next proceeded to describe the *Pholas dactylus* which he had found in clay-slate in Cornwall, and to describe particularly the form and actions of the animal, which he had kept alive in his house more than a month (there were fifteen or sixteen shells of all sizes), and although he marked the slab in which they were, he could not perceive that *they turned round for the purpose of boring*. In the same slab he also found *Pholas parva*.

Report on the Mollusca and Radiata of the Ægean Sea, and on their distribution, considered as bearing on Geology. By Edward Forbes, *F.L.S., M.W.S., Professor of Botany in King's College, London.*

The British Association having done me the honour of requesting a report on the Mollusca and Radiata inhabiting the Ægean and Red Seas, considered more especially in their bearings on questions of distribution and of geology, I have now the pleasure of laying before this meeting such portion of it as relates to the eastern Mediterranean. The data upon which it is founded have been entirely derived from personal research during a voyage of eighteen months in the Ægean, when but few days passed by without being devoted to natural history observations. The calculations in the following pages have been based upon more than 100 fully recorded dredging operations in various depths, from 1 to 130 fathoms, and in many localities from the shores of the Morea to those of Asia Minor, besides numerous coast observations whenever opportunity offered. The circumstances under which these researches were made were peculiarly propitious. The merit of the results obtained is mainly due to Captain Graves in command of the Mediterranean Survey, at whose invitation the reporter joined H.M.S. Beacon as Naturalist, in April 1841, from which time, until his departure for England in October 1842, every possible assistance and means of observation were put at his disposal by that distinguished officer, and every cooperation afforded by the officers of the Survey. Without such aid it would have been quite impossible to have obtained the results now laid before the Association, which, from their having been made in connection with the Hydrographical Survey, may assume a value to which no private observations could lay claim*.

The Ægean Sea, although most interesting to the naturalist as the scene of the labours of Aristotle, has been but little investigated since his time. The partially-published observations of Sibthorpe, and the great French work on the Morea, include the chief contributions to its natural history. In the last-named work are contained catalogues of the Fishes and Mollusca, with notices of one or two Annelides. In all the marine tribes my lists greatly exceed the French catalogues, more than doubling the number of Fishes, and exceeding that of Mollusca by above 160 species, not to mention Radiata, Amorphozoa and Articulata. In the present report I propose to give an account of the distribution of the several tribes of Mollusca and Radiata in the eastern Mediterranean, exhibiting their range in depth, and the circumstances under which they are found; to inquire into the laws which appear

* A great portion of the observations among the Cyclades were made jointly with Lieut. Spratt, Assistant Surveyor of the Beacon, and of those relating to the coasts of Asia Minor with Mr. Hoskyn, late Master of the Beacon, and now Assistant Surveyor of H.M.S. Lucifer. Many independent observations of great value to the author were made by Lieut. Freeland, Lieut. Mansell, Mr. Chapman, and other officers of the Beacon, and he is desirous of recording his thanks to all the gentlemen named for their kindness in placing their collections at his disposal. He is happy to say that the Ægean researches have not ceased with his departure, Capt. Graves and his officers being actively engaged in natural history investigations in addition to their many scientific duties during the survey now in progress of the Island of Candia.

to regulate their distribution, and to show the bearings of the investigation on the science of geology.

I shall commence with an enumeration of the species of Mollusca and Radiata, prefacing the tabular view of each tribe with a few general remarks.

Mollusca.

Cephalopoda.

Octopus vulgaris and *macropodius*, *Sepia officinalis* and *Sepiola rondeletii*, were the cuttle-fishes which I met with in the eastern Mediterranean. They are all inhabitants of the shallows, and are found in or near the littoral zone, where they are much sought after by the Greeks as articles of food. They are speared at night by torchlight when on their foraging excursions. The sandy shores of the island are thickly covered with the shell of the Sepia, sometimes forming beds of considerable thickness. In no instance did the shell occur when dredging, so that we may suppose that species to be confined to the littoral zone. The *Sepiola rondeletii* was taken on the coast of Asia Minor, as deep as 29 fathoms in a bottom of weed. *Octopus macropodius* only occurred once, and then among the rocks near watermark, in the Island of Cerigo, at the entrance of the Ægean. The *Argonauta* was much sought after, but never found. It is, however, a recorded inhabitant of the shores of Greece.

Pteropoda.

Eight species of Pteropoda, members of the genera *Hyalæa*, *Cleodora* and *Criseis*, inhabit the Ægean, and appear to be equally diffused in all parts of the eastern Mediterranean. The white mud which forms the sea bottom between 100 and 200 fathoms abounds with their remains, many hundreds coming up in a single dredge, chiefly *Criseis* and *Cleodora*. In the muddy deposits of upper regions they are scarce, in those of shallow water altogether absent. Though immense numbers of their dead shells were taken, comparatively few of these testacea occurred in a living state. Of the eight species four were taken alive, three of which were *Criseis*, and the fourth *Hyalæa tridentata*. The last was only observed once in the Bay of Cervi, at the entrance of the Ægean, in August 1841 : the *Criseis* were abundant in the spring of the same year. They usually abound about three hours after noon and towards nightfall, sparkling in the water like needles of glass. Throughout the summer and autumn they were very seldom met with. It would appear that great flocks of Pteropoda live in the deeper parts of the sea, ascending to the surface only occasionally, and at definite seasons. That their range in depth is limited, is evident from the fact that their remains abound only between 100 and 200 fathoms, diminishing above and below that region.

Nucleobranchiata.

Seven species of undoubted Nucleobranchiata, with three probable members of that order, inhabit the Ægean, representatives of genera, four of which are shell-bearing and two naked. The observations regarding habitat and time of appearance apply equally to the members of this order and those of the last, with the exception of the *Firolæ*, which may be seen during most months of the year. Of the testaceous nucleobranes, the *Atlanta peronii* and two species of *Ladas* appear to be universally diffused in the Ægean. *Carinaria* is very rare, having only occurred twice, and then dead. A little shell of Bellerophon-like appearance is abundant in the mud of great depths, and from its resemblance to the young state of *Carinaria* I have placed it here. Two species of that very anomalous genus *Sagitta* were met with

occasionally, and were frequently examined in the hope of throwing new light on their true position in the animal kingdom. All the naked nucleobranes of the Ægean are extremely active animals, rapid in their movements, and ferocious in their habits.

Pteropoda and Nucleobranchiata.

	No. of Ægean Species.	No. of Mediterranean Species.	Observations.
PTEROPODA.			
Hyalæa, Lam.	3	4	
1. tridentata, *Forsk.* .	.....	.....	Living, Cervi. Dead, Lycia, VIII.
2. gibbosa, *Rang* . . .	.....	.....	Dead in Region VIII., common.
3. vaginellina, *Cantr.*.	.....	.....	Dead in Region VIII., frequent.
Cleodora, Per. and Less.	2	2	
1. cuspidata, *Bosc.* .	.....	.....	Dead, v. r. Region VIII.
2. pyramidata, *Péron.*	.....	.....	Dead, common. Region VIII.
Criseis, Rang	3	3	[abundant.
1. spinifera, *Rang* . .	.....	.....	Living, common. Dead, R. VIII.,
2. striata, *Rang*. . . .	.....	.....	Living,rare. Dead,R.VIII.frequent.
3. clava, *Rang*	.....	.....	Living, common. Dead, R. VIII., abundant.
NUCLEOBRANCHIATA.			
Atlanta, Less.	1	1	
1. peronii, *Less.* . . .	.....	.....	Living,rare. Dead, R.VIII.frequent.
Ladas, Cantr.	1	2	
1. planorboides, *Forb.*	.....	.....	Dead, R. VIII., not rare.
? *Bellerophina*, D'Orb. .	1	1	
1. minuta, *Forb.* . . .	.....	.....	Dead, R. VIII., common.
Carinaria, *Lam.*	1	1	
1. mediterranea, *Per.*	.....	.....	Dead, R. VIII., v. r. Nid.
Peracle, Forb.	1	1	
1. physoides, *Forb.* .	.....	.....	Dead, R. VIII., not common.
Firola, Per. and Less. .	3	5	
1. frederica, *Less.*. . .	.....	.....	Frequent.
2. hyalina, *Forsk.* . .	.....	.....	Frequent.
3. sp.	.....	.....	Rare.
Sagitta, Q. and Gaim. .	2	2 or 3	
1. mediterranea, *Forb.*	.....	.....	Not frequent.
2. Sp. alt.?	.....	.....	Not frequent.

Gasteropoda Nudibranchia.

The absence of tides is extremely unfavourable to the presence of animals of this beautiful tribe, nevertheless numerous species are recorded as inhabitants of the Mediterranean. In the eastern division of that sea, however, they are scarce, and but seldom met with. The only species observed in any quantity was a large red Doris (*D. argo*) which frequents the rocks of the coast of Lycia, close to the water-mark, laying its bright red spawn in sponge-like masses on their surface. Another member of this genus was

found at a depth as great as fifty fathoms. Of the allied genus *Goniodoris* several very beautiful species were obtained. The characteristic Nudibranc of the Mediterranean, a giant among its tribe, *Tethys leporina*, was only met with once, swimming foot up on the surface of the sea in the Gulf of Smyrna, in an exhausted state, its sides being infested by that extraordinary parasite the *Vertumnus tethydicola*. Out of fifteen species of *Nudibranchia* taken in the Ægean, three are certainly, and four probably identical with species inhabiting the coast of Great Britain, living at similar depths and under similar circumstances.

Nudibranchia.

Species.	Spec. in Med.	Species in Ægean.	Range in Depth.	Ground.	Locality.	Geographical Range.
Doris, Lin.	?	5	fathoms.			
coccinea, *Forb.*	.....	.....	30–45	weedy.	Syra, Naxia.	Med., Celt. Seas.
testudinaria ?, *Cuv.*	.....	.....	lit.	rock.	Lycia.	Celtic, North.
argo, *Lin.*	.....	.....	lit.	rock.	Lycia.	
aurata, *Forb.*	.....	.....	50	.....	Cyclades.	
pilosa, *Mul.*	.....	.....	13	weedy.	Cyclades.	Med., Celt., N. S.
Goniodoris, Forb.	?	4				
gracilis, *Rupp.*	.....	.....	40	weedy.	Cyclades.	
vivida, *Forb.*	.....	.....	8–28	weedy.	Cyclades.	
tenerrima, *Forb.*	.....	.....	40	weedy.	Cyclades.	
regalis, *Forb.*	.....	.....	lit.	.....	Skanousi.	
Tethys, Lin.	2	1				
leporina, *Lin.*	.....	.....	pelagic.	.....	G. of Smyrna.	Mediterranean.
Tritonia, Cuv.	.....	1				
plebeia, *Johnst.*	.....	.....	25	mud and corallines.	G. of Smyrna.	Med., Celt. Seas.
Scyllæa, Lin.	1	1				
pelagica, *Lin.*	.....	.....	4	zostera.	Milo.	Mediterranean.
Melibœa, Rang	?	2				
coronata, *Gm.?*	.....	.....	30	mud and corallines.	G. of Smyrna.	Med., Celt. Seas.
? minuta, *Forb.*	.....	.....	5	weed.	Despotico.	
Eolida, Cuv.	?	1				
embletoni, *Johnst.?*	.....	.....	lit.	stony.	Paros.	
Elysia, Risso.						
timida, *Risso*	1	1	lit.	rocky.	Paros.	Celtic Seas.

Gasteropoda, Inferobranchiata, Tectibranchiata, Scutibranchiata, Cyclobranchiata, and Cirrhobranchiata.

Of these orders there are sixty Ægean species, among which six are Inferobranchiata, twenty-two Tectibranchiata, fifteen Scutibranchiata, eleven Cyclobranchiata, and one Cirrhobranchiata. Of the sixty species fifty-one have calcareous shells, the remainder belonging to the genera *Aplysia, Pleurobranchus*, and *Gasteropteron*. The genus *Doridium* was not met with. Of the testaceous species eight are new, four inhabiting very deep water. Of the remainder, *Bulla convoluta* has hitherto been known only in a fossil state. Thirteen species range to the British Seas. Four or five testaceous species, inhabiting the western Mediterranean, do not reach the Ægean. Associated with the *Dentalia* are several species of *tubicolar annelides* of the genus *Ditrupa*, most of them inhabiting very deep water. The slight contraction of the mouth of the shell in this curious genus enables us to distinguish between it and its molluscan analogue when the animal is absent.

Species.	Range.	Found living at	Ground.	Freq.	Geographical Distribution.
INFEROBRANCHIATA.	fathoms.	fathoms.			
Pleurobranchus, Cuv.					
aurantiacus, *Risso* .	40	40	weedy.	v. r.	
limacoides, *Forb.* . .	lit.	lit.	rocky.	r.	
scutatus, *Forb.* . . .	20	20	weedy.	v. r.	
calyptræoides, *Forb.*	20	20	weedy.	v. r.	
sordidus, *Forb.* . . .	40	40	weedy.	v. r.	
Umbrella, Lam.					
mediterranea, Lam. .	70	0	nullipore.	v. r.	
TECTIBRANCHIATA.					
Aplysia, Lin.					
depilans? *Lin.* . . .	5–7	5–7	mud.	f.	Lus., Celt., N.
depressa, *Cantr.* . . .	5–15	5–15	mud.	l., r.	
saltator, *Forb.* . . .	12–30	12–30	weedy.	l., r.	
Icarus, *Forb.*					
gravesi, *Forb.*	10–25	10–25	weedy.	l.	
Bullæa, Lam.					
aperta, *Lin.*	29–110	29	weedy.	l.	Lus., Celt., N.
angustata? *Bivon.* .	lit.–119	0	mud.	v. r.	
alata, *Forb.*	119	0	mud.	v. r.	
Bulla, Lin.					
lignaria, *Lin.*	40	0	nullipore.	v. r.	Lus., Celt., N.
retifer, *Forb.*	20	0	weedy.	v. r.	
akera, *Mul.*	20	0	weedy.	v. r.	Lus., Celt., N.
hydatis, *Lin.*	6–30	10	mud.	l.	Lus., Celt., N.
cornea, *Lam.*	0–69	20–55	mud.	a.	
striata, *Brug.*	1	1	mud.	l.	
utriculus, *Broc.* . . .	40–140	0	mud, nullipore.	l.	
convoluta, *Broc.* . .	20–50	25–40	weed.	r.	
turgidula, *Forb.* . . .	10	0	mud.	v. r.	
cretica, *Forb.*	120	0	mud.	v. r.	
truncata, *Adams* . .	13–40	0	mud.	l.	Celt., N.
truncatula, *Brug.* . .	7–40	10–40	sand, mud, &c.	a.	
striatula, *Forb.* . . .	7–30	10	mud.	f.	
Gasteropteron, Meckel.					
meckelii, *Kosse* . . .	25–30	25–30	mud.	v. r.	
Volva, Montf.					
? acuminata, *Brug.* .	40	0	weed.	v. r.	
SCUTIBRANCHIATA.					
Haliotis, Lin.					
lamellosa, *Lam.* . . .	lit.	lit.	rock.	l.	
Crepidula, Lam.					
fornicata, *Lin.*	lit.?	0	. . . . .	l.	
unguiformis, *Lam.* .	10–20	10–20	shelly.	f.	Senegal.
Calyptræa, Lam.					
sinense, *Lin.*	7–55	7–40	shelly.	l.	Lus., Celt., N.

[Eux.

Species.	Range.	Found living at	Ground.	Freq.	Geographical Distribution.
Capulus, De Montf.	fathoms.	fathoms.			
ungaricus, *Lin.*.....	105	0	nullipore.	v. r.	Lus., Celt., N.
Emarginula, Lamk.					
cancellata, *Phil.* ...	100	0	nullipore.	v. r.	
elongata, *Costa*.....	40–100	40	nullipore.	f.	Can.
huzardii, *Payr*.....		0			
capuliformis, *Phil.* .	40–95	40	nullipore.	r.	
Fissurella, Brug.					
neglecta, *Desh*.....	lit.	lit.	rock.	a.	
græca, *Lin.*	14–95	24	weed, &c.	f.	Lus., Celt., N.
gibba, *Phil.*	lit.	lit.	rock.	a.	
Lottia, Gray.					
gussoni, *Costa*	41–69	0	nullipore.	r.	
unicolor, *Forb*.....	55–150	60–105	nullipore.	f.	
Gadinia, Gray.					
garnoti, *Payr.*	lit.?	0	.....	r.	
CYCLOBRANCHIATA.					
Patella, Lin.					
scutellaris, *Lam.* ...	lit.	lit.	rock.	a.	Can.
ferruginea, *Gm.* ...					
bonnardi, *Payr.* ...					
lusitanica, *Gm.*.....					
Chiton, Lin.					
squamosus, *Lin.* ...	lit.	lit.	rock.	a.	
freelandi, *Forb*.....	30–50	30–50	nullipore.	r.	
cajetanus, *Bl.*	lit.	lit.	rock.	l.	
rissoi, *Payr.*	5–10	5–10	stony.	r.	
polii, *Phil*.....	4	4	stony.	r.	
lævis, *Penn.*	31–80	31–80	nullipore.	l.	Lus., Celt., N.
fascicularis, *Lin.* ...	lit.	lit.	stony.	l.	Lus., Celt., N., [Can.
CIRRHOBRANCHIATA.					
Dentalium, Lin.					
9-costatum, *Lam.*...	4–150	7–70	weed, &c.	a.	Lus.
multistriatum?, *Desh.*	7–10	0	weed, &c.	r.	
entalis, *Lin.*	1–16	7	weed, &c.	r.	Lus., Celt., N.
fissura, *Lam*.....	10	0	.....	v. r.	
rubescens, *Desh.* ...	20–28	20–25	weed.	l.	
quinquangulare, *For.*	80–230	150–230	mud.	a.	

Note.—The figures in the first column of the above and following tables indicate the extent of the range at which the species was met with, whether alive or dead; in the second, the greatest and least depth at which it was taken alive; in the third, the kind of sea-bottom is named; in the fourth, the letters express the degree of frequency of occurrence:—a, *abundant*, generally distributed and plentiful; f, *frequent*; l, *local*, more or less plentiful in a few localities; r, *rare*; and v. r, *very rare*, when but few examples occurred. In the fifth column, the extra-Mediterranean distribution (as far as known *with certainty*) is given, the European seas being divided into *Arctic*, *Northern*, *Celtic*, *Lusitanian*, and *Euxine*. The abbreviation "Can." refers to the seas of the Canary Islands.

Gasteropoda Pulmonifera.

A single marine species of this order, *Auricula myosotis* of Draparnaud, is found under stones in muddy places on the shores of several of the Cyclades, and also, though local, on the coast of Asia Minor. It ranges to the shores of Britain.

Gasteropoda Pectinibranchiata.

One hundred and ninety species inhabit the Ægean. Of these ninety-eight are Holostomatous univalves, eighty-two Siphonostomatous, and ten Convolute. There are among them thirty-four new species, one-half of which inhabit great depths. More than two-thirds of the Holostomata do not range beyond fifty fathoms in depth, whilst of the Siphonostomatous and Convoluted univalves more than half the species exceed that limit. Of the first division, twenty-two species extend their range to the British shores, ten of the second, and two of the third. Eight species of pectinibranchiate univalves now living in the Ægean have hitherto been observed only in a fossil state. Two of them, viz. *Fusus crispus* and *Buccinum semistriatum*, have long been regarded as characteristic shells of certain tertiary formations.

Of species recorded as inhabitants of the western Mediterranean which were not met with in the eastern, there are twenty-four Holostomata, twenty Siphonostomata, and nine Convolute.

Nearly a third of the following one hundred and ninety Pectinibranchiata are found fossil in the pliocene deposits of the Archipelago, mingled with species of a more southern character, some of which, as *Terebra duplicata* and *Phorus agglutinans*, are existing inhabitants of the Red Sea. In the corresponding tertiaries of Sicily, Atlantic species occur of which there are no traces either recent or fossil in the Egean. These facts would seem to indicate the connexion of a Mediterranean basin on the one hand with the Indian Ocean by the Red Sea, and on the other with the Celtic Seas during the last tertiary period.

Pectinibranchiata.

Species.	Range.	Found living at	Ground.	Freq.	Geographical Distribution.
Coriocella, Blainv.	fathoms.	fathoms.			
perspicua, *Gmel.* ..	69	0	.....	v. r.	Lus., Celt.
Natica, Brug.					
millepunctata, *Lam.*	10–70	0	weedy.	l.	Lus.
valenciensii, *Payr.*.	10–60	10	weedy.	l.	
pulchella, *Risso*.. ...	2–80	20–45	weedy, nullipore	f.	
guilleminii, *Payr*...	13–20	0	.....	r.	
olla, *M. de Serres*..	4–10	4–7	sand.	l.	
Eulima, Risso.					
polita, *Mont*..... ..	7–29	.....	sand.	f.	Lus., Celt., N.
distorta, *Desh.*	69–140	.....	weedy.	l.	Can.
nitida, *Lam.*	25–41	41	weedy, nullipore	l.	
subulata, *Don.*	7–140	29	weedy.	l.	Celt., N.
unifasciata, *Forb.* ...	69	.....	nullipore.	v. r.	
Parthenia, Lowe.					
acicula, *Phil*.....	10–41	30	weedy.	l.	
pallida, *Phil*.....	41	0	.....	v. r.	

