute apex, more angularly shouldered whorls, fewer and more prominent ribs, more numerous cinguli, and especially in having its entire surface microscopically granulated.

Mangilia (?) *glypta* Bush.

Report U. S. Com. Fish and Fisheries, p. 80, for 1883, 1885.

PLATE XLV, FIGURES 5, 5a.

Shell small, semi-transparent, fusiform, with about five slightly convex whorls, below the nucleus, which consists of three and a half smooth, transparent, white, glassy, regularly increasing turns. The apical whorl is small, not very prominent, somewhat oblique. The sculpture consists of about ten rather indistinct, narrow, longitudinal ribs, and broad, rounded, very conspicuous cinguli, which, in crossing the ribs, form prominent, smooth, white, oblong beads or nodules; there are three rows of these on the whorls of the spire, and five or six on the body-whorl; the second and third are the most prominent and farther apart than the first two. Cinguli without nodules continue to the end of the canal, the transverse ribs disappearing at its base. Aperture a little more than one-third the length of the shell, narrow-ovate, pinched up anteriorly into a very narrow, short canal; outer lip thickened, forming a slight varix, with a thin, white edge and a shallow sinus close to the suture, with one or two, minute, white crenulations just within its posterior edge; there are also about

five similar but much larger crenulations on the inner margin of the lip, extending from the sinus to the base of the canal. Inner lip continuous with the outer, with a free, thin, white edge, having four or five minute white crenulations just within its inner margin. Canal short, narrow, bent slightly backwards at its anterior end, with a decided, but shallow notch. Epidermis raised in conspicuous folds along the lines of growth.

Color, of fresh specimens, light yellowish brown under a lighter yellow epidermis.

Length of a specimen with imperfect nucleus, 5^{mm}; its breadth, 2.5^{mm}; length of aperture, 2.5^{mm}; its breadth, 1^{mm}.

Two fresh and several worn specimens, in 16 to 48 fathoms.

The conspicuous epidermis prevents this species being rightly placed in the *Mangilia* group, but as no specimens with the animal have as yet been found, its position cannot be determined with certainty, although in its general appearance and lamelliform epidermis it closely resembles a *Pisania*.

Acus protectus (Conrad) Dall.

Cerithium protectum Conrad, Proc. Acad. Nat. Sci. Phil., vol. iii, p. 26, 1846.

Acus protectus Dall, Proc. U. S. Nat. Mus., vol. vi, p. 325, 1883.

Three dead specimens (No. 35,383), station 2108, in 48 fathoms.

RACHIGLOSSA.

Marginella Smithii Verrill.

These Transactions, vol. vi, pp. 420, 452, 1885.

A number of specimens, in 15 to 43 fathoms.

Nassa consensa Rav.

Ravenel, Proc. Acad. Nat. Sci. Phil., vol. xiii, p. 43, 1861.

Tryon, Amer. Mar. Conch., p. 35, 1873.

Rather common in 10 to 49 fathoms.

Astyris pura Verrill.

These Transactions, vol. v, p. 515, 1882.

Two specimens, living and dead, in 14 and 15 fathoms.

TÆNIOGLOSSA.

Cyphoma gibbosa (Linné) Adams.

H. & A. Adams, Genera, vol. i, p. 271, pl. 28, fig. 8, 1858.

Chenu, Manuel de Conchyliologie, vol. i, p. 273, fig. 1790, 1859.

One dead specimen (No. 40,766) occurred at station 2280, in 16 fathoms.

Lunatia heros (Say) H. & A. Adams.

Gould, *Invert. Mass.*, Binney's ed., pp. 338-340, figs. 608-610, 1870.

Verrill, *Invert. Anim. Vineyard Id.*, p. 646, pl. 23, figs. 133-136, 1874.

A few dead specimens, in 16 to 68 fathoms.

Sigaretus maculatus Say.

Say, *Amer. Conch.*, vol. iii, pl. 25, 1831; *Conch. U. S.*, p. 176, pl. 25, 1858.

Tryon, *Amer. Mar. Conch.*, p. 61, pl. 10, fig. 106, 1873.

Two dead specimens (No. 38,750), station 2276, in 16 fathoms.

Cerithiopsis Emersonii Adams.

Gould, *Invert. Mass.*, p. 387, fig. 649, 1870.

Verrill, *Invert. Anim. Vineyard Id.*, p. 648, pl. 24, fig. 151, 1874.

Rather common in 14 to 16 fathoms.

Triforis turris-thomæ (D'Orb.) Dall.

Cerithium turris-thomæ D'Orbigny, *Moll. Cuba*, vol. ii, p. 155, atlas, pl. 23, figs 10-12, 1853.

Triforis turris-thomæ Dall, *Bull. Mus. Comp. Zool.*, vol. ix, p. 81, 1881.

PLATE XLV, FIGURE 6.

One dead specimen (No. 35,807), station 2114, in 14 fathoms.

Cæcum pulchellum Stimp.

Gould, *Invert. Mass.*, p. 315, fig. 583, 1870.

Verrill, *Invert. Anim. Vineyard Id.*, p. 649, pl. 24, fig. 158, 1874.

Common in 14 to 17 fathoms.

Cæcum Cooperi Smith.

Verrill, *Invert. Anim. Vineyard Id.*, p. 649, 1874; these *Transactions*, vol. v, p. 525, 1882; vol. vi, pl. 28, fig. 8, 1884.

A few specimens were found with the preceding.

