A MONOGRAPH

OF THE

MOLLUSCA FROM THE CRAG.

BIVALVIA, *Linnæus*, 1767.

BIVALVIA. *Bonanni*, 1681. *Lister*, 1686. *Flem.* 1828.
DITHYRA. *Arist. Turt.* 1822. *Swains.* 1840.
DITOMA. *Tournefort*, 1742.
ACEPHALA TESTACEA (part). *Cuv.* 1789.
LAMELLIBRANCHIATA. *De Blainv.* 1814.
CONCHIFERA (part). *Lam.* 1818.
CONCHÆ. *Leach.* 1819.
PELECYPODA. *Goldfuss*, 1820.
ENDOCEPHALA (part). *Lat.* 1825.
ELATOBRANCHIA. *Menke*, 1830.
CORMOPODA. *Burm.* fide *Herrm.*

ANIMALS of this Division of the Linnean Testacea have no proper head, their most vital parts are enveloped in a mantle, or pallium, as it is called, which surrounds them on all sides; the edges of this mantle are sometimes plain, at others fringed, and are more or less united: what is called the foot, is generally a large and powerful muscular mass, capable, in some species, of being protruded beyond the shell to a considerable distance. The respiratory organs, or *branchiæ*, are usually four in number, and are arranged in the form of ruffles enveloping the abdominal mass, but entirely included within the mantle; in some few of the species, the number of these feathery appendages is less, while in others there are more, than four. The animal is protected by two portions of shelly matter called valves, these are secreted by and formed upon the mantle, and are articulated together by a cartilage and ligament, by which the two pieces are held in position, and move, as it were, like a door upon its hinge, or rather

like the two covers of a book, this is furthermore often strengthened by prominences and depressions in a part of the shell kept thickened for the purpose, interlocking each other, preventing, in most instances, the possibility of any material inconvenience arising from lateral motion without a fracture. The common action of the valves in their separation or opening is from the relaxation of the adductor muscles, when from the natural elasticity of the ligament the valves are drawn apart, and again closed by the contraction of the muscle or muscles that pass from one valve to the other, strongly adhering to the inner surface of the shell on which, in most cases, a distinct, and often a deep indentation is left.

The muscular fibres by which the edges of the mantle are withdrawn adhere to, and leave a linear impression somewhat within the margin of the shell; and, in some of the Bivalvia, at the posterior side of the animal, are two siphonal tubes, formed by the prolonged portions of the mantle, the lower one is called the inhalent, the upper one the exhalent siphon, these tubes are capable of being protruded by the animal with the assistance of muscles for that purpose, and again withdrawn under the protection of the shell. In animals possessed of these tubes, the withdrawal of them is indicated in an impression on the body of the shell by the retractor muscle, leaving what is called a siphonal scar, or palleal sinus, which generally denotes, by its depth, a corresponding proportion in the length of the tubes; and where the muscular fibres of the mantle adhere to the interior, leaving the impression without an inflection, the animal either has no prolongation of the mantle, or that the tubes are so short as scarcely to be capable of extension beyond the margin of the valves, and the impression in that case formed by the mantle is parallel, or nearly so, to the outer edge of the shell.

These marks, therefore, are of essential service to the Palæontologist, as they afford the only indications of the form possessed by the animal inhabitant, thus impressed upon the interior of the valves. It is however to be feared, that a perfectly strict reliance cannot always be placed upon the peculiar magnitude of this siphonal scar, even in specific determination, as a marked deviation from what might otherwise be considered its typical form may occasionally be detected, but it is in those species which are most subject to variation in the outward forms of the shell; as a general rule, this line, when visible, is of the greatest assistance, and at all times a good auxiliary character in the determination of a species. The length of the siphonal tubes, or the consequent indenture or sinuation of the mantle mark in the shell, points out a difference in the animal from those in which the sinus is wanting, or at least nearly so, where it indicates a mantle either without or with very short siphons, giving fair grounds for generic separation; but occasionally, species are met with that are otherwise very closely allied, having a similar dentition, and bear the same general relationship in regard to the shell, although very unlike in the form of the mantle-mark, such as *Leda* and *Nucula*, *Cardium* and *Adacna*, *Lucina* and *Lucinopsis*, and cannot, without violence to a natural arrangement, be removed to any distant position,

merely, in consequence of a difference in the length of the tubes or depth of the sinus.*

