n the boulders of New England and the wes-
tract, (a wilderness region lying northeast,
and filled with delightful lakes,) I am inform-
it for hunting, that the eminences are com-
e rocks covered with a hardy growth of ever-
rom the investigations on the northwest and
in, where the primitive rocks are found, that
from Boonville to the junction of the trans-
earlier formations. In fact, all that part of
hawk and Black rivers is described in Ma-
is primitive, although further examinations
d if I mistake not, the bed of the Black river
granite, and the High falls are made by a
lthough as my recollection of these observa-
l not assert them with entire confidence.
Spar.—Information from a young farmer
ls in his neighborhood," induced me to visit
expecting as usual to find fine crystals of
estern bank of the Dry Sugar river, and on
antity of earth and stones, several tortuous
vered, six or eight feet long, in some parts
t the hand, and filled with wet argillaceous
mbers of loose imperfect crystals of calc
ck on each side of the vein was entirely
tion of beautiful crystals. Their form is
3 and 97, of Shepard's Mineralogy—the
lateral angles replaced by tangent planes
figure 19, Pl. 3, in Cleaveland's Mineral-
s are an inch in length—"six sided prisms
minated at each extremity by three penta-
on alternate lateral planes, and form with
4'." The rock is very hard and divided
twelve inches, and it requires much labor
cimens without injury.
e boulders of green coccolite and glassy
portions, are found interspersed with those
l Leyden, and when laid up in the farm
e exposed to view, the pieces have a most
ave found pebbles of this kind in the Mo-
foot of High falls on Black river—thirty

Anonymous

The coccolite, of a deep green color, occurs in masses of large granular concretions, and in grains disseminated through the quartz, presenting in its fracture, brilliant cleavage faces, partially developing the primary form. The coccolite encloses rhomboidal calc spar of various hues; and on blasting to obtain unweathered specimens, the rock opened through several veins of *Tabular Spar*, which remained on either face, coating it with a thin layer of most delicate whiteness. Crystals of prismatic *green pyroxene*, an inch in length, were observed in one instance.

In a large boulder, (near the road on the right, just before entering the village of Boonville from the south,) some thirty feet in circumference, and eight or ten feet in height, were several veins of white feldspar and quartz, from two to five inches wide, intersecting each other and extending through the rock, which contained in profusion the *brown granular garnet*, and a few points of the green coccolite. These minerals were noticed in Vol. XIII. p. 198, and richly deserve for their beauty the high encomiums there bestowed; and the fact last mentioned illustrates the uniformity which prevails in the associations of minerals, being the same as found at Willsboro' and other places.

ART. III.—*On the Economical Uses of some species of Testacea.*

(Concluded from No. I. page 73.)

VI. MUREX ———? (Linn.)—Hebrew *Argaman*. Greek Πορφυρα, and Lat. *Purpura*. *Purple Whelk*.

WHAT the species was from which the ancients obtained the real Tyrian dye, is now uncertain, but in coloring cloth there is no doubt that many species, and perhaps two or three genera, were used. The *Murices*, the *Buccina*, and the *Strombi*, and probably most of the voluted univalves, contain more or less of the coloring matter, and we may reasonably suppose that they would not be neglected where there was so great a demand for the purple dye. By the old writers, however, they are all described under one name. Pliny makes mention of two species, from one of which only the true color was obtained; the other (which he calls *Conchylium*) seems from his description to have been a real Buccinum, and produced only a poor blue or greenish hue, like the sea in a storm, while it emitted a strong rank smell, and was of course less valuable. The shell dye has been in use from the earliest periods. Moses, B. C. 1491,

makes mention of it in several places, and he used much wool of a purple color in the works of the tabernacle, and in the garments of the High Priest.* This the Israelites must have brought out from Egypt with them, and from the quantity in their possession it cannot have been very scarce in that country. It was used as royal robes by the kings of Midian, B. C. 1249;† and B. C. 606, the Babylonians covered their idols with garments of purple.‡ At the same time it was also the royal color among these people, and we find that Daniel, after explaining the writing on the wall, as a special mark of favor, was clothed in it.§ Alexander Balus, king of Syria, sent Jonathan Maccabeus a crown of gold, and a purple robe, allowing him to take the title of king's friend.‖ The band or Cydaris, which formed the essential part in the old Persian diadem, was composed of a twined substance of purple and white; and any body below the royal dignity presuming to wear these colors, unsanctioned by the king, was guilty of a transgression of the law deemed equal to high treason.¶

Although in after times it was almost exclusively known by the name of Tyrian purple, yet it appears to have been only on the decline of that great commercial city that it was manufactured there. It is mentioned by Ezekiel,** B. C. 588, as being imported from the Isles of Elisha, (Peloponnesus;) and Aristotle,†† as late as B. C. 340, makes no mention of its being brought from Phœnicia. In his time the best and largest shells were from Sigeum and Lectum on the promontory of Troas, and the smaller and inferior from Euripus and Caria. When, however, Tyre had lost its commerce, and become an inferior place, the chief supply of Europe was drawn from it, though we find it imported into Rome from Lacedemon, and manufactures of it in various parts of Italy as late as A. D. 14.‡‡ During the earlier periods of the Roman republic it was solely worn by the kings and patricians, but in later times Pliny§§ informs us that

* Exodus xxv. 14. xxviii. 5—6. Josephus, Act. Jud. lib. iii. c. vii. § 7.

† Judges viii. 26. ‡ Jeremiah x. 9. Baruch vi. 12. § Daniel v. 7.

‖ Maccabees i. 20. These references are from Calmet's Dictionary, Art. PURPLE, where they are distinctly understood to refer to the dye from the shell.

¶ Sir Robert Ker Porter's Travels in Georgia, &c. Volume ii. p. 154, *quoted in* Horne's Introd. to the Holy Scriptures, Vol. i. ch. iii. sec. 3. § 3.

** Ezekiel xvii. 7. †† Aristot. de Hist. Animal, lib. v. cap. 15.

‡‡ Macpherson's Annals of Commerce, Vol. i. p. 124. Juvenal, Sat. viii. 101.

§§ Plin. Hist. Nat. lib. ix. cap. 36. lib. xxxi. cap. 10. from which all the information with respect to the Romans is drawn, where not otherwise pointed out.

cloth of this color was so common as to be
and for the covering of furniture, by all the
He also remarks, that so great was its antiqui
of it was unknown to him, and adds from the
that Romulus and his successors used it—w
the same as saying that the first invention of
The Grecian tradition, but which of course w
that Hercules Tyrius was the first discover of
having eaten the shell fish, and returned to
with the purple color. Da Costa imagines th
the periwinkle (*Buccinum Lapillus*, Linn.)
cient British, and quotes the authority of the
lived (on the sea coast) in the early part of th
Among the Greeks, Lycurgus ordered the L
their soldiers with scarlet, [*purple;*] the rea
seems either to have been because this colo
cloth, and most lasting and durable, or on th
ness and splendor, which the lawgiver though
men's spirits, or lastly, because it was most
stains of blood. In war, a purple garment w
the end of a spear and used as a flag or signa

And though Jesus Christ was clothed in p
fixion, as a mark of derision, yet at this tim
have been either universally or necessarily wo
when giving audience to the ambassadors fro
described as being dressed in "*royal appare*
ple, but, as Josephus tells us, was wholly of s

* "*Sunt cochleæ, satis superabundantes, quibus tinc*
tur; cujus rubor pulcherrimus nullo unquam solis ar
injuria pallescere, sed quo vetustior, eo solet esse venu
lib. i. cap. i. See Donovan's British Shells, in loco
marked that Bede lived at Jarrow, about five miles f
Tyne, which there divides the counties of Durham an
rocks on that coast at the present day abound with th
are they, that it may almost be said that acres of rock
the clustering of the fish, intermixed with the *Bala*
young of the *Mytilus edulis*, and the supply is quite su
extensive manufacture of the dye.

† Potter's Archæologia Græca, 6th ed. vol. ii. p. 56

‡ *Ενδυσαμενος 'εσθητα βασιλικην.* Acts ch.
ενδυσαμενος εξ αργυρου πεποιημενην ΙΙΑΣΑΝ.
xviii. c. 8. § 2.