Cithna (?) *olivacea* V.

These *Transactions*, vol. vi, p. 185, pl. 29, f. 5, 1884.

A single dead specimen occurred at station 2273, in 17 fathoms.

Skeneia trilix, sp. nov.

Bush, Report U. S. Com. Fish and Fisheries, p. 82, for 1883, 1885.

PLATE XLV, FIGURES 7, 7a.

Shell small, disk-shaped, with the spire nearly flat, but with the nuclear whorls rising a little above the level of the last whorl. Whorls four or more, the body-whorl strongly tricarinate, one carina at the periphery, one around the base and one around the shoulder, the spaces between them equal, convex and nearly smooth. The upper carina shows on all except the nuclear whorls and the one next following; above this carina the whorl is flattened or slightly concave, joining the preceding whorl nearly at right angles, but swelling a little close to the suture; on this band four or five faint spiral striæ sometimes occur; more rarely traces of them are found below the carina and on the base. On the basal side, the last whorl is pretty regularly rounded and strongly convex and the umbilical depression is large and deep, funnel-shaped, extending to the apex. Within this, the whorls are distinctly spirally grooved and sometimes its border is defined by a small, distinctly raised carina. Aperture nearly circular though slightly angulated at the carinæ. Lip a little thickened, slightly expanded next the body-whorl; inner lip represented only by a thin, closely adherent layer of enamel. Nucleus small, a little prominent, smooth, glossy and subvitreous, the apical whorl minute and slightly turned up. Surface of the shell lustrous and usually nearly smooth though often showing faint, flexuous lines of growth.

Dry specimens are more or less opaque, yellowish white.

Fresh specimens, preserved in alcohol, are very thin, nearly transparent, the animal matter showing distinctly beneath. The entire surface of these is crossed by numerous, very delicate, regular, equally distant, microscopic lines in the direction of the lines of growth.

Operculum very thin, horny, light yellow, round, of about five equal whorls, nucleus at the center.

Animal with short, stout tentacles; prominent eyes situated at their bases; and a rather broad, bilobed snout.

Breadth, 3^{mm}; height, 1^{mm}.

Very abundant, both alive and dead, in 7 to 17 fathoms.

Skeneia lirata V.

Omalaxis (?) *lirata* Verrill, these Transactions, vol. v, p. 529, 1882; vol. vi, p. 452, 1885.

Several specimens were found in 10 to 17 fathoms.

PTENOGLOSSA.

Scalaria leptalea, sp. nov.

Shell comparatively thin and delicate, rather stout, large, composed of about ten regularly tapered, very convex whorls. The nucleus is small, and consists of two and a half smooth, shining whorls; below this the surface is crossed by delicate, thin, slightly raised, reflected, oblique ribs, between which there are very numerous, exceedingly fine cinguli, about fifteen to the millimeter. On the upper whorls the ribs are very numerous, exceedingly fine and very close together, becoming less numerous, coarser and farther apart on the lower ones. The number decreases in a ratio of ten, there being thirty-six on the eighth whorl, twenty-six on the ninth, and sixteen on the body-whorl. Aperture ovate; outer lip thin with a reflected edge; inner lip thickened and reflected anteriorly.

Color bluish white.

Length of the largest specimen, with imperfect nucleus, 15.5^{mm}; breadth, 5.5^{mm}; length of aperture, 4^{mm}; its breadth, about 3^{mm}.

One adult and several young specimens, in 14 to 16 fathoms.

Scalaria teres, sp. nov.

PLATE XLV, FIGURE 8.

Shell very small and slender, thin, delicate, semi-transparent, very shining. Whorls about nine, very convex, regularly coiled, crossed by numerous (about twenty-seven on the body-whorl) very thin, delicate, slightly raised, a little oblique ribs, having an almost imperceptible angle just below the suture. Nucleus large, delicate pink, consisting of three and a half perfectly smooth, shining whorls. Aperture oval; inner lip thickened, slightly reflected at the base. Color bluish white with a delicate pink apex.

Length, 4^{mm}; breadth, 1.5^{mm}; length of aperture, about 1^{mm}; its breadth, about .5^{mm}.

This species can be readily recognized by its size, delicacy and very brilliant luster.

Two living specimens from stations 2275 and 2276, in 16 fathoms.

GYMNOGLOSSA.

Niso ægleës Bush.

Report U. S. Com. Fish and Fisheries, p. 83, for 1883, 1885.

PLATE XLV, FIGURES 10, 10a.

Shell of moderate size, regularly tapered, conical, thin, semi-transparent, smooth, shining, consisting of about twelve, closely coiled,

flattened whorls, with the suture indistinct defined by a thread of dark chestnut-brown, above and below which there is an indefinite band of yellowish white, gradually shading, towards the centre of the whorls, into light yellow or brown, sometimes mingled with purple. The nucleus is small, consisting of about three regularly coiled whorls of a light purple or amethystine color. Base prominent, angulated, with a moderately large and deep umbilicus, margined by a dark chestnut-brown thread. Aperture nearly quadrangular, the angles being formed at the termination of the dark threads, defining the base and the umbilical region, somewhat produced at the anterior angle, forming an indistinct notch. Outer lip thin, with a dark chestnut-brown edge; inner lip regularly curved, slightly reflected over the umbilicus, with a somewhat thickened, dark chestnut-brown edge; just back of this there runs across the base, from within the umbilicus to the sutural thread, a thread or streak of the same dark chestnut-brown color, and throughout the entire length of the shell, with the exception of the nucleus, similarly colored streaks occur, crossing the whorls at irregular intervals. In specimens somewhat eroded, fine but distinct lines of growth cross the whorls at pretty regular intervals, and occasionally even in fresh specimens indications of them are seen. Operculum horny, very thin, light yellow.