Some Malacologists seem disposed almost entirely to reject the shell, as unworthy of consideration in a Zoological arrangement, viewing it in the light of an inert or inorganic mass, unconnected with the animal, or at least merely formed by and used as a protection to its more vital parts, and have based their superstructure upon the mantle itself, and upon the difference in length of its siphonal tubes. In the 'History of British Animals,' by Dr. Fleming, published in 1828, the Bivalvia were separated into two sections, called SIPHONIDA and ASIPHONIDA, a division subsequently adopted by some continental authors under the denominations SINUPALEALIA and INTEGROPALEALIA, as founded upon a portion of the animal more highly organised than its dermal covering, and, consequently, supposed to give a more scientific basis to its classification. Investigations by the microscope have shown a high degree of organisation, and the possession of a considerable amount of vitality in the shell, essential to the existence, depending upon, and modified by the exigencies of the animal; and in this outer coating of the mantle there is preserved a relationship apparently more constant than is exhibited by its fleshy interior; and whatever other organs, in the more vital parts may be supposed to furnish a basis for Ordinal division, it is very doubtful if the form of the mantle alone will be sufficient.

The number and position of those parts of the hinge called teeth are essential distinctions, as there is a permanence of form in the dentition of all genera, although, in a few instances, these characters which are prominent and distinctive in some species, will be diminished and become nearly obsolete in others; but they do not vary in form or position in the same genus.† That portion of the hinge called the *ligament*, performs an important office in the animal economy, as it is by this the valves are bound together, and kept in their true position. This uniting and elastic substance is called *cartilage*, when it is placed within the edges of the valves, and is consequently compressed when they are closed, and by its tendency to expand at the relaxation of the adductor muscle or muscles, assists in the separation of the shells at the ventral margins: that portion which is external, is called *ligament*, and is generally placed on a prominent fulcrum, or projecting portion of the shell, and by its elasticity or contraction draws back and opens the valves when the opposing power of the adductors is relaxed; although this substance is of a cartilaginous nature, and contains but a small portion of lime, and is consequently not often preserved in a fossil state, its position is always indicated where it has been, either by a pit or depression for its reception, or by the fulcrum to which it was attached. In the smaller portion of the Bivalvia, the animal is furnished with only one adductor muscle, and constitutes

* Great differences also exist between the mantles of some of the members of the Leptonidæ.

† There is a slight exception to this rule in the hinge of the Polyodonts, *Leda*, *Pectunculus*, *&c.*, where the *number* of teeth will vary, even in individuals of the same species at different periods of existence, but their general character is not altered.

that division or section called *Monomyaria*, or *Unimusculosa*, by some authors. In this, the muscle is placed in the centre, or nearly so, and is generally large and powerful, adhering strongly to the interior, leaving often a deep indentation which is sometimes of a different colour to the rest of the shell; the form of this muscle mark is variable in different genera, but is not of much assistance in specific determination. Some of these have the hinge ligament on the exterior, like the Oyster, &c., where it acts by contraction and elongation; in others, Pecten, &c., its action is by expansion and compression; in this group, the edges of the mantle are generally disunited and not prolonged into siphons, and the impression formed by its muscles within the shell, is without any inflection, and parallel to the margins of the valves. In the much larger portion, called *Dimyaria*, or *Bimusculosa*, the animal has two distinct adductor muscles, one of which is situated near the anterior margin, while the other occupies generally a corresponding position on the posterior side.

As these muscular impressions are relatively situated in the same position, and always of the same form, a great alteration takes place during the growth of the animal by a gradual progression, as it increases in size and the shell enlarges; the successive advancement of these impressions is indicated in many species by distinct lines of growth: and as this enlargement necessarily increases outwardly, the animal possesses the power of making fresh additions to the exterior portion of the muscle, while at the interior part, the now becoming useless or inconvenient portion, is detached from its former place of adherence, and absorbed by the animal; while in most species, a fresh layer of calcareous matter, secreted from the whole surface of the mantle, is deposited upon the interior of the shell, and covering the deserted portion of the muscle mark, leaving untouched that part only against which is attached its powerful adductor. In the Oyster, more especially, these successive layers are distinctly visible, showing the enlargment of the shell by the extension of the mantle in the lines of growth upon the exterior, as also by the generally rugose or lineated surface of the ligamental area. The same may be said of the dental characters of the shell which are always relatively placed in regard to the specimen, whether in the young or in the adult; and the alteration, therefore, of their position in the growth of the shell, can only be effected by the removal of one part, while fresh deposition is formed on the other, unless the whole be sufficiently organised to partake of the varying changes of the animal itself: a question as yet not satisfactorily determined.