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erce, Vol. i. p. 124. Juvenal, Sat. viii. 101.
lib. xxxi. cap. 10. from which all the informa-
awn, where not otherwise pointed out.

cloth of this color was so common as to be employed as tapestry, and for the covering of furniture, by all the better class of citizens. He also remarks, that so great was its antiquity that the introduction of it was unknown to him, and adds from the chronicles then extant, that Romulus and his successors used it—which was perhaps only the same as saying that the first invention of it could not be traced. The Grecian tradition, but which of course was merely a fable, was that Hercules Tyrius was the first discover of it, his dog by chance having eaten the shell fish, and returned to him with its lips tinged with the purple color. Da Costa imagines that the dying qualities of the periwinkle (*Buccinum Lapillus*, Linn.) were known to the ancient British, and quotes the authority of the venerable Bede, who lived (on the sea coast) in the early part of the eighth century.* Among the Greeks, Lycurgus ordered the Lacedemonians to clothe their soldiers with scarlet, [*purple ;*] the reason of which institution seems either to have been because this color is soonest imbibed by cloth, and most lasting and durable, or on the account of its brightness and splendor, which the lawgiver thought conducive to raise the men's spirits, or lastly, because it was most proper to conceal the stains of blood. In war, a purple garment was frequently placed on the end of a spear and used as a flag or signal.†

And though Jesus Christ was clothed in purple before his crucifixion, as a mark of derision, yet at this time it does not appear to have been either universally or necessarily worn by princes. Herod, when giving audience to the ambassadors from Tyre and Sidon, is described as being dressed in "*royal apparel*," which was not purple, but, as Josephus tells us, was wholly of silver.‡

* "*Sunt cochleæ, satis superabundantes, quibus tinctura coccinei coloris conficitur ; cujus rubor pulcherrimus nullo unquam solis ardore, nulla valet pluviarum injuria pallescere, sed quo vetustior, eo solet esse venustior.*" Bede, Hist. Eccles. lib. i. cap. i. See Donovan's British Shells, in loco *B. Lapillus*. It is to be remarked that Bede lived at Jarrow, about five miles from the mouth of the river Tyne, which there divides the counties of Durham and Northumberland, and the rocks on that coast at the present day abound with this shell: indeed, so plentiful are they, that it may almost be said that acres of rocks are hidden from sight by the clustering of the fish, intermixed with the *Balanus elongatus*, (Mont.) and young of the *Mytilus edulis*, and the supply is quite sufficient to have served for an extensive manufacture of the dye.

‡ Potter's Archæologia Græca, 6th ed. vol. ii. p. 50.

‡ *Ενδυσαμενος εσθητα βασιλικην.* Acts ch. xii. ver. 21. *Στολην ενδυσαμενος εξ αργυρου πεποιημενην ΠΑΣΑΝ.* Josephus, Ant. Jud. lib. xviii. c. 8. § 2.

The shells inhabit all the shores of the Mediterranean, but the best were procured at Tyre, the island of Meninx, the coasts of Getulia and Laconica, and the island of Coa in the Ægean Sea.* The real Murex was fished for and caught with small and delicate nets; a bait was put in them, consisting of cockles or other bivalves, which had been so long kept out of water, that on being thrown in again they gaped widely. The Murex attacked them as food, and was drawn up with them. The other species were found adhering to rocks, on mud banks, &c. The season for catching them was in the spring, when the dye was the deepest and best. It is contained in a small white vein, which lies in the neck of the fish, and in its natural state is a thin and almost colorless liquor. The shell was carefully broken off, and as the dye loses its value when the fish is dead, they were obliged to cut it out alive. The veins were then laid in salt, and left to settle for three days; after which the whole was boiled for ten days more, and the fleshy parts skimmed off as they rose to the surface, till the whole liquid was clear, bright and red. The longer it was boiled, the deeper of course the color became. After this, the wool, well scoured, was steeped in it for some hours, then cleaned and carded, and put in again, to remain till it could absorb no more. Nitre was employed in fixing the color. The hue of the Tyrian dye was of a very deep red, soft and *shining*; the color of a rose, but approaching to black, or like a very deep shade of the color now called *lake;* of course the word *purple* as at present understood, conveys a wrong impression. When the smaller and inferior species were used, the process was the same, with the exception of their being crushed in the shell, instead of the vein being cut from them. The two were occasionally mixed to produce a variety of shade, according to the fashion.† No mention is made of linen being so dyed, and it seems to have been confined to woolen fabrics, and perhaps, as some think, to cotton. A writer in the Philosophical Transactions of the Royal Society of London,‡ Anno 1684, mentions a person at Minhead, on the coast of Ireland, who made it his business to mark linen with the liquor from shells. From

* Plin. Hist. Nat. and Juvenal Sat. ut supra.

† This appears to be the *dibaphos* and *bistinctus* of the Latin writers, and which does not imply that the wool had been twice dyed in the same liquor to produce a deeper shade, as some suppose, but that it was of an entirely different hue. Pliny says such was the most fashionable and the most expensive.

‡ Trans. of the Royal Society, abr'd. vol. ii.

the description and plate given, he appears to ha common periwinkle (*Buccinum Lapillus*, Linn. On trying the experiment himself, the writer vary much, and frequently before attaining its fi was pellucid and nearly colorless, then became a placed in the sun, immediately much darker; changed to a full sea green, and after that into a few minutes more it was a purplish red, and af two became a very deep purple. Further than affect it, but on being washed in soap and water bright and brilliant crimson. When the article the sun, it emitted a very strong and fetid smell, safœtida were mixed together. More lately a used by the Spanish Americans at Nicoya, also the cloth thus prepared was so expensive as onl nobles.* Among the Romans the royal edi signed with this liquor, and it was used as a pig

In common with the rest of the genus, the fis locomotive, living sometimes in deep water, an itself in the shore, while it is constantly search coloring liquor is probably provided as a means mal, as the ink of the cuttle fish, or the saliva although we have never observed the fact in an ish species, the fish when touched is said to have tarily emitting it.† In which case it comes out rank and offensive odor. If this be so, it must in passing through the vein, as when cut out it attaining its purple and final hue. Since the di and the introduction of cochineal into Europe, entirely neglected as an article of merchandise are aware of, any where used in the present da

VII. Murex Tritonis, (Linn.)—*Tri*

This fine univalve is indigenous to most warm the African, American, and Asiatic seas, and is of the islands of the southern Pacific. The

* Rees' Cyclopædia. Article Purple Fish.

† Aristotle, de Hist. Animal. lib. v. cap. 15. Hughes' p. 272.

l the shores of the Mediterranean, but the Tyre, the island of Meninx, the coasts of and the island of Coa in the Ægean Sea.* ed for and caught with small and delicate nem, consisting of cockles or other bivalves, kept out of water, that on being thrown in

The Murex attacked them as food, and

The other species were found adhering &c. The season for catching them was in was the deepest and best. It is contained ch lies in the neck of the fish, and in its l almost colorless liquor. The shell was as the dye loses its value when the fish is o cut it out alive. The veins were then le for three days; after which the whole ore, and the fleshy parts skimmed off as till the whole liquid was clear, bright and oiled, the deeper of course the color be- l, well scoured, was steeped in it for some rded, and put in again, to remain till it re was employed in fixing the color. The s of a very deep red, soft and shining; proaching to black, or like a very deep d *lake;* of course the word *purple* as at a wrong impression. When the smaller ed, the process was the same, with the hed in the shell, instead of the vein be- o were occasionally mixed to produce a o the fashion.† No mention is made of seems to have been confined to woolen think, to cotton. A writer in the Phi- ne Royal Society of London,‡ Anno Finhead, on the coast of Ireland, who inen with the liquor from shells. From

ut supra.
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d. vol. ii.

the description and plate given, he appears to have made use of the common periwinkle (*Buccinum Lapillus*, Linn.) for this purpose. On trying the experiment himself, the writer found the color to vary much, and frequently before attaining its final hue. At first it was pellucid and nearly colorless, then became a light green, and if placed in the sun, immediately much darker; in a few minutes it changed to a full sea green, and after that into a watchet blue; in a few minutes more it was a purplish red, and after lying an hour or two became a very deep purple. Further than this the sun did not affect it, but on being washed in soap and water it changed to a very bright and brilliant crimson. When the article dyed with it lay in the sun, it emitted a very strong and fetid smell, as if garlic and assafœtida were mixed together. More lately a species of shell was used by the Spanish Americans at Nicoya, also for dyeing with, but the cloth thus prepared was so expensive as only to be worn by the nobles.* Among the Romans the royal edicts were frequently signed with this liquor, and it was used as a pigment by artists.

In common with the rest of the genus, the fish is carnivorous and locomotive, living sometimes in deep water, and sometimes burying itself in the shore, while it is constantly searching for food. The coloring liquor is probably provided as a means of defense to the animal, as the ink of the cuttle fish, or the saliva of the snail; and although we have never observed the fact in any American or British species, the fish when touched is said to have the power of voluntarily emitting it.† In which case it comes out purple, and of a very rank and offensive odor. If this be so, it must undergo some change in passing through the vein, as when cut out it is white, and long in attaining its purple and final hue. Since the discovery of America, and the introduction of cochineal into Europe, the fish dye has been entirely neglected as an article of merchandise, and is not, that we are aware of, any where used in the present day.