Length of the largest specimen, 7.5^{mm}; breadth, 3.5^{mm}; length of aperture, 2.5^{mm}; its breadth, 2^{mm}.

Common in 7 to 32 fathoms.

Odostomia engonia, sp. nov.

Shell long, rather stout, white, lustrous, obelisk-shaped, consisting of seven and a half flattened whorls, distinctly chamfered above the suture which is canaliculate. The surface is apparently smooth except a rather prominent, rounded, revolving thread at the angle of the whorls, but under the microscope it is covered with numerous, unequal, indistinct striæ. Nucleus very small, just showing above the first whorl. Body whorl distinctly angulated at the periphery where there is a prominent, rounded thread, with a somewhat elongated, rounded base. Umbilicus small, deep, nearly concealed by the reflected inner lip. Aperture oval, anteriorly considerably produced beyond the base. Columella with a small, distinct fold within the aperture not seen in a front view.

Length, 5^{mm}; breadth, 2^{mm}; length of aperture, 1.8^{mm}; its breadth, 1^{mm}. A more mature specimen from Beaufort, N. C., is 6.5^{mm} long; 2.8^{mm} broad; with an aperture 2^{mm} long and 1^{mm} broad.

One living and a few dead specimens, in 15 and 16 fathoms.

Odostomia engonia, var. *teres* nov.

PLATE XLV, FIGURE 9.

A similar but much more slender shell was found with the preceding. The whorls are more flattened and have a distinct, impressed, spiral line just below the angle. The nucleus is large and very oblique. The aperture is not so much produced anteriorly. In young specimens the fold is very conspicuous.

A specimen with the same number of whorls as the one measured above is 4.5^{mm} long; 1.5^{mm} broad; aperture, 1^{mm} long and about .8^{mm} broad.

Odostomia cancellata (D'Orb.)

Chemnitzia cancellata D'Orbigny, Moll. Cuba, vol. i, p. 225, atlas, pl. 17, figs 1-3, 1853.

A few specimens were found in 11 to 16 fathoms.

TECTIBRANCHIATA.

Actæon puncto-striatus (Adams) Stimp.

Tornatella puncto-striata Gould, Invert. Mass., p. 224, fig. 515, 1870.

Actæon puncto-striata Verrill, Invert. Anim. Vineyard Sd., p. 664, pl. 25, fig. 165, 1874.

PLATE XLV, FIGURE 17.

A number of specimens were found in 7 to 17 fathoms, but they are much larger than the typical form from Vineyard Sound and have finer and more closely punctate spiral sculpture, a more conspicuous fold on the columella, and some specimens have three distinct bands of delicate pink color on the body-whorl, and one on the preceding whorl.

Philine Sagra (D'Orb.)

Bulla Sagra D'Orbigny, Moll. Cuba, vol. i, p. 123, atlas, pl. 4, figs. 5-8, 1853.

PLATE XLV, FIGURES 16, 16a.

Two dead specimens (No. 38,442), station 2113, in 15 fathoms.

Cylichna buplicata (Lea).

Bulla buplicata Lea, Proc. Bost. Soc. Nat. Hist., p. 204, 1844.

Utriculus buplicatus Tryon, Amer. Mar. Conch., p. 104, pl. 13, fig. 213, 1873.

PLATE XLV, FIGURE 14.

Very abundant in 7 to 17 fathoms; rare in 48 fathoms.

Cylichna cælata, sp. nov.

PLATE XLV, FIGURE 15.

Shell rather thick, opaque white, with a slightly lustrous surface, of moderate size, somewhat conical in shape, with a truncated tip and an elongated, tapering base. Spire concealed within a very deep pit; the two or three whorls are distinctly visible in an end view and are crossed by numerous, delicate, little curved riblets which curve over the top of the body-whorl extending down a short distance, and gradually blend with the flexuous lines of growth. Commencing about the middle of the whorl and covering the base there are numerous, fine, punctate, spiral lines, very much crowded anteriorly. Aperture very narrow, expanded anteriorly; outer lip a little produced at the top, bending round somewhat abruptly, then following the outline of the body-whorl, and joining the inner lip in a regular curve; inner lip much thickened at its base with a minute umbilical chink behind it. Color yellowish white.

Length, 3^{mm}; greatest breadth, 1.5^{mm}.

Rare in 15 to 43 fathoms.

Bulla Candei D'Orb.

Moll. Cuba, vol. i, p. 128, atlas, pl. 4, figs. 1-3, 1853.

PLATE XLV, FIGURE 13.

Very common in 7 to 48 fathoms.

Volvula oxytata, sp. nov.

Volvula, sp., Bush, Report U. S. Com. Fish and Fisheries, p. 84, for 1883, 1885.

PLATE XLV, FIGURE 12.

Shell rather small, somewhat cylindrical, with a sharp, spike-like apex and a tapering, rounded, anterior end, rather thin, semi-transparent, somewhat lustrous, with four or five very fine, indistinct, punctate, spiral lines on each end and very indistinct, microscopic striæ on the intervening surface. Aperture long, very narrow, expanded anteriorly; outer lip thin, following the curvature of the body-whorl to just below the middle where it continues in a straight line and joins the inner lip in a broad curve; inner lip very thin, slightly reflected anteriorly over a slight umbilical chink. Color bluish-white under a pale yellow epidermis.