Species.	Range.	Found living at	Ground.	Freq.	Geographical Distribution.
Parthenia, Lowe.	fathoms.	fathoms.			
ventricosa, *Forb.* ...	110–150	0	mud.	f.	
turris, *Forb.*...	.....	.....	.....	v. r.	
elegantissima, *Mon.*	4–31	10–31	mud.	a.	Celt., N., Can.
scalaris, *Phil.*..	30	0	nullipore.	v. r.	
fasciata, *Forb.*	110–150	0	mud.	v. r.	
varicosa, *Forb.*.....	29	0	weed.	v. r.	
humboldti, *Riss.* ...	lit.?	0	sand.	l.	
Odostomia, Flem.....					
conoidea, *Broc*.....	7–41	35–40	sand, weed.	f.	
Truncatella, Risso ...					
truncatula, *Drap*....	lit.	lit.	sand.	l.	Lus., Celt.
Rissoa, Frem.					
desmaresti, *Forb.*...	10	10	mud.	a.	
(= costata, *Desm.*)					
ventricosa, *Desm*....	10–80	10–80	mud, weed, sand.	a.	Lus., Celt.
oblonga, *Desm*.....	10	10	mud.	l.	Lus.
violacea, *Desm*	7–16	7–16	mud.	l.	Lus., Celt.
monodonta, *Bivon*..	sublit.	sublit.	sand?	l.	
radiata, *Phil*.....	10	10	mud.	v. r.	
rubra, *Adams.*	sublit.	sublit.	sand.	l.	Lus., Celt., N.
cancellata, *Desm.*...	sublit.	sublit.	sand.	f.	Lus.
cimicoides, *Forb.* ...	2–69	4–29	sand, weed.	f.	
granulata, *Phil*.....	19	sublit.	sand.		
montagui, *Payr.* ...	10–29	10	sand, weed.	a.	
buccinoides? *Desh*..	4	4	mud.	r.	
reticulata, *Mont.* ...	30–185	55	nullipore, mud.	a.	Celt., N.
ovatella, *Forb.*	69–150	0	mud.	r.	
acuta, *Desm*....	4–110	0	weed, mud.	r.	Lus.
pulchella, *Phil*.....	10–31	10–31	weed, &c.	f.	
conifera, *Mont*.....	10	sublit.	sand.	a.	Celt.
striata, *Adams*.....	20	0	nullipore.	v. r.	Celt., N.
cingilus, *Mont.*	20	0	nullipore.	v. r.	Celt., N.
pulchra, *Forb.*	lit.	0	sand.	v. r.	
elongata, *Phil.*.....	25	0	nullipore.	r.	
Littorina, Fer.					
cœrulescens, *Lin.* ...	lit.	lit.	rock.	a.	General in N. & S. Atlantic, [Eux.
Fossarus, Phil.					
adansoni, *Phil.*.....	lit.	lit.	rock.	r.	
Scalaria, Lam.					
communis, *Lam.* ...	10	10	mud.	l.	Lus., Celt., N.
lamellosa, *Lam.* ...	sublit.?	0	sand.	l.	Lus., Can.
planicosta, *Bivon* ...	45	0	nullipore.	r.	
hellenica, *Forb*.....	110	0	mud.	v. r.	
Turritella, Lam.					
triplicata, *Broc*.....	6–95	30–69	mud, &c.	a.	Can.
terebra, *Lin*.....	7–60	7–60	mud.	l.	Lus., Celt., N.
suturalis, *Forb.*	25	0	mud.	v. r.	
Vermetus, Adanson					
gigas, *Bivon*.....	sublit.	sublit.	rock, &c.	a.	
sublamellatus, *Bivon*	lit.	lit.	rock, &c.	a.	

Species.	Range.	Found living at	Ground.	Freq.	Geographical Distribution.
Vermetus, Adanson.	fathoms.	fathoms.			
arenarius, *Desh.* ...	lit.	lit.	rock, &c.	a.	
glomeratus, *Lin.* ...	lit.	lit.	rock, &c.	f.	
granulatus, *Forb.*...	lit.	lit.	rock, &c.	f.	
corneus, *Forb.*	25–48	40–45	weedy.	l.	
Siliquaria, Brug.					
anguina, *Gmel.* ...	45–69	0	nullipore.	r.	
Nerita, Lin.					
viridis, *Lin.*	4–24	4–16	weedy.	l.	West Indies.
Adeorbis, S. Wood.					
subcarinata, *Mont.*..	lit.	0	sand?	f.	Lus., Celt.
Scissurella, D'Orb.					
plicata, *Phil.*	70–150	0	mud.	r.	
Solarium, Lam.					
stramineum, *Gmel.*	69	0	nullipore.	l. r.	
Trochus, Lin.					
coutourii, *Payr*.....	15–69	69	weed.	a.	Eux.
vielloti, *Payr.*	lit.	lit.	rock.	f.	
jussieui, *Payr.*	lit.	lit.	rock.	a.	
tineis, *Chacci.*	69–105	0	nullipore.	l.	
magus, *Lin.*	25–40	25	weedy.	l.	Lus., Celt., N.,
canaliculatus, *Lam.*	6–13	6–8	weedy.	l.	[Can.
racketti, *Payr*.....	4–14	sublit.	mud.	f.	
villicus, *Phil.*	14	14	mud.	r.	
pallidus, *Forb.*.....	lit.	0	rock?	v. r.	
umbilicaris, *Gmel.* .	lit.	lit.	rock.	l.	Lus.
lyciacus, *Forb.*.....	lit.	lit.	rock.	l.	
spratti, *Forb.*	3–30	3–24	weed.	a.	
fanulum, *Gmel*.....	9–60	9	weed.	l.	
richardi, *Payr.*.....	lit.	lit.	rock.	l.	
adansoni, *Payr.* ...	3–30	3–20	weed.	f.	
divaricatus, *Lin.* ...	lit.	lit.	rock.	a.	Eux.
articulatus, *Lam.* ...	lit.	lit.	rock.	a.	
fragarioides, *Lam*...	lit.	lit.	rock.	a.	Lus., Can.
therensis, *Forb*.....	lit.	lit.	rock.	l.	
ziziphinus, *Lin.* ...	19–55	19–55	weed.	f.	Lus., Celt., N.
conulus, *Lam.*	8–27	8–27	mud, weed.	f.	Lus.
laugieri, *Payr.*	sublit.?	0	sand?	l.	Lus.
crenulatus, *Broc.*...	3–10	3–10	sand, mud, &c.	a.	Lus.
gravesi, *Forb.*	3–41	8–40	sand, weed.	a.	
exasperatus, *Penn.* .	10–165	10–105	mud, nullip., &c.	a.	Lus., Celt.
millegranus, *Phil.* .	41–110	41–110	mud, nullipore.	r.	Lus., Celt., N.
Turbo, Lin.					
sanguineus, *Gmel*....	27–105	27–60	nullipore.	f.	
rugosus, *Gmel.*	8–80	8–80	mud, weed.	l.	Can.
Phasianella, Lam.					
pulla, *Gmel.*	2–80	3–80	sand.	f.	Lus., Celt., N.
intermedia, *Phil.*...	8–10	8–10	mud.	l.	[Eux., Can.
vieuxii, *Payr.*	6–24	6–24	sand, &c.	f.	
Ianthina, Lam.					
nitens, *Menke.*	pelagic.	pelagic.	.....	l.	Atlantic.

Species.	Range.	Found living at	Ground.	Freq.	Geographical Distribution.
Cerithium, Brug.	fathoms.	fathoms.			
vulgatum, *Brug.* ...	11–40	11–40	mud, weed.	a.	Eux., Can.
fuscatum, *Costa.* ...	lit.	lit.	rock.	a.	
mammillatum, *Risso.*	lit.	lit.	sand.	l. a.	
lima, *Brug.*	3–140	3–80	weed, &c.	a.	Lus., Celt., N.,
trilineatum, *Phil.*...	lit.?	0	sand?	r.	[Can.
lacteum, *Phil.*	29–30	0	nullipore.	r.	
angustissimum, *Forb.*	7–55	0	weed.	l.	
Triforis, Desh.					
adversum, *Lin.*	4–95	7–41	weed.	f.	Lus., Celt.
perversum, *Lam.* ...	55–69	69	weed.	l.	Lus., Celt., Can.
Pleurotoma, Lam.....					
albida, *Desh.*.....	lit.?	0	sand?	f.	
formicaria, *Sow.* ...	10–80	10–80	weed.	a.	Peru?
rude, *Phil.*	lit.?	0	sand?	r.	
crispata, *Jan.*	40–105	70–80	mud, sand.	l.	
bertrandi, *Payr.* ...	13	0	weed.	r.	
purpurea, *Mont.*. ...	30–50	35	weed.	l.	Lus., Celt., N.
reticulata, *Bron.* ...	20–105	30	weed.	l.	Lus.
β spinosa, *Forb.* ...	3–55	3–40	weed, &c.	a.	
maravignæ, *Biv.* ...	20–105	20–80	weed, &c.	f.	
vauquelini, *Payr.*..	24–55	31	gravel.	l.	
gracilis, *Mont.*	13–80	50–80	nullipore.	f.	Lus., Celt.
attenuata, *Mont*.....	7–35	8–31	weed.	l.	
lævigata, *Phil.*	8	0	sand.	v. r.	
teres, *Forb.*	45	0	nullipore.	v. r.	
lefroyi, *Mich.*					
philberti, *Mich*.....	20–55	24–31	weed, &c.	f.	
turgida, *Forb.*	25–30	30	weed.	r.	
fallax, *Forb*.....	.....	.....	.....	r.	
linearis, *Mont.*	8–31	8	weed.	l.	Lus., Celt., N.
fortis, *Forb.*	70	0		v. r.	
lyciaca, *Forb.*	80			v. r.	
minuta, *Forb.*	92–105			r.	
abyssicola, *Forb.* ...	110			r.	
ægeensis, *Forb*.....	13	13	weed.	v. r.	
Fasciolaria, Lam.					
tarentina, *Lam*.....	lit.	lit.	rock.	a.	
Fusus, Lam.					
lignarius, *Lam*.....	lit.–30	lit.–7	rock, mud.	a.	
syracusanus, *Lam.* .	3–41	3–41	sand.	l.	
lavatus, *Bast.*	10–60	10–60	mud, weed.	a.	Lus.
muricatus, *Mont.* ..	50–150	80–95	nullipore, &c.	f.	Lus., Celt., N.
crispus, *Broc.*	40–60	0	nullipore.	f.	
fasciolarioides, *Forb.*	20–58	23–30	weed.	f.	
karamanensis, *Forb.*	30	30	mud.	v. r.	
Murex, Lin.					
brandaris, *Lin.*	2–40	3–28	sand, mud, &c.	a.	Can.
trunculus, *Lin*.....	lit. 10–28	lit.–10	rock, mud.	a.	Can.
cristatus, *Broc*.....	20–80	50–80	sand, weed.	a.	
edwardsii, *Payr.* ...	lit.	lit.	rock.	a.	

Species.	Range.	Found living at	Ground.	Freq.	Geographical Distribution.
Murex, Lin.	fathoms.	fathoms.			
vaginatus, *Cr.&Jan.*	150	0	mud.	v. r.	
distinctus, *Cr. & Jan.*	40–69	0	nullipore.	r.	
brevis, *Forb.*.....	24	24	mud.	v. r.	
fistulosus, *Broc*.....	6–50	6	mud.	r.	
Aporrhais, Da Costa.					
pes-pelecani, *Lin.*...	12–70	20–45	weed, mud.	a.	Lus., Celt., N.
Ranella, Lam.					
lanceolata, *Menke*....	lit.?	0	rock?	v. r.	
Triton, Lam.					
variegatum, *Lam*....	7	7	weed.	v. r.	
Purpura, Lam.					
hæmastoma, *Lam.* .	lit.	0	rock.	v. r.	Atlantic.
Cassidaria, Lam.					
tyrrhena, *Lin.*	40–48	0	weed.	v. r.	
Dolium, Lam.					
galea, *Lin*.....	10–31	0	sand?	l.	Can.
Pollia, Gray.					
maculosa, *Lam*.....	lit.	lit.	rock.	a.	
candidissima, *Phil.*.	lit.	0	sand?	v. r.	
minima, *Phil.*	55–69	60	nullipore.	l.	
Nassa, Lam.					
macula, *Mont.*	7–10	9	weed.	v. r.	Lus., Celt., N.
variabile, *Phil*	0–27	0–7	mud.	a.	
d'orbignyi, *Payr*....	lit.?	0	sand?	r.	
varicosa, *Turt*.....	27	0	.....	r.	
intermedia, *Forb*....	45–185	0	nullipore, mud.	l.	
granulata, *Phil*.....	7–10	0	mud.	r.	
prismatica, *Broc.* ...	19–20	0	nullipore.	r.	
reticulata, *Lin*.....	7–10	7	weed.	a.	Eux., Can.
musiva?, *Broc*.....	7–10	8	weed.	l.	Lus.,Celt.,Brit.
cornicula, *Olivi.* ...	0–19	2	rock, &c.	l.	
semistriata, *Broc*....	70–78	0	mud.	v. r.	
mutabile, *Lin.*	lit.–10	lit.–10	sand, mud.	a.	Lus., Can.
gibbosula, *Lin.*	lit.	0	sand?	v. r.	
neritea, *Lin.*	lit.	lit.	sand.	a.	Lus., Eux.
Columbella, Lam.....					
rustica, *Lam*.....	0–55	lit.–20	rock, &c.	a.	Eux., Can.
linnæi, *Payr*.....	lit.–60	lit.–10	rock, &c.	a.	Eux.
gervillii, *Payr*.....	30–40	30	weed.	l.	
Mitra, Lam.					
ebenus, *Lam.*	20–80	20–80	weed, mud.	f.	Can.
cornea, *Lam*.....	lit.?	0	weed.	l.	
savignii, *Payr*.....	16–30	16–20	weed.	f.	
obsoleta, *Bron*.....	3–69	6–30	weed.	f.	
littoralis, *Forb*.....	lit.	0	sand?	a.	
phillippiana, *Forb.* .	45–105	45	nullipore.	r.	
granum, *Forb.*	20–60	20	weed.	l.	
Tornatella, Lam.					
fasciata, *Lam.*	29–80	80	sand.	l.	Lus., Celt., N.
pusilla, *Forb*.....	100	0	nullipore.	v. r.	

Species.	Range.	Found living at	Ground.	Freq.	Geographical Distribution.
Tornatella, Lam.	fathoms.	fathoms.			
globulina, *Forb.* ...	95	0	nullipore.	v. r.	
Marginella, Lam.					
clandestina, *Bron.*..	4–105	10–40	mud, &c.	a.	
secalina, *Br.*.....	25–69	30	weed.	l.	
miliacea, *Lam.*.....	lit.–20	0	sand.	f.	
Erato, Risso.					
lævis, *Don*	19–55	40–45	weed, nullip.	l.	Lus., Celt.
Ringuicula, Desh.					
auriculata, *Menard.*	7–10	0	sand?	r.	Can.
Cypræa, Lin.					
lurida, *Lin.*	lit.	0	sand?	v. r.	
pyrum, *Lin.*	lit.	0	sand?	v. r.	
spurca, *Lin.*	lit.	lit.	rock.	l.	
europæa, *Lin.*	23–60	55	nullipore.	f.	Lus.
Conus, Lin.					
mediterraneus, *Brug.*	2–41	lit.–10	rock, mud.	a.	Eux.

Palliobranchiata.

Eight species of *Brachiopoda* inhabit the Ægean, seven of which are *Terebratulæ* and one a *Crania*. They range from 25 to 230 fathoms, but abound between 70 and 100 on a bottom of nullipore and coral, where the number of individuals belonging to this tribe taken in a single dredge usually far exceeds that of all the other Testacea accompanying them. Their presence and abundance is an unfailing clue to the region from whence the produce of the dredge has been obtained. They are gregarious, living on clean ground, and were found only in a dead state in the neighbouring mud. Of the largest species, the *Terebratula vitrea*, two broken specimens only were taken, one of them at the great depth of 1380 feet below the surface. No living examples of any of the species, however, were found below 105 fathoms. The uniform muddy bottom below that depth is unfavourable to their presence. The same remarks apply to *Crania ringens*. It is remarkable that *Terebratula caput serpentis*, which is not uncommon in the western Mediterranean, is altogether absent in the eastern. *Thecidia*, also, was never met with in the latter.

Species.	Range.	Found living at	Ground.	Freq.	Geographical Distribution.
Terebratula, Lam. ...	fathoms.	fathoms.			
vitrea, *Gm.*	92–250	0	nullip., mud.	v. r.	N. Atlantic.
truncata, *Gm.*	55–105	60–105	nullipore.	a.	North., Lus., [Can.
detruncata, *Gm.* ...	27–110	45–105	nullipore.	a.	
cuneata, *Risso*.....	28–69	28–69	nullipore.	r.	
lunifera, *Phil.*	95	95	nullipore.	v. r.	
seminulum, *Phil.* ...	45–105	60–105	nullipore.	f.	
appressa, *Forb*.....	95	95	nullipore.	v. r.	
Crania, Retz.					
ringens, *Honing.* ...	40–150	40–90	nullipore.	a.	

Lamellibranchiata Dimyaria.

One hundred and fifteen species of this division of bivalve Mollusca were observed in the Ægean. Of these ten are undescribed forms, most of which are inhabitants of great depths. Two are species formerly known only in the fossil state (*Solen tenuis* and *Neæra costellata*). Forty-five extend their range to the British shores; six do not reach beyond the oceanic coasts of the peninsula. Of the more abundant larger forms, the greater part are littoral species; among the smaller deep sea forms some, such as *Ligula profundissima* and *Kellia abyssicola*, are very abundant. The majority of species in this division inhabit muddy or sandy ground.

None of the new species found were observed fossil in the neighbouring tertiaries. Among the pleiocene fossils were four species, which, though three of them are not unfrequent in the western Mediterranean, were not met with in the eastern (*Isocardia cor*, *Pholas candidus*, *Artemis exoleta*, and *Venus casina*). It is worthy of remark that these are all existing Celtic forms. Neither was *Diplodonta apicalis* met with alive, which is abundant in the tertiaries of the Archipelago, and is an existing inhabitant of the Red Sea. There are thirty-seven species inhabiting the coasts of Sicily which were not met with in the Ægean; of these twenty-two are oceanic forms.

Lamellibranchiata Dimyaria.

Species.	Range.	Found living at	Ground.	Freq.	Geographical Distribution.
	fathoms.	fathoms.			
Teredo, sp.	119	0		v. r.	
Clavagella, Lam.					
melitensis ?	lit.	lit.	calc. rock.	l.	
Gastrochæna, Speng.					
cuneiformis, *Lam.*..	30	0	mud.	v. r.	
Solen, Lin.					
siliqua, *Lin.*	1	0	sand.	r.	Lus., Brit.
tenuis, *Phil.*	7–40	7–40	sandy & nullip.	r.	
coarctatus, *Lin.*.....	7–50	20	nullipore.	f.	Celt., N.
Solecurtus, De Bl.					
strigillatus, *Lin.* ...	1	$\frac{1}{2}$–1	sand.	l.	Celt.
Ligula, Mont.					
sicula, *Sow.*	lit.	0	sand.	r.	
boysii, *Mont.*.....	4–50	10–45	mud.	a.	Celt., N.
prismatica, *Mont.*...	25–55	55	mud.	r.	Northern.
*profundissima, *Forb.*	72–30	80–185	white mud.	a.	
Mactra, Lin.					
stultorum, *Lin.*.....	lit.	lit.	sand.	l.	Celt., N., Lus.
Kellia, Turt.					
corbuloides, *Phil.*...	lit.	lit.	sand.	l.	
suborbicularis, *Mont.*	29–45	30–55	mud.	r.	Celt., N.
rubra, *Mont.*.....	lit.	lit.	rock.	l.	N. & S. Atl.
abyssicola, *Forb.* ...	70–200	70–180	mud.	a.	
transversa, *Forb.* ...	119	0	white mud.	v. r.	
Montacuta, Turt.					
sp. und.....	7	0	mud.	v. r.	
Solenomya, Lam.					
mediterranea, *Lam.*	2	0	sand.	v. r.	
Byssomya, Payr.					
guerinii, *Payr.*.. ...	8	0	sand.	v. r.	

Species.	Range.	Found living at	Ground.	Freq.	Geographical Distribution.
Corbula, Lam.	fathoms.	fathoms.			
nucleus, *Lam.*	7–80	7–40	mud, sand.	a.	Lus., Celt., N.
Poromya, Forb.					
anatinoides, *Forb.*...	40–150	0	mud.	f.	
Neæra, Gray.					
cuspidata, *Bron.* ..	12–185	12–185	mud,weed, sand.	f.	Lus., Celt., N.
costellata, *Desh.* ...	20–185	30–185	mud, grav.weed.	f.	
attenuata, *Forb.* ..	110–150	140	mud.	r.	
abbreviata, *Forb.*...	75–185	140	mud.	r.	
Pandora, Lam.					
rostrata, *Lin.*	4	0	sand.	v. r.	Lus., Celt.
obtusa, *Leach.*	7–110	20–70	mud, weed.	f.	Lus., Celt.
Lyonsia, Turt.					
striata, *Mont.*	20–70	20–70	weed, nullip.	l.	Lus., Celt., N.
Thracia, Leach.					
pubescens, *Mont.* ...	70	0	.....	v. r.	Lus., Celt., N.
phaseolina, *Kiener.*	7–30	7	sand.	v. r.	
pholadomyoides, *For.*	150	0	coral.	v. r.	
Saxicava, Lam.					
arctica, *Fabr.*	20–80	20–80	weed, sand.	l.	Lus., Celt., N., [Can.
Venerupis, Lam.					
Irus, *Lam.*.....	lit.	0	.....	a.	Lus., Celt., N.,
decussata, *Phil.*.....	lit.	0	sand ?	a.	[Eux.
Psammobia, Lam.					
vespertina, *Lam.* ...	7–40	0	sand.	r.	Lus.,Celt.,Can.
discors, *Lam.*	25–40	0	nullipore.	v. r.	
ferroensis, *Mont.* ...	20–40	0	nullipore.	v. r.	Lus., Celt., N.
Tellina, Lin.					
pulchella, *Lam*.....	11	0	sand ?	r.	[Eux.
donacina, *Gm.*	7–45	7–12	mud.	a.	Lus., Celt., N.,
serrata, *Broc.*	7–45	0	weed.	l.	
balaustina, *Poli* ...	6–48	40	sand.	f.	
fragilis, *Lin.*	lit.	0	sand.	r.	Lus.,Celt.,Eux.
planata, *Lin.*.....	lit.	0	sand.	l.	Lus
depressa, *Gm.*	lit.	0	sand.	l.	Lus., Celt.
distorta, *Poli*	5–10	7	weed.	l.	
Lucina, Brug.					
flexuosa, *Mont.*.....	7–11	11	mud.	r.	Celt.
lactea, *Lam.*.....	0–25	10–24	mud.	a.	Lus.,Celt.,Eux.
desmarestii, *Payr.* .	lit.	lit.	sand.	l.	[Can.
rotundata, *Mont.*....	6	0	mud.	r.	Celt.
spinifera, *Mont*	4–30	13–40	weed, nullipore.	f.	Lus., Celt.
pecten, *Lam.*.....	0–16	0	sand.	f.	Can.
digitalis, *Lam.*.....	25	0	sand ?	v. r.	Lus., Celt.
commutata, *Phil.*...	11–75	0	nullipore.	l.	
bipartita, *Phil.*	55–95	69	nullipore.	l.	
transversa, *Bronn* ...	10–25	10	mud.	f.	
ferruginosa, *Forb.*...	119	119	mud.	l.	
Donax, Lin.					
trunculus, *Lin.*.....	lit.	lit.	sand.	l.	Lus., Celt., N.
venusta, *Poli*	8	8	mud.	r.	[Eux., Can.
complanata, *Mont.* .	lit.	lit.	sand.	l.	Lus., Celt.