VII. Murex Tritonis, (Linn.)—*Trumpet Shell.*

This fine univalve is indigenous to most warm climates; it inhabits the African, American, and Asiatic seas, and is found on the coasts of the islands of the southern Pacific. The only use it appears to

* Rees' Cyclopædia. Article Purple Fish.
† Aristotle, de Hist. Animal. lib. v. cap. 15. Hughes' Nat. Hist. of Barbadoes, p. 272.

be put to, is the making of musical horns or trumpets of it, and for this purpose it has long been used by the natives of Africa and India, and even long before the christian era it was thus employed by the inhabitants of the countries bordering on the Mediterranean. By the ancient Greeks it was universally used for giving signals in war. On the discovery of the Society Islands, it was found to be used in war, by the native priests on solemn occasions, and by the heralds in their ships; it was, in fact, the royal and religious instrument of music, and only made use of as such. The largest shells were selected for the purpose, which in general are about one foot in length. They made a perforation about an inch in diameter, near the apex, and into this they inserted a bamboo cane about three feet in length, which was secured by binding it to the shell by fine cocoa nut braid. The whole was made air tight with the gum of the breadfruit tree. The sound is described as being extremely loud, but the most dismal and monotonous that it is possible to imagine. As late as the last century it was used on board of ships trading to the West Indies or South America instead of a speaking trumpet. A species was also used (and perhaps still is) in Barbadoes, but whether the present one, we cannot from the description determine; it served instead of a bell to call the slaves to their work, and sounded so loud, that on a calm morning it might be heard above a mile off. The apex was merely broken, and then blown through. The fish was eaten, and divers were regularly employed in catching it. They were generally met with in about six fathom water, but after heavy rains they were found at the mouths of the water courses, feeding on the garbage washed down to them. If the water was dimpled so that the bottom could not be seen, the divers poured a spoonful of oil on the surface, which calmed it sufficiently for their purpose. When the tail part, which was somewhat gritty and sandy, was taken away, the rest of the fish tasted like "tripe, but shorter, sweeter, and more luscious." It is this shell which is generally represented in the hands of Triton in pictures, and whence its trivial name;* and from the use to which

* Thus Ovid, speaking of Neptune—

—"supraque profundum
Extantem, atque humeros innato murice tectum
Cœruleum Tritona vocat, conchæque sonaci
Inspirare jubet, fluctusque et flumina signo
Jam revocare dato, cava buccina sumitur illi
Tortalis in latum quæ turbine crescit ab imo."

Ovid, Metamorph. lib. 1

shells were thus put, originated the word *Buccin* ancients included at least a third of the known

VIII. Murex ——— ?

Another species of Murex (?) was used by th ing a pigment for painters; but the color was ob side of the shell, and not from the fish, as was th

IX. Ostrea edulis, (Linn.)—*Europe*

Ancient History.—The oyster has probably earliest periods. As they lie in comparatively sh increase in numbers and size, and offer a very nu ing food, we may reasonably suppose that the countries where they are found, were in general them. From Aristotle we learn that the Gre them.‡ It was as early as A. U. C. 633, that th them by laying them in pits and ponds was in At that time, one Sergius Orata first tried the ex crine oysters, and as he made much money by ceeding well, it rapidly spread into different c increased in luxury, the supply from the immed sufficient, and all the shores of the Mediterran for the shell fish. They were frequently broug tance, and at much expense, to be fattened in l feasts. They abounded at Abydos on the H most celebrated appear to have been procured a cus Lucrinus, and from Brundusium. Much h of these places appears to have arisen from fash ters of different times praising as the best those triets. The most generally esteemed, howeve from Rutupiæ, (now Sandwich, in Kent, Englan carried to Italy in great numbers. If we consid

* Dillwyn's Des. Cat. Vol. II. p. 727. Plin. Hist. Nat. li Polynesian Researches, Vol. I. p. 197, where a wood c green. Hughes' Nat. Hist. of Barbadoes, p. 276. Potter Vol. II. p. 79, where there is given a long dissertation on trumpets were introduced instead of the shells.

† "Concha quæ pictoribus usui est crassitudine pluriu dum non intra tectem, sed foris habet." Arist. de His Interpr. Du Val, tom. ii. p. 844.

‡ Aristotle de Hist. Animal. lib. v. cap. 15. §

of musical horns or trumpets of it, and for
been used by the natives of Africa and India,
e christian era it was thus employed by the
ries bordering on the Mediterranean. By
s universally used for giving signals in war.
Society Islands, it was found to be used in
s on solemn occasions, and by the heralds
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se of as such. The largest shells were se-
hich in general are about one foot in length.
about an inch in diameter, near the apex,
a bamboo cane about three feet in length,
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ptune—
supraque profundum
meros innato murice tectum
vocat, conchæque sonaci
tusque et flumina signo
cava buccina sumitur illi
æ turbine crescit ab imo."
Ovid, Metamorph. lib. I.

shells were thus put, originated the word *Buccinum*, which among the ancients included at least a third of the known univalves.*

VIII. Murex ——— ?

Another species of Murex (?) was used by the Greeks in preparing a pigment for painters; but the color was obtained from the outside of the shell, and not from the fish, as was the purple dye.†

IX. Ostrea edulis, (Linn.)—*European Oyster.*

Ancient History.—The oyster has probably been used from the earliest periods. As they lie in comparatively shallow water, quickly increase in numbers and size, and offer a very nutricious and refreshing food, we may reasonably suppose that the aborigines of those countries where they are found, were in general well acquainted with them. From Aristotle we learn that the Greeks in his time ate them.‡ It was as early as A. U. C. 633, that the mode of fattening them by laying them in pits and ponds was introduced to Rome. At that time, one Sergius Orata first tried the experiment on the Lucrine oysters, and as he made much money by it and his plan succeeding well, it rapidly spread into different districts. As Rome increased in luxury, the supply from the immediate coasts was not sufficient, and all the shores of the Mediterranean were ransacked for the shell fish. They were frequently brought from a great distance, and at much expense, to be fattened in Italy for the Roman feasts. They abounded at Abydos on the Hellespont;§ but the most celebrated appear to have been procured at Circæum, the Lacus Lucrinus, and from Brundusium. Much however of the fame of these places appears to have arisen from fashion, as we find writers of different times praising as the best those from different districts. The most generally esteemed, however, seem to be those from Rutupiæ, (now Sandwich, in Kent, England,) and which were carried to Italy in great numbers. If we consider the difficulties of

* Dillwyn's Des. Cat. Vol. II. p. 727. Plin. Hist. Nat. lib. XXXII. cap. 11. Ellis' Polynesian Researches, Vol. I. p. 197, where a wood cut of the instrument is given. Hughes' Nat. Hist. of Barbadoes, p. 276. Potter's Archæologia Græca, Vol. II. p. 79, where there is given a long dissertation on the time in which real trumpets were introduced instead of the shells.

† "Concha quæ pictoribus usui est crassitudine plurimum excedit, at florem illum non intra tectem, sed foris habet." Arist. de Hist. Anim. lib. v. cap. 15. *Interpr.* Du Val, tom. ii. p. 844.

‡ Aristotle de Hist. Animal. lib. v. cap. 15.

§ Virgil, Georg. i. 207.

land carriage, and the slowness of sailing vessels in those times, we may form some idea of their price, and the height to which luxury in eating had attained. In later times they appear to have been chiefly used for supper.* That many different species were used is probable. Pliny informs us that those from Circæum (Cape Cieceji) were black both in the flesh and shell, those from Spain reddish, and those from Sclavonia brown and dusky.† It was supposed that the fish fattened during the full moon, and grew thin as it waned; we are not aware that this has been observed in the present day, but it may have happened in particular situations, owing to the difference in the tides. The Roman epicures were in the habit of icing them before eating them, and the ladies used the calcined shell as a cosmetic and depilatory. To the doctors this fish was most valuable, being recommended in a great variety of diseases, and prepared in various ways; and though it could, generally speaking, do no good, it certainly could do little harm.

Modern History.—In England, the oyster fisheries are chiefly carried on at Colchester, in Essex, celebrated for its *green* oysters, at Feversham and Milton in Kent, and in the Isle of Wight. They are also fished for in the Swales of the Medway, in the Tenby on the coast of Wales, and near Liverpool, as well as around Portsmouth, and in many of the creeks of the southern coast. The best are found at Purfleet, the worst near Liverpool. They are very plentifully but partially distributed, and are found to extend further north on the western than on the eastern side of the island. In Scotland they also abound but appear likewise to prefer the north-eastern to the northwestern coast. While they are every where plentiful and highly flavored, from the Clyde to the Zetland, Orkney, and Western Islands, it does not appear that they breed higher on the other side than in the Firth of Forth. Those on the western shores are however comparatively little used, and with the exception of a few sent from Loch Farbert to Greenock, they are consumed by the natives on the spot. Those of the eastern coast, on the contrary, are carried to Newcastle upon Tyne, Hull and London, and have been exported in large quantities to Holland. The best are procured near Preston Pans, Port Seaton, and the Isle of Inchkeith, in Musselburgh bay, Firth of Forth; and vessels from Milton, Lee, and other parts of England come to dredge for them, and carrying them

* Juvenal, Sat. vi. 301. † Plin. Hist. Nat. lib. ix. cap. 30

away, afterwards fatten them for the English mar
Preston Pans are known by the name of *Pandoo*
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thousand ducats annually from the shell fishery a
Picolo, on which this place is situated, the spa
received on large conical earthen pans, secured a
ropes tied to them and sunk in different parts
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entirely hidden by the shells, when the whole a
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Of the quantity of oysters consumed in Engla
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† Plin. Hist. Nat. lib. ix. cap. 32.

away, afterwards fatten them for the English markets. Those from Preston Pans are known by the name of *Pandoors*, as being found at the door of, or near the pans, and from the quantity of fresh water are the fattest and best flavored. In Ireland, Milford Haven is celebrated for its oysters.