Length of one of the largest specimens, 4^{mm}; breadth, 1.5^{mm}.

Not uncommon in 7 to 17 fathoms.

Volvula minuta, sp. nov.

PLATE XLV, FIGURE 11.

Shell very small, spindle-shaped, thin, semi-transparent, white, destitute of sculpture with the exception of three or four very indistinct, punctate, spiral lines on the base. Aperture very narrow, gradually expanding anteriorly from about the middle, with a regularly curved outer lip. Columella with a slight twist or fold, with a very small umbilical chink behind it. Epidermis indistinct.

Length of the largest specimen, 2.5^{mm}; breadth, 1^{mm}.

A few specimens occurred in 14 to 16 fathoms.

Pleurophyllidia Cuvieri Meckel.

Ohenu, Manuel de Conchyliologie, vol. i, p. 399, figs. 3024, 3025, 1859.

Two specimens occurred in 15 and 27 fathoms.

NUDIBRANCHIATA.

Scyllæa Edwardsii V.

These Transactions, vol. v, p. 550, pl. 43, f. 10, 1882.

Several young specimens were taken, at the surface, near station 2108.

HETEROPODA.

Atlanta Peronii Les.

Verrill, these Transactions, vol. v, p. 529, 1882; vol. vi, pl. 28, figs. 4, 4a, 1884.

Several dead specimens, in 15 to 843 fathoms.

Atlanta inclinata Soul.

Verrill, these Transactions, vol. vi, p. 211, 1884.

A few dead specimens, in 48 to 843 fathoms. Alive at the surface.

PTEROPODA.

Cavolina tridentata Gray.

Verrill, Invert. Anim. Vineyard Id., p. 669, pl. 25, fig. 177; these Transactions, vol. v, p. 554, figs. 6, 7, 1882.

A few dead specimens, in 16 to 843 fathoms.

Cavolina uncinata (D'Orb.) Gray.

Verrill, these Transactions, vol. v, p. 554, 1882.

Common in 16 to 843 fathoms.

Cavolina longirostris Les.

Verrill, these Transactions, vol. v, p. 555, 1882.

Very abundant in 14 to 938 fathoms.

Cavolina quadridentata (Les.)

Verrill, these Transactions, vol. vi, p. 212, 1884.

A few specimens, in 15 to 142 fathoms.

Cavolina inflexa (Les.) Gray.

Verrill, these Transactions, vol. v, p. 555, 1882.

One specimen, in 48 fathoms.

Diacria trispinosa Gray.

Verrill, Invert. Anim. Vineyard Id., p. 669, 1874.

Common in 15 to 938 fathoms.

Clio pyramidata Linné.

Verrill, these Transactions, vol. v, p. 555, 1882.

Rather common in 16 to 938 fathoms.

Styliola virgula (Rang.)

Verrill, these Transactions, vol. v, p. 557, 1882; vol. vi, p. 213, 1884.

One specimen, in 15 fathoms.

Styliola subulata (Quoy and Gaimard).

Verrill, these Transactions, vol. vi, p. 213, 1884.

A few specimens, in 15 to 843 fathoms.

SOLENOCONCHA.

Dentalium leptum Bush.

Report U. S. Com. Fish and Fisheries, p. 84, for 1883, 1885.

PLATE XLV, FIGURES 18, 18a.

Shell of moderate size, very slender, slightly curved posteriorly, rather thin and delicate, with a very smooth and glossy surface, destitute of sculpture, except at the posterior end, which is covered with numerous, crowded, very fine, raised, longitudinal lines visible only under the lens. Anterior aperture round, with a sharp, thin edge; posterior aperture somewhat thickened, very small, round, slightly oblique, with a very deep, narrow, dorsal notch. Color delicate sal-

mon, or yellow, gradually shading into white toward the anterior end. Very young specimens are white, very thin and glassy.

Length, 31.5^{mm} ; diameter of anterior aperture, 2^{mm} ; of posterior aperture, about $.5^{mm}$.

Common in 7 to 48 fathoms.

Cadulus Carolinensis Bush.

Report U. S. Com. Fish and Fisheries, p. 85, for 1883, 1885.

PLATE XLV, FIGURE 19.

Shell of medium size, semi-transparent (perfectly fresh specimens are almost transparent and glassy, showing the animal quite distinctly) very glossy, white, circular throughout its entire length. Greatest diameter at about the anterior third, diminishing slightly to the round, very oblique, anterior aperture, and backward to the posterior end, at first very gradually and farther back very rapidly. Curvature well marked in some specimens, very slight in others, nearly uniform dorsally, but ventrally, most decided in the posterior third. Posterior aperture very small, round, a little oblique, with four small, distinct notches, two on each side:

Length, 9.5^{mm} ; greatest diameter, about 2^{mm} ; diameter of anterior aperture, 1^{mm} ; posterior aperture, $.4^{mm}$.

Very abundant in 7 to 48 fathoms.

Cadulus incisus, sp. nov.

PLATE XLV, FIGURE 20.

Shell rather small, slender, somewhat cylindrical, slightly contracted dorsally, just back of the anterior aperture, tapering and curving gradually from about the middle toward the posterior end. It is thin, semi-transparent and very lustrous. The anterior aperture is oval, and a little oblique; the posterior aperture is very oblique with four narrow, very deep notches, two on each side, forming four conspicuous points on the end of the shell.