Species.	Range.	Found living at	Ground.	Freq.	Geographical Distribution.
Donax, Lin.	fathoms.	fathoms.			
semistriata, *Poli* ...	lit.	0	sand.	r.	
Mesodesma, Desh.....					
donacilla, *Desh*.....	lit.	½	sand.	a. l.	Lus.
Astarte, Sow.					
incrassata, *DelaJonk.*	30–80	.....	nullipore.	r.	
pusilla, *Forb.*	70–112	70	nullipore.	l.	
Artemis, Poli.					
lincta, *Mont*.....	0–16	1	sand.	l.	Lus., Celt., N.
Cytherea, Lam.					
apicalis, *Phil.*	4–95	30–40	weed, coral.	a.	
venetiana, *Lam*.....	20–40	0	mud.	f.	
chione, *Lin.*	7–10	0	.....	r.	Lus., Celt.
Venus, Lin.					[Eux. & Casp.
gallina, *Lin.*	0–2	1–2	sand.	l.	Lus., Celt., N.,
verrucosa, *Lin*.....	2–40	0	.....	l.	Lus., Celt., Can.
ovata, *Mont*.....	29–135	27–80	nullipore, mud.	a.	Lus., Celt., N.
fasciata, *Mont*.....	27–40	40	nullipore.	l. r.	Lus., Celt., N.
incompta? *Phil.* ...	20–30	0	.....	r.	
Pullastra, Sow.					
virginea, *Lin.*	15	0	weed.	r.	Lus., Celt., N.
aurea, *Lin*.....	4–10	7	mud.	l.	Lus., Celt.
geographica, *Lin*....	10–15	10	mud.	l.	Lus.
decussata, *Lin*.....	lit.	lit.	sand.	f.	Lus., Celt.
Cardium, Lin.					
echinatum, *Lin*.....	7–50	0	weed.	l.	Lus., Celt., N.
erinaceum, *Lam.* ...	20	0	weed.	v. r.	
lævigatum, *Lin*.....	20–40	0	weed.	l.	Lus., Celt., N.
papillosum, *Poli* ...	6–75	7–45	weed, mud, &c.	a.	
exiguum, *Lin.*	7–30	16–24	weed.	f.	Lus., Celt.
punctatum, *Ren.* ...	12	12	sand.	r.	[Can.
minimum, *Phil*.....	70–142	80	mud	f.	[Eux., Casp.,
edule, *Lin*.....	lit.	lit.	sand.	l.	Lus., Celt., N.,
rusticum, *Chemn*....	lit.	lit.	sand.	r.	Lus., Eux., [Casp.
Cardita, Brug.					
sulcata, *Brug.*	7–30	10–20	weed.	f.	
squamosa, *Lam.* ...	25–150	40–95	nullipore.	f.	
trapezia, *Mull.*	0–95	1–25	rock, weed.	f.	
calyculata, *Lam.* ...	0–1	0–½	rock.	a.	Lus., Can.
Arca, Lin.					
barbata, *Lin*.....	lit.–4	0–1	rock.	a.	Lus., Celt.
lactea, *Lam*.....	0–150	10–150	r^k., weed, nul. &c.	a.	Lus., Celt.
scabra, *Poli*	70–105	100	nullipore.	r.	
imbricata, *Poli* ...	35–230	90–230	nullipore, mud.	f.	Can.
antiquata, *Lin*.....	45–50	0	nullipore.	r.	
tetragona, *Poli*	20–80	30–80	nullipore.	f.	Lus., Celt.
noæ, *Lin*.....	0–27	1–3	rock.	f.	Lus., Can.
Pectunculus, Lam.					
glycimeris, *Lam.* ...	6–24	6	mud.	r.	
pilosus, *Lam*.....	25–69	69	nullipore.	r.	Lus., Celt., N.,
violaceus, *Lam*.....	10	0	gravel.	v. r.	[Can.
lineatus, *Phil.*	4–30	0	nullipore.	r.	

Species.	Range.	Found living at	Ground.	Freq.	Geographical Distribution.
Nucula, Lam.	fathoms.	fathoms.			
polii, *Phil.*.....	45–140	0	mud, nullipore.	l.	
margaritacea, *Lam.*.	2–95	3–40	mud, &c.	a.	Lus., Celt., N.
ægeensis, *Forb.* ...	185	185	mud.	r.	
emarginata, *Lam.*...	7–50	7–45	mud, weed.	f.	
striata, *Phil.*.....	40–185	40–11	sand, mud.	f.	
Chama, Lin.					
gryphoides, *Lin.* ...	0–50	12–0	rock, nullipore.	f.	Lus., Can.
Modiola, Lam.					
barbata, *Lam.*	7–95	7–95	mud,weed, null.	l.	Lus., Celt.
tulipa, *Lam.*	2–50	6–45	mud, &c.	l.	Lus., Celt.
discrepans, *Mont.*...	10–40	10	weed.	r.	Lus., Celt., N.
marmorata, *Forb.*...	19–45	19	gravel.	r.	Lus., Celt., N.
Lithodomus, Lam.					
lithophagus, *Lam.*...	lit.	lit.	rock.	f.	
Mytilus, Lin. [*Lam.*					
gallo-provincialis,	lit.	lit.	rock.	r.	
minimus, *Poli*	lit.	lit.	rock.	a.	
Pinna, Lin.					
squamosa, *Lin.*.....	1–24	1	sand, mud.	f.	Can.

Lamellibranchiata Monomyaria.

There are twenty-eight species of this division of bivalve Mollusca inhabiting the Ægean. Of these six are undescribed forms inhabiting the greater depths, being all found between 40 and 200 fathoms. Of the remainder, eight extend their range to the shores of Britain. Many of the species which elsewhere attain a considerable size are small in the Ægean. The gregarious species do not there form great banks or beds as in other places.

Of the new species found one only (*Pecten hoskynsii*) was observed fossil in the neighbouring tertiaries, and that one in a deposit of considerable age (ante-pliocene). Of the others, several are abundant in the pleiocene deposits, at the period of the formation of which, however, they seem to have attained their full dimensions, and not to have been dwarfed as at the present day. Generally speaking, the proportion of dead valves greatly exceeds that of living shells of this section, brought up in dredge, and in the majority of species the valves become disunited after death and scattered. There are about twelve Monomyaria, which though inhabiting the western Mediterranean, do not seem to extend their range to the Ægean.

Lamellibranchiata Monomyaria.

Species.	Range.	Found living at	Ground.	Freq.	Geographical Distribution.
Avicula, Lam.	fathoms.	fathoms.			
tarentina, *Lam.*.....	20	20	mud.	r.	Can.
Lima, Brug.					
squamosa, *Lam.* ...	1–69	1–28	rock, gravel.	f.	Lus., Can.
tenera, *Turt.*.....	0–30	0	sand.	l.	Lus.Celt.[Can.
fragilis, *Mont.*	20–40	20–40	nullipore.	l.	Lus., Celt., N.,
subauriculata, *Mont.*	15–30	0	weed.	l.	Lus., Celt., N.

Species.	Range.	Found living at	Ground.	Freq.	Geographical Distribution.
Lima, Brug.	fathoms.	fathoms.			
elongata, *Forb.*.....	55–140	55	nullipore, mud.	f.	
cuneata, *Forb.*	40	0	nullipore.	r.	
crassa, *Forb.*.....	70–150	0	nullipore, mud.	f.	
Pecten, Brug.					
jacobæus, *Lam.* ...	12–70	25	nullipore.	r.	Lus., Can.
dumasii, *Payr.*.....	70–150	0	nullipore, mud.	l.	
pes felis, *Lam.*	60–69	0	nullipore.	r.	
sulcatus, *Lam.*.....	7	0		l.	
opercularis, *Lin.* ...	10–70	31–55	nullipore, &c.	a.	Lus., Celt., N.
varius, *Lin.*	7–55	25–55	nullipore, &c.	f.	Lus., Celt., N.
pusio, *Lam.*	10–69	40	weed.	f.	Lus., Can.
polymorphus, *Bronn.*	8–69	28–41	weed, &c.	a.	Eux.
hyalinus, *Phil.*.....	6–60	6–40	sand.	a.	
testæ, *Bivon*.....	29–69	30–50	weed.	f.	
similis, *Laskey*	27–185	40–70	mud.	a.	Celt., North.
fenestratus, *Forb.*...	45–140	0	mud, nullipore.	f.	
concentricus, *Forb.*.	70–185	0	mud.	f.	
hoskynsii, *Forb.* ...	185–200	0	mud.	l.	
Spondylus, Lam.					
gadæropus, *Lin.* ...	$\frac{1}{2}$–14	1	rock.	l.	Can.
gussonii, *Costa*.....	105	105	nullipore.	r.	
Ostrea, Lin.					
plicatula, *Lin.*	lit.–30	lit.	rock, &c.	l.	
cochlea, *Poli*	60–110	0	nullipore.	r.	Can.
Anomia, Brug.					
ephippium, *Lin*.....	20–40	20	weed, &c.	l.	Lus., Celt., N.
polymorpha, *Phil*....	20–140	20–30	weed, &c.	l.	Lus., Celt., N.

Mollusca Tunicata.

Of the simple Ascidians seventeen species were met with. Five of them were Pelagic species, among which *Salpa maxima* and *S. democratica* were the most abundant, especially in the spring of the year, when great numbers of them approached the surface in fine weather in the afternoon. The remainder were fixed species, chiefly belonging to the genera *Phallusia*, *Ciona*, and *Cynthia*, some of which were found as deep as fifty-five fathoms; they were most abundant between twenty and forty fathoms, generally on weedy ground. A number of compound Ascidians were also met with in similar depths of water*.

Radiata.

Arachnodermata.

There are fifty-seven species of acalephous animals recorded as inhabitants of the Mediterranean sea; but few of these occur in the Ægean. Though

* The working out of the species procured of this difficult tribe and of some of the radiate families, especially the smaller Zoophytes, demands more disposable time than the reporter's professional avocations (at present) permit; he is constrained therefore reluctantly to give only a general sketch in these departments, hoping at some future meeting to present supplementary details.

continually on the look-out for these beautiful creatures only fifteen species were met with, mostly described forms. The sheltered bays of Asia Minor and the squally seas of the Cyclades were alike unprolific; twice only were considerable numbers met with; once in the Gulf of Scopæa, where during the winter months great numbers of *Aurelia*, most species of which genus are gregarious, assembled, and once in the bay of Smyrna, where the presence of gigantic *Rhizostomæ* afforded full occupation for several days, in September 1842. In neither case were the individuals widely spread, but confined to a limited space. Besides the two species named, six other members of the order *Pulmograda* were met with in the months of July, August and December. Of the *Ciliograda*, the *Beroe forskälii* was taken in May 1841, off the island of Milo, and in company with it a single example of the *Cestum veneris*. A few days after a *Cydippe* was seen, but not taken, in the bay of Syra. Of the *Physograda*, several examples of a large *Stephanomia* were met with in the Gulf of Macri, in December, where they were seen floating a few feet below the surface, about 3 p.m. on sunny days. Of the *Diphydæ* occasional individuals were seen, probably species of *Calpe* or *Pyramis*. Of the *Cirrhigrada*, *Velella spirans* was collected by Lieut. Spratt on the shore at Rhodes, in December 1842, and *Porpita glandifera* occurred once on the sandy shore between Patara and the mouth of the Xanthus in February 1842.

We must attribute the great abundance of *Medusæ* in the western Mediterranean, as compared with their scarcity in the eastern, to the oceanic influence in the former. They abound near the gut of Gibraltar, a locality prolific in species as well as individuals. Their numbers decrease as we approach the shores of Greece. In the Ægean, as we have seen, they play an unimportant part. The few gregarious species extend their range to the Black Sea, where great herds of *Aureliæ* are not unfrequently met with. Pelagic as these animals are, there is reason to believe that the range of the species is extremely limited, and that they afford a valuable means of defining zoological provinces in the open sea.

Arachnodermata.

	No. of Ægean Sp.	No. of Medit. Sp.	Date when taken.	Locality.
PULMOGRADA.	8	29		
Rhizostoma, Cuv.	1	1		
cuvieri?, *Eschs.*.....	.....	.....	Sept. 1842.	Bay of Smyrna.
Cephea, Peron	1	1		
tuberculata, *Macri.* .	.....	8	Aug., Sept., Nov. 1842.	Cyclades, Sporades, Cervi.
Oceania, Peron	1			
cruciata, *Forsk*.....	.....	.....	July, 1841.	Serpho Bay.
Thaumantias.....	1	1		
laxa, *Forb*.....	.....	.....	Aug. 1841.	Off Milo.
Aurelia, Peron	1	4		
granulata?, *Lam.* ...	.....	.....	Dec. 1841.	Gulf of Scopæa, Caria.
Geryonia, Peron	2	2		
nov. sp.?	.....	.....	Aug. 1841.	Bay of Cervi.
proboscidalis, *Forsk.*	.....	.....	Dec. 1841.	Gulf of Macri.
Mesonema, Eschs.	1	5		
cœlum pensile, *Mod.*	.....	.....	May 1841.	Off Milo.

	No. of Ægean Sp.	No. of Medit. Sp.	Date when taken.	Locality.
CIRRHIGRADA.	2	2		
Velella, Lam.....	1	1		
spirans, *Forsk.*	.....	.....	Dec. 1841.	Rhodes.
Porpita, Lam.	1	1		
glandifera, *Lam*.....	.....	.....	Feb. 1842.	Lycia.
PHYSOGRADA.	1	7		
Stephanomia, Peron ...	1	2		
contorta?, *M. Ed.*...	.....	.....	Dec. 1841.	Gulf of Macri.
CILIOGRADA.	3	6		
Beroë, Mul.	1	1		
forskalii, *M. Ed.*	.....	.....	May, 1841.	Off Milo.
Cestum, Le Sueur.....	1	1		
veneris, *Le Sueur* ...	.....	.....	May, 1841.	Off Milo.
Cydippe, Eschs	1	1		
sp.	.....	.....	May, 1841.	Syra.
DIPHYDÆ.	2	9		
Pyramis, Otto	1	1		
tetragona, *Otto*	.....	.....	various.	Throughout.
Calpe, Quoy & Gaim...	1	1		
pentagona, *Quoy & G.*	.....	.....	various.	Throughout.

Echinodermata.

Crinoidea.—The only crinoid animal inhabiting the Ægean is the common European *Comatula* (*C. rosacea*), identical in every respect with the northern examples of the species. It is local, and lives on weedy ground in from 20 to 30 fathoms water. I met it only among the Cyclades. In no instance was it found in the young or *Phytocrinus* state.

Ophiuridæ.—Eleven species of *Ophiuridæ* inhabit the Ægean, ranging from the surface to the greatest depths explored. Four of the Ægean species are identical with northern forms; viz. *Ophiura texturata* and *albida*, *Amphiura neglecta* and *Ophiothrix rosula*. They are all found in habitats similar to those in which they occur in the British seas. The last-named species is invariably smaller than northern individuals. Five, viz. *Pectinura vestita*, *Ophiura abyssicola*, *Ophiomyxa lubrica*, *Ophiopsila aranea*, and *Amphiura neglecta*, are entirely new species. Three of these new forms were found only in very deep water 100 fathoms and under, one of them, the second named, having been taken alive in 200 fathoms. One of the Ægean *Ophiuridæ* is an instance of a most extensive range, being found in all muddy bottoms between 7 and 180 fathoms, the specimens from the greatest depths exactly resembling those from the shallows.

The Euryale has not as yet been found in the eastern Mediterranean; it inhabits the Eastern and the Adriatic. Deducting synonyms from previous enumerations of the Mediterranean *Ophiuridæ* proper, my list exceeds by four species all former catalogues.

Asteriadæ.—Thirteen species of *Asteriadæ* inhabit the Ægean; of these,

seven do not range deeper than ten fathoms. A Goniaster and an Asterina were the species met with in deepest water, the first coming up from 60 fathoms off Cnidus, the second ranging from 20 to 70 fathoms. Four species were identical with Celtic forms, one of them being the *Uraster glacialis*, which ranges northward to the shores of Greenland. The northern seas greatly exceed the Mediterranean in the number of species and abundance of individuals of this order. Out of the small number of *Asteriadæ* which were taken in the Ægean, one half the number occurred only as single specimens.

Echinidæ.—The extreme abundance of *Echinus lividus*, which lines the rocks a little below water-mark in most parts of the Mediterranean, is a characteristic feature of that sea. Otherwise (especially in the Ægean) *Echinidæ* are not extensively represented. The true *esculentus* has a wide range in the eastern Mediterranean, extending from Cerigo to Asia Minor, but individuals are very scarce. A small species (*E. monilis*) is abundant on nullipore ground at all depths between 15 and 100 fathoms. *Spatangi* are very rare: a few examples occurred in the sandy shores, and fragments were dredged as deep as 150 fathoms. *Spatangus purpureus*, identical with the British species, is extremely scarce in the Ægean, but more frequent, and attaining a large size in the Sicilian seas. The Mediterranean *Cidaris* is very characteristic of this sea: its spines are frequently taken, and sometimes the living animal, which dwells on coral ground, mostly in from 60 to 70 fathoms. It would appear to be gregarious.

Holothuriadæ.—The number of Ægean *Holothuriadæ* is seven, of which four belong to the typical genus of the family, the species of which are very characteristic of the Mediterranean. They all live in shallow water, attain to large size, and usually occur in great numbers. The only Celtic species observed was the *Cucumaria pentactes*, dredged in 11 fathoms off the mouth of the Hermus, and exactly resembling specimens taken in similar situations on the British coast. The *Holothuriadæ* are much more numerous in the western Mediterranean. Mud and sand are their most usual habitats.

Sipunculidæ.—Out of six Ægean species of this family, three inhabit crevices of the rocks near water-mark, two live among fuci in a muddy bottom, and one (*Syrinx nudus*), the only one which is common to the Egean and Celtic seas, is found on sand. The rock-inhabiting species are frequent, the others rare. There is no diminution in the number of individuals or their size as we travel eastwards.

Echinodermata.

Species.	Ægean.	Medit.	Ground.	Depth.	Geog. Distrib.
CRINOIDEA.				fathoms.	
Comatula, Lam.	1	1			
rosacea, *Link*	....	....	weedy.	20–30	Celtic seas.
OPHIURIDÆ.					
Pectinura, Forb.	1	1			
vestita, *Forb.*.....	....	....	nullipore.	100	
Ophiura, Lam.....	3	3			
texturata, *Lam.*.....	....	....	weedy.	28	
albida, *Forb.*.....	....	....	sand, weed.	5–50	Celt. & North.
abyssicola, *Forb.*	....	....	white mud.	100–200	British seas.
Ophioderma, Mul. & Tros.	1	2			
lacertosa, *Lam.*.....	....	.....	weedy, mud.	10–30	Can.

Species.	Ægean.	Medit.	Ground.	Depth.	Geog. Distrib.
				fathoms.	
OPHIURIDÆ.					
Ophiomyxa, Mul. & Tros.	1	1			
lubrica, *Forb.*	....	....	weedy.	10–20	
Ophiopsila, Forb.	1	1			
aranea, *Forb.*	....	....	weedy.	20–50	
Amphiura, Forb.	3	5?			
florifera, *Forb.*	....	....	mud.	100	
neglecta, *Johnst.*	....	....	weedy.	20–30	North. & Celt.
chiagii, *Forb.*	....	....	mud.	7–180	
Ophiothrix, Mul. & Tros.	1	1?			
rosula, *Forb.*	....	....	weedy.	20–30	North. & Celt. [Can.
ASTERIADÆ.					
Uraster, Ag.	1	3			
glacialis, *Lin.*	....	....	rock.	½	North. & Celt.
Ophidiaster, Ag.	1				
lævigata, *Lam.*	....	....	rock.	lit.	
Cribrella, Ag.	1				
sepositia, *Lam.*	....	....	weedy.	20–30	
Goniaster, Agass.	1	1			
sp.	....	....	nullipore.	60	
Asterina, Nardo	3	3			
sp.	....	....	rock.	lit.	
sp.	....	....	nullipore.	20–70	
sp.	....	....	sand & zost.	10–20	
Luidia, Forb.	1	1			
sp.	....	....	mud.	20	
Asterias, Lin.	3	4			
sp.	....	....	sand.	½–8	
sp.	....	....	sand.	½–8	
sp.	....	....	mud.	5	
sp.	....	....	mud.	3	
Palmipes, Link	1	1			
membranaceus, *Retz*	....	....	.....	30	North. & Celt.
ECHINIDÆ.					
Cidaris, Leske	1	1			
histrix, *Lam.*	....	....	nullipore.	55–105	
Echinus, Lin.	3	7			
esculentus, *Lin.*	....	....	weedy.	7–40	Bay of Biscay,
lividus, *Lam.*	....	....	rock.	lit.	[Ireland.
monilis, *Def.*	....	....	nullipore.	15–105	
Echinocyamus, Leske	1	1			Celt. & North
pusillus, *Mul.*	....	....	nullipore.	8–200	[seas.
Spatangus, Klein	2	3?			Atlantic.
purpureus, *Mul.*	....	....	weedy.	20	
Amphidetus, Ag.	1	2?			
mediterraneus, *Forb.*	....	....	sand.	20–30	
Brissus, Klein	2	2 or 3			
atropos?, *Lam.*	....	....	weedy.	20–30	
sp. und.	....	....	mud, nul.	60–130	

Species.	Ægean.	Medit.	Ground.	Depth.	Geog. Distrib.
HOLOTHURIADÆ.				fathoms.	
Holothuria, Lin.	4	6?			
tremula, *Lin.*	....	....	sand.	1	
sp.	....	....	weed.	3	
sp.	....	....	rock.	½	
sp.	....	....	rock, weed.	½	
Cucumaria, Blainv.	1	?			
pentactes, *Mul.*	....	....	mud.	11	Celt. & North [seas.
Ocnus, Forb.	1	?			
sp.	....	....	rocky.	½	
Chirodota, Eschs.	1	4?			
sp.	....	....	mud.	6–11	
SIPUNCULIDÆ.					
Syrinx, Bohadsch.		?			
nudus, *Lin.*	1	2	sand.	lit. ½.	Celtic, Lus.
sp.	....	....	rocky.	lit.	
Sipunculus, *Lin.*	3	?			
sp.	....	....	weedy.	0–8	
sp.	....	....	weeds.	2–3	
sp.	....	....	rock.	lit.	
Bonellia.	1	1?			
sp.	....	....	rock.	lit.	

Zoophyta.