Dr. Carpenter gives in his 'Report on the Microscopic Structure of Shells,' as the true history of the *Conchiferous Acephala*, the following account:—"The *margin* only of the mantle has the power of giving origin to the *outer* layer of the shell, while the *whole surface* may generate the *inner*. Every new production of shell consists of an entire lamina of the latter substance, which lines the whole interior of the old valve, and of a broader margin of the former which thickens its edge. So long as the animal continues to increase in dimensions, each new exterior layer of shell projects so

far beyond the preceding, that the new border composed of the outer layer, is simply joined on to the margin of the former one, so that the successive formations of the outer layer scarcely underlie each other. But when the animal has arrived at its full growth, the new laminæ cease to project beyond the old, and as each is composed of a marginal band of the external substance attached to the edge of an entire lamina of the inner, these bands must now underlie each other, being either quite free as in Ostrea, or closely united to each other as in Unio, and most other Bivalves; and the additions to the shells of the Gasteropoda are made upon the same plan, although it has commonly been supposed that they are only attached to the edge of the old shell, instead of being continued over its entire surface."

The figure and size of the foot materially influences the form of the anterior part of the shell, while the posterior depends upon the modification of the siphons. The degree of development of the nervous system is said to be very variable in these animals, and the organs of sense dependant thereon variously distributed, imperfect organs of sight are present in some species, and rudimentary organs of hearing have been detected in others, and are possibly present in all: while in some, the sexes are separate and distinct, in others they are united or hermaphrodite, microscopic animals and plants constitute their principal food.

Species of this class have been found in the seas of every clime, and inhabit the waters of all depths, some few are left dry by the retiring tide, while others frequent the bottom of seas, to the depth of 200 fathoms; and the vertical range of many species is so extensive, as to render doubtful the allocation of strata from the presence of a few fossil forms, with whose habits we are but indifferently acquainted; moreover, the habits of all recent species are not, perhaps, necessarily the same as those of their prototypes that lived in times long past, and probably, under different conditions.

The authors of the beautiful work upon the 'British Mollusca,' now in the course of publication, have given many interesting details respecting the range in depth at which most of these animals have been obtained, and occasionally, the nature of the ground they had selected for their habitation; the generality of species prefer clear water and a sandy bottom, but others are frequenters of mud. The bottoms of the Crag Seas, judging from the deposits now remaining upon the Eastern Coasts of England, appear to have been principally of sand or gravel, with comminuted fragments of shells; that of the Coralline Crag Sea being generally fine in its particles, formed at a depth varying, perhaps, from 20 to as much as 40 fathoms, if the habits of the then existing animals were the same as their homologues of the present day. The Red Crag Sea appears to have been subject to greater agitation, and was probably less in depth, while much of its bottom was of a gravelly character, or of coarser sand. The deposits of the Mammaliferous Crag Period present us with characters rather more variable; that which is found near Norwich, being what is called Fluvio-marine, formed probably, in a shallow estuary, and composed of sand, gravel, and shells,

while the Bridlington bed was more purely marine, with a bottom apparently of sandy mud, similar to what is exhibited by the newly discovered tranquil deposit resting upon the Red Crag at Chillesford, where the water may have been of some considerable depth.

In estimating the dimensions of the shell in the following descriptions, the proportions are given only as an approximation; in most species, these are more or less variable. The length is taken from the anterior edge of the shell to the outermost portion of the posterior side, that being considered as anterior where the foot is protruded, while the position of the ligament and the siphonal tubes, where they exist or their presence shown in the shell by the sinuated form of the pallial impression, is on the posterior side. Presuming, therefore, the animal to move with the foot foremost, it will have its dorsal or hinge-part of the shell uppermost, and the diameter from the umbo to the ventral margin is called its height, while the depth is measured from the most tumid part of one valve to the corresponding place in the other.

ANOMIA.* *Linn.* 1767.