Length of largest specimen, 8^{mm} ; diameter anterior aperture, 1^{mm} ; posterior aperture, $.5^{mm}$. The other specimen is smaller and more slender, measuring 7^{mm} in length; with the anterior aperture $.8^{mm}$ in diameter and the posterior less than $.5^{mm}$.

LAMELLIBRANCHIATA.

Martesia cuneiformis (Say).

Pholas cuneiformis Say, Journ. Phil. Acad., vol. ii, p. 322, 1822; Conch. U. S., p. 108, 1858.

Martesia cuneiformis Tryon, Amer. Mar. Conch., p. 127, pl. 17, figs. 267, 268, 1873.

A single valve (No. 40,800) was found at station 2276, in 16 fathoms, and living specimens occurred, imbedded in wood, at Beaufort, N. C.

Diplothyra Smithii Tryon.

Proc. Phil. Acad., 1862; Amer. Mar. Conch., p. 128, pl. 17, fig. 269, 1873.

A single living specimen, imbedded in limestone, was found in shallow water at Beaufort, N. C.

Siliqua costata (Say), H. & A. Ad.

Machæra costata Gould, Invert. Mass., p. 47, fig. 370, 1870.

Siliqua costata Verrill, Invert. Anim. Vineyard Id., p. 675, pl. 32, p. 244, 1874.

A fragment was found at station 2277, in 16 fathoms.

Corbula Swiftiana C. B. Adams.

Contributions to Conchology, vol. i, p. 236, 1852.

Separate valves were found in very great abundance, in 7 to 48 fathoms and a few living specimens, in 16 to 48 fathoms.

Corbula disparilis D'Orbigny.

La Isla de Cuba, v, Moluscos, p. 322, pl. 27, figs. 1-4, 1845.

Separate valves were very common in 14 to 48 fathoms.

Neæra costata Bush.

Report U. S. Com. Fish and Fisheries, p. 85, for 1883, 1885.

PLATE XLV, FIGURE 21.

Shell moderately thick, compressed, triangular-ovate, with a contracted and somewhat elongated rostrum, and with three or four very prominent, curved, distant, radiating ribs on the convex part of the valves, and a few smaller and closer ones anteriorly. Umbos high, smooth; beaks somewhat curved backward. The dorsal margin, from the beaks to the end of the rostrum, is strongly and regularly concave, the rostrum being a little upturned or straight at the tip; anteriorly,

the dorsal margin is convex, and falls off abruptly to the obtusely rounded anterior end. The ventral margin is broadly rounded and projects outward in an acute angle, at the projection of each of the principal ribs; the intervals between these angles are usually concave, and beyond the last rib the outline recedes in a concave curve to the origin of the rostrum, which is rapidly narrowed to near the tip. Of the three principal radiating ribs, the middle one runs from the beak nearly to the middle of the ventral margin, curving a little backward; the posterior one terminates about midway between the former and the end of the rostrum, curving strongly backward; the most anterior one ends about midway between the middle one and the anterior end of the shell; midway between this and the middle one, there is a smaller secondary rib. These three primary ribs are strongly elevated, not very broad, with the summits rather thin, finely notched by the concentric lines of growth; the most posterior one is the largest and highest, and projects the most at the margin. Between these ribs the spaces are wide and strongly concave, marked by numerous and regular lines of growth. On the anterior end of the shell there are two or three smaller radiating ribs, which are separated by intervals about equal to their own breadth, and give the margin a slightly crenulated appearance. The rostrum is narrow, strongly compressed, with both the dorsal and ventral outline concave. Two small ridges run from the beak to the tip of the rostrum, separated by a very narrow, flattened area. The right valve has two well-marked lateral teeth, the posterior one considerably longer and larger than the anterior; between these there is a small, ovate cartilage pit. The inner surface of the valves shows deeply indented grooves corresponding to the primary external ribs. Color, opaque white. Epidermis indistinct.

Length of the largest specimen, 6^{mm}; height, 4^{mm}; thickness, 4^{mm}.

Four living and two dead specimens were found at stations 2108 and 2269, in 48 fathoms.

This species bears considerable resemblance to *N. ornatissima* D'Orb., but the ribs are less numerous, more curved, and the primary ones are much larger and more widely separated, and the shell is less convex.

Neæra paucistriata Dall. MSS.

Three living specimens, found in 16 and 17 fathoms, were identified by Mr. Dall as this species.

Pandora Carolinensis, sp. nov.

Pandora, sp., Bush., Report U. S. Com. Fish and Fisheries, p. 86, for 1883, 1885.