Oysters are found on most parts of the French coast, but they are most plentiful on those of Bretagne and Normandy. The most extensive fishery is that which is carried on at Granville, in the bay of which, and for six leagues to the northward they abound. The fishermen bring them to the town and dispose of them to women, who after having fattened them, dispose of them, either pickled or in the shell. Paris, Dieppe and Rouen are chiefly supplied from this place, for which purpose boats are continually arriving from other parts. The oysters from Rochelle and Bordeaux, and generally from the coast of Bretagne, are however by far the most esteemed; being fatter and more highly flavored, owing to the quantity of fresh water there running into the ocean. Here they are *greened* in the same manner as in England, and require about the same time to come to perfection. They are all to be met with in Paris, but those from Normandy in the greatest numbers. The appetite for shell fish of all sorts, which seems peculiar to the natives of the southern provinces of Italy, is such as to appear exaggerated to a foreigner, accustomed to consider but a few of them as eatable. So great however is it, that at Taranto, the government draws a revenue of twenty four thousand ducats annually from the shell fishery alone. In the Mare Picolo, on which this place is situated, the spawn of the oyster is received on large conical earthen pans, secured at equal distances by ropes tied to them and sunk in different parts of the bay. Their appearance is equally singular and beautiful; the vessel becomes entirely hidden by the shells, when the whole assumes the form of one solid but irregular mass of rockwork. The young oysters being rubbed off are scattered through various parts of the bay, and finally, when sufficiently grown, are collected by means of iron rakes.

Of the quantity of oysters consumed in England, we have no certain or continuous statistics. In 1824, the quantity bred and taken in the county of Essex, and consumed mostly in London, was supposed to amount to fourteen thousand or fifteen thousand bushels. They are at times imported in considerable numbers, but the yearly quantity is subject to important fluctuations. In the season of 1801–2, one hundred and eighty eight British vessels, carrying from

six to nine men each, were entered at the custom house of Cancale, in France, and carried back one hundred and nineteen millions four hundred and seventy three oysters, chiefly to London. On an average of 1831—1832, the imports into the same city amounted to fifty two thousand and ninety five bushels a year. In or about 1786, Glasgow consumed twenty thousand annually, which were carried from Leith on horseback or by carts, across the country. The quantity in the present day must be much greater. In 1803, the consumption of Paris was estimated at one million dozen, selling on an average at six sous per dozen.

Natural habits.—The European oyster is smaller, thinner, and more rounded than the American, while the lower valve is less concave or vaulted, it is not beaked, and the fish, compared with the size of the shell, is smaller and of a different flavor; there are besides, various other differences, and their habits are so very dissimilar that there can be no doubt at all of their being distinct species. The European oyster is found only adhering to rocks and stones, or occasionally to very strong clayey bottoms, and should these be washed away, the oyster beds perish. The fish is viviparous, and the young produced with a perfectly formed shell. They are, when first emitted, quite transparent, and they swim with great quickness, by means of a membrane extending out of the shell. So small are they in this state that Van Leeuwenhoek computes that one hundred and twenty of them in a row would extend an inch, and consequently a globular body, whose diameter is an inch, would, if they were round, be equal in size to one million seven hundred and twenty eight thousand of them! The vulgar opinion, and that on which the restraining laws have been framed is, that the period of spawning is May, at which time the young, or *spat*, is found adhering to the rocks. But as the young, as described above, are found in the parents perfectly formed and alive in the month of August, this is most probably the period of parturition, though it be not till May that they become fixed or sufficiently grown to be seen by the common observer. At this time they are about the size of a sixpence, and comparatively hard and firm, and have been well compared to a drop of candle grease in water. In two, or at farthest three years, they are fit for the table. The age to which it attains is probably great, but after having arrived at its full size, the valves are thickened, instead of being increased in length or breadth. From May to July, both the male and female oyster are said to be *sick*, and are in thin and poor

condition, but by the end of August they have aga
fat and in season. The sexes are distinguished
by the color of the fringe, that of the male being b
ored, that of the female white. Sand is prejudicia
ture of fresh water advantageous. The shell, a
Hatchett, is formed of carbonate of lime and a g
animal gluten, but more intimately mixed, and no
layers, as in the perlaceous shells.* The oyster f
shining intestinal worms, or animalcules, which
opening the shell in the dark. A most destructive
ter bed is the sea-star, (*Asterias glacialis*, Linn.
rays round the shell and perseveres till it has suck
ant. Another enemy is said to be the muscle
Linn.)

Fishery.—In both England and France the se
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liable to be convicted of felony if they disturb it, a
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or *spat*, as it is technically called, is dredged up,
they separate it from the shells and stones to w
and these they are obliged again to throw into t
the beds being destroyed. The spat is thrown
shallow water on the shores, to increase in size
such situations is considered private property.
oysters are not *bedded*, but are entirely procure

* Professor Rogers doubts the accuracy of this analysis
of animal matter contained in this shell, and he suppose
very minute portion of gluten. In this opinion he states
the experiments of Bucholtz and Brandes, and those he
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Fishery.—In both England and France the season for fishing for the oyster is restricted by law. In the former country the time allowed for collecting the spawn from the sea is May, when the dredgers may take all they can procure, but after that month they are liable to be convicted of felony if they disturb it, and are only allowed to take such oysters as are the size of half a dollar. The spawn, or *spat*, as it is technically called, is dredged up, and if not too small, they separate it from the shells and stones to which it is adhering, and these they are obliged again to throw into the water to prevent the beds being destroyed. The spat is thrown into creeks or into shallow water on the shores, to increase in size and fatten, and in such situations is considered private property. At Preston Pans the oysters are not *bedded*, but are entirely procured from the sea, and

* Professor Rogers doubts the accuracy of this analysis, as regards the quantity of animal matter contained in this shell, and he supposes that there only exists a very minute portion of gluten. In this opinion he states that he is supported by the experiments of Bucholtz and Brandes, and those he himself made on the *Ostrea Virginica*. What the shells were which were used by the former gentleman, we are not informed; but with all deference we would suggest that he himself seems to have forgotten that the American and British shells are quite distinct species, from which most probably arises the difference he has discovered, and which instead of proving Mr. Hatchett's experiments to be in the main incorrect, only tends to prove that the species are perfectly distinct, and not mere varieties. The quantity of gluten contained in the *Ostrea edulis*, is well known to even the most superficial observer, where the shell is common, and may be found in the large and thick specimens, or on the decaying of the shell, between the inner and outer laminæ, frequently in great quantities. It is of a dirty yellow color, and thick and clammy in its consistency. See Silliman's Am. Jour., Vol. xxvi. p. 361.

in dredging, those which are too small are thrown back again. The season begins on the first of September, and lasts till April. The dredgers make use of a peculiar kind of net, which is very strong, and fastened to three spikes of iron; this they drag along the bottom of the sea, and thus force the oysters into it; each boat requires five men, and they dredge in water from four to fifteen fathoms deep. The *green* oysters are all procured at or in the neighborhood of Colchester. When they wish to give them this color, they throw them into pits dug about three feet deep in the salt marshes, which are overflooded only at spring tides, and to which they have sluices to let out the salt water till it be about one and a half feet deep. These pits become green, and communicate their color to the fish in four or five days, although they commonly let them continue there six weeks or two months, in which time they will become a dark green. The color has recently been ascertained to arise from conferva, and other marine vegetable matter, decayed by the heat of the sun, on which the animal feeds. A very common and very mistaken opinion exists, especially among foreigners, that not only those, but all English oysters are impregnated with copper, '*which they get from feeding off copper banks*;' such we believe would be quite as injurious to the animal itself as it could be to us, and the fancy can only have arisen from the strong flavor peculiar to this fish. Green oysters are comparatively little esteemed in the present day.

Use.—The great value of this animal is for diet. The shell was at one time supposed to possess peculiar medicinal properties, but analysis has shown that the only advantage animal carbonates have over those of the mineral kingdom, arises from their containing no metallic or foreign substance.* The inhabitants of the shores of Hindoostan did, two centuries since, and perhaps still may, use it in the same manner. The fish is recommended by the doctors where great nourishment and easy digestion are required, the valuable quality being the quantity of gluten it contains. In the northeastern parts of England, old houses may be seen with their tops and gable ends ornamented with these shells, only the inside being exposed; a custom which is said, we know not with what truth, to have been introduced from Holland. In some parts of Scotland the shells are used as manure, and found very excellent and stimulating; in other places they are burned as lime.