ANOMIA. *Müller.* 1776.
GLYCIMERIS. *Browne,* 1756.
LAMPADES (sp.). *Gevers.* 1787, fide *Gray.*
FENESTELLA. *Bolton.* 1798, fide *Herrmansen.*
ECHION and ECHIODERMA. *Poli.* 1791.
CEPA. *Humphries,* 1797.
ANOMYA. *Agass.* 1839.

Generic Character. Shell irregular, inequivalved, subequilateral, ovate or suborbicular, and fixed: lower or inferior valve more or less flattened, with a large foramen or perforation, through which passes a bony or calcareous appendage for the attachment of the animal; upper valve, convex smooth or irregularly laminated, sometimes striated, costated or muricated, often assimilating the body of the shell to that on which it is fixed; one muscular impression in the lower or fixed valve, with three in the upper or convex one; ligament internal, placed a little within the umbo of the upper or larger valve, in a somewhat triangular pit, with a projection near the edge of the foramen in the opposite valve, to which it is attached; hinge without teeth.

The animal of this genus, is said to have the edges of the mantle disconnected, the margins bearing a double fringe of short scirrhous appendages, without ocelli or rudimentary eyes. No siphonal tubes, and foot very small, nearly obsolete. The adductor muscle is divided into three parts, making three distinct impressions on the

* Etym. '*Ανόμοιος*, unlike or unequal.

upper, while one only is formed upon the lower valve, the other two passing into the calcareous operculum by which it is fixed. Sexes distinct.

As the individuals of this genus are always attached, they are seldom of a regular form, but generally more or less distorted, modified by, and often assuming the shape and characters of the body to which they adhere; and as they are frequently attached to the shells of the Pecten, an individual of this genus, which in its natural state is nearly smooth, will become, in consequence, rayed or pectinated, partaking of the characters of the body it has been living upon. If, therefore, it be attached near the umbo of the Pecten, its regular increase will assume the form of that genus; but if its attachment be upon the wider rays, these ribs will not represent the regular form, but the impress of its place of attachment will be shown, as in fig. 3 *b*, in parallel or nearly parallel ridges across the shell. In order to produce this appearance, the addition that is made by the mantle to the edges of the shell are carried over the ribs of the Pecten down into the interspaces, by which means a costated form is given to a shell, otherwise smooth. This character, however, according to Mr. Clark, appears to be eclectic, or at the will of the animal. Thus, whenever the under or lower valve has its edges elevated above the ribs of the Pecten, so as not to be influenced by those inequalities, then the upper valve retains its original form. The lower valve is generally thin, often papyraceous, so that in the fossil state, the upper valve is the most numerous.

The Anomia is closely allied to the Pectens, and the perforation in the lower valve, is said by the authors of the 'Hist. of Brit. Mollusca,' to be chiefly a greater extension of the auricular sinus of that genus; and that the young fry will be probably found attached by means of a byssus, which as the animal increases, eventually becomes converted or transformed into the calcareous opercular process of the older shell, this organ of attachment being merely the extension and indurated portion of the lower part of the adductor.

A large number of detached valves are found in the Coralline Crag, but their specific appropriation is a matter of great difficulty from their excessive variability of form, as well as great irregularity in their external ornament; and as their correct assignment, even in a recent state, with "all appliances and means to boot" by the aid of their animal inhabitant, as well as by assistance given in the colouring matter of the shell, is still a doubtful matter, the appropriation of the fossil species may be looked upon with suspicion.

Mr. Clark in the examination of this genus, has arrived at the conclusion, that there is but one species now found in the British Seas; and that the extraordinary variation both in form and sculpture, exhibited by individuals, is so fluctuating in character, as not to be depended upon for specific distinction. As, however, there are generally some marked differences in these shells by which the variations may be separated, I have followed the authors of 'British Mollusca,' in considering them for the present so many distinct species.

This genus is found in the Secondary Rocks; one species has been described by Mr. Bean, from the Cornbrash; 'Mag. Nat. Hist.' 1839. And some from the Greensand by Dr. Fitton.