Shell of moderate size, triangular-ovate, with a short, acutely angled posterior end and an elongated, slightly rostrated anterior end. Valves very unequal, overlapping; the superior one very convex; the inferior one flat or slightly concave. Beaks very small, curved inward and backward, situated near the posterior end. Anterior dorsal margin very straight; posterior very oblique, slightly concave just behind the beaks; ventral margin much swollen along the middle, pretty regularly curved to near the anterior end where it is slightly contracted and forms a short, narrow rostrum. Right valve the larger, very convex, moderately thick, with a dull surface, roughened by the irregular, sinuous lines of growth. Extending from the beaks perpendicularly across the valve is a distinct, though slight, depression in the surface, in crossing which the lines of growth abruptly curve downward. A prominent, rounded ridge runs from the beaks to the anterior ventral margin, forming a narrow dorsal area crossed by the lines of growth. Below the ridge the surface is a little concave and forms a slight contraction in the margin, more apparent in some specimens than in others. Anterior hinge plate is a little thickened, very narrow ledge, on which the left valve rests, extending nearly the entire length of the dorsal margin; behind the beaks is a thick, conspicuous, triangular process or tooth, which is concave next the margin of the valve; in front of this, directly under the beaks, is a narrow, oblique cavity, with the very narrow cartilage-pit in front of it. Left valve considerably smaller and very thin, with a conspicuous furrow running out from beak, corresponding to the ridge in the opposite valve, above which the valve bends slightly outward. Besides the irregular lines of growth the surface is cut by numerous, about fourteen, unequally distant, impressed, radiating lines. In front of the beaks the edge of the valve is bent in at right angles, forming a gradually widening area which laps over the opposite valve; directly under the beak is a thick, prominent, elongated, oblique tooth, and a very much thinner, longer, less elevated, more oblique, wedge-shaped one in front of it with the narrow cartilage-pit between; extending from behind the beaks along the dorsal margin is a rather delicate ridge, which in some specimens shows only as a slight thickening of the edge, and in others it is separated from it and shows as a ridge or tooth. Pallial impression well marked; pallial line formed by a line of indistinct dots. Interior of the shell very pearly.

Length of one of the largest specimens, 16^{mm}; height, across center, 8^{mm}; thickness, about 3^{mm}.

Separate valves were very abundant in 7 to 48 fathoms; and a few young living specimens were found in 15 to 17 fathoms.

Clidiophora, sp. indet.

A single left valve, (No. 45,202), quite distinct from *C. trilineata*, or any species known to me, occurred at station 2275, in 16 fathoms.

Valve small, thin, very much distorted. Beaks minute, bending strongly outward, situated far over toward the posterior end; anterior dorsal margin curving abruptly upward from the beak and then continuing in a straight line; posterior dorsal margin very short, oblique and slightly concave, forming an acute angle at its junction with the ventral margin. Ventral margin much curved, the greatest curvature near the anterior end, where it bends inward toward the beaks, forming a very slight rostrum. Surface very rough. Two distinct, impressed lines or grooves, parallel to the dorsal margin, extend from the beaks to the anterior end; above the second there is a broad, nearly flat, dorsal area; below it the valve is very convex and the surface is cut by from thirteen to fifteen very conspicuous, unequal, and unequally distant, concentric grooves, becoming deeper and farther apart toward the ventral margin and scarcely visible on the posterior surface, which is concave and roughened by the lines of growth. Interior lustrous and very pearly. The two exterior, dorsal grooves show as two distinct ridges, and four of the deepest, exterior, concentric grooves appear as elevated lines, with broad, concave interspaces. The edge of the valve along the entire length of the anterior dorsal margin is bent in at right angles and forms a gradually widening area. Hinge consists of three distinct, thin, oblique, unequal, divergent teeth. The first is a very oblique, long and narrow, angular ridge, having a shallow, elongated cartilage-pit in its posterior side. The second, directly under the beaks, is very much shorter, broader, more elevated, and less oblique, and the third is a very slightly elevated ridge extending from the beak to the posterior muscular scar. Scars rather distinct, pallial line not visible.

Macha Cumingiana (?) Dkr.

Macha Cumingiana Dunker, Proc. Zool. Soc. London, p. 425, 1861.

Macha strigillata (Linné), var. (?) Bush, Report U. S. Com. Fish and Fisheries, p. 86, for 1883, 1885.

Shell moderately large, thin, convex, long and narrow, with broadly

rounded ends and with the opposite margins nearly parallel. Beaks very small, incurved, situated near the anterior third; the dorsal margin in front of the beaks, straight, and behind them slightly oblique. Surface somewhat lustrous, roughened by the irregular lines of growth and cut by numerous, fine, wavy, diagonal lines, the first one commencing just behind the beaks, and extending to the anterior ventral margin; near the posterior end of the shell, over the portion radiating from the beaks to the posterior ventral margin, they abruptly turn down in the opposite direction. In a specimen about an inch long there are about thirty-six of these lines. Extending from the beaks obliquely backward across the shell there are two very faint, slightly raised, narrow, divergent rays. The hinge in the right valve consists of two unequal, prominent, divergent teeth. The first one, directly under the beak, is a three-sided, pointed tooth, projecting inward and upward like a hook; immediately back of this is a very narrow, gradually widening, sharp-edged, very oblique ridge, which forms the second tooth. Back of these, curving strongly inward and upward, is a short, high, angulated, tooth-like process, to the very concave exterior surface of which the ligament is attached. In the left valve, immediately under the beak, attached to the end of the ligamental process, there is a prominent, very thin, leaf-like tooth, curving strongly upward and backward.

In young specimens the lines of growth and the oblique markings show very distinctly on the interior, but in more mature examples these are concealed by a layer of smooth, very lustrous, pure white enamel. Pallial line distinct, with a broad, deep, very conspicuous sinus.

Color, opaque bluish white, under a thin, closely adherent, lustrous, light yellow epidermis.

Length of the largest perfect specimen, 30^{mm}; height, 13^{mm}; thickness, about 4^{mm}.

Several valves of young specimens were found in 15 to 17 fathoms. At station 2273 a fragment occurred showing the shell to be large and very thick when full grown.

*Tellina linte*a Conrad.