Zoophytes are, on the whole, scarce in the Ægean. They seem to suffer the same diminishing influence as to size with the Mollusca, very numerous minute specimens occurring of *Corallium rubrum*, for instance, but none being met with of sufficient size as to render them of value in commerce. Corallines are scarce, a very few species only being common, among others *Farcimia fistulosa*. *Flustræ* are very rare; incrusting corallines frequent. The only corals met with of any size were *Cladocora cæspitosa* and *Porites dædalea*. The former is extremely abundant near water-mark on the coast of Asia Minor, where it forms elegant cauliflower-like patches of bright orange, from the hue of the animals, adhering to the rocks. The latter is rare, and was dredged alive in about 12 fathoms in the Bay of Serpho.

Among the soft Zoophytes there are several beautiful and curious species inhabiting the Ægean. In all six species were met with, of which one, the *Edvardsia vestita*, was remarkable for living in a tube of its own construction, formed of gravel and shells; and another for living entirely on the surface of the ocean, where it was frequently met with swimming during the winter months.

Alcyonia were not uncommon, but no species of *Pennatula* was met with, nor of *Gorgonia**.

The range of Zoophytes is very great in the Ægean, extending nearly to the greatest depths explored. A beautiful little waxy green *Idmonea?* was characteristic of depths below 100 fathoms, extending to 180. *Caryophyllia* (*cyathus*) ranged from 5 to 90 fathoms. *Hornera* at 40. *Plumulariæ* ranged to 40. *Myriapora truncata* was found as deep as 70 fathoms alive. *Tubu-*

* Two species of *Pennatula* have since been procured in abundance off the mouth of the Hermus in 7 fathoms, by Lieut. Spratt.

lipora serpens in 20 to 40 fathoms. *Retepora* abundant between 15 and 30. *Alecto* incrusting shells in 150 fathoms. Four species of coral were taken, though dead, at 105 fathoms. *Eudendrium* was found at 20 fathoms. *Valkeria* and *Campanularia* at 30. *Crisia* at 20. *Actinia* ranged from the surface to 20 fathoms. *Alcyonium* as deep as 70.

Amorphozoa.

Sponges abound in the Ægean, inhabiting all depths of water between sea-mark, where the rocks are often of a brilliant scarlet with incrusting species, to nearly 200 fathoms, a sponge allied to *Grantia* having been dredged alive at 180 fathoms, and a small species of another genus at 185. The sponge of commerce is procured by divers from rocks in various depths between 7 and 30 fathoms. Most of the larger species are found at lesser depths, very large ones occurring in the second zone or region. The forms of the species do not appear to bear any relation to the depth in which they are found, tubular sponges, globular, incrusting and palmate species all inhabiting the littoral zone. I met with about twenty species of *Amorphozoa* in the eastern Mediterranean.

The distribution of marine animals is determined by three great primary influences, and modified by several secondary or local ones. The primary influences are climate, sea-composition and depth, corresponding to the three great primary influences which determine the distribution of land animals, namely climate, mineral structure and elevation. The first of these primary marine influences is uniform in the eastern Mediterranean. From Candia to Lycia, from Thessaly to Egypt, we find the same species of Mollusca and Radiata assembled together under similar circumstances. The uniformity of distribution throughout the Mediterranean is very surprising to a British naturalist, accustomed as we are to find distinct species of the same genera, *climatally representative* of each other, in the Irish and North seas, and on the shores of Devon and Zetland. The absence of certain species in the Ægean which are characteristic of the western Mediterranean, is rather to be attributed to sea-composition than to climate. The pouring in of the waters of the Black Sea must influence the fauna of the Ægean and modify the constitution of its waters. To such cause we must attribute the remarkable fact, that with few exceptions individuals of the same species are dwarfish compared with their analogues in the western Mediterranean. This is seen most remarkably in some of the more abundant species, such as *Pecten opercularis*, *Venerupis irus*, *Venus fasciata*, *Cardita trapezia*, *Modiola barbata*, and the various kinds of *Bulla*, *Rissoa*, *Fusus*, and *Pleurotoma*, all of which seemed as if they were but miniature representatives of their more western brethren.

To the same cause may probably be attributed the paucity of *Medusæ* and of corals and corallines. Sponges only seem to gain by it. The influence of depth is very evident in the general character of the Ægean fauna, in which the aborigines of the deeper recesses of the sea play an important part numerically, both as to amount of species and individuals.

The secondary influences which modify the distribution of animals in the Ægean are many. First in importance ranks the character of the sea-bottom, which, though uniform in the lowest explored region, is very variable in all the others. According as rock, sand, mud, weedy or gravelly ground prevails, so will the numbers of the several genera and species vary. The presence of the sponges of commerce often depends on the rising up of peaks of rock in the deep water near the coast. As mud forms by much the most extensive portion of the bottom of the sea, bivalve Mollusca abound more individually though not specifically than univalves. As the deepest sea-bottom is

of fine mud, the delicate shells of Pteropoda and Nucleobranchiata are for the most part only preserved there. Where the bottom is weedy we find the naked Mollusca more numerous than elsewhere; where rocky, the strong-shelled Gasteropoda and active Cephalopoda. Few species either of Mollusca or Radiata inhabit all bottoms indifferently.

The nature of the sea-bottom is mainly determined by the geological structure of the neighbouring land. The general character of the fauna of the Ægean is in a great measure dependent on the great tracts of scaglia which border it, and of which so many of its islands are formed. The degradation of this cretaceous limestone fills the sea with a white chalky sediment, especially favourable to the development of Mollusca. Where the coast is formed of scaglia numerous marine animals abound which are scarce on other rocks. The genera *Lithodomus* and *Clavagella* among Mollusca, the *Cladocora cæspitosa* among Zoophytes, are abundant in such localities only.

In a report on the distribution of British terrestrial and fluviatile Mollusca, which I had the honour of presenting to the Association at Birmingham, I asserted that a remarkable negative influence was exercised by serpentine on the distribution of pulmoniferous Mollusca. This I have had peculiarly favourable opportunities of confirming in the Ægean, where whole islands being formed of serpentine, the almost total absence of those animals which are abundant on the islands of other mineral structure is most striking. But I found further, that not only does serpentine exercise a negative influence on air-breathing Mollusca, but also on marine species. An extensive tract on the coast of Lycia and Caria, indented with deep and land-locked bays, is formed of that rock. In such bays, with the exception of a few littoral species which live on all rocks, we find an almost total absence of Testacea; whilst in correspondent bays in the neighbouring districts, formed of scaglia, of saccharine marble, and even of slate, we find an abundance of Testacea, so that it can hardly be doubted that the absence or scarcity of shelled Mollusca in such case is owing to negative influence exercised by the serpentine. *The outline of the coast* is evidently an important element in such influences, or in modifying it.

Tides and *currents* in most seas are important modifying influences. In the Ægean the former are so slight as scarcely to affect the fauna; the latter, in places, must be powerful agents in the transportation of species and of the spawn of marine animals. Their action, however, like that of storms, appears materially to affect the upper regions only; the transportation of the species of one region into another seldom extending further than that of the regions immediately bounding that in which it is indigenous. Certain species, such as the *Rissoæ*, which live on sea-weed, may occasionally fall to the bottom region, of which they are not true natives, and may live for a time there, but such cases appear to be rare, and the sources of fallacy from *natural transportation* are fewer than might be imagined at first thought, and in most cases have arisen rather from the form of the coast than from currents. Thus where the coast-line is very steep, the sea suddenly deepening to 60 or 70 fathoms close to the rocks, limpets, littoral *Trochi* and other shells, when they die, fall to the bottom, and are found along with the exuviæ of the natural inhabitants of those depths. Several instances of this occurred during dredging.

The *influx of fresh water*, whether continual, or where a river empties itself into the sea, or temporary, as on the coast of Asia Minor during the rainy season, when every little ravine becomes suddenly filled with a raging torrent, bearing down trees and great masses of rock, and charged with thick mud, frequently modifies the marine fauna of certain districts very

considerably. The first generates great muddy tracts, which present a fauna peculiar to themselves: the second, though of short duration, deposits detached patches of conglomerate, and by the sudden settling of the fluviatile mud forms thin strata at the bottom of the sea, often containing the remains of terrestrial and fluviatile animals, soon to be covered over by marine deposits with very different contents. From the influx of a great river we may have tropical or subtropical, terrestrial or fluviatile forms mingled with temperate marine. Thus among forty-six species of Testacea collected by Captain Graves and Mr. Hoskyn on the shore at Alexandria, there are four Egyptian land and freshwater Mollusca, three of which are of truly subtropical forms, viz. *Ampullaria ovata*, *Paludina unicolor*, and *Cyrena orientalis*. The marine associates of these are, however, noways more southern in appearance, and for the most part identical as species with the Testacea which strew the shore at Smyrna or at Toulon, in the former case mingled with Melanopsis, in the latter with characteristic European Pulmonifera.

When the sea washes the shores of Egypt, remains of vegetables of a subtropical character become mingled with similar associations of marine Mollusca with those in which the relics of more northern plants become imbedded in the waters of the Black Sea. The Nile may carry down the woods and animals of Upper Egypt, the Danube those of the Austrian Alps. Deposits presenting throughout similar organic contents of marine origin, may contain at one point the relics of marmots and mountain salamanders, at another those of ichneumons and crocodiles.

Vegetable remains are being imbedded in strata forming at very different depths. Thus olive leaves were scattered among the mud dredged from a depth of 30 fathoms on the coast of Lycia, at Symboli, and date stones and monocotyledonous wood from a depth of nine fathoms off Alexandria. Of course the associated Mollusca were very distinct in each instance, in the first being members of the fourth, in the second of the second region of depth.

Provinces of Depth.

There are eight well-marked regions of depth in the eastern Mediterranean, each characterised by its peculiar fauna, and when there are plants, by its flora. These regions are distinguished from each other by the associations of the species they severally include. Certain species in each are found in no other, several are found in one region which do not range into the next above, whilst they extend to that below, or *vice versâ*. Certain species have their maximum of development in each zone, being most prolific in individuals in that zone in which is their maximum, and of which they may be regarded as especially characteristic. Mingled with the true natives of every zone are stragglers, owing their presence to the action of the secondary influences which modify distribution. Every zone has also a more or less general mineral character, the sea-bottom not being equally variable in each, and becoming more and more uniform as we descend. The deeper zones are greatest in extent; so that whilst the first or most superficial is but 12, the eighth, or lowest, is above 700 feet in perpendicular range. Each zone is capable of subdivision in smaller belts, but these are distinguished for the most part by negative characters derived from the cessation of species, the range of which is completed, and from local changes in the nature of the sea-bottom.

First Region, or Littoral Zone.

The first of the provinces in depth is the least extensive, and two fathoms

may be regarded as its inferior limit. Its mineral nature is as various as the coast-line, and its living productions are influenced accordingly; sand, rock or mud presenting their several associations of species. Limited, too, as is its extent, it nevertheless presents well-marked subdivisions. That portion which forms the water-mark, and which (though in the Mediterranean the space be very small in consequence of the very slight tides) is left exposed to the air during the ebb, presents species peculiar to itself. Such on rock are *Littorina cœrulescens*, *Patella scutellaris*, *Kellia rubra*, *Mytilus minimus*, and *Fossarus adansoni*; on sand, *Mesodesma donacilla*, a bivalve which buries itself in great numbers immediately at the water's edge; in mud, a mineral character almost always derived from the influence of the influx of fresh water, *Nassa mutabile* and *neritoidea*; *Cerithium mammillatum* on all bottoms, usually under stones or weed; *Truncatella truncata* and *Auricula*. All these species are gregarious, most of them occurring in considerable numbers, and they are almost all Mollusca having a great geographic range; eight out of the eleven being widely distributed in the Atlantic, and one, the *Littorina cœrulescens*, extending from Tristan d'Acuna to the shores of Norway. The fuci of the coast-line, such as *Dictyota dichotoma* and *Corallina officinalis*, are also species of wide geographic diffusion. The bottomless barnacles (*Ochthosia*) are characteristic of this belt.

Immediately below this boundary line between the air and the water, we have a host of Mollusca of peculiar forms and often varied colours, associated with numerous Radiata and Articulata. In this under-belt we find the most characteristic Mediterranean forms, those which exhibit the action of the climatal influence most evidently. Boring in the sand live *Solen strigillatus*, *Lucina desmarestii*, *Amphidesma sicula*, *Venerupis decussata*, and various species of *Donax*, *Tellina* and *Venus*; in the mud abounds *Lucina lactea*; on the rocks we find *Cardita calyculata*, *Arca barbata*, *Chama gryphoides*, *Lithodomus*, *Chiton squamosus* and *cajetanus*, *Patella bonnardi*, *Fissurella costaria*, several species of *Vermetus*, *Haliotis*, numerous and peculiar *Trochi*, *Cerithium fuscatum*, *Fasciolaria tarentina*, *Fusus lignarius*, *Murex trunculus*, *Pollia maculosa*, *Columbella rustica*, *Cypræa spurca*, and *Conus mediterraneus*, with various Radiata and Articulata, most of them peculiar forms. In this belt, in fact, we have the characteristic species of the Mediterranean fauna, those animals which give a subtropical aspect to the general assemblage of forms in that sea. It is worthy of note, that not only is the climatal influence evident in the colouring and size of the shells of Mollusca in this region, but also in that of the animals themselves, which often present the most varied combinations of brilliant hues, sources of well-marked specific character. This is especially the case with the Gasteropoda, and is equally true with the sublittoral forms of the Northern as of the Southern seas.

It is only in this subdivision of the highest zone that we see distinct instances of local distribution of species in the Ægean. This is especially the case with the genus *Trochus*, some of the species of which have a very limited distribution, though always abundant where they occur. It is also the case with the naked Mollusca and with Zoophytes. Among the last, the rocks of the first zone in Asia Minor are well distinguished from those in the islands, by the great abundance of a beautiful coral, *Cladocora cæspitosa*, which is found in large masses, but does not appear to live deeper than six or eight feet below the surface of the water. In the sheltered gulfs of Lycia and Caria, sponges (not the kinds used in commerce) of singular shapes and bright colours abound in this region, growing to a considerable size. In the Cyclades the beautiful *Actinea rubra* abounds in similar localities. *Padina*

pavonia is the characteristic *Fucus* of the belt of the first region, and among its elegant fronds may be seen innumerable Crustacea prowling, whilst in the crevices of the rocks on which they grow live numerous fishes of the blenny and wrasse tribes, like all the other natives of this province, remarkable for the vivid painting of their skins.

The inhabitants of the lowest portion of this narrow but varied belt are equally characteristic, especially such as live on the sandy tracts covered with *Zostera*. The *Pinna squamosa* is most abundant here, and in rocky places the cuttle-fishes abound. On the Zostera live numerous *Rissoæ*.

Besides its true inhabitants, the littoral zone is continually receiving accessions to its fauna from the washing up of the exuviæ of the animals of the succeeding region, especially after storms, which strew the sandy shores with the remains of Mollusca. Mingled with these are the remains of freshwater animals carried into the sea by the streams. These are not necessarily found in the immediate neighbourhood of the streams by which they are brought down, but seem to be carried along the shore by eddies and currents, so that in a deep bay they may frequently be found at the opposite part of the shore to that where the stream which doubtless wafted them to the sea emptied itself, the depth of the intermediate gulf precluding the notion that they could have been washed across. Whilst the sea one day casts up numerous shells, Crustacea, &c., it often covers them up with silt the next, so that increasing alternations of organic bodies and sand or mud must be continually in process of formation in this region.

Testacea of Region I.

Lamellibranchiata.

Clavagella ——*
Solen siliqua.
Solecurtus strigillatus.*
Ligula sicula.
Mactra stultorum.*
Kellia corbuloides.*
rubra.*
Tellina donacina.
fragilis.
planata.
Lucina pecten.
digitalis.?
lactea.*
desmarestii.*
Venerupis irus.*
decussata.*
Donax trunculus.*
complanata.
semistriata.
Mesodesma donacilla.*
Venus gallina.*
decussata.*
geographica.?
Cardium rusticum.
edule.*
Cardita calyculata.*
trapezia.*
Arca barbata.*
lactea.*
noæ.*
Lithodomus lithophagus.*
Mytilus gallo-provincialis.*
minimus.*
Pinna squamosa.*
Lima squamosa.*
tenera.?
Spondylus gadæropus.*
Ostrea plicatula.*

Gasteropoda.

Chiton squamosus.*
cajetanus.*
fascicularis.*
Patella scutellaris.*
ferruginea.*
bonnardi.*

Note.—The asterisk indicates that the species attains its maximum of development in that region; the note of interrogation implies that the species is probably a straggler.

Patella lusitanica.*
Gadinia garnoti.?
Crepidula fornicata.
unguiformis.*
Emarginula huzardi.*
Fissurella costaria.*
gibba.*
Bullæa angustata.?
aperta.?
Bulla striata.
cornea.?
truncatula.?
truncata.?
striatula.?
Eulima polita.?
Parthenia elegantissima.?
humboldti.
Truncatella truncatulum.*
Rissoa desmarestii.*
ventricosa.*
oblonga.*
violacea.*
monodonta.*
fulva.
cancellata.
granulata.
montagui.*
acuta.
pulchella.
conifera.
cingilus.
pulchra.
Littorina cœrulescens.*
Fossarus adansoni.*
Scalaria lamellosa.?
Vermetus gigas.*
subcancellatus.*
arenarius.*
glomeratus.*
granulatus.*
Nerita viridis.?
Haliotis lamellosus.*
Adeorbis subcarinata.
Trochus vielloti.*
jussieui.*
pallidus.*
umbilicaris.*
lyciacus.*
richardi.*
divaricatus.*
articulatus.*
Trochus fragarioides.*
therensis.*
laugieri.?
Phasianella pulla.?
Ianthina nitens,* strag.
Cerithium fuscatum.*
mammillatum.*
lima.?
trilineatum.?
Triforis adversum.?
Pleurotoma albida.?
rude.?
purpurea.?
lævigata.?
lefroyi.?
fallax.?
linearis.?
lyciaca.?
Fasciolaria tarentina.*
Fusus lyciacus.?
lavatus.?
Murex brandaris.?
trunculus.*
edwardsii.*
Ranella lanceolata.?
Purpura hæmastoma.
Pollia maculosa.*
candidissima.?
Nassa reticulata.
d'orbignii.?
variabile.?
cornicula.*
mutabile.*
gibbosula.*
neritea.*
Columbella rustica.*
linnæi.*
Mitra littoralis.?
cornea.?
Marginella miliacea.?
Ringuicula buccinea.?
Cypræa lurida.
rufa.*
spurca.*
Conus mediterraneus.*
Dentalium 9-costatum.?
multistriatum.?
entalis.?
rubescens.?
Auricula myosotis.*

Second Region.

The ground in the second region, which extends from two to ten fathoms, is most generally mud or sand, the former green with a beautiful Fucus, *Caulerpa prolifera*, abundant in the Archipelago, but I believe rare elsewhere, the latter abounding in *Zostera oceanica*. Great *Holothuriæ* are here found in abundance, and, among Mollusca, chiefly burying Conchifera. *Nucula margaritacea* and *Cerithium vulgatum* are the Testacea most generally distributed through this region. Those most prolific in individuals are, among Gasteropoda, *Cerithium vulgatum* and *lima*, *Trochus crenulatus* and *spratti*, *Rissoa ventricosa* and *oblonga*, and *Marginella clandestina*. Among Lamellibranchiata, *Tellina donacina*, *Lucina lactea*, *Nucula margaritacea*, and *Cardium exiguum*. Storms disturb this zone by washing up its inhabitants into the littoral region.

The smaller zoophytes, especially encrusting species and such as attach themselves to the leaves of *Zostera*, are frequent. *Caryophyllia cyathus* begins to appear here, ranging however through all the succeeding zones.

Testaceous Mollusca inhabiting the Second Region.

Lamellibranchiata.

Solen tenuis.*
antiquatus.
Solecurtus strigillatus.
Ligula boysii.*
Solenomya mediterranea.*
Montacuta sp.
Byssomya guerinii.
Corbula nucleus.*
Pandora obtusa.
rostrata.
Thracia phaseolina.
Psammobia vespertina.
Donax venusta.
Cytherea chione.
lunata.
apicalis.
Venus gallina.*
verrucosa.*
aurea.*
geographica.*
Tellina donacina.*
serrata.
balaustina.
distorta.*
Lucina flexuosa.
pecten.
lactea.*
Lucina rotundata.
spinifera.
transversa.
Cardium papillosum.*
rusticum.
exiguum.
Cardita sulcata.
trapezia.
Arca barbata.
lactea.*
Pectunculus glycimeris.*
Nucula emarginata.*
nuclea.
Modiola barbata.*
tulipa.*
discrepans.*
marmorata.*
Pinna squamosa.
Lima squamosa.
tenera.
Pecten polymorphus.*
hyalinus.*
varius.
sulcatus.
Spondylus gadæropus.
Ostrea plicatula.*
Chama gryphoides.

Palliobranchiata.

0.

Gasteropoda.

Chiton rissoi.*
polii.*
Calyptræa sinense.*
Crepidula unguiformis.*

Emarginula huzardii.
Bulla hydatis.*
cornea.
ovulata.
striatula.
truncatula.*
turgidula.
Natica valenciensii.*
pulchella.
olla.*
Eulima polita.*
subulata.
Parthenia elegantissima.
Odostomia conoidea.
Rissoa desmarestii.*
ventricosa.*
oblonga.*
violacea.*
radiata.*
cimicoides.*
montagui.*
buccinoides.*
pulchella.*
acuta.
Scalaria communis.
Turritella triplicata.
terebra.*
Nerita viridis.*
Dentalium 9-costatum.*
multistriatum.*
entalis.*
fissura.*
Trochus canaliculatus.*
racketti.*
spratti.*
fanulum.*
Trochus adansoni.*
conulus.*
crenulatus.*
gravesi.*
exiguus.*
Turbo rugosus.*
Phasianella pulla.*
intermedia.*
vieuxii.*
Cerithium lima.*
angustissimum.
Triforis adversum.*
Pleurotoma formicaria.*
reticulata spinosa.*
attenuata.*
linearis.*
Fusus syracusanus.*
lavatus.*
lignarius.
Murex brandaris.*
trunculus.*
edwardsii.*
fistulosus.*
Ranella gigantea.*
Nassa reticulata.*
variabile.*
musiva.
granulata.*
macula.*
mutabile.*
Columbella rustica.*
linnæi.*
Mitra obsoleta.*
Marginella clandestina.*
Ringuicula buccinea.*
Conus mediterraneus.*

Third Region.