1. ANOMIA EPHIPIUM, *Linnæus*. Tab. I, fig. 3, *a—d*.

ANOMIA EPHIPPIUM. *Linn.* Syst. Nat. ed. 12, p. 1150, No. 218, 1767.
— SQUAMULA. *Id.* - - - p. 1151, No. 221.
— — *Turt.* Brit. Biv. p. 229, pl. 18, fig. 5-7, 1822.
— — *Broc.* Conch. Foss. Subap., p. 461, 1814.
— — *Dekay.* Nat. Hist. New York (Zool.), p. 168, pl. 12, fig. 209, 1843.
— — *Middendorff.* Malacozoologia Rossica (Mem. de l'Acad. des Sc. Imp· de St. Petersb.), p. 519, t. 11, fig. 18-21, 1849.
— SULCATA. *Poli.* Test. Sic. vol. ii, p. 186, t. 30, fig. 12.
— MARGARITACEA. *Id.* - - t. 30, fig. 11.
— CŒPA. *Id.* - - - t. 36, figs. 1, 25-8.
— LENS? *Goldf.* Pet. vol. ii, p. 40, t. 88, fig. 8, *a—e*.
— EPHIPPIUM. *S. Wood.* Catalogue, 1840.
— COSTATA. *Broc.* Conch. Foss. Subap., p. 463, t. 10, fig. 9, 1814.
— RADIATA? *Id.* - - - - t. 10, fig. 10.
— SULCATA? *Id.* - - - - t. 10, fig. 12.

Spec. Char. Testâ polymorphâ, crassâ vel tenui, plerumque lavigatâ, formâ valdè irregulari.

Shell many shaped, thick and strong, sometimes thin and fragile, generally smooth, form very irregular.

Diameter, $\frac{3}{4}$ths of an inch.

Locality, Cor. Crag, Sutton, Sudbourn.

Recent, Mediterranean, Britain, Scandinavia, North America.

The variety of this species, called *squamula*, is exceeding abundant in the Coralline Crag, and like the recent shell, is subject to great distortion, depending upon the body to which it has been attached; a large number of these specimens have taken the characters of the genus Pecten, to which, in the living state they were attached, but it is only in the upper or free valve that I have been able to observe the costated form, the lower or adherent one was probably much thinner, and less capable of preservation.

A few specimens of the lower or perforated valve are occasionally met with, and in all that I have seen, the valve is externally smooth, at least, free from striæ or costæ, and its place of attachment was some smooth or even surface. This variety does not appear to have attained the size of more than $\frac{3}{4}$ths of an inch in diameter, and the majority of specimens have not reached above half those dimensions. In those which have the upper valve quite flat and smooth, the place of attachment was probably the interior of some shell, from which the lower valve would take the convex form, giving room between the two for the occupation of its inhabitant. The beak or umbo of this species, is almost immediately at the margin or projecting a little beyond it.

The variety called *cylindrica* or *cymbiformus* (fig. 3, *c*), is also occasionally found in the Coralline Crag, though by no means abundantly. It has been determined by British Conchologists, that this form is produced from its place of adherence being the stem of the seaweed, or some such cylindrical body,* while the variety *fornicata* is said to be merely a deformity from some similar cause; this I have not yet seen in the fossil state. The exterior of some of the Crag specimens indicate their place of rest to have been upon a *Bryozoon*, the shell being prettily and distinctly marked by that animal.

Some idea may be formed of the Protean character of this species, as no less than eighteen different specific names are introduced by the authors of the 'Hist. of Brit. Moll.' into their synonyma, while these, with several others by them, considered as distinct, are included as mere varieties by Mr. Clark.

2. ANOMIA ACULEATA, *Müller*. Tab. I, fig. 2, *a*—*b*.

ANOMIA ACULEATA.		*Müll.* Zool. Dan. Prod., p. 249, 1766.
—	—	*Mont.* Test. Brit., p. 157, pl. 4, fig. 5, 1803.
—	—	*Brown.* Brit. Conch. Illust., pl. 34, fig. 6, 1827.
—	—	*S. Wood.* Catalogue, 1840.
—	—	*Gould.* Invert. Massach., p. 139, fig. 90, 1841.
—	—	*Philippi.* En. Moll. Sc., vol. ii, p. 214, t. 28, fig. 1, 1841.
—	—	*Thorpe.* Brit. Mar. Conch., p. 123, fig. 73, 1844.
—	—	*Loven.* Ind. Moll. Scand., p. 30.
—	—	*Dekay.* Nat. Hist. New York (Zool.), p. 168, pl. 12, fig. 210.
—	STRIOLATA.	*Turt.* Brit. Biv., p. 233, 1822.
—	—	*W. Wood.* Ind. Test., p. 54, pl. 11, fig. 7, 1825.
—	—	*Flem.* Brit. An., p. 396, 1828.
—	—	*Thorpe.* Brit. Mar. Conch., p. 123, 1844.