* Iodine is found in some of them.—*Ed.*

In 1768, Mr. John Canton discovered that a
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which adheres to the roots of the trees in the
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found in Sumatra, where we are told that they
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is about three hundred miles, so that they ought
the trouble.‖

X. Ostrea Scabra, (Linn.)—*Scal*

This is an inhabitant of the Bahama islands, w
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same purpose.

* So called from its emitting light in the dark after expo
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† In compiling this article, the following works are th
been referred to and quoted from:—Plin. Hist. Nat. lib. xx
36. Rees' Cyclopædia, Art. Oyster. McCulloch's Com
Brewster's Edinburgh Encyclop. Art. Fisheries. Encycl
dix, Vol. viii. Art. Oyster. Postlethwaite's Diction. Ar
Stat. Hist. of Scotland, Vol. i. p. 358. Vol. vi. p. 196. Vo
pp. 69, 102, &c. Keppel Craven's Tour, p. 184. Statistic
P. E. Herbin, Vol. i. p. 386. Diction. de Trevoux. Philo
Vol. viii. 554. lviii. 337. ii. 606, &c. &c. &c.

‡ Marsden's Hist. Sumatra, p. 121.

§ Martyn's Hist. of the Br. Col. Vol. iv. p. 295.

‖ Webster's Voyage to the S. Atlantic Ocean, 1830, Vol.

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In 1768, Mr. John Canton discovered that a very good phosphorus* could be made from oyster shells. He added a little sulphur to them, and by calcination produced the substance. A long account of the process and his experiments is given in the Philosophical Transactions of that year. The French have a proverb drawn from this animal, which they apply to an awkward person, "*il parle ou joue, &c. comme une huitre á l'écaille.*"†

Besides these, oysters are found in most countries; the following are a few of the species.

The West Indies have, according to Hughes, two oysters, a large one in deep water, which is seldom eaten, and the mangrove oyster, which adheres to the roots of the trees in the wash of the tide, whence the old fable of oysters growing on trees. The same are found in Sumatra, where we are told that they are by no means so good as those of Europe.‡ Round the shores of New South Wales oysters are extremely plentiful, and though generally small, are of delicate flavor. Every rock is covered with them, and Mr. Martyn informs us he has seen parties of young ladies, with small hammers, seated on a large rock and feasting with great *goût* on these dainties.§ In Southern Africa the oysters of Mossel Bay are much celebrated, and their flavor considered so fine, that epicures have been induced to visit the bay from Cape Town, (Cape of Good Hope,) for the express purpose of enjoying a feast of them. The distance is about three hundred miles, so that they ought to be good to repay the trouble.‖

X. Ostrea Scabra, (Linn.)—*Scaly Oyster.*

This is an inhabitant of the Bahama islands, where it is eaten. It is occasionally to be met with in the Philadelphia markets for the same purpose.

* So called from its emitting light in the dark after exposure to the sun's rays.—Ed.

† In compiling this article, the following works are those which have chiefly been referred to and quoted from:—Plin. Hist. Nat. lib. xxxii. cap. vi. lib. ix. cap. 36. Rees' Cyclopædia, Art. Oyster. McCulloch's Comm. Dict. Art. Oyster. Brewster's Edinburgh Encyclop. Art. Fisheries. Encyclop. Americana, Appendix, Vol. viii. Art. Oyster. Postlethwaite's Diction. Art. Oyster. Sinclair's Stat. Hist. of Scotland, Vol. i. p. 358. Vol. vi. p. 196. Vol. x. p. 202. Vol. xvii. pp. 69, 102, &c. Keppel Craven's Tour, p. 184. Statistique generale, &c. par. P. E. Herbin, Vol. i. p. 386. Diction. de Trevoux. Philosophical Transactions, Vol. viii. 554. lviii. 337. ii. 606, &c. &c. &c.

‡ Marsden's Hist. Sumatra, p. 121.

§ Martyn's Hist. of the Br. Col. Vol. iv. p. 295.

‖ Webster's Voyage to the S. Atlantic Ocean, 1830, Vol. i. p. 223.

XII. Mya Pictorum, (Linn.)—*Painters' Gaper,*

Is common to many of the rivers of Great Britain and the north of Europe. It was formerly made use of for holding the colors employed by artists, whence its trivial name; but for the last thirty or forty years it has, we believe, been entirely neglected for this purpose, and is now only to be met with in collections.

XII. Turbo littoreus, (Linn.)—*Whelk.*

This shell is common to most of the shores of Great Britain, but is perhaps most plentiful on the limestone rocks, on the northeastern coast of England, where it lives in common with the periwinkle, below high water mark: it is gathered by children and old men, and retailed, boiled, in small measures, in the streets of the seaport towns. They are never very abundant, and may be considered rather as an humble luxury than an article of food.

The periwinkle, (*Buccinum Lapillus*, Linn.) though so nearly resembling it, and more common, is not, that we are aware of, ever used in the present day, though it formerly was, as Holinshed tells us: "We have in like maner no small store of great whelkes and perewinkles, and each of them brought farre into the land from the sea coaste in their severall seasons."*

XIII. Pecten maximum, (Penn.)—*Great Scallop.*

This shell is found on most of the coasts of Great Britain and Ireland, particularly on those of Portland and Purbeck in Dorsetshire, and near Yarmouth in Norfolk. The fish is eaten, and in some parts it is pickled and barreled, and in this state is the object of a small commerce. Holinshed mentions them as being extensively used in Henry VIII. and Queen Elizabeth's reigns, and they are still cooked in various ways, and considered a luxury. The fish was formerly supposed to be medicinal, and recommended by the doctors as "detersive, aperitive and carminative," and the shell was also administered in the same manner as that of the oyster. At a still earlier period it was worn by pilgrims, and thence found its way into armo-

* Holinshed's Chronicles, Lond. Ed. 1807, Vol. i. p. 378.

rial bearings.* It was, however, proper
Compostella pilgrimage. Popes Alexan
Clement V, granted in their bulls a faculty
postella, that they might excommunicate
to pilgrims any where except in the city o
assigned is, that the scallop shell is the ba
ago or St. James.† They were occasionall
shell lies in large beds, in moderately dee
by dredging. In common with the other
tive, and have the power of springing c
move themselves. They effect this by s
valve against whatever they lie on, and s
inches at a time. The only value which
its occasional, but well known use as a sub

XIV. Pecten opercularis. (Pe

This shell, though smaller and less co
occasionally used as food on the southern
habits are the same as the last, and the sh

XV. Pecten concentricum, *J*

Is found along the whole coast of the U
to Florida. It does not appear to be ver
but is occasionally to be met with in the N
ter cellars for that purpose.

Of this genus many more species are m
in different countries, as when large enou
obtained, wholesome and palatable.

* "The scallop shows in a coat of ar
That of the bearer's line,
Some one in former days hath bee
To Santiago's shrine."—*Southe*

† Southey's Pilgrim. to Compostella, Notes, pp.
tions of the origin are given.

‡ Donovan's Br. Shells, pl. 49. Holinshed's Ch
Medical Dictionary, Vol. iv. Art. Pecten.

§ Murray's Encyclopædia of Geography, Art. E
Linnean Society of London, Vol. viii. p. 99.

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as that of the oyster. At a still earlier
ims, and thence found its way into armo-

cles, Lond. Ed. 1807, Vol. i. p. 378.

earings.* It was, however, properly speaking, peculiar to the Compostella pilgrimage. Popes Alexander III, Gregory IX, and Clement V, granted in their bulls a faculty to the archbishop of Compostella, that they might excommunicate those who sold these shells to pilgrims any where except in the city of Santiago; and the reason assigned is, that the scallop shell is the badge of the apostle of Santiago or St. James.† They were occasionally carved as cameos. The shell lies in large beds, in moderately deep water, and is procured by dredging. In common with the other species, they are locomotive, and have the power of springing or leaping, by which they move themselves. They effect this by suddenly forcing the under valve against whatever they lie on, and so raise themselves a few inches at a time. The only value which the shell has now, is for its occasional, but well known use as a substitute for a dish.‡

XIV. PECTEN OPERCULARIS. (Penn.)—*Small Scallop.*

This shell, though smaller and less common than the former, is occasionally used as food on the southern coasts of England. Its habits are the same as the last, and the shell is not put to any use.§

XV. PECTEN CONCENTRICUM, *American Scallop,*

Is found along the whole coast of the United States, from Maine to Florida. It does not appear to be very generally used as food, but is occasionally to be met with in the New York markets and oyster cellars for that purpose.

Of this genus many more species are most probably used as food in different countries, as when large enough they are always easily obtained, wholesome and palatable.

* "The scallop shows in a coat of arms,
That of the bearer's line,
Some one in former days hath been
To Santiago's shrine."—*Southey's Pilgrim. Introd.*

† Southey's Pilgrim. to Compostella, Notes, pp. 208—217, where various traditions of the origin are given.

‡ Donovan's Br. Shells, pl. 49. Holinshed's Chron. Vol. ii. p. 378, and James' Medical Dictionary, Vol. iv. Art. PECTEN.