In this region, which extends from ten to twenty fathoms, the sea-bottom is very generally gravelly in places, great tracts of sand also being common. The *Caulerpa* and *Zostera* are still found, but cease towards its lower part. It may be regarded as a zone of transition presenting but few peculiarities. A very small and beautiful species of *Asterina* abounds on the fronds of *Zostera* here, and the large *Holothuriæ* are still abundant. *Aplysiæ* and the blue *Goniodoris* are the characteristic Mollusca. *Lucina lactea*, *Cardium papillosum*, *Tellina donacina*, and *Cerithium lima* are the Testacea most generally distributed. The species most prolific are *Cerithium lima*, *Cardium papillosum*, *Ligula boysii*, *Nucula margaritacea* and *emarginata*, *Lucina lactea* and *hiatelloides*, so that bivalves would appear to prevail.

Testacea of Region III.

Lamellibranchiata.

Solen tenuis.?
Solen antiquatus.*

Ligula boysii.*
Corbula nucleus.*
Neæra cuspidata.*
Pandora obtusa.
Thracia phaseolina.
Psammobia vesperti na.?
Tellina pulchella.*
donacina.*
serrata. ?
balaustina.
Lucina flexuosa.*
pecten.
commutata.
transversa.*
lactea.*
spinifera.*
Cytherea chione.
lunata,
apicalis.
Venus verrucosa.
geographica.
virginea.*
Cardium echinatum.
papillosum.*
exiguum.*
Cardium punctatum.*
Cardita sulcata.
trapezia.*
Arca lactea.
Pectunculus glycimeris. ?
Nucula margaritacea.
emarginata.
Chama gryphoides.
Modiola barbata.
tulipa.
discrepans.*
marmorata.*
Pinna squamosa.
Lima squamosa. ?
tenera. ?
subauriculata.
Pecten jacobæus.
polymorphus.
hyalinus.
opercularis.
varius.
pusio.
Spondylus gadæropus.
Ostrea plicatula.

Gasteropoda.

Calyptræa sinense.
Fissurella græca.
Bulla convoluta.
ovulata.
striatula.
truncatula.
truncata.
akera.
Natica millepunctata.
pulchella.
guilleminii.
valenciensii.
Eulima polita.
subulata.
Parthenia elegantissima.
Odostomia conoidea. ?
Rissoa ventricosa.*
violacea.*
cimicoides.*
montagui.
acuta. ?
conifera. ?
pulchella.
Scalaria communis.
Turritella triplicata.
terebra*.
Nerita viridis.
Trochus coutourii.
canaliculatus.*
racketti.*
villicus.*
spratti.*
fanulum.
adansoni.
ziziphinus.*
conulus.*
crenulatus.*
gravesi.*
exiguus.
Turbo rugosus.
Phasianella pulla.
vieuxii.*
Cerithium vulgatum.*
lima.*
angustum.*
Triforis adversum.*
Pleurotoma formicaria.
bertrandi.
reticulata spinosa.*
gracilis.
attenuata.
ægeensis.*
linearis.?
Fusus lignarius.

Fusus syracusanus.
lavatus.*
Murex brandaris.*
trunculus.?
fistulosus.?
Aporrhais pes-pelecani.*
Dolium galea.?
Nassa prismatica.
variabile.*
granulata.?
Nassa cornicula?
Columbella rustica.*
linnæi.*
Mitra savignii.*
obsoleta.
Marginella clandestina.
Erato lævis.
Conus mediterraneus.?
Dentalium 9-costatum.*
multistriatum.

Fourth Region.

It extends through fifteen fathoms of length between twenty and thirty-five fathoms. The sea-bottom is very various, mud and gravel prevailing, sandy tracts being very rare. *Fuci* are abundant, the characteristic species being *Dictyomenia volubilis*, *Sargassum salicifolium*, *Codium bursa* and *flabelliforme*, and *Cystoceira*. The rare and curious *Hydrodictyon umbilicatum* was procured in this region on the coast of Asia Minor. Corallines are more frequent here than in the other zones. *Porites dædalea* occurs, but is very local. *Retepora cellulosa* is very abundant; several species of *Tubulipora* occur; *Myriapora truncata* and *Cellaria ceramioides* are characteristic species of this zone. Sponges abound, and some of the finest of those used in commerce grow here. Nullipore is abundant. *Echinidæ* are frequent, and *Comatula*. Crustacea are common, also *Annelides*.

Among Testacea the most generally distributed are *Nucula margaritacea* and *emarginata*, and *Dentalium* 9-*costatum*: those most prolific are *Nucula margaritacea*, *Arca lactea*, *Cardium papillosum*, *Corbula nucleus*, and *Ligula boysii*; *Dentalium* 9-*costatum* and *Cerithium lacteum*. *Mollusca tunicata* are common in this region.

Testacea of Region IV.

Lamellibranchiata.

Gastrochæna cuneiformis.
Solen tenuis.?
antiquatus.*
Ligula boysii.*
prismatica.
Kellia suborbicularis.*
Corbula nucleus.*
Neæra costellata.*
cuspidata.*
Pandora obtusa.*
Lyonsia striata.*
Thracia phaseolina.
Saxicava arctica.*
Psammobia discors.
ferroensis.
Tellina donacina.
serrata.
balaustina.
Lucina commutata.
digitalis.
Lucina transversa.
lactea.?
spinifera.
Astarte incrassata.
Cytherea apicalis.*
venetiana.
Venus verrucosa.
ovata.*
fasciata.
Cardium echinatum.
erinaceum.
lævigatum.
papillosum.*
exiguum.*
Cardita sulcata.*
squamosa.
trapezia.
Arca lactea.*
tetragona.*
noæ.?

Pectunculus glycimeris.
pilosus.
lineatus.
Nucula margaritacea.*
emarginata.*
Chama gryphoides.
Modiola barbata.*
tulipa.*
discrepans.*
marmorata.*
Pinna squamosa.
Avicula tarentina.
Lima squamosa.*
tenera.
Lima fragilis.*
subauriculata.
Pecten jacobæus.*
polymorphus.*
hyalinus.*
testæ.*
opercularis.*
varius.*
pusio.*
similis.
Ostrea plicatula.
Anomia ephippium.*
polymorpha.*

Palliobranchiata.

Terebratula detruncata.
Terebratula cuneata.*

Gasteropoda.

Chiton lævis.*
freelandi.*
Calyptræa sinense.
Emarginula elongata.
Fissurella græca.*
Bullæa aperta.*
Bulla hydatis.
cornea.*
ovulata.*
striatula.
truncatula.
truncata.
convoluta.
Natica millepunctata.
valenciensii.
pulchella.
Eulima polita.
nitida.
subulata.*
Parthenia acicula.
elegantissima.*
scalaris.
varicosa.
Odostomia conoidea.*
Rissoa ventricosa.*
cimicoides.
montagui.
reticulata.
acuta.?
pulchella.*
striata.
elongata. (?)
Turritella triplicata.*
terebra.
Vermetus corneus.
Nerita viridis.?
Trochus coutourii.
magus.*
spratti.*
fanulum.
adansoni.
ziziphinus.*
conulus.*
gravesi.
exiguus.*
Turbo sanguineus.*
rugosus.*
Phasianella pulla.
vieuxii.*
Cerithium vulgatum.*
lima.*
lacteum.
angustissimum.
Triforis adversum.*
Pleurotoma formicaria.*
reticulata var. spinosa.*
maravignæ.*
vauquelini.*
gracilis.
attenuata.*
philberti.*
turgida.*
linearis.
Fusus lignarius.?
syracusanus.*
lavatus.
Murex brandaris.*
trunculus.?

Murex cristatus.
brevis.*
fistulosus.
Aporrhais pes-pelecani.*
Nassa variabile.
varicosa.
granulata.
prismatica.
Columbella rustica.*
linnæi.
gervillii.
Mitra ebenus.*
Mitra savignii.*
obsoleta.*
granum.*
Marginella clandestina.*
secalina.*
miliacea.
Erato lævis.
Tornatella fasciata.
Cypræa europæa.
Conus mediterraneus.?
Dentalium 9-costatum.*
rubescens.*

Fifth Region.

From thirty-five to fifty-five fathoms, an extent of five fathoms more than the last, presents a well-marked fauna, and constitutes a fifth region. *Fuci* are much scarcer than in the last, but among its vegetable products are *Rytiphlœa tinctoria*, *Chrysimenia uvaria*, and *Dictyomenia volubilis*; the last, which gives a marked character to the preceding zone, being rare in this. Echinodermata are frequent here, Zoophytes not abundant. *Myriapora truncata* is frequent. The bottom is very generally nullipore and shelly. Muddy bottoms are scarce. The Testacea most generally distributed are *Nucula margaritacea*, *Pecten opercularis*, and *Turritella tricostata*. Those most abounding in individuals are *Nucula emarginata* and *striata*, *Cardium papillosum*, *Cardita aculeata*, and *Dentalium 9-costatum*.

Testacea of Region V.

Lamellibranchiata.

Solen tenuis.*
antiquatus.*
Ligula boysii.
prismatica.
Kellia suborbicularis.*
Corbula nucleus.*
anatinoides.
Neæra cuspidata.*
costellata.*
Pandora obtusa.
Lyonsia striata.?
Saxicava arctica.*
Psammobia discors.
ferroensis.
Tellina donacina.
serrata.
balaustina.*
Lucina commutata.
spinifera.*
Astarte incrassata.
Cytherea venetiana.
apicalis.*
Venus verrucosa.
ovata.
fasciata.
Cardium echinatum.
lævigatum.
papillosum.
Cardita squamosa.
trapezia.
Arca lactea.*
imbricata.
antiquata.
tetragona.*
Pectunculus pilosus.
Nucula polii.
margaritacea.*
emarginata.*
striata.*
Chama gryphoides.?
Modiola barbata.*
tulipa.*
discrepans.
marmorata.
Lima squamosa.
fragilis.*
subauriculata.
cuneata.
Pecten jacobæus.
polymorphus.*

Pecten hyalinus.*
testæ.*
opercularis.*
varius.*
Pecten pusio.*
lævis.*
fenestratus.
Anomia ephippium.

Palliobranchiata.

Terebratula detruncata.*
cuneata.?
Terebratula seminula.
Crania ringens.*

Gasteropoda.

Chiton lævis*
freelandi.*
Lottia gussonii.
Calyptræa sinense.*
Emarginula capuliformis.*
elongata.
Fissurella græca.*
Volva acuminata.
Bullæa aperta.?
Bulla cornea.*
utriculus.
lignaria.
ovulata.
truncatula.*
truncata.
Natica millepunctata.?
valenciensii.?
pulchella.*
Eulima distorta.
nitida.*
Parthenia acicula.*
elegantissima.?
pallida.
Odostomia conoidea.
Rissoa ventricosa.*
cimicoides.
reticulata.
Scalaria planicosta.
Turritella triplicata.*
terebra.?
Vermetus corneus.*
Siliquaria anguina.
Trochus coutourii.
magus.*
fanulum.
ziziphinus.*
gravesi.
exiguus.
millegranus.*
Turbo sanguineus.*
Turbo rugosus.*
Phasianella pulla.?
Cerithium vulgatum.*
lima.*
angustum.*
Triforis adversum.*
Pleurotoma formicaria.*
purpurea.
reticulata.
maravignæ.*
vauquelini.
gracilis.*
attenuata.
teres.
philberti.
Fusus lavatus.
muricatus.
crispus.
fasciolaria.
Murex brandaris.
muricatus.
distinctus.
fistulosus.
Aporrhais pes-pelecani.*
Cassidaria tyrrhena.
Nassa intermedia.
Columbella rustica.
linnæi.
Mitra ebenus.*
obsoleta.
phillippiana.
granum.
Tornatella fasciata.
Marginella clandestina.*
secalina.
Erato lævis.*
Cypræa europæa.*
Conus mediterraneus.?
Dentalium 9-costatum.

Sixth Region.

It extends through a range of twenty-four fathoms, between fifty-five and seventy-nine fathoms. Nullipore is the prevailing ground. *Fuci* have become extremely rare. *Cidaris histrix* is the characteristic Echinoderm. Several starfishes are not uncommon. *Venus ovata, Cerithium lima,* and *Pleurotoma maravignæ* are the most generally diffused species. *Turbo sanguineus, Emarginula elongata, Nucula striata, Venus ovata, Pecten similis,* and the various species of Brachiopoda those most prolific in individuals.

It will be observed, that although *Fuci* have become extremely scarce, and in the next zone altogether disappear, there are still a considerable number of Phytophagous Testacea. These are mostly found on "coral" ground, that is, on a clean bottom abounding in nullipore. Now that the observations of M. Decaisne, M. Kutzing and others have so clearly proved the vegetable nature of that singular production, so long regarded as a zoophyte, the source of the food of the Holostomatous Testacea in these deep regions is no longer problematical.

Testacea of Region VI.

Lamellibranchiata.

Ligula profundissima.
Kellia suborbicularis.*
Corbula nucleus.*
anatinoides.
Neæra cuspidata.
costellata.*
abbreviata.
Pandora obtusa.*
Lyonsia striata.*
Thracia pubescens.
Saxicava arctica.*
Kellia abyssicola.*
Lucina commutata.
bipartita.*
Astarte incrassata.
pusilla.
Cytherea apicalis.
Venus ovata.*
fasciata.
Cardium papillosum.
echinatum.
minimum.
Cardita squamosa.*
trapezia.
Arca lactea.*
scabra.
imbricata.
tetragona.*
Pectunculus pilosus.*
Nucula polii.
margaritacea.
striata.*
Modiola barbata.
Lima squamosa.
elongata.*
crassa.
Pecten jacobæus.
dumasii.
polymorphus.
hyalinus.
testæ.
varius.*
pusio.
pes felis.
similis.*
fenestratus.
concentricus.
Anomia polymorpha.

Palliobranchiata.

Terebratula truncata.*
detruncata.*
cuneata.*
Terebratula seminula.*
Crania ringens.

Gasteropoda.

Chiton lævis.
Lottia gussonii.
Lottia unicolor.*
Calyptræa sinense.

Emarginula elongata.
capuliformis.
Fissurella græca.
Bullæa aperta.?
Bulla cornea.*
utriculus.?
Coriocella perspicua.
Natica millepunctata.
valenciensii.
pulchella.
Eulima distorta.
subulata.
unifasciata.
Parthenia elegantissima.?
Rissoa ventricosa.?
cimicoides.
reticulata.*
ovatella.
Turritella 3-plicata.*
terebra.*
Siliquaria anguina.
Scissurella plicata.
Solarium stramineum.
Trochus coutourii.
fanulum.
exiguus.*
millegranus.*
Turbo sanguineus.
rugosus.*
Phasianella pulla.
Cerithium lima.*
angustum.
Triforis adversum.
perversum.*
Pleurotoma formicaria.*
crispata.*
reticulata var. spinosa.
maravignæ.*
vauquelini.

Seventh Region.

The depths between 80 and 105 fathoms (an extent of 25), yield a characteristic fauna of their own. The sea-bottom is usually nullipore, more rarely sand or mud. Herbaceous *Fuci* have disappeared. *Echinodermata* are here not uncommon; *Zoophyta* and *Amorphozoa* scarce. Among the former are species of *Hornera, Lepralia* and *Cellepora*; among the latter a small round species of *Grantia* is frequent. *Echinus monilis, Cidaris histrix* and *Echinocyamus*, with some of the *Ophiuridæ*, are frequent alive: no *Asteriadæ* occur. *Mollusca tunicata* have ceased; as also *Nudibranchæa*. Crustacea are not unfrequent, as well as testaceous annelides, among which the glassy Serpula is very characteristic of this region.

The Testacea most generally distributed are *Lima elongata, Cardita aculeata, Rissoa reticulata*, and *Fusus muricatus*.

Those most prolific are *Rissoa reticulata, Turbo sanguineus, Venus ovata, Nucula striata, Pecten similis*, and the various species of Brachiopoda, which tribe abounds in this region.

Testacea of Region VII.

Lamellibranchiata.

Ligula profundissima.
Corbula nucleus.
Poromya anatinoides.
Neæra cuspidata.
costellata.*
abbreviata.
Pandora obtusa.
Saxicava arctica.*
Lucina commutata.
bipartita.
Astarte incrassata.
pusilla.
Cytherea apicalis.
Venus ovata.*
Cardium minimum.*
Cardita squamosa.*
Arca lactea.*
scabra.
imbricata.
tetragona.
Nucula polii.
margaritacea.
striata.*
Modiola barbata.*
Lima elongata.
crassa.

Pecten dumasii.
similis.?
fenestratus.?
concentricus.?
Spondylus gussonii.*
Ostrea cochlear.
Anomia polymorpha.

Palliobranchiata.

Terebratula truncata.*
detruncata.*
lunifera.*
seminula.*
Terebratula vitrea.
appressa.*
Crania ringens.*

Gasteropoda.

Chiton lævis.*
Lottia unicolor.*
Pileopsis ungaricus.
Emarginula cancellata.
elongata.
capuliformis.
Fissurella græca.
Bullæa aperta.?
Bulla utriculus.
Natica pulchella.
Eulima distorta.
subulata.?
Parthenia elegantissima.
Rissoa ventricosa.*
reticulata.*
ovatella.
Turritella triplicata.
Scissurella plicata?
Trochus tinei.
exiguus.*
millegranus.*
Turbo sanguineus.
rugosus.*
Phasianella pulla.*
Cerithium lima.*
Triforis adversum.
Pleurotoma formicaria.?
crispata.*
reticulata.
maraviguæ.*
gracilis.*
Fusus muricatus.*
Murex cristatus.*
Nassa intermedia.
Mitra ebenus.*
phillippiana.
Tornatella fasciata.*
pusilla.
globulosa.
Marginella clandestina.
Dentalium 9-costatum.
5-angulare.

Eighth Region.

The eighth region includes all the space explored below 105 fathoms, extending from that depth to 1380 feet beneath the surface of the sea, having a range of 125 fathoms, being more than twice the extent of all the other regions put together. Throughout this great, and I may say hitherto unknown province, for the notices we have had of it have been but few and fragmentary, we find an uniform and well-characterized fauna, distinguished from those of all the preceding regions by the presence of species peculiar to itself. Within itself the number of species and of individuals diminishes as we descend, pointing to a zero in the distribution of animal life as yet unvisited. It can only be subdivided according to the disappearance of species which do not seem to be replaced by others.

Sixty-five species of Testacea were taken in the eighth region, eleven of which were procured alive. Of the total number 22 were Univalves, 3 of which were found living; 30 Lamellibranchiate Bivalves, 8 living; 3 Palliobranchiate Bivalves, all dead, and possibly derived from the preceding region; and 10 Pteropoda and Nucleobranchiata, also dead. Of these, 17 Univalves, 23 Lamellibranchiata, and 3 Palliobranchiata occurred above 140 and under 180 fathoms; 4 Univalves, 11 Lamellibranchiata, and 1 Palliobranchiate Bi-

valve above 180 and under 200; and 1 Univalve, 4 Lamellibranchiate, and 1 Palliobranchiate Bivalve above 200 fathoms.

The Mollusca found alive at the greatest depths were *Arca imbricata* in 230 fathoms; accompanied by *Dentalium quinquangulare*. At 180 fathoms living examples of *Nucula ægeensis*, *Ligula profundissima*, *Neæra attenuata* and *costellata*, *Arca lactea*, and *Kellia abyssicola* occurred. *Trochus millegranus* was taken alive in 110 fathoms, along with the *Dentalium pusillum* of authors, which proved to be an annelide of the genus *Ditrupa*, and of which three species live in this region.

Pecten hoskynsii, *Lima crassa*, *Nucula ægeensis*, *Scalaria hellenica*, *Parthenia fasciata* and *ventricosa*, all new species, have been found in no other region. *Ligula profundissima*, *Pecten similis*, *Arca imbricata*, *Dentalium quadrangulare* and *Rissoa reticulata*, are more prolific of individuals in this region than in any other. *Ligula profundissima* and *Dentalium quinquangulare* are the most generally diffused species below 105 fathoms; the former being present in eleven localities, the latter in seven. The localities examined were eleven in number and far apart from each other, extending from Cerigo to the coast of Lycia.

The *Bullæa angustata*, *Rissoa acuta*, *Cerithium lima* and *Teredo* are probably only stragglers in this region.

Several *Ophiuridæ* are true inhabitants of the eighth region; as *Ophiura abyssicola*, *Amphiura florifera*, *Amphiura chiagi* and *Pectinura vestita*, all well adapted by their organisation to live in the white mud of great depths. The only other Echinoderm was *Echinocyamus* at 200 fathoms, which however was not taken alive. The Zoophytes are *Caryophyllia cyathus*, *Alecto* and an *Idmonea*, which occurs in very deep water. Small sponges of three genera were taken alive as deep as 180 fathoms. The deepest living Crustacea occurred at 140 fathoms, and the carapaces of small species are frequent. Besides the *Ditrupæ*, annelides of the genus *Serpula* were taken in the greatest depths explored. *Foraminifera* are extremely abundant through a great part of the mud of this region, and for the most part appear to be species very distinct from those in the higher zones. Representatives of the genera *Nodosaria*, *Textularia*, *Rotalia*, *Operculina*, *Cristellaria*, *Biloculina*, *Quinqueloculina* and *Globigerina* are among the number.

Testacea of Region VIII.

Lamellibranchiata.

Teredo.
Ligula profundissima.
Corbula anatinoides.
Neæra cuspidata.*
costellata.*
attenuata.
Pandora obtusa.
Thracia pholadomyoides.
Kellia abyssicola.*
oblonga.
Astarte pusilla.
Venus ovata.
Lucina ferruginosa.
Cardium minimum.
Cardita squamosa.
Arca lactea.
scabra.
imbricata.
tetragona.
Nucula polii.
striata.*
ægeensis.*
Lima elongata.
crassa.
Pecten dumasii.
similis.
fenestratus.
hoskynsi.
Ostrea cochlea.?
Anomia polymorpha.

Palliobranchiata.

Terebratula detruncata.
vitrea.
Crania ringens.

Gasteropoda.

Lottia unicolor.
Bullæa aperta.
angustata.?
alata.
Bulla utriculus.
cretica.
Eulima subulata.
Parthenia ventricosa.
turris.
fasciata.
Rissoa reticulata.
ovatella.
Rissoa acuta.?
Scalaria hellenica.
Scissurella plicata.
Trochus millegranus.
Cerithium lima.?
Pleurotoma abyssicola.
Fusus echinatus.
Nassa intermedia, var.
Marginella clandestina.
Dentalium quinquangulare.
9-costatum?

The following Diagram exhibits the comparative characters and relations of the several regions:—

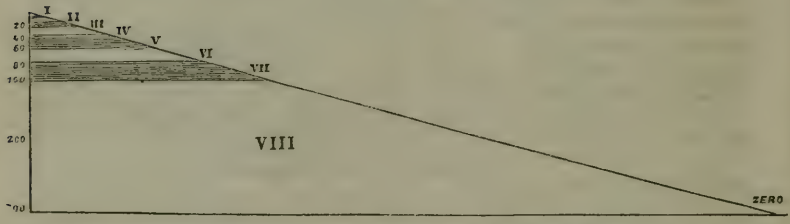
Diagram of Regions of Depth in the Ægean Sea.