Journ. Acad. Nat. Sci. Philadelphia, vol. vii, p. 259, pl. 20, fig. 3, 1837.

Common in 10 to 26 fathoms.

Semele lata C. B. Adams.

One valve (No. 40,600) agreeing perfectly with specimens labelled as this species in the Peabody Museum of Yale College, was found at station 2290, in 10 fathoms.

Dosinia obovata Conrad.

Cytherea obovata Conrad, Fossils Tertiary Form. U. S., p. 14, pl. 8, fig. 4, 1838.

Dosinia obovata Conrad, Amer. Journ. Conch., vol. vi, p. 77, 1870-71.

Bush, Report U. S. Com. Fish and Fisheries, p. 87, for 1883, 1885.

Very abundant in 7 to 17 fathoms.

Chione alveata (Conrad).

Venus alveata Conrad, Journ. Acad. Nat. Sci. Phila., vol. vi, p. 264, pl. 11, fig. 19, 1831; Fossils Tertiary Form. U. S., p. 9, pl. 5, fig. 2, 1838. (? non Say.)

Common in 10 to 48 fathoms.

Cardium pinnulatum Conrad.

Gould, Invert. Mass., p. 141, fig. 452, 1870.

Verrill, Invert. Anim. Vineyard Sd., p. 683, pl. 29, fig. 209, 1874.

Common in 15 to 142 fathoms.

Cyprina Islandica (Linné) Lam.

Gould, Invert. Mass., p. 129, fig. 443, 1870.

Verrill, Invert. Anim. Vineyard Sd., p. 683, pl. 28, fig. 201, 1874.

A few valves occurred in 27 to 49 fathoms.

Astarte undata Gld.

Gould, Invert. Mass., p. 119, fig. 432, 1870.

Verrill, Invert. Anim. Vineyard Sd., p. 684, pl. 29, fig. 203, 1874.

Separate valves occurred in 27 to 48 fathoms and living specimens, in 43 to 49 fathoms.

Crassatella (Eriphyla) lunulata Conrad.

Gouldia mastracea Gould, Invert. Mass., p. 128, fig. 442, 1870.

Verrill, Invert. Anim. Vineyard Sd., p. 685, pl. 29, figs. 206, 207, 1874.

Crassatella (Eriphyla) lunulata Dall, Proc. U. S. Nat. Mus., vol. vi, p. 340, 1883.

Several valves occurred in 7 to 43 fathoms.

Crassatella, sp.

A single valve (No. 40,590) occurred at station 2307, in 43 fathoms. It measures 28^{mm} in length; 20^{mm} in height; 6^{mm} in thickness.

Venericardia granulata (Say.)

Cardita borealis Gould, Invert. Mass., p. 146, fig. 455, 1870.

Cyclocardia borealis Verrill, Invert. Anim. Vineyard Sd., p. 683, pl. 29, fig. 216, 1874.

Venericardia granulata Verrill, these Transactions, vol. vi, p. 258, 1884.

A few valves occurred in 27 to 49 fathoms.

Venericardia obliqua, sp. nov.

Shell small, moderately thick, compressed, somewhat triangular, very oblique, much produced anteriorly. Beaks small, acute, curved inward and very much forward. Surface crossed by from twelve to fourteen principal radiating ribs and two or three smaller ones on either side. The ribs are broad, flat, roughened by the lines of growth and separated by narrow, rather deep, unequal grooves. Interior smooth, very lustrous, semi-transparent, the external ribs showing distinctly through, and at their termination, forming broad crenulations in the margin. Hinge plate very broad, with a single prominent, slightly oblique, wedge shaped, bilobed tooth directly under the beak, in the right valve, with a deep triangular cavity on either side; and in the left valve two stout, divergent, wedged shape teeth, with a deep, triangular cavity between. Color dirty white with a broad, median, concentric band of yellow-brown.

Length of a medium sized specimen, 6^{mm}; height, 6.5; thickness, 3^{mm}.

One living specimen and a few single valves, in 7 to 10 fathoms.

Chama congregata Conrad.

Fossils Tertiary Form. U. S., p. 32, pl. 17, fig. 2, 1838.

Separate valves occurred in 7 to 27 fathoms and living specimens, in 16 fathoms.

Lucina filosa Stimp.

Gould, Invert. Mass., p. 98, fig. 404, 1870.

Verrill, Invert. Anim. Vineyard Sd., p. 686, pl. 29, fig. 212, 1874.

A number of valves occurred in 27 to 80 fathoms.

Lucina nassula Conrad.

Amer. Journ. Sci., vol. ii, p. 394, 1846.

Proc. Acad. Nat. Sci. Phil., vol. iii, p. 24, 1846.

Rather common in 7 to 48 fathoms.

Lucina trisulcata Conrad.

Amer. Journ. Sci., vol. xli, p. 346.

Fossils Tertiary Form. U. S., p. 71, pl. 40, fig. 5, 1838.

A single valve (No. 40,598) occurred at station 2290, in 10 fathoms.

Cryptodon obesus Verrill.

Invert. Anim. Vineyard Sd., p. 393, pl. 29, fig. 214, 1874; these Transactions, vol. v, p. 569, 1882.

A few valves were found in 15 to 48 fathoms.

Diplodonta turgida Verrill and Smith.

Verrill, Amer. Journ. Sci., vol. xxii, p. 303, 1881; these Transactions, vol. v, p. 569, pl. 58, fig. 42, 1882.