§ Murray's Encyclopædia of Geography, Art. ENGLAND. Transactions of the Linnean Society of London, Vol. viii. p. 99.

XVI. Voluta gravis. (Linn.)—*Chank.*

These shells form a considerable article of trade in Hindoostan, where they are in extensive demand all over the country. They are sawed into narrow rings, and are worn as ornaments for the arms, legs and fingers, by the Hindoo women. Many of them are likewise buried with the bodies of rich and distinguished persons. They are fished up by the pearl divers in the Gulf of Manaar, and elsewhere in India, in about two fathoms water. The fishery is monopolized by government, who most commonly let the banks for as much as four thousand pounds sterling per annum, but the trade is free. When the Dutch held possession of Ceylon, the fishery was open to all, but the trade to Bengal was a monopoly in the hands of the Company. A chank, opening to the right, called in Calcutta the *right handed chank*, is so highly prized as sometimes to sell for four hundred, five hundred, or even one thousand rupees, or about five hundred dollars, American currency.*

XVII. Cypræa Moneta. (Linn.)—*Money Cowry.* Hindoostanee *Kepardakas*—Guinea Coast, *Timbis.*

This little shell is indigenous both to the East Indies and the western coast of Africa. In the former they are chiefly found on the shores of the Lacadive and Maldive islands, and are thence imported into Calcutta and Bombay. In both continents they are used as a circulating medium, and in India they pass current in the British presidencies, but for very low values. In Calcutta two thousand five hundred and sixty cowries are worth one current rupee, or about fifty cents; but there are several intermediate and nominal coins, the lowest worth four of these shells. They are, however, quickly disappearing from commercial transactions where Europeans are settled. Previous to the abolition of the slave trade they were largely imported into England, to be subsequently used in Africa, and though the quantity is much diminished, they are still to be found in the price currents of London and Liverpool. In Peale's museum at Philadelphia, there is a singular head dress of scarlet cloth, entirely studded with these shells, which is said to have been brought from China.†

* McCulloch's Commercial Dictionary, Article Chank. Diction. Univers. de la Geographie, par J. Peuchet, Art. Ceylon.

† McCulloch's Commercial Diction. Art. Cowries and Calcutta. Martyn's Hist. of the British Colonies, Vol. i. p. 357. Vol. iv. p. 589. Kelly's Univ. Cambist, 2d Ed. Vol. i. pp. 88 and 166.

XVIII. Chiton fasciatus? (Li

The only instance, we believe, of any sp
used, is the present, at the island of Ba
cooked for the table. We are told that
color, (whence its provincial name,) and th
short and well tasted." It is about one an
and three quarters of an inch in breadth.
dant, and living on the rocks, is easily obt
less.*

XIX. Murex despectus. (Linn

This, the largest of the British univalv
most of the coasts of Great Britain. It
with oysters, but we have most frequen
ground lines of the fishermen, to the baits
common with the rest of the genus, it is car
ally eaten, but being coarse food, is more g

XX. Solen Siliqua. (Linn.)-

This shell is found in abundance on mar
England, especially on the northern and we
of Scotland and Ireland. The ancients es
ed, as a delicious food, and Dr. Lister infc
nearly as rich and palatable as the lobste
land, in the present day, it is more used
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during the spring, and the shell is of no va
by the inhabitants of the Crimea, bordering
shores of which it is plentifully found.‡

XXI. The operculum of a species of s
been used in making the sacred perfume o
called in the Hebrew *specheleth*, and which

* Hughes' Natural Hist. of Barbadoes, p. 275.

† Donovan's British Shells, plate 31.

‡ Ib. plate 46. Histoire physique, morale, civil
derne par M. Le Clerc, Vol. iv. p. 291.

RAVIS. (Linn.)—*Chank.*

erable article of trade in Hindoostan, demand all over the country. They ad are worn as ornaments for the arms, loo women. Many of them are like- rich and distinguished persons. They vers in the Gulf of Manaar, and else- thoms water. The fishery is monopo- st commonly let the banks for as much ng per annum, but the trade is free. ion of Ceylon, the fishery was open to s a monopoly in the hands of the Com- he right, called in Calcutta the *right* zed as sometimes to sell for four hun- one thousand rupees, or about five rency.*

Linn.)—*Money Cowry.* Hindoostanee Guinea Coast, *Timbis.*

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ary, Article CHANK. Diction. Univers. de CEYLON.
n. Art. COWRIES and CALCUTTA. Martyn's . 357. Vol. iv. p. 589. Kelly's Univ. Com-

XVIII. CHITON FASCIATUS? (Linn.)—*Beef Shell.*

The only instance, we believe, of any species of this genus being used, is the present, at the island of Barbadoes, where they are cooked for the table. We are told that the fish is of a pale red color, (whence its provincial name,) and that "it is very firm eating, short and well tasted." It is about one and a half inches in length, and three quarters of an inch in breadth. It appears to be abundant, and living on the rocks, is easily obtained. The shell is useless.*

XIX. MUREX DESPECTUS. (Linn.)—*Rock Whelk.*

This, the largest of the British univalves, is not uncommon on most of the coasts of Great Britain. It is occasionally drawn up with oysters, but we have most frequently obtained it from the ground lines of the fishermen, to the baits of which it adheres. In common with the rest of the genus, it is carnivorous. It is occasionally eaten, but being coarse food, is more generally used as bait.†

XX. SOLEN SILIQUA. (Linn.)—*Razor Shell.*

This shell is found in abundance on many of the sandy shores of England, especially on the northern and western coasts, and on those of Scotland and Ireland. The ancients esteemed them, when cooked, as a delicious food, and Dr. Lister informs us that he thought it nearly as rich and palatable as the lobster. In England and Scotland, in the present day, it is more used as bait than for the table, but in Ireland it is still much eaten during Lent. It is in season during the spring, and the shell is of no value. It is eaten likewise by the inhabitants of the Crimea, bordering on the Black Sea, on the shores of which it is plentifully found.‡

XXI. The OPERCULUM of a species of shell is understood to have been used in making the sacred perfume of the Jews, the substance called in the Hebrew *specheleth*, and which in the English version is

* Hughes' Natural Hist. of Barbadoes, p. 275.
† Donovan's British Shells, plate 31.
‡ Ib. plate 46. Histoire physique, morale, civile et politique de la Russie moderne par M. Le Clerc, Vol. iv. p. 291.

translated *onycha*,* and by the LXX. *onyx*. Dioscorides and Rumphius both describe the shell. It is found in the marshes of India, where the Nard (*Andropogon Nardus*, Linn.) grows, on the leaves of which it feeds, and is thence said to obtain its peculiar odor. The shells are gathered in the summer, when the heat has dried up the water; and it serves as the basis of all perfumes throughout the east. According to its etymology, (ονυξ) *onyx* signifies the nail of the finger or toe, which the substance resembles, and which, according to the Greek tradition, was so called from its being the parings of Venus' nails, cut off by Cupid with one of his arrows. The best was procured from the shores of the Red Sea, which was white and large: the Babylonian was black and smaller, and therefore probably from a different species of shell.†

XXII. MYTILUS EDULIS. (Linn.)—*Edible Muscle.*

This shell is common to most parts of the world, being met with in each of the four continents, and we believe in Australasia. Specimens from different places certainly do differ, but so slightly, and so much the same are their habits, that a scientific naturalist finds it impossible to separate the species by any decisive mark.

In the warm climates they grow to a larger size, and their flesh is more nutritive, than in the cold. They lie in large beds in shallow water, and adhere to each other or to foreign substances, by means of the byssus, which is particularly strong, but they are probably locomotive, at least when young. They succeed the best when always under water, but will also live on rocks only covered at high tide. They are generally used for the table, and make perhaps the best bait known for fishing. In England they are chiefly eaten by the poorer classes on the coasts, and seldom carried into the interior; in Lancashire, however, they have been planted in the river Weir like oysters, where they grew fat and delicious. They are plentiful on most of the coasts of France, both in the Atlantic and Mediterranean, and are commonly used not only in the maritime departments, but also in Paris; and although they are seldom admitted to the tables of the higher classes, the consumption of them is very considerable. In the neighborhood of Rochelle they are kept to fatten in

* Exodus, ch. xxxi. v. 34. Dictionnaire de Trevoux, Vol. iv. Art. ONYX.

† Calmet's Dict. of the Holy Bible, Art. ONYCHA. Scripture illustrated by means of Natural Science, Vol. iv. p. 45.

salt water ponds, (*Bouchots*) into which a certa water is allowed to enter; by which means they in size and flavor. They are in season in the au

In Italy, where, owing to the frequent fasts, s largely into the food of the people than elsewh extremely plentiful. The sandy bed of the Mar stands the town of Taranto, is literally blacke which cover it. The boats that glide over its su them; they emboss the rocks which border the equally abundant on the shore, piled up in heaps They spawn on ropes, which are tied at interva the water, and these, when drawn out, exhibit th sive festoons of carved ebony, or brilliant black the size of a small bean, they are plucked from tered in different parts of the bay, whence, at t tion, they are collected by means of iron rakes They are generally to be met with in the Nev the consumption is not large, neither is the fis European: they are common on the oyster be the bay. The shell differs from the British sp not so much ridged, more angular, more exten more polished on the outside, and it seldom gr but it is probably only a variety. Some parts o tain seasons all) are unwholesome, and there death has been caused by eating them: the s England occasionally used in a somewhat simi *Mya Pictorum*, but otherwise it is of no value.