Sea-Bottom = deposits forming.	Region.	Depth in fathoms.	Characteristic Animals and Plants.
Extent—12 feet. Ground various. Usually rocky or sandy (conglomerates forming).	I.	2	Littorina cœrulescens. Fasciolaria tarentina. Cardium edule. Plant:—Padina pavonia.
Extent—48 feet. Muddy. Sandy. Rocky.	II.	10	Cerithium vulgatum. Lucina lactea. Holothuriæ. Plants:—Caulerpa and Zostera.
Extent—60 feet. Ground mostly muddy or sandy. Mud bluish.	III.	20	Aplysiæ. Cardium papillosum.
Extent—90 feet. Ground mostly gravelly and weedy. Muddy in estuaries.	IV.	35	Ascidiæ. Nucula emarginata. Cellaria ceramioides. Plants:—Dictyomenia volubilis. Codium bursa.
Extent—120 feet. Ground nulliporous and shelly.	V.	55	Cardita aculeata. Nucula striata. Pecten opercularis. Myriapora truncata. Plant:—Rityphlœa tinctoria.
Extent—144 feet. Ground mostly nulliporous. Rarely gravelly.	VI.	79	Venus ovata. Turbo sanguineus. Pleurotoma maravignæ. Cidaris histrix. Plant:—Nullipora.

DIAGRAM OF REGIONS OF DEPTH IN THE ÆGEAN SEA (*continued*).

Sea-Bottom = deposits forming.	Region.	Depth in fathoms.	Characteristic Animals and Plants.
Extent—156 feet. Ground mostly nulliporous. Rarely yellow mud.	VII.	105	Brachiopoda. Rissoa reticulata. Pecten similis. — Echinus monilis. — Plant:—Nullipora.
Extent—750 feet. Uniform bottom of yellow mud, abounding for the most part in remains of Pteropoda and Foraminifera.	VIII.	230	Dentalium 5-angulare. Kellia abyssicola. Ligula profundissima. Pecten hoskynsi. — Ophiura abyssicola. — Idmonea. Alecto. Plants:—0.
Zero of Animal Life probably about 300 fathoms.			
Mud without organic remains.			

TRUE SCALE OF THE ABOVE DIAGRAM.



To all the eight regions only two species of Mollusca are common, viz. *Arca lactea* and *Cerithium lima*: the former a true native from first to last, the latter probably only a straggler in the lowest. Three species, namely, *Nucula margaritacea*, *Marginella clandestina* and *Dentalium 9-costatum*, are common to seven regions; the second possibly owing its presence in the lower ones to its having dropped off floating sea-weeds. Nine species are common to six regions.

Corbula nucleus.	*Turritella 3-plicata.*
Neæra cuspidata.	*Triforis adversum.*
Pandora obtusa.	*Columbella linnæi.*
Venus apicalis.	*Cardita trapezia.*

Modiola barbata.

Seventeen species are common to five regions.

Neæra costellata.	*Pecten hyalinus.*
Tellina pulchella.	*varius.*
Venus ovata.	*Crania ringens.*
Cardita squamosa.	*Natica pulchella.*
Arca tetragona.	*Rissoa ventricosa.*
Pecten polymorphus.	*cimicoides.*

Rissoa reticulata. | *Columbella rustica.*
Trochus exiguus. | *Conus mediterraneus.*

Terebratula detruncata.

When we inquire into the history of the species having such extensive ranges in depth, we find that more than one-half of them are such as have a wide geographic range, extending in almost every case to the British seas, and in some of those exhibiting the greatest range in depth, still further north; many of them also ranging in the Atlantic far south of the gut of Gibraltar. If, again, we inquire into the species of Mollusca which are common to four out of the eight Ægean regions in depth, we find that there are 38 such, 21 of which are either British or Biscayan, and 2 are doubtfully British, whilst of the remaining 15, 6 are distinctly represented by corresponding species in the north. Thus among the Testacea having the widest range in depth one third are Celtic or northern forms, whilst out of the remainder of Ægean Testacea, those ranging through less than four regions, only a little above a fifth are common to the British seas. One-half of the Celtic forms in the Ægean which are not common to four or more zones in depth, are found among the cosmopolitan Testacea, inhabiting the uppermost part of the littoral zone. From these facts we may fairly draw a general inference, that the *extent of the range of a species in depth is correspondent with its geographical distribution.*

The proportion of Celtic forms in the faunæ of the zones varies in the several great families of Testacea. In the accompanying tables I have exhibited this variation conchologically, in order that they may be more useful to the geologist than if the unpreservable species were included. It will be seen that there is a great disproportion in several of the regions between the number of Celtic forms of Univalves and of Bivalves, that whilst the Monomyaria and Dimyaria range as high as 35 and 30 per cent., the highest range of the Holostomatous univalve is only 13 and a fraction, and of the Siphonostomatous but 8, whilst the Aspiral species preserve a uniform per-centage of 6 in the three highest zones and of 3 in the three following.

Conchological Table, No. I.

Distribution of Shells in depth.

	Ægean total.	I.	II.	III.	IV.	V.	VI.	VII.	VIII.
Multivalves (molluscous).	7	3	2	0	2	2	1	1	0
Patelliform univalves ..	20	11	3	2	3	5	6	6	1
Tubular univalves (Dentalia)	6	4	4	2	2	1	1	2	2
Holostomatous spiral univalves (with Bullæ and Auricula)	115	50	40	40	44	35	28	17	15
Siphonostomat. and convolute spiral univalves.	104	40	27	30	41	36	30	16	5
Testaceous Pteropoda and Nucleobranchia.....	12	1	0	0	0	0	0	3	12
Brachiopoda	8	0	0	0	2	4	5	7	3
Conchifera Lamellibranchiata.....	135	38	53	52	68	58	48	34	28
	408	147	129	126	142	141	119	85	66

Conchological Table, No. II.

Distribution of Celtic forms in the several zones.

	I.	II.	III.	IV.	V.	VI.	VII.	VIII.
Multivalves	1	0	..	1	1	1	1	0
Patelliform univalves	0	1	2	2	2	2	2	0
Tubular univalves	1	1	0	0	0	0	0	0
Holostomatous spiral univalves	12	9	13	16	14	11	8	4
Siphonostomatous spiral univalves	4	5	7	8	9	6	5	2
Testaceous Pteropoda, and Nucleobranchia	..	..	..	..	..	..	0	0
Brachiopoda	..	..	..	0	0	0	0	0
Conchifera Lamellibranchiata	16	25	28	39	33	19	11	7
	34	41	50	66	57	39	27	13
	= 21 per cent.	= 36 per cent.	= 45 per cent.	= 43 per cent.	= 40 per cent.	= 35 per cent.	= 36 per cent.	= 20 per cent.

The importance of these results must be obvious to the geologist. The inductions as to climate or distribution which he may draw from his examition of the Testacea of a given stratum, will vary according to the depth in which those Testacea lived and the ground on which they lived; for every zone of depth yields a different percentage; and as the nature of the ground determines the tribe of Testacea which frequents it, and as every tribe yields a different per-centage, according to the variation of character of the sea-bottom, so will the conclusions of the geologist vary and become uncertain. The remedy is however obvious. By carefully observing the mineral character of the stratum in order to ascertain the nature of the former sea-bottom, by noticing the associations of species and the relative abundance of the individuals of each in order to ascertain the depth, and by calculating the per-centage of northern or southern forms separately for each tribe, our conclusions will doubtless approximate very nearly to the truth.

A comparison of the Testacea and other animals of the lowest zones with those of the higher exhibits a very great distinction in the hues of the species, those of the depths being for the most part white or colourless, whilst those of the higher regions, in a great number of instances, exhibit brilliant combinations of colour. The results of an inquiry into this subject are as follows:

The majority of shells of the lowest zone are white or transparent: if tinted, rose is the hue; a very few exhibit markings of any other colour. In the seventh region white species are also very abundant, though by no means forming a proportion so great as in the eighth. Brownish-red, the prevalent hue of the Brachiopoda, also gives a character of colour to the fauna of this zone: the Crustacea found in it are red. In the sixth zone the colours become brighter, reds and yellows prevailing, generally, however, uniformly colouring the shell. In the fifth region many species are banded or clouded

with various combinations of colours, and the number of white species has greatly diminished. In the fourth, purple hues are frequent, and contrasts of colour common. In the third and second green and blue tints are met with, sometimes very vivid, but the gayest combinations of colour are seen in the littoral zone, as well as the most brilliant whites.

The animals of Testacea and the Radiata of the higher zones are much more brilliantly coloured than those of the lower, where they are usually white, whatever the hue of the shell may be. Thus the genus *Trochus* is an example of a group of forms mostly presenting the most brilliant hues both of shell and animal; but whilst the animals of such species as inhabit the littoral zone are gaily chequered with many vivid hues, those of the greater depth, though their shells are almost as brightly coloured as the coverings of their allies nearer the surface, have their animals for the most part of an uniform yellow or reddish hue, or else entirely white.

The chief cause of this increase of intensity of colour as we ascend is doubtless the increased amount of light above a certain depth. But the feeding grounds of the animals would appear to exert a modifying influence, and the reds and greens may be in many cases attributed to the abundance of nulli pore and of the *Caulerpa prolifera*, a sea-weed of the most brilliant pea-green, the fronds of which the Mollusca of that colour, such as *Nerita viridis*, make their chosen residence.

The eight regions in depth are the scene of incessant change. The death of the individuals of the several species inhabiting them, the continual accession, deposition and sometimes washing away of sediment and coarser deposits, the action of the secondary influences and the changes of elevation which appear to be periodically taking place in the eastern Mediterranean, are ever modifying their character. As each region shallows or deepens, its animal inhabitants must vary in specific associations, for the depression which may cause one species to dwindle away and die will cause another to multiply. The animals themselves, too, by their over-multiplication, appear to be the cause of their own specific destruction. As the influence of the nature of sea-bottom determines in a great measure the species present on that bottom, the multiplication of individuals dependent on the rapid reproduction of successive generations of Mollusca, &c. will of itself change the ground and render it unfit for the continuation of life in that locality until a new layer of sedimentary matter, uncharged with living organic contents, deposited on the bed formed by the exuviæ of the exhausted species, forms a fresh soil for similar or other animals to thrive, attain their maximum, and from the same cause die off. This, I have reason to believe, is the case, from my observations in the British as well as the Mediterranean seas. The geologist will see in it an explanation of the phænomenon of interstratification of fossiliferous and non-fossiliferous beds.

Every species has three *maxima* of development,—in depth, in geographic space, in time. In depth we find a species at first represented by few individuals, which become more and more numerous until they reach a certain point, after which they again gradually diminish, and at length altogether disappear. So also in the geographic and geologic distribution of animals. Sometimes the genus to which the species belongs ceases with its disappearance, but not unfrequently a succession of similar species are kept up, representative as it were of each other. When there is such a representation the minimum of one species usually commences before that of which it is the representative has attained its correspondent minimum. Forms of representative species are similar, often only to be distinguished by critical examination. When a genus includes several groups of forms or subgenera, we

may have a double or treble series of representations, in which case they are very generally parallel. The following examples from the Ægean fauna will serve to illustrate the representation in depth.

Ligula ...	Ligula boysii.	Min. II. Max. III. Min. V.
	Ligula profundissima.	Min. VI. Max. VIII.
Nucula	Nucula margaritacea.	Min. II. Max. IV. Min. VI.
	Nucula polii.	Min. V. Max. VIII.
	Nucula emarginata.	Min. II. Max. IV. Min. V.
	Nucula striata.	Min. IV. Max. VI. Min. VIII.
Cardium.	Cardium papillosum.	Min. II. Max. IV. Min. VI.
	Cardium minimum.	Min. VI. Max. VIII.
Cardita.	Cardita calyculata.	Max. I.
	Cardita trapezia.	Min. I. Max. IV. Min. VI.
	Cardita squamosa.	Min. IV. Max. VI. Min. VIII.
Arca ...	barbata.	Max. I.
	lactea.	Min. I. Max. IV. Min. VIII.
	scabra.	Min. IV.? Max. VII. Min. VIII.
	imbricata.	Min. V. Max. VIII.
Trochus	crenulatus.	Max. II. Min. III.
	exiguus.	Min. II. Max. V. Min. VII.
	ziziphinus.	Min. III. Max. IV. Min. V.
	millegranus.	Min. V. Max. VII. Min. VIII.
Nassa ...	variabilis.	Min. I.? Max. II. Min. IV.
	prismatica.	Max. IV.? Min. V.
	intermedia.	Min. V. Max. VII. Min. VIII.

In cases equally evident, but where the maxima and minima are not so definite, the succession of representations may be exemplified thus:

Lima ...	subauriculata.	III. IV. V.
	cuneata.	V.
	elongata.	VI. VII. VIII.
Rissoa .	granulata.	I. II.
	cimicoides.	II. III. IV. V. VI.
	reticulata.	V. VI. VII. VIII.

Genera like species have a fixed maximum of development in depth, not being irregularly distributed in the several zones, but presenting their greatest assemblage of species in some one, whilst the numbers fall away more or less gradually in the preceding and following zones. In making calculations of the *maxima* of genera in depth, we must be careful to exclude all stragglers from the zones in which they may occur, otherwise our figures will be untrue. In the following table I have exhibited the specific distribution in depth of such of the Ægean genera as present the greatest number of species.

	Ægean total.	I.	II.	III.	IV.	V.	VI.	VII.	VIII.
Cardium.....	9	2	3	3	6	3	3	1	1
Pecten	14	0	4	6	8	9	11	4	5
Bulla	14	5	6	8	8	6	2	1	2
Rissoa.....	21	14	10	7	7	3	3	3	2
Trochus	28	10	10	13	10	9	7	5	1
Pleurotoma....	24	3	5	7	10	11	9	5	1
Nassa	14	3	6	4	4	1	2	1	1

The consideration of the representation in space forms an important element in our comparisons between the faunas of distinct seas in the same or representative parallels. The analogies between species in the northern and southern, the eastern and western hemispheres, are instances. But there is another application of it which I would make here. The preceding tables and list afford indications of a very interesting law of marine distribution, probable *à priori*, but hitherto unproved. The assemblage of cosmopolitan species at the water's edge, the abundance of peculiar climatal forms in the highest zone, where Celtic species are scarce, the increase in the number of the latter as we descend, and when they again diminish the representation of northern forms in the lower regions, and the abundance of remains of Pteropoda in the lowest, with the general aspect of the associations of species in all, are facts which fairly lead to an inference *that parallels in latitude are equivalent to regions in depth*, correspondent to that law in terrestrial distribution which holds that *parallels in latitude are representative of regions of elevation*. In each case the analogy is maintained, not by identical species only, but mainly by representative forms; and accordingly, although we find fewer northern species in the faunas of the lower zones, the number of forms representative of northern species is so great as to give them a much more boreal or subboreal character than is presented by those regions where identical forms are more abundant.

The consideration of the law of *representation in time* illustrates importantly the history of the very few species hitherto known only as distinct, which were discovered during the course of these researches in the Ægean. They are either such species as have had their maxima during the tertiary æra and are now fast approaching extinction, or such as had their infancy in the latest præadamic formations and are now attaining their maxima. Of the first, *Nassa substriata*, hitherto regarded as a characteristic tertiary shell, is an instance. Abounding in all the latest tertiaries of the Archipelago and of Europe generally, apparently gregarious, half a dozen straggling individuals were all that occurred in above 150 dredgings throughout the Ægean, those too in a region below their usual habitation when the species was in its prime. Of the second, *Neœra costulata* is an example; a few specimens of which only had been derived from tertiary deposits.

The result of the examination of the Ægean fauna does not hold out much prospect of the discovery of any more important extinct forms in a living state. The very few which I have been so fortunate as to discover are not such as materially to disturb the calculations of the geologist, especially if he takes into consideration the relations of each species to others and to its own maximum and minimum in time and geographic distribution. To those who have looked forward to the finding of lost forms in the greater depths of the sea, the catalogues I here present to the Association must be unsatisfactory; for though two or three such have occurred, the majority of species in the great depths are either described existing forms, or altogether new. The zero of animal life in depth has been too nearly approached to hold out further hopes. The indefatigable researches of Captain Graves and his officers have supplied me, since my return, with a mass of new data from all depths and from many new localities; but the result of their examination has been to confirm the calculations I had made from my own observations, and to lead to the pleasing hope that the researches embodied in this report will form a safe base-line for future investigations in the same department of philosophic zoology.

Were the bottom of the Ægean sea, with its present inhabitants, to be elevated and converted into dry land, or even that sea be filled up by a long

series of sedimentary depositions, the evidences of its fauna which would be presented may be summed up as follows :—

1. Of the higher animals, the marine Vertebrata, the remains would be scanty and widely scattered.

2. Of the highest tribe of Mollusca, the Cephalopoda, which though poor in species is rich in individuals, there would be but few traces, saving of the Sepia, the shell of which would be found in the sandy strata forming parts of the coast lines of the elevated sea-bed,

3. Of the Nudibranchous Mollusca there would not, in all probability, be a trace to assure us of their having been; and thus, though we have every reason to suppose from analogy that those beautiful and highly characteristic animals lived in the tertiary periods of the earth's history, if not in older ages, as well as now, there is not the slightest remain to tell of their former existence.

4. Of the Pteropoda and Nucleobranchiata the shell-less tribes would be equally lost with the Nudibranchia, whilst of the shelled species we should find their remains in immense quantity characteristic of the soft chalky deposits derived from the lowest of our regions of depth.

5. The Brachiopoda we should find in deeply-buried beds of nullipore and gravel, and from their abundance we could at once predict the depth in which those beds were formed.

6. The Lamellibranchiate Mollusca we should find most abundant in the soft clays and muds, in such deposits generally presenting both valves in their natural position, whilst such species as live on gravelly and open bottoms would be found mostly in the state of single valves.

7. The testaceous Gasteropoda would be found in all formations, but more abundant in gravelly than in muddy deposits. In any inferences we might wish to draw regarding the northern or southern character of the fauna, or on the climate under which it existed, whether from univalves or bivalves, our conclusions would vary according to the depth in which the particular stratum examined was found, and on the class of Mollusca which prevailed in the locality explored.

8. The Chitons would be found only in the state of single valves, and probably but rarely, for such species as are abundant, living among disjointed masses of rock and rolled pebbles, which would afterwards go to form conglomerate, would in all probability be destroyed, as would also be the case with the greater number of sublittoral Mollusca.

9. The *Mollusca tunicata* would disappear altogether, though now forming an important link between the Mediterranean and more northern seas.

10. Of the Arachnodermatous Radiata there would not be found a trace, unless the membranous skeleton of the *Velella* should under some peculiarly favourable circumstances be preserved in sand.

11. Of the Echinodermata certain species of *Echinus* would be found entire; species of *Cidaris*, on account of the depth at which that animal lives, would be not unfrequent, in certain strata, as the region in which it is found bounds the great lowermost region of chalky mud; the spines would be found occasionally in that deposit, far removed from the bodies to which they belonged. Starfishes, saving such as live on mud or sand, would be only evidenced by the occasional preservation of their ossicula. Of the extent of their distribution and number of species no correct idea could be formed. Of the numerous *Holothuriadæ* and *Sipunculidæ* it is to be feared there would be no traces. The single Crinoidal animal would be rarely preserved entire, but its ossicula and cup-like base would be found in the more shelly deposits.

12. Of the Zoophyta the corneous species might leave impressions resembling those of Graptolites in the shales formed from the dark muds on which they live. The Corals would be few, but perhaps plentiful in the shelly beds, mostly however fragmentary. The *Cladocora cæspitosa*, where present, would infallibly mark the bounds of the sea, and from the size of its masses, might be preserved in conglomerates where the Testacea would have perished. The *Actiniæ* would have disappeared altogether.

13. Of the Sponges, traces might be found of the more siliceous species when buried under favourable circumstances.

14. The Articulata, except the shelled Annelides, would be for the most part in a fragmentary state.

15. Foraminifera would be found in all deposits, their minuteness being their protection; but they would occur most abundantly in the highest and lowest beds, distinct species being characteristic of each.

16. Tracts would be found almost entirely deficient in fossils; some, such as the mud of the Gulf of Smyrna, containing but few and scattered, whilst similar muds in other localities would abound in organic contents. On sandy deposits formed at any considerable depth they would be very scarce and often altogether absent. Fossiliferous strata would generally alternate with such as contain few or no imbedded organic remains. Whilst at present the littoral zone presents the greatest number and variety of animal and vegetable inhabitants, including those most characteristic of the Mediterranean sea, when upheaved and consolidated, their remains would probably be imperfect as compared with those of the natives of deeper regions, in consequence of the vicissitudes to which they are exposed and the rocky and conglomeratic strata in which the greater number would be imbedded. A great part of the conglomerates and sandstones found would present no traces of animal life, which would be most abundant in the shales and calcareous consolidated muds.

Supposing such an elevation of the sea-bottom of the Ægean to have taken place, a knowledge of the associations of species in the Regions of Depth would enable us to form a pretty accurate notion of the depth of water in which each bed was deposited. This I had an opportunity of exemplifying at Santorin. During a visit to that remarkable volcanic crater, in company with Lieut. Spratt, we carefully examined the little island of Neokaimeni, which came up in 1707, with a view to ascertain, if possible, the depth at which the eruption took place from any portion of the sea-bottom which might be included in its substance. Our search was successful, for imbedded in the pumice was a thin stratum of sea-bottom with its testaceous inhabitants in beautiful preservation. The following were the species:—

Pectunculus pilosus, fine and double, the valves closed; *Arca tetragona*, *Cardita trapezia*, *Cytherea apicalis*.

Trochus ziziphinus, large and fine; *T. fanulum*, *T. exiguus*, and *T. coutourii*; *Turbo rugosus* and *sanguineus*; *Phasianella pulla*, *Turritella* 3-*costata*, *Rissoa cimicoides*, *Cerithium lima*, *Pleurotoma gracilis*.

A *Serpula*, fragments of *Cellepora* and *Millepora*.