Spec. Char. Testâ suborbiculari vel ovatâ; striatâ, striis plurimum numerosis, radiantibus, squamoso-aculeatis; umbone submarginali, lævi.

Shell suborbicular or ovate; striated, striæ generally numerous, with fine elevated or squamose prominences, rendering the surface rough or prickly; umbo, submarginal, and smooth.

Diameter, ½ an inch.

Locality. Cor. Crag, Sutton, and Ramsholt.

Recent, Mediterranean, Britain, Scandinavia, and North America.

This species, called the prickly Anomia, is very abundant in the Coralline Crag at Sutton, whence all my numerous specimens were obtained. I have not yet seen it from the newer formations. It closely resembles the young of the preceding in most

* This, however, was not the position of our shell, which is the upper or imperforate valve, and is quite flat, the lower or adherent one, was probably convex externally, and fixed to the *interior* of some cylindrical body, and to which our specimen must have acted as a lid.

of its characters, but may be distinguished, if not specifically, certainly as a variety, by its sculpture, which is in the form of spinous or squamose radiations. In the recent state, the lower or perforated valve, is said to be generally thin and fragile, and destitute of the aculeated striæ. As the shells found in the Crag are separated or detached, they would not be recognised, if this were always the case; but many of the lower valves are alike ornamented with these markings, though they are less conspicuously so than upon the upper ones. The umbo of this is placed very near the margin, and is generally slightly recurved; the striæ are numerous, although in some specimens they are more distant; but in all they have more or less, the vaulted or raised, and slightly reflected edges, which as it grows produce the series of aculeated or fimbriated striæ upon the exterior, though very faintly exhibited in the variety called *striolata*. In the very young of some of my specimens, the shell appears to be free from sculpture of any kind, and this may favour the opinion of Mr. Clark.

3. ANOMIA PATELLIFORMIS, *Linnæus*. Tab. I, fig. 4, *a*—*b*.

ANOMIA PATELLIFORMIS. *Linn.* Nov. Act. Upsal., vol. i, p. 42, pl. 5, figs. 6, 7, 1773.
— — *Loven.* Ind. Moll. Scandin., p. 30, 1846.
— — *Alder.* Cat. Moll. North. and Durh., p. 75, 1848.
— — *Forb.* and *Hanl.* Hist. of Brit. Moll., vol. ii, p. 334, pl. 56, figs. 5, 6, 1849.
— — *Middendorff.* Malac. Ross. (Mem. de l'Acad. des Sc. St. Petersb.), p. 521; 1849.
— UNDULATIM STRIATA. *Chem.* Conch. Cab., t. viii, p. 88, tab. 77, fig. 699.
— UNDULATA. *Gmel.* Syst. Nat., p. 33, 46.
— — *Mont.* Test. Brit., p. 157, pl. 4, fig. 6, 1803.
— — *Turt.* Brit. Biv., p. 230, pl. 18, figs. 8, 9, 10, 1822.
— — *Brown.* Illust. Conch. Gr. Brit., pl. 34, figs. 2, 3, 1827.
— — *Flem.* Brit. An., p. 395, 1828.
— — *S. Wood.* Catalogue, 1840.
OSTREUM STRIATUM. *Dacosta.* Brit. Conch., p. 162, pl. 11, fig. 4.
OSTREA STRIATA. *Donov.* Brit. Shells, vol. ii, tab. 45, 1801.
— — *Mont.* Test. Brit., pp. 153, 580, 1803.
— — *List.* Hist. Conch., fig. 36.
Ency. Meth., pl. 171, fig. 16, and pl. 184, figs. 5, 6.

Spec. Char. Testâ suborbiculari, plicis 20—30 *convexis, undulati-radiatis; striis concentricis crebris, sublaminaceis; umbone subprominulo à margine remotiusculo.*

Shell suborbicular, ornamented with 20—30 radiating and undulating ribs; concentric striæ or lines of growth thick and sublaminated; umbo slightly prominent, a little distant from the margin.

Diameter, 1½ inch.

Locality. Cor. Crag, Sudbourn and Sutton.
Red Crag, Sutton, Bawdsey, Walton Naze.
Recent, Britain and Scandinavia.