Where they abound, the European oyster is by them, but this is not yet thoroughly proved are particularly plentiful on the western coast are considered private property, and a revenue making the fishermen pay a species of tax, quantity taken. They are enumerated by I shell fish in use in his time, and are in the pre inhabitants of the shores of the Black Sea.*

* Donovan's Br. Shells in loco. Hon. R. Keppel C Southern Provinces of the kingdom of Naples, pp. 183– of Scotland. Herbin's Statistique generale et particuliè pp. 384—6. Holinshed's Chronicles, Vol. i. p. 378. Russie, Vol. iv. p. 291.

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salt water ponds, (*Bouchots*) into which a certain quantity of fresh water is allowed to enter; by which means they are improved both in size and flavor. They are in season in the autumn.

In Italy, where, owing to the frequent fasts, shell fish enter more largely into the food of the people than elsewhere, this species is extremely plentiful. The sandy bed of the Mare Piccolo, on which stands the town of Taranto, is literally blackened by the muscles which cover it. The boats that glide over its surface are laden with them; they emboss the rocks which border the strand, and appear equally abundant on the shore, piled up in heaps, or packed in carts. They spawn on ropes, which are tied at intervals to poles stuck in the water, and these, when drawn out, exhibit the semblance of massive festoons of carved ebony, or brilliant black coral. When about the size of a small bean, they are plucked from the ropes, and scattered in different parts of the bay, whence, at the period of perfection, they are collected by means of iron rakes and sent to market. They are generally to be met with in the New York markets, but the consumption is not large, neither is the fish so excellent as the European: they are common on the oyster beds and other parts of the bay. The shell differs from the British species in being flatter, not so much ridged, more angular, more extended at the larger end, more polished on the outside, and it seldom grows so large or thick, but it is probably only a variety. Some parts of the fish (and at certain seasons all) are unwholesome, and there are instances where death has been caused by eating them: the shell was formerly in England occasionally used in a somewhat similar manner as that of *Mya Pictorum*, but otherwise it is of no value.

Where they abound, the European oyster is *said* to be destroyed by them, but this is not yet thoroughly proved. In Scotland, they are particularly plentiful on the western coast, and in some places are considered private property, and a revenue raised from them by making the fishermen pay a species of tax, or fixed rent for the quantity taken. They are enumerated by Holinshed among the shell fish in use in his time, and are in the present day eaten by the inhabitants of the shores of the Black Sea.*

* Donovan's Br. Shells in loco. Hon. R. Keppel Craven's Tour through the Southern Provinces of the kingdom of Naples, pp. 183—4. Sinclair's Statist. Hist. of Scotland. Herbin's Statistique generale et particulière de la France, &c. Vol. i. pp. 384—6. Holinshed's Chronicles, Vol. i. p. 378. Le Clerc's Histoire de la Russie, Vol. iv. p. 291.

XXIII. Cardium edule. (Linn.)—*Edible Cockle.*

This common English shell inhabits the low sandy and muddy shores of most parts of Great Britain, and is found a little above low water mark. The specimens lie singly, about a foot deep in the sand, and like the *Mya arenaria* of this country, their locality is known by a dimple or depression, of about half an inch in diameter. They are dug out. They are likewise found on some of the French coasts, and in both countries are used for the table; but their consumption is entirely confined to the more humble and poorer classes. In the sixth century they were however of much more importance, and eaten by all. In general they are prepared by simply boiling them, after having been kept a few days in fresh water to get quit of the sand they contain.

In the island of Barry, on the coast of Inverness, Scotland, this fish is at times the chief support of the inhabitants, and so plentiful are they there, that in seasons of scarcity the people have subsisted solely on them for months together. The popular opinion there is, that they spring from small animalculæ, brought down by the water springs from a certain green hill in the neighborhood of the sands. Buchanan, the Scottish historian, gives a somewhat similar account of their origin, as being believed in his time throughout Scotland. Except the occasional burning of the shell as lime, or applying it as manure, it is of no value. They are in season during the spring.*

XXIV. Helix Pomatia. (Linn.)—*Edible Snail.*

Luxury perhaps attained to a greater height in ancient Rome than in any other country of which we have the history. Not only was there the most lavish splendor and magnificence in the houses and the temples; not only were these met with in the dress and equipages, but the most minute attention and refinement was applied to the science of cookery and to the table. The present shell is an instance of this: not content with eating animals as they were by nature, the greatest ingenuity was manifested in feeding and fattening them, and while Rome was mastering or holding in subjection

* Sinclair's Statistical Hist. of Scotland, Vol. xiii. p. 336. Holinshed's Chronicles, Vol. i. p. 378.

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procure one dish of tongues, rivers turned
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Pliny informs us that one Fulvius Harpinu
vented a stew for snails about B. C. 80, in
protected. Every care was taken of them,
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day, do of their horses. Several species,
were probably used, each of which were
ments, and were regularly fed on wheat m
mixed with a few laurel leaves. Thus pr
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The *Cochlearia*, or snail stews, were ger
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fed with bran and wine lees or vegetable
fed in similar places on vegetables, and
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well as in those of Switzerland, Spain, and
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Scotland, Vol. xiii. p. 336. Holinshed's Chron-

one half the known world, thousands of birds were slaughtered to procure one dish of tongues, rivers turned from their course, and mountains cut through, to form oyster pits and lamprey stews, and patricians and senators thought it not beneath their dignity to superintend the minutiæ of snail warrens. This shell is indigenous to most parts of continental Europe, but it chiefly abounds in Italy and Spain. In the former it anciently was, and still is, much used for the table, and among the Roman epicures there was constant competition to prove who could produce the largest and the fattest. Pliny informs us that one Fulvius Harpinus was the first who invented a stew for snails about B. C. 80, in which they were fed and protected. Every care was taken of them, and the owners of these warrens boasted as much of their snails, as gentlemen, in the present day, do of their horses. Several species, from various countries, were probably used, each of which were kept in separate departments, and were regularly fed on wheat meal sodden with wine and mixed with a few laurel leaves. Thus preserved, they grew to a most surprising size, and if we can believe the authorities, it was not uncommon for the shell, (naturally about two inches in diameter,) to contain ten quarts of liquid!

The *Cochlearia*, or snail stews, were generally made in open places surrounded by water, so that the snails might not abandon them, and care was taken that the places were not too much exposed to the sun or the dews. The artificial stews were most frequently made under rocks whose bottoms were watered by lakes or rivers, and if there was not a natural dew, they produced one by means of a pipe of water bored full of holes. They were also fed on a smaller scale, in large pots or pans, bored full of holes to let in the air, and lined with bran and wine lees or vegetables. In Italy they are still fed in similar places on vegetables, and during Lent are eaten in great quantities. They are regularly exposed in the markets, as well as in those of Switzerland, Spain, and France, and are exported in barrels to the Antilles. They were introduced into England about two centuries since, and distributed through the counties of Surrey and Sussex, but by whom is now uncertain. They soon spread themselves, however, through most parts of the south, and are found at present in the country round Dublin. In the north they have never prospered, and we are not aware of any place more northerly than Northamptonshire, where they are to be found. In Holstein they are indigenous as far as the shores of the Baltic, and are the

most common snail of that country; but neither there nor in England are they used for the table. In France they are the objects of a small commerce; the peasants collect them in the vineyards, and feed them till winter, when they seal themselves up, and in this state they are purchased by the confectioners, who prepare them in the shell with butter and herbs, and forward them to Paris. They are recommended in pulmonary complaints, and are used by the ladies as a cosmetic. The French have a proverb drawn from this shell, which they apply to an ill formed or decrepid person—"*il est fait comme une escargot.*" They are found in the Crimea, where they are eaten by the Tartars.*

The *Helix Aspersa*, (Muller,) was introduced into England by Sir Kenelar Digby, for the relief of those affected with diseases in the lungs, but is not, that we are aware of, now ever used.

XXV. Unio ——?—*Fresh water Muscles.*

This most abundant and interesting American family, though every where found, appears to be but little used. Some tribes of Indians eat them, and at present round one of the ponds at Plymouth, Mass., may be seen pits full of these shells, the fish of which had been consumed by the aborigines before the landing of the Pilgrims. Some of the thicker species of the Ohio, are said to have been at Pittsburgh successfully turned into buttons and ornaments resembling mother-of-pearl.