Now there are only two of the regions in depth in which such an association of species would be met with,—the fourth and the fifth. Had it been the sixth, *Trochus ziziphinus* would have been replaced by its representative *Trochus millegranus*. In the third *Arca tetragona* has not commenced its range, but in the fourth and fifth we found all the species named. The state of the *Pectunculus* and the *Trochus ziziphinus* indicating their *maxima*, with the numbers taken of some of the others, refer us to the fourth region as the province in which the sea-bottom on which they lived was formed, *i. e.* in

a depth between twenty and thirty-five fathoms. The thinness of the layer of organic remains resting in pumice indicated that no long period had past since a former disturbance of the bottom. The state of the bivalves, their shells double and their valves closed, with the epidermis remaining, indicated that they had been suddenly destroyed, for when *Pectunculi* and *Arcæ* die naturally the valves either separate or remain gaping. They had, doubtless, been smothered in the shower of pumiceous ash which now covers them. The Bay of Santorin, close to the island in question, afforded us no soundings with 150 fathoms line, so that either a high bank, on which lived the Mollusca enumerated, existed there in 1707, before the eruption, or the bottom was uniformly such as the association of animals on it certainly indicates, in which case a depression of more than 100 fathoms must have taken place in consequence of the convulsion.

A similar application may be made of the knowledge of associations of species in depth to the elucidation of the deposits of the tertiary and even of older periods. The determination of the depth by such means is of great importance, for we have already seen how calculations as to climate and northern or southern character of fauna may mislead, unless we attain a knowledge of the region in which the strata were deposited.

The bottom of the Ægean is probably gradually shallowing. The streams which pour into it are thickly charged with sediment. The lowest depth explored was 230 fathoms. Now when the sedimentary deposit shall have filled up that region and brought it to the lowest range of the region next above, it will present a thickness of 725 feet. We have seen that this lowest region had everywhere a bottom of yellowish mud, and that similar animal forms prevailed throughout its extent. Now the strata which shall have been formed by the filling up of that region will present throughout an uniform mineral character closely resembling that of chalk, and will be found charged with characteristic organic remains and abounding in Foraminifera. We shall in fact have an antitype of the chalk. But the Ægean is far deeper through a great portion of its extent than 230 fathoms. The depth below this point will doubtless be filled with a similar mineral deposit, in places perhaps several thousand feet in thickness. But we have seen that the diminution in the number of species and of individuals as we descend in this lowest region pointed to a not far distant zero; therefore the greater part of this immense under-deposit will in all probability be altogether void of organic remains. When indurated it would present the appearance of a great portion of the immense beds of scaglia or Apennine limestone which form such extensive districts in the South of Europe and West of Asia. This is supposing no change of level takes place during the deposition of the chalky mud. But any depression, rapid or gradual, will add to the extent of this great stratum, and by supposing such phænomenon to occur,—and the probability of its occurrence is attested by numerous examples of such in the Archipelago,—we may have a cretaceous formation produced of uniform mineral character and of indefinite thickness. On the other hand, any elevation, by raising the upper portions of the lower zone into the region next above it, will cause a correspondent change in its fauna, and if a depression ensue, we shall have an alternation of faunas, indicating very different depths and presenting very distinct zoological combinations.

Similar considerations respecting the other regions in depth must occur to the zoo-geologist who examines the facts embodied in the catalogues and tables of this report. I shall not swell its pages further by entering more at length into this attractive portion of my subject, which I leave to the conside-

ration of more experienced inquirers, with the exception of calling attention to one other point in zoo-geology, which interested me in the course of my researches. It is this.

A very slight depression of land in the Gulf of Macri on the coast of Lycia, would now plunge below the sea muddy tracts, abounding in *Melania*, *Melanopsis*, *Neritina* and other freshwater Mollusca. Their successors in the first formed shallows would be *Cerithium mammillatum* and a few bivalves, the former mollusk in myriads. A drift of sand over this Cerithium mud would call into existence a new fauna, and every successive depression or elevation, however slight, would produce considerable zoological changes, for the subdivisions of the uppermost region are of small extent in depth, and very liable to be affected by secondary influences.

Now an inspection of the ancient monuments of the ruins of Telmessus proves that such elevations and depressions of small, but as regards animated nature, important extent, have occurred several times during the historical period; and a section of the great plain of Macri would doubtless exhibit such alternations of freshwater and marine strata with their characteristic organic contents.

In the preceding pages I have put forward several generalizations which to many may appear to be founded on inductions drawn from too limited a number of facts. The objection is, to a certain extent, true; though my data have been more numerous than would appear from this report, since the general conclusions embodied in it have not been founded only upon the observations in the Ægean, but also on a long series of researches previously conducted in the British seas. In the present state of the subject speculation is unavoidable, and indeed necessary for its advancement. If it be as important as the author believes, further researches are imperatively called for; and since this branch of inquiry, as at present conducted, may be said to have originated entirely with the British Association, he hopes that through encouragement afforded by that body, other and abler observers may be induced to enter the field, one in which the labourers require support, involving as it does time, expense and personal risk. Should the officers of the Navy and the members of Yacht Clubs take an interest in the subject, much might be done through their aid. To the surveying service the author from experience looks forward confidently for most valuable observations. Since questions of importance to navigation and commerce are intimately connected with this inquiry, it is not too much to look forward eventually to government for its support, the more so as the means of most naturalists—votaries of a science in which the pleasure of discovery is the only reward—do not warrant their adventuring privately in such researches.

Note.—In drawing up the tables of species embodied in this report, I have derived valuable assistance from several scientific friends, especially from Mr. Thompson of Belfast, who enabled me to compare my collections with a series of Mediterranean Testacea named by Michaud; from Mr. Cuming, in whose splendid collection is a series of Sicilian shells from Philippi; and from Mr. Harvey, who most kindly examined the Algæ necessary for the elucidation of the regions of depth.

APPENDIX No. I.

Examples of Dredging Papers, selected in order to show the associations of species in the several regions. The numerous dredging operations on which this Report is founded were all registered in a similar manner.

The accentuated numbers in the column of "dead specimens" refer to the disunited valves of Conchifera and Brachiopoda.

I.

Date .....May 29th, 1841.
Locality .....Nousa Bay, Paros.
Depth.....Five to six fathoms.
Distance from shore .....(Within the Bay.)
Ground .....Mud and sandy mud.
Region .....II.

Species.	No. of living spec.	No. of dead spec.	Observations.
Pinna squamosa.....	0	1	
Modiola tulipa	1	0	In sandy mud.
Pecten polymorphus.	4	6′	
—— hyalinus.....	1	0	
Nucula margaritacea.	0	40′	In dark mud.
Cytherea chione.....	0	1′	
—— venetiana	1	3–5′	
—— apicalis	1	2–12′	
Artemis lincta.....	0	1′	
Pullastra virginea ...	0	5′	
Venus verrucosa.....	0	5′	
Tellina donacina	0	1–3′	
—— balaustina.....	0	2′	
Ligula boysii	0	2–10′	
Lucina lactea	0	2–38′	
—— squamosa	0	3′	
—— rotundata	0	4′	
Cardium rusticum ...	0	1′	A strong valve.
—— exiguum.....	3	7′	
Cardita sulcata	0	1′	Washed in from shore.
Patella scutellaris ...	0	1	
Calyptræa sinense ...	0	2	
Bulla hydatis	0	1	
Turritella 3-plicata...	0	1	
Trochus canaliculatus	0	4	
Cerithium lima	0	3	
—— vulgatum	12	8	
Murex fistulosus.....	1	0	In dark mud.
Aplysia depilans.....	1	0	
Ostræa plicatula.....	0	10′	

Radiata.—Asterias, sp. Ophiura albida. Holothuria tubulosa. Caryophyllia cyathus. Sponges. Several Crustacea. Five specimens of a Gobius.

Plants.—Zostera oceanica. Caulerpa prolifera. Dictyomenia volubilis. Acetabularia.

II.

Date .....September 12, 1842.
Locality .....Gulf of Smyrna, off Mouth of Hermus.
Depth.....Seven fathoms.
Distance from shore .....Half a mile.
Ground.....Dark mud.
Region .....II.

Species.	No. of living spec.	No. of dead spec.	Observations.
Pecten sulcatus	0	4′	Full grown valves.
—— varius	0	3′	Full size.
Modiola barbata	2	2′	
Solen tenuis	1	3′	Hitherto a fossil.
—— coarctatus	0	8′	
Thracia pubescens ...	2	3′	
Ligula boysii	0	2′	
Pandora obtusa	0	4′	
Tellina donacina	5	10′	
Corbula nucleus	12	8–50′	
Cardium echinatum...	0	3′	Young specimens.
Artemis lincta	0	10′	
Montacuta, sp.....	0	1	Much worn.
Nucula margaritacea..	5	30	
—— emarginata.....	6	3–15′	
Dentalium 9-costatum	6	30	
Turritella terebra	6	12	
Parthenia elegantissi-	0	12	
Eulima subulata [ma	0	1	
Bulla truncatula	0	4	
—— striatula	0	6	New.
Rissoa monodonta	0	8	All young.
Ringuicula auriculata.	0	5	
Pleurotoma formicaria	0	2	
Cerithium angustisimum	0	2	
Buccinum variabile ...	0	10	
—— granulatum.....	0	8	Hitherto a fossil.
Murex brandaris	0	2	
Natica pulchella	0	2	
Calyptræa sinense	2	18	

Radiata.—Amphiura chiagi. Two specimens of Chirodota. Cucumaria pentactes, 2. No Zoophytes.

Two species of Serpula. A few Annelides. Two Crustacea.

III.

Date .....Aug. 17, 1841.
Locality .....Bay of Vathy, Amorgo.
Depth.....10 to 15 fathoms.
Distance from shore ...Within the port.
Ground .....Sand, gravelly and shelly.
Region .....III.

Species.	No. of living spec.	No. of dead spec.	Observations.
Modiola tulipa.....	0	1′	
Pecten polymorphus .	1	30′	
—— opercularis.....	0	3′	All very small.
Cardita trapezia	0	1′	
—— sulcata	0	3′	
Cardium exiguum	0	1′	
—— papillosum	0	50′	
Nucula margaritacea.	3	50′	
—— emarginata.....	2	15	
Ligula boysii	0	50′	
Lucina transversa	0	1′	
—— lactea	0	50′	
—— hiatelloides.....	3	30	
Pleurotoma attenuata	0	1	
—— ægeensis.....	7	1	New.
Rissoa pulchella	0	5	Hitherto a fossil.
Trochus magus	0	1	
Cerithium lima	0	60	
Nerita viridis	0	2	
Natica millepunctata .	0	2	
—— guilleminii [ma	0	1	
Parthenia elegantissi-	0	10	
Marginella clandesti-	0	1	
Bulla striatula [na	0	1	New.
—— ovulata	0	2	
Dentalium 9-costatum	1	10	

Ophioderma lacertosa, one specimen. Echinocyamus, dead. A few Crustacea.

IV.

Date .....August 29, 1841.
Locality .....Head of Cervi Bay, Morea.
Depth.....20 fathoms.
Distance from shore ...One mile.
Ground .....Weedy.
Region .....III. (commencement of.)

Modiola tulipa.....	1	0	A young shell.
Anomia ephippium ...	0	1′	
Pecten polymorphus .	0	4′	
—— opercularis.....	2	4′	Very small.
—— pusio	1	1	Young specimens
Cytherea apicalis.....	0	2–3′	
Cardium exiguum.....	4	3′	
—— lævigatum	0	1	Full size.
Cardita trapezia	5	3′	
Nucula emarginata...	0	3′	
Arca lactea	16	10′	
—— tetragona	2	0	Young specimens
—— barbata	2	1	
Ligula boysii	0	1′	
Tellina balaustina	0	3′	
Hiatella arctica	2	0	
Dentalium 9-costatum	1	3	
Natica valenciensii ...	0	1	
Chiton lævis.....	1	0	
Turbo rugosus.....	4	1	
Trochus crenulatus...	0	1	
—— exiguus	4	2	
—— ziziphinus	0	2	
Cerithium vulgatum..	1	1	
—— lima.....	0	1	
Triforis adversum [ni	0	1	
Chenopus pes-peleca-	0	1	
Nassa prismatica.....	0	1	
Columbella rustica ...	0	2	
—— linnæi	0	3	
Fusus lignarius	0	1	
—— fasciolarioides...	0	2	New.
Murex cristatus	0	2	
Pleurotoma formicaria	0	1	
—— reticulata spinosa	1	0	
Mitra obsoleta.....	0	1	
—— savignii [træoides	0	2	
Pleurobranchus calyp-	0	2	In crevices of sponge.

1 Asterias. 2 Ophioderma lacertosa.
Many sponges, annellides and corallines.

V.

Date .....Sept. 14, 1842.
Locality .....Gulf of Smyrna.
Depth.....26 fathoms.
Distance from shore ...Two miles and a half.
Ground .....Fine brown mud.
Region .....III.

Avicula tarentina.....	3	3′	Full grown, adhering to each other.
Hiatella arctica	4	0	

Amphiura chiagii.
Plumulariæ and other Sertulariadæ adhering, with small sponges, to the Aviculæ.

VI.

Date .....Sept. 16, 1842. [Smyrna.
Locality .....Off Long Island, Gulf of
Depth.....28 fathoms.
Distance from shore ...One mile and a half.
Ground .....Yellow sand.
Region .....III.

Lucina spinifera	1	2′	
Ligula prismatica	0	3	
Pandora obtusa	0	3	
Astarte pusilla?	1	0	

Sertularian zoophytes.
Ophiura texturata. Comatula mediterranea.

Note.—The two preceding dredges are examples selected from many such, of unprolific tracts in a

region usually fertile in living inhabitants. In this case a sea-bottom derived from the debris of fresh water tertiary formations seems to be the negative influence.

VII.

Date .....Dec. 1, 1841.
Locality .....Port of Sumboli under Cra-
Depth.....30 fathoms. [gus, Lycia.
Distance from shore ...Within the basin.
Ground .....Ash-coloured mud.
Region .....IV.

Species.	No. of living spec.	No. of dead spec.	Observations.
Modiola tulipa.....	0	1′	
Lima tenera.....	0	1′	
Pecten jacobæus	0	frag.	
—— polymorphus ...	0	10′	
—— opercularis	0	2′	
Ostræa plicatula, jun.?	0	10′	
Arca noæ.....	0	frag.	
Pectunculus lineatus..	0	1′	
Nucula emarginata ...	0	2′	
—— margaritacea ...	0	12′	
Cardita sulcata	0	1′	
—— trapezia	0	1′	
Cardium lævigatum...	0	1′	
—— papillosum	0	10′	
—— exiguum	0	3′	
—— echinatum	0	20′	
Venus ovata.....	0	2′	
—— incompta?	0	1′	
Cytherea venetiana...	0	2′	
—— apicalis	0	12′	
Lucina spinifera	0	10′	
—— sinuosa	0	1′	
—— commutata.....	0	1′	
Tellina donacina.....	0	2′	
Saxicava arctica	0	2	
Thracia pubescens ...	0	frag.	
Corbula nucleus	20	40′	
Ligula prismatica	0	6′	
—— boysii	0	4′	
Solen coarctatus [mis	0	6′	
Gastrochænacuneifor-	0	2′	
Murex brandaris	0	frag.	
Aporrhais pes-pelecani	0	2	
Cerithium vulgatum..	0	1	
—— lima.....	0	5	
Conus mediterraneus.	0	frag.	
Turritella 3-plicata ...	0	1	
Rissoa cimex	0	2	
Trochus exiguus	0	1	
—— contourii.....	0	1	
—— sanguineus	0	1	
Natica pulchella	0	1	
Bulla hydatis	0	1	
Dentalium 9-costatum	2	5	
Bulimus acutus	0	1	

It will be observed, that among the many testacea taken in this dredge, only two species occurred alive. The locality is a deep basin with a very shallow and narrow entrance, an indurated bar of sand and pebbles having formed across an inlet, the consequence of which has probably been the destruction of the greater number of mollusca which formerly inhabited it.

Leaves of olive and of Quercus coccifer were found imbedded in the mud. No zoophytes occurred.

VIII.

Date .....August 5. [Paros.
Locality .....Off northern extremity of
Depth.....40 fathoms.
Distance from shore ...Three miles and a half.
Ground .....Weedy.
Region .....V.

Species.	No. of living spec.	No. of dead spec.	Observations.
Pecten pusio	5	4′	
—— opercularis	0	1	Small.
Nucula margaritacea .	0	2′	
Cytherea apicalis.....	0	1′	
Cardita squamosa	1	1′	
Cardium papillosum..	0	2	
Fusus fasciolarioides .	1	0	New.
Murex brandaris	0	3	
Vermetus gigas	0	1	
—— corneus	3	0	New.
Trochus exiguus	8	2	
Turbo rugosus [dus	1	0	
Pleurobranchus sordi-	1	0	New.
Doris tenerrima	2		New.
—— gracilis	2		
—— coccinea	1		
Ascidia, four species.			
Aplidium, two species.			

Echinocyamus, alive and dead. Plumularia. Several Crustacea.
Codium tomentosum.

IX.

Date .....October 11, 1841.
Locality .....Off Cape Crio, Asia Minor.
Depth.....55 to 70 fathoms.
Distance from shore ...Three-fourths of a mile.
Ground .....Millepore.
Region .....VI.

Pecten pes-felis	0	frag.	
—— hyalinus	0	1′	
—— pusio	0	2′	
Venus ovata.....	0	1′	
Cytherea apicalis.....	0	2–2′	
Lucina bipartita	0	3′	
Astarte incrassata	0	4′	
Cardita trapezia	0	2′	
Arca barbata	0	1′	
—— lactea	0	1′	
Terebratula truncata .	10	6–8′	
—— detruncata	18	30–10′	
—— seminulum	2	0	
Crania ringens.....	20	8′	
Fusus lavatus	5	2	
—— crispatus.....	0	3	Hitherto only fossil.
—— turritellatus	2	5	
Pleurotoma	0	frag.	
Columbella linnæi ...	0	2	
Cerithium lima	0	2	

Species.	No. of living spec.	No. of dead spec.	Observations.
Triforis adversum	0	1	
Mitra obsoleta	0	3	
—— granum	0	1	New.
—— ebenus	0	2	
Murex cristatus	0	1	
Trochus fanulum.....	0	1	
Turbo sanguineus.....	0	2	
Turritella 3-plicata ...	2	3′	
Natica valenciensii ...	0	frag.	
Cypræa europæa [mis	0	1	
Emarginula capulifor-	0	2	
Lottia unicolor	1	3	
Chiton rissoi	1	0	
—— lævis	1	0	
—— fascicularis.....	1	0	
—— frelandi	1	0	A new species.

Goniaster, sp., 1 spec. Asterina, sp., 3 spec.
Echinus monilis, many specimens. Cidaris histrix, abundant, alive.
Echinocyamus, many specimens.
Myriapora truncata, alive.
A small yellow Goby.

X. (by Lieut. Spratt.)

Date .....July, 1842.
Locality .....Off east coast of Naxia.
Depth.....80 to 95 fathoms.
Distance from shore ...Three miles from N.E. Cape.
Ground .....Nullipore.
Region .....VII.

Terebratula truncata .	1	0	
—— detruncata.....	18	6	
Pecten varius	6	4′	All small.
—— opercularis.....	0	1′	A small valve.
—— testæ	1	2′	
Lima elongata.....	0	1′	Young and small, apparently frag. of M. barbata.
Modiola	0	2	
Hiatella arctica	1	0	
Cardita aculeata	0	1′	
Astarte incrassata?...	0	1′	
Cytherea apicalis.....	3	3′	
Venus ovata.....	1	2′	
Arca tetragona.....	1	1′	Small.
—— scabra	0	2	Small.
Murex cristatus, var..	4	2	
Pleurotoma maravig-	1	2	
—— gracilis [næ	1	0	
—— crispata	1	1	Hitherto fossil.
—— reticulata	0	1	
—— formicaria	1	0	
Cerithium lima	2	6	
Trochus exiguus	2	1	
Phasianella pulla.....	1	0	
Rissoa reticulata.....	1	3	
—— ventricosa	1	0	A straggler?
Turbo rugosus.....	2	0	
Natica pulchella	0	1	
Tornatella fasciata ...	1	0	Well grown.
Emarginula elongata.	0	1	
Chiton lævis	1	0	

Annelides.—Serpulæ.
Crustacea.—Some small species.
Radiata.—Echinus monilis and Echinocyamus pusillus. Species of Cidaris.

XI.

Date .....July, 1841.
Locality .....Off Serpho-Poulo.
Depth.....95 fathoms.
Distance from shore ...Two miles.
Ground .....Millepore.
Region .....VII.

Terebratula truncata .	0	6–4′	
—— detruncata	30	10–6′	
—— lunifera	1	0	
Crania ringens.....	0	35′	
Lima elongata	0	2′	New.
—— crassa	0	3′	New.
Modiola	1	1′	Very young.
Pecten testæ	0	1–3′	
—— concentricus ...	2	4′	New.
—— similis.....	0	6′	
Cardita squamosa	1	7′	
Cytherea apicalis.....	0	2′	
Venus ovata	0	4′	
Astarte pusilla.....	0	2	New.
Lucina commutata ...	0	1′	
—— bipartita.....	0	1′	
Arca lactea	4	6′	
Pleurotoma crispata..	1	3	Hitherto known only fossil.
—— abyssicola.....	0	3	New.
—— marivignæ	1	7	
—— reticulata	1	1	
—— minuta	0	4	New.
Fusus muricatus	0	5	
Triforis perversum ...	0	1	
—— lima	0	7	
Turritella 3-costata..	0	2	
Trochus exiguus	0	2	
Turbo sanguineus	0	2	
Rissoa reticulata [na	6	36	
Marginella clandesti-	0	2	
Tornatella pusilla	0	1	New.
Emarginula elongata.	0	1	
—— capuliformis ...	0	2	
Fissurella græca	0	1	
Cleodora pyramidata.	0	1	

Two species of sponge.
Several zoophytes, including Caryophyllia.
Echinocyamus, alive. Echinus monilis, alive and dead.
Several small Crustacea.

XII.

Date .....Sept. 16, 1841.
Locality .....Off Ananas Rocks.
Depth.....105 fathoms.
Distance from shore ...From rocks three miles, from
Ground .....Nullipore. [Milo ten miles.
Region .....VII.