Common in 27 to 68 fathoms.

Montacuta bidentata (Montagu).

Verrill, these Transactions, vol. v, p. 571, 1882.

Single specimens were found in 16 and 48 fathoms.

Leda unca Gld.

Gould, Proc. Boston Soc. Nat. Hist., vol. viii, p. 282, 1862.

Tryon, Amer. Mar. Conch., p. 183, 1873.

Verrill, these Transactions, vol. vi, p. 260, 1884.

Very abundant in 7 to 48 fathoms.

Pectunculus tricenarius Conrad.

Fossils Tertiary Form. U. S., p. 63, pl. 35, fig. 1, 1838.

One valve (No. 40,614), station 2296, in 27 fathoms.

Crenella glandula (Totten) Ad.

Gould, Invert. Mass., p. 194, fig. 492, 1870.

Verrill, Invert. Anim. Vineyard Sd., p. 695, pl. 31, fig. 233, 1874.

Single valves occurred in 16 and 48 fathoms.

Pecten Clintonius Say.

Pecten tenuicostatus Gould, Invert. Mass., p. 196, fig. 494, 1870.

Pecten Clintonius Verrill, these Transactions, vol. vi, p. 261, 1884.

Several specimens occurred in 16 to 49 fathoms.

Anomia aculeata Müll.

Gould, Invert. Mass., p. 204, fig. 498, 1870.

Verrill, Invert. Anim. Vineyard Sd., p. 697, pl. 32, figs. 239, 240, 240a, 1874.

Several specimens occurred in 16 to 142 fathoms.

List of species found between 40 and 50 fathoms.

GASTROPODA.

Marginella borealis V.

Volutella lachrimula Gld.

n. *Sipho pygmaeus* (Gld.) V.

n. *Anachis Habiceeti* (Jeff.) V.

n. *Astyris zonalis* (Lins.) V.

Lamellaria pellucida V.

LAMELLIBRANCHIATA.

Saxicava arctica (Linné) Desh.

n. *Thracia Conradi* Couth.

Astarte castanea Say.

n. *Astarte crenata* Gray.

Leda acuta (Conrad).

n. *Nucula delphinodonta* Migh.

GASTROPODA—continued.

- n. Crucibulum striatum* (Say) H. and
A. Ad.
n. Cingula carinata Migh.
n. Aclis tenuis V.
Ethalia multistriata V.
Calliostoma Bairdii V. & S.
Cocculina reticulata V.
n. Eulimella Smithii V.

LAMELLIBRANCHIATA—cont.

- n. Modiolaria nigra* (Gray) Lovén.
n. Modiolaria corrugata (Stimp.)
Mörch.
Crenella decussata (Mont.) Macg.
Amussium, sp. nov.

EXPLANATION OF PLATE XLV.

- Figure 1.—*Mangilia oxytata*, sp. nov. (p. 460), × 10.
Figure 2.—*Mangilia psila*, sp. nov. (p. 455), × 5.
Figure 3.—*Mangilia melanitica* Dall., var. *oxia*, nov. (p. 459), × 10.
Figure 3a.—The same. Nuclear whorls, × 30.
Figure 4.—*Mangilia ephamilla*, sp. nov. (p. 457), × 5.
Figure 4a.—The same. Nuclear whorls, × 25.
Figure 5.—**Mangilia* (?) *glypta*, sp. nov. (p. 461), × 10.
Figure 5a.—The same. Nuclear whorls, × 15.
Figure 6.—*Triforis turris-thomæ* (D'Orb.) Dall (p. 463), × 10.
Figure 7.—*Skenea trilia*, sp. nov. (p. 464), × 10.
Figure 7a.—The same. View of the base, × 10.
Figure 8.—*Scalaria teres*, sp. nov. (p. 465), × 6.
Figure 9.—*Odostomia engonia*, var. *teres*, nov. (p. 467), × 6.
Figure 10.—*Niso agleës*, sp. nov. (p. 465), × 5.
Figure 10a.—The same. Nuclear whorls, × 30.
Figure 11.—*Volvula minuta*, sp. nov. (p. 469), × 20.
Figure 12.—*Volvula oxytata*, sp. nov. (p. 468), × 10.
Figure 13.—*Bulla Candei* D'Orb. (p. 468), × 10.
Figure 14.—*Cylichna biphlicata* (Lea) (p. 467), × 10.
Figure 15.—*Cylichna cælata*, sp. nov. (p. 468), × 6. The lines denoting the sculpture are much too heavy.
Figure 16.—*Philine Sagra* (D'Orb.) (p. 467), × 10.
Figure 16a.—The same. To show sculpture, × 50.
Figure 17.—*Acteon puncto-striatus* (Adams) Stimp. (p. 467), × 10.
Figure 18.—*Dentalium leptum*, sp. nov. (p. 470), × 2½.
Figure 18a.—The same. Dorsal view of posterior end to show notch, × 10.
Figure 19.—*Cadulus Carolinensis*, sp. nov. (p. 471), × 8.
Figure 20.—*Cadulus incisus*, sp. nov. (p. 471), × 4.
Figure 21.—*Næra costata*, sp. nov. (p. 472), × 10.

Figures 2, 3a, 4a, 5a, 8, 9, 15, 16a, 20 are camera-lucida drawings by the author; the others are drawn by Mr. J. H. Emerton, from nature.

* The specimen figured has an imperfect nucleus and is destitute of the epidermis found on perfectly fresh specimens.