XXVI. Chama Gigas, (Linn.)—*Boat Shell.*

This very fine and well known bivalve is chiefly found in the Bay of Tappanuli, in Sumatra; but is sufficiently plentiful around New Guinea, and in other parts of the east; it lies in moderately deep water, and frequently grows to a very large size. One shell described by Linnæus weighed four hundred and eighty nine English pounds, and he says the inhabitant has been known to furnish one hundred and twenty men with a day's food. Sir Joseph Banks had an

* Plin. Hist. Nat., lib. ix. cap. 32. Donovan's British Shells, Vol. III. Pl. 84 Dictionnaire de Trevoux, Art. *Escargot.* Le Clerc's Hist. Mod. de Russie. Statistique de France, Vol. I. pp. 387–388. Say's Am. Conchology, *Helix. Introd.* The information respecting the Romans, is chiefly from Varro, *De Re Rustica*, a copy of which the writer has not been able to meet with, and has therefore drawn his information from extracts. Those who have it in their power to consult the original, will, he believes, find more extended information on the subject

account of one which weighed five hundred and
largest valve measured four feet six inches in le
five inches and a half in breadth, and one foo
pearls are occasionally found in them; the san
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font in the church of St. Sulpice, at Paris, and w
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of the methods of taking them is by thrusting
tween the valves as they lie open, when by the
that follows, they are made fast. The name
language of Sumatra is *Kima*, whence probabl
this shell in which Neptune is represented in pic

XXVII. Cameos or *Camaieux*, are in the pr
made from shells. The word properly applie
whether cut or not, and which is formed of layer
so that when cut the ground appears of one hu
another. The derivation of the name is *Ca*
word, signifying *another stone*, or *one stone place*
shells employed are from the Mediterranean, bu
able to ascertain the species—the genus we unde
The outer coat is white, the interior layers dark
hard, admit of a fine polish. They are cut with
The substitution of shells for stones, appears t
invention. False cameos are made of pieces
colors luted together, and afterwards either cut
the figure. It is these which are now so commo
a price.†

XXVIII. Shells have long been used by t
fancy work; sixty or seventy years since, this
fashion in Europe, and large *grottos*, on which e
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* Dillwyn's Des. Cat. Vol. I. p. 215. Marsden's History
15, 121.

† Chalmers' Commercial Dictionary. Dictionnaire de

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3. Say's Am. Conchology, *Helix. Introd.*
ans, is chiefly from Varro, *De Re Rustică*,
een able to meet with, and has therefore
Those who have it in their power to con-
l more extended information on the subject.

account of one which weighed five hundred and seven pounds; the largest valve measured four feet six inches in length, and two feet five inches and a half in breadth, and one foot in depth. Large pearls are occasionally found in them; the same gentleman once exhibited one which was valued at between nine hundred and twelve hundred dollars; a large shell of this sort is used as a baptismal font in the church of St. Sulpice, at Paris, and was presented by the Venetians to Francis the first. The shell is worked by the natives of Sumatra into arm rings and other ornaments, and in the hands of their artists is found to take a polish equal to finest statuary marble. It is several inches thick, and perfectly white, and might probably be used to advantage in some of the finer arts in this country. One of the methods of taking them is by thrusting a long bamboo between the valves as they lie open, when by the immediate closure that follows, they are made fast. The name for this shell in the language of Sumatra is *Kima*, whence probably our word.* It is this shell in which Neptune is represented in pictures to be riding.

XXVII. Cameos or *Camaieux*, are in the present day frequently made from shells. The word properly applies to the onyx stone, whether cut or not, and which is formed of layers of different colors, so that when cut the ground appears of one hue and the figure of another. The derivation of the name is *Camehuia*, an oriental word, signifying *another stone*, or *one stone placed on another*. The shells employed are from the Mediterranean, but we have not been able to ascertain the species—the genus we understand to be *Venus*. The outer coat is white, the interior layers dark red, and being very hard, admit of a fine polish. They are cut with the lapidary's mill. The substitution of shells for stones, appears to be a very modern invention. False cameos are made of pieces of glass of different colors luted together, and afterwards either cut or cast, according to the figure. It is these which are now so common and sold at so low a price.†

XXVIII. Shells have long been used by the ladies in making fancy work; sixty or seventy years since, this was particularly the fashion in Europe, and large *grottos*, on which extravagant sums had been expended were not uncommon, besides a multiplicity of fancy

* Dillwyn's Des. Cat. Vol. I. p. 215. Marsden's History of Sumatra, 3d ed. pp. 15, 121.

† Chalmers' Commercial Dictionary. Dictionnaire de Trevoux, Art. Onyx.

work in shells of all sorts. Mr. Hughes, in his History of Barbadoes, has two folio pages, vindicating the ladies against the imputation of extravagance and waste of time in their passion for this shell work, but his argument goes rather to prove that this pursuit is *more* improving than many others which the fair sex of his time followed, than that it is altogether such as ought to engross their minds to the extent it did. Though this taste is disappearing, shells are still in this country made into fancy baskets, vases, ornaments for head dresses, &c., the manufacture of which is chiefly carried on as a real art, and for profit, and as such, is of course as valuable, as far as it goes, as any other branch of ornamental industry. Articles thus made are admitted for competition at the fairs of the American Institute in New York.* Though all species are occasionally used, the principal seem to be the rice shell, (*Voluta oryza*,) the rose shell, (*Cypræa sulcata? immature*,) the green shell, (*Nerita viridis*,) some species of Tellina, &c. &c. from the West Indies. At Taranto, shell work is a regular business, but the articles are chiefly pictures, resembling mosaic work, picture frames, &c. The shells are stuck one by one, according to their shades, upon paste board, on which lines have previously been drawn. The articles are very expensive, and being of course of little use, they are purchased rather as curiosities than otherwise. There are also some manufactures of a like nature in France.†

XXIX. Some of the Indian tribes west of the Rocky Mountains make use of various colored shells, ground to an oval, or nearly round shape, as a circulating medium. The same use is made by the Indians of the eastern coast of wampum, or strings of beads cut from the *Venus mercenaria*, (Linn.) and other shells, as well for a register of events, or history of their nation. The Indians likewise use the wampum as instruments of treaty, and as *speech belts*, or letters to convene a meeting of the Sachems, when such is required for consultation.‡

The New Zealanders use shells and beads of mother-of-pearl as necklaces, bracelets, and amulets, and also stud their baskets and

* At the October Fair, 1836, a diploma was granted by this Society "for a beautiful shell miniature church." Journal of the Am. Institute, Vol. II. p. 196.

† Hon. Keppel Craven's Tour through the Southern Provinces of Naples, p. 184. Hughes' History of Barbadoes, &c.

‡ Hunter's Manners and Customs of several Indian Tribes, p. 302. Marshall's Life of Washington, 2d ed. Vol. I. notes, p. 3—4.

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XXX. The Brehmins of Hindoostan make observations, by means of shells arranged before and the Egyptians and even the ancient Gree used shells in counting and calculations.†

XXXI. At Mobile, shells are used in mending purpose they are said to answer well.

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XXXIV. Bivalves were used by the Greeks ostracism, the name of the person to be banis the shell. Whether the Romans ever made purpose has been doubted; though at first they afterwards only the earthenware tiles, to whi *ὀστρακον* was transferred.

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ROBERT HARE, M. D., Prof. of Chem. in t
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TO THE EDITORS OF THE JOURNAL OF P

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* Cook's Voyages, 3d ed. 4to, Vol. I. p. 219, &c. whe are given.

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XXX. The Brehmins of Hindoostan make their astronomical observations, by means of shells arranged before them on the ground, and the Egyptians and even the ancient Greeks are said to have used shells in counting and calculations.†

XXXI. At Mobile, shells are used in mending the roads, for which purpose they are said to answer well.

XXXII. By some of the aborigines of the coast of South Amer- ica, a large bivalve, full of grain, was buried with the body, to feed it during its travels to the next world.

XXXIII. The stony operculum of some species of East Indian *Turbo*, are used in this country as '*eye stones*,' to remove dust, etc. from the eye.

XXXIV. Bivalves were used by the Greeks and Romans in the ostracism, the name of the person to be banished being written on the shell. Whether the Romans ever made use of shells for this purpose has been doubted; though at first they perhaps might, and afterwards only the earthenware tiles, to which the Greek name ὄστρακον was transferred.

ART. IV.—*Criticisms and suggestions respecting Nomenclature;* by ROBERT HARE, M. D., Prof. of Chem. in the Univ. of Pennsylvania. *Also, a letter from the celebrated* J. J. BERZELIUS.‡

TO THE EDITORS OF THE JOURNAL OF PHARMACY.

Philadelphia, March 4, 1837.

Dear Sirs—In September, 1833, I published in your Journal, together with some encomiums upon the treatise of Chemistry by the celebrated Berzelius, certain objections to his nomenclature, and some suggestions respecting a substitute, which I deemed to be preferable. In the following June I addressed a letter to Professor Silliman upon the same topics, in which my criticisms and sugges-

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‡ Copied from the American Journal of Pharmacy, April, 1837.