Species.	No. of living spec.	No. of dead spec.	Observations.
Terebratula vitrea	0	2′	Dead and worn.
—— truncata	30	100-20′	Of all ages.
—— detruncata	100–	400-6′	Of all ages.
—— seminulum	18	10-8′	
—— appressa	1	0	Adhering to T. vitrea. New.
Crania ringens.....	0	6′	
Lima elongata	0	5′	New.
Pecten concentricus ..	0	1′	New.
—— fenestratus	0	2′	New.
Spondylus gussonii ...	1	1′	
Arca lactea	1	7′	
—— scabra.....	0	2′	
Neæra cuspidata	0	1′	
—— attenuata	0	1′	New.
Fusus echinatus	0	2	
Pleurotoma crispata ..	0	2	Hitherto known only fossil.
—— marivignæ	0	2	New.
—— abyssicola	0	4	New.
Mitra phillipiana.....	0	4	New.
Cerithium lima	0	8	
Trochus tinei	0	6	
—— exiguus	1	9	Hitherto known only fossil in the Mediterranean basin.
Turbo sanguineus	0	24	
Rissoa reticulata	4	11	
Emarginula elongata .	0	8	
Pileopsis hungarica ...	0	1	Small.
Lottia unicolor	1	24′	New.
Atlanta peronii	0	2	Encrusted with nullipore, and thus rendered solid.
Hyalæa gibbosa	0	1′	
Cleodora pyramidata .	0	3′	
Criseis clava	0	7	
—— spinifera	0	10	

Pectinura vestita, one (new). Echinocyamus, many, dead. Young Cidaris, alive. Echinus monilis, alive and dead. Four species of zoophyte. Several species of Serpula. Fragment of a Balanus. Small crabs. Foraminifera.

XIII.

Date .....Sept. 2. [and Cerigo.
Locality .....Channel between the Morea
Depth.....110 fathoms. [coast.
Distance from shore ...Three miles from Cervi
Ground .....Sandy mud.
Region .....VIII.

Species.	No. of living spec.	No. of dead spec.	Observations.
Pecten similis	0	10′	New to Mediterranean.
Lima elongata.....	0	3′	New.
Lima crassa	0	4′	New.
Nucula polii.....	0	5′	
—— striata.....	1	6′	
Arca lactea	0	1′	Young shell.
Poromya anatinoides .	0	2′	New.
Neæra costellata	2	4′	
—— cuspidata	1	2′	
Hiatella rugosa	0	frag.	Full grown.
Pandora obtusa	0	3′	
Kellia abyssicola	0	8′	New.
Cardium minimum ...	0	3′	
Rissoa reticulata	0	6	
Bulla utriculus.....	0	1	
Trochus millegranus .	1	1	
Parthenia ventricosa .	0	1	New.
Dentalium quinquan-	0	4	Hitherto fossil.
Atlanta peronii [gulare	0	3	
Ladas planorboides...	0	2	
? Limacina minuta ...	0	3	
Hyalæa gibbosa	0	3	
—— vaginellina	0	1	
Cleodora pyramidata .	0	4	
3 species of Criseis ?..	0	...	Abundant.

Annelides.—Ditrupa subulata and pusilla, the latter alive.
Crustacea.—Several small species.
Radiata.—Amphiura chiagi. Spines of Cidaris.

XIV.

Date .....August 2, 1841.
Locality .....Off Island of Amorgo.
Depth.....140 fathoms.
Distance from shore ...Ten miles. [of pumice.
Ground .....White mud with fragments
Region .....VIII.

Species.	No. of living spec.	No. of dead spec.	Observations.
Anomia polymorpha .	0	1–4	Perhaps a strag-
Lima elongata.....	0	12′	New. [gler.
—— crassa.....	0	5′	New. [ranean.
Pecten similis	0	30′	New to Mediter-
—— dumasii	0	1′	
—— fenestratus	0	2′	New.
Nucula polii.....	0	1′	
Arca tetragona	1	1	
—— lactea	0	10′	
Cardium minimum ...	0	1′	
Kellia abyssicola.....	3	2–4′	New.
Ligula profundissima.	2	5–17′	New. [only fossil.
Neæra costellata	0	7′	Hitherto known
—— cuspidata	1	12′	[only fossil.
Murex vaginatus.....	0	1	Hitherto known
Cerithium lima	0	1	A straggler.
Rissoa ovatella	0	1	New.
Parthenia ventricosa .	0	1	New.
Eulima subulata	0	1	
—— distorta [gulare	0	1	
Dentalium quinquan-	2	30	
Bulla utriculus [nea	0	1	
Carinaria mediterra-	0	1	Small.

Species.	No. of living spec.	No. of dead spec.	Observations.
Atlanta peronii	0	6	
? Limacina minuta....	0	8	New.
Hyalæa gibbosa	0	10	
—— vaginellina.....	0	1	
Criseis clava	0	40	
—— spinifera	0	100	
—— striata.....	0	4	

Idmonea and another zoophyte.
Ophiura abyssicola, alive.
Fragments of a Brissus. Serpula, one species; Ditrupa pusilla, and three species of Crustacea.

XV.

Date .....Sept. 17, 1841.
Locality .....Off Milo.
Depth.....150 fathoms.
Distance from shore ...Four miles.
Ground .....Fine white sandy mud.
Region .....VIII.

Pecten similis	0	30′	New to Mediter-
—— concentricus	0	2′	[ranean
—— dumasii	0	frag.	
Lima elongata.....	0	8′	New.
—— crassa	0	8′	New.
Arca lactea	0	10′	
—— scabra.....	0	1′	
Poromya anatinoides .	0	1′	New.
Kellia abyssicola	0 ?	10–50′	New.
Neæra cuspidata	0	2′	[only as fossil.
—— costellata	0	3′	Hitherto known
—— abbreviata	0	2′	New.
Cardita squamosa ...	0	1′	A young valve.
Ligula profundissima.	0	1–15′	
Crania ringens [ta	0	2′	
Terebratula detrunca-	0	2	Stragglers.
Murex vaginatus.....	0	1	And two frag-
Fusus muricatus [na	0	4	ments (hitherto
Marginella clandesti-	0	1	fossil).
Rissoa reticulata.....	0	12	
—— ovulata	0	2	
Parthenia ventricosa .	0	1	New.
Cerithium lima	0	1	Straggler?
Lottia unicolor	0	1	
Scissurella plicata	0	3	
Peracle physoides	0	3	
Hyalæa gibbosa	0	22	
——vaginellina	0	1	
——cornea.....	0	2	
Cleodora pyramidata .	0	many	
——	0	2	

Criseis, the three species abundant.

XVI.

Date .....Dec. 23, 1843. [Asia Minor.
Locality .....S.E. side of Gulf of Macri,
Depth.....185 fathoms.
Distance from shore ...Two miles.
Ground .....Pale yellowish mud.
Region .....VIII.

Species.	No. of living spec.	No. of dead spec.	Observations.
Pecten concentricus..	0	3′	New.
—— hoskynsi.....	0	4′	New.
—— similis.....	0	3′	
Arca imbricata.....	1	18′	
Nucula striata	0	2′	
—— ægeensis.....	1	6–5′	New.
Kellia abyssicola	4	20′	New.
Neæra cuspidata	1	3′	[only fossil.
—— costellata	1	8	Hitherto known
—— abbreviata	0	3	New.
Ligula profundissima.	1	3–15′	
Pleurotoma abyssicola	0	3	New.
Nassa intermedia, var.	0	3	New.
Rissoa reticulata.....	0	12	Hitherto fossil only in Mediterranean, recent in North Seas.
Marginella clandesti- [na	0	3	
Dentalium quinquan-	0	36	
Hyalæa cornea [gulare	0	frag.	
—— gibbosa	0	3	
—— vaginellina.....	0	1	
Cleodora pyramidata .	0	12	
Criseis clava.....	0	many	
—— spinifera	0	many	
—— striata.....	0	many	
? Limacina minuta....	0	many	New.
Carinaria mediterra-	0	1	
Peracle physoides [nea	0	10	New.

Many *Nodosariæ* and other Foraminifera. The carapace of a crab. A very small living sponge. Arms of *Amphiura chiagii*.

XVII.

Date... .....Nov. 25, 1841. [Asia Minor.
Locality .....S. extremity of Gulf of Macri,
Depth.....230 fathoms.
Distance from shore ...One mile (shore steep).
Ground .....Fine yellowish mud.
Region .....VIII.

Terebratula vitrea	0	2′	
Ligula profundissima.	0	3′	New.
Arca imbricata[gulare	1	1′	
Dentalium quinquan-	1	0	
Hyalæa gibbosa	0	1	
Cleodora pyramidata .	0	8	
Criseis spinifera.....	0	5	

A glassy Serpula, and the corneous tube of an Annelide adhered to the Terebratula; also a species of Alecto and a Lobatula.

APPENDIX No. II.

Brief Diagnoses of new species of Mollusca named in the preceding tables. The new Radiata are described in the Linnæan Transactions.

Order Nucleobranchiata.

Genus Ladas, *Cantraine.*

Ladas planorboides, sp. nov.

L. testâ pellucidâ, albâ, lævi, compressâ, carinatâ, exalatâ, anfractibus 4.

Diam. $0\frac{1}{12}$. Reg. VIII. (frequent.)

Genus Peracle, *Forbes.*

(I propose this genus for certain small reversed, spiral shells, having the aperture more or less prolonged into a pointed canal. Fuller details will be given elsewhere.)

Peracle physoides, sp. nov.

P. testâ ovatâ, albâ, pellucidâ (epidermide? reticulatâ); caudâ longâ, arcuatâ, acutissimâ.

Long. $0\frac{1}{12}$. Reg. VIII. Cyclades, Lycia.

? *Bellerophina minuta.*

I have enumerated among the Nucleobranchiata a shell under this name, which I have now good reason to believe is the shell of the larva of (perhaps many) species of several orders of Mollusca. It is extremely minute, helicoid, transparent, and of two or three whorls. It abounds in the mud from very deep water.

Gasteropoda.

Order Nudibranchia.

Fam. *Doridæ.* Genus Doris, *Lin.*

Doris aurata, sp. nov.

D. corpore ovali, convexo, lævi, succineo, maculis stellatis albis; branchiis 5—6, flavidis; tentaculis aurantiacis apicibus flavis; pede flavo.

Long. $0\frac{3}{4}$ unc. *Hab.* 50 fathoms. Paros (Lieut. Mansell).

Genus Goniodoris, *Forbes.*

Goniodoris regalis, sp. nov.

G. corpore elongato, lanceolato, plano, lævi; dorso viridi, longitudinaliter flavo-vittato, albo-marginato; lateribus griseis flavo-maculatis; pede albo; branchiis 10—12, viridibus, flavo-marginatis; tentaculis azureis.

Long. $\frac{1}{4}$ unc. *Hab.* Littoral. Port Massini, Skanousi. (Lieut. Freeland.)

Goniodoris tenerrima, sp. nov.

G. corpore cuneato, alto, dorso lateribusque griseis lineis interruptis albis cœruleisque pictis; margine flavo; pede angustissimo albo; branchiis 10—12, griseis, pedunculatis; tentaculis azureis.

Long. 3 unc. *Hab.* 4 miles from Paros in 40 fathoms, weedy ground.

Goniodoris vivida, sp. nov.

G. corpore subquadrato cœruleo, dorso fasciâ centrali albâ, albo marginato; branchiis 7, cœruleis.

Long. $0\frac{3}{10}$ unc. *Hab.* 7—30 fathoms, weedy ground, Cyclades.

Fam. *Melibœadæ.* Genus Melibœa, *Rang.*

Melibœa? minuta, sp. nov.

M. corpore oblongo, flavido, lateribus in branchiis binis rotundatis lobiformis productis.

Long. $0\frac{3}{24}$. *Hab.* 5 fathoms. Despotico.

The form of the branchiæ approaches those of *Scyllæa*, whilst the tentacula are characteristic of *Melibœa*. This minute nudibranc may possibly belong to an intermediate genus.

Order INFEROBRANCHIATA.

Fam. *Pleurobranchaceæ*. Genus PLEUROBRANCHUS, *Cuv.*

Pleurobranchus limacoides, sp. nov.

P. corpore (repente) oblongo, lævi, aurantiaco; pallio ovato plano, contra-subemarginato; caudâ exsertâ lanceolatâ; tentaculis elongatis, linearibus.

Long. $2\frac{3}{4}$ unc. *Hab.* under stones near water-mark among the Cyclades. Allied to *P. oblongus* of Cantraine.

Pleurobranchus calyptræoides, sp. nov.

P. corpore ovato, lævi, citrino, pallio orbiculari convexo, caudâ exsertâ latâ obtusâ, tentaculis linearibus.

Long. $1\frac{1}{4}$ unc. *Hab.* on sponges, 20 fathoms, Cervi Bay, Morea.

Pleurobranchus scutatus, sp. nov.

P. corpore rotundato, rubro-aurantiaco; pallio lato scabro, convexo, anticè producto; caudâ pallio occultâ; tentaculis linearibus.

Long. 1 unc. *Hab.* on *Codium tomentosum*, in 20 fathoms, Cyclades.

Pleurobranchus sordidus, sp. nov.

P. corpore rotundato convexo; pallio rugoso, sordidè brunneo, anticè producto; pede quadrato, albo; caudâ brevissimâ; tentaculis albis linearibus; ore aurantiaco.

Long. $0\frac{3}{4}$ unc. *Hab.* 40 fathoms off Paros.

Order TECTIBRANCHIATA.

Fam. *Aplysiaceæ*. Genus APLYSIA, *Lin.*

Aplysia saltator, sp. nov.

A. corpore globoso, griseo albo nigroque maculato, tuberculato, tuberculis mucronatis; sinu branchiali parvo; pede angustissimo, tentaculis brevibus.

Long. 2 unc. Alt. $1\frac{2}{10}$. *Hab.* 20—30 fathoms. Serpho Bay.

Genus ICARUS, *Forbes.*

(The animal for which I propose to constitute the genus *Icarus* differs from *Aplysia* in having but two tentacula, and in being prolonged posteriorly into a slender lanceolate tail. The dorsal shield resembles the shell of a *Bullæa*. A full account of the genus will be published elsewhere.)

Icarus gravesi, sp. nov.

Animal viridum purpureo, alboque variegatum. *Testa* alba, pellucida.

Long. $1\frac{7}{12}$ unc. Long. test. $5\frac{5}{12}$ unc. Syra, Serpho.

Fam. *Aceridæ*. Genus BULLÆA, *Lamarck.*

Bullæa alata, sp. nov.

B. testâ orbiculari, spiraliter punctato-striatâ, labro expanso, spiram excedente, margine integro.

Long. and lat. $0\frac{3}{4}$. Suda Bay, Candia, in 119 fathoms. (Capt. Graves, 1843.)

Genus BULLA, *Lin.*

Bulla retifer, sp. nov.

B. testâ oblongâ, laxè convolutâ, longitudinaliter transversimque striatâ, epidermide reticulato-vestitâ, spirâ truncatâ, umbilicatâ, aperturâ ovatâ supernè coarctatâ; columellâ marginatâ.

Long. $0\frac{3}{12}$. Lat. $0\frac{2}{12}$ unc. Serpho.

Bulla striatula, sp. nov.

B. testâ oblongâ, cylindricâ, lacteâ, transversè undulato-striatâ, longitudinaliter obsoletè striatâ, vertice subtruncato concavo; spirâ manifestâ; aperturâ supernè lineari, infernè dilatatâ.

Long. $0\frac{3}{4}$ unc. Rio, Macri, Servi, Crete, &c.

Bulla turgidula, sp. nov.

B. testâ inflatâ, ovatâ, albâ, politâ, infernè supernèque transversè striatâ, medio lævissimo; apice truncato, umbilicato, margine crenato; spirâ occultâ; aperturâ angustâ, utrinque subrostratâ.

Long. $0\frac{3}{4}$ unc. Servi, Amorgo.

Bulla cretica, sp. nov.

B. testâ globosâ, albâ, lævigatâ, spirâ manifestâ, umbilicatâ, margine rotundatâ; aperturâ supernè contractâ, infernè dilatatâ; columellâ perforatâ.

Long. $0\frac{1}{10}$ unc. Crete in 119 fathoms. (Capt. Graves, 1843.)

Order Scutibranchiata.

Fam. *Patelloideæ*. Genus Lottia, *Gray*.

Patelloidea, *Quoy* and *Gaim.* Acmæa, *Hartman*.

Lottia unicolor, sp. nov.

L. testâ parvâ, rotundatâ, subconicâ, lævigatâ, rubrâ, apice centrali.

Long. $0\frac{3}{12}$ unc. Asia Minor, Crete, Cyclades.

Order Cyclobranchiata.

Fam. *Chitonidæ*. Genus Chiton, *Lin.*

Chiton freelandi, sp. nov.

C. valvulis omnibus granulatis, carinatis, areis inferioribus elevatis longitudinaliter obsoletè excavatis; areis superioribus depressis transversè profundè sulcatis; carinâ lævigatâ; margine squamoso, squamis tessellatis.

Long. $0\frac{1}{2}$ unc. Lat. $0\frac{3}{12}$ unc. Caria, Delos, Crete (in deep water).

Order Cirrhobranchiata.

Genus Dentalium, *Lin.*

Dentalium quinquangulare, sp. nov.

C. testâ arcuatâ, albâ, longitudinaliter striatâ, pentangulari.

Long. $0\frac{5}{12}$. Everywhere in the deepest region.

Order Pectinibranchiata.

Fam. *Scalariadæ*. Genus Eulima, *Risso*.

Eulima unifasciata, sp. nov.

E. testâ turritâ, lævigatâ, politâ, albâ, fasciâ fulvâ cinctâ; anfractibus 11, planiusculis; aperturâ ovatâ.

Long. $0\frac{3}{12}$ unc. Lycia. Reg. VIII.

Genus Parthenia, *Lowe*.

= Turbonilla, *Risso*, Pyrgiscus, *Philippi*, = Chemnitzia, *d'Orbigny*.

Parthenia ventricosa, sp. nov.

P. testâ turritâ, acutâ, albâ, pellucidâ, lævi, politâ; anfractibus 9 tumidis, aperturâ subquadratâ, columellâ rectâ, subumbilicatâ.

Long. $0\frac{3}{4}$ unc. Cerigo, Cyclades, Lycia. Reg. VIII.

Parthenia turris, sp. nov.

P. testâ aciculatâ, albâ, pellucidâ, lævi, politâ; anfractibus 11 convexis, aperturâ subquadratâ, columellâ rectâ, imperforatâ.

Long. $0\frac{3}{12}$ unc. Cyclades. Reg. VIII.

Parthenia fasciata, sp. nov.

P. testâ turritâ, albâ, fasciâ flavâ; anfractibus 7, planis, ad suturas subangulatis, longitudinaliter costatis, ultimo anfractu 16-costato, basi subangulato, lævi; aperturâ quadrangulari.

Long. $0\frac{2}{12}$ unc. Cyclades, Lycia. Reg. VIII.

Parthenia varicosa, sp. nov.

P. testâ turritâ, albidâ, fasciis fulvis; anfractibus 11 convexis, varicosis, spiraliter striatis, longitudinaliter (18—20) costatis, basi rotundato, ecostulato, aperturâ subquadratâ.

Long. $0\frac{1}{2}$. Lat. $0\frac{3}{24}$ unc. Cyclades.

Genus Rissoa, *Trem.*

Rissoa cimicoides, sp. nov.

R. testâ ovato-conicâ, albidâ, anfractibus 7 convexiusculis, sulcis longitudinalibus spiralibusque granulato-decussatis, ad suturam marginatis, crenulatis; aperturâ ovatâ, labro externo incrassato.

Long. $0\frac{2}{12}$ unc. Crete, Cyclades, Lycia, Smyrna.

Rissoa ovatella, sp. nov.

R. testâ oblongâ, albâ, anfractibus 5, spiraliter punctato-striatis; aperturâ ovatâ infernè angulatâ; columellâ rectâ.

Long. $0\frac{5}{24}$ unc. Cyclades, Asia Minor.

Rissoa pulchra, sp. nov.

R. testâ turritâ, albâ, anfractibus 6 convexis, longitudinaliter sulcato-striatis (striis 19), suturis profundis; aperturâ ovatâ, labro simplici.

Long. $0\frac{1}{10}$ unc. Paros.

Genus Scalaria, *Lam.*

Scalaria hellenica, sp. nov.

S. testâ turritâ, albâ, imperforatâ, anfractibus 10 convexis, varicosis, spiraliter striatis longitudinaliter costatis, costis rotundatis crassiusculis, in ultimo anfractu 10; aperturâ marginatâ, margine radiato-crenato.

Long. $0\frac{2}{10}$ unc. Cervi.

Genus Turritella, *Lam.*

Turritella suturalis, sp. nov.

T. testâ elongatâ, albâ, anfractibus ventricosis, spiraliter pauci-costatis, ad suturas excavatis, lævigatis.

Long. $\frac{3}{12}$. Caria.

Fam. *Siliquariadæ*. Genus Vermetus, *Adanson.*

Vermetus corneus, sp. nov.

V. testâ tenui, corneâ, pellucidâ, tereti, transversè corrugatâ, striatâque.

Long. 3 unc. Lycia, Cyclades, Crete.

Fam. *Trochidæ*. Genus Trochus, *Lin.*

Trochus pallidus, sp. nov.

T. testâ conoideâ, latâ, griseâ maculis obscuris, anfractibus 5—6 spiraliter striatis (sub lente striis longitudinalibus), ad suturas planiusculis, ultimo in medio subexcavato, basi plano angulato; umbilico profundo, albo, margine acuto.

Alt. $0\frac{4}{12}$. Lat. bas. $0\frac{5}{12}$ unc. Amorgo.

Trochus lyciacus, sp. nov.

T. testâ conoideâ, latâ, albidâ, purpureo maculatâ (ad umbilicum flammulatâ), anfractibus 5—6 spiraliter sulcatis, sulcis transversè striatis, ad suturam planatis, in medio excavatis; basi plano, marginato; umbilico parvo; aperturâ quadrangulari, columellâ incrassatâ.

Alt. $0\frac{7}{24}$. Lat. bas. $0\frac{5}{24}$ unc. Lycia, Peræa.

Trochus spratti, sp. nov.

T. testâ conoideâ, nigro-brunneâ, maculis albis tessellatâ; anfractibus 6 convexis spiraliter sulcatis, transversè obliquè striatis, ad suturam planiusculis; basi margine rotundato; umbilico parvo, albo; aperturâ subquadratâ.

Alt. $0\frac{7}{12}$. Lat. bas. $0\frac{7}{24}$ unc. Servi, Cyclades, Lycia, Smyrna.

Trochus gravesi, sp. nov.

T. testâ conicâ, albâ, brunneâ, maculis albidis, epidermide iridescente, anfractibus 8 planis, spiraliter transversèque striatis, infernè ad suturam bicingulatis, cingulis planiusculis, crenulatis; basi margine subangulato, spiraliter sulcato, radialiter striato; umbilico nullo; aperturâ subquadratâ.

Alt. $0\frac{5}{12}$. Lat. bas. $0\frac{3}{12}$ unc. Cyclades, Morea, Lycia.

Fam. *Cerithiadæ*. Genus Cerithium, *Brug.*

Cerithium angustissimum, sp. nov.

C. testâ lineari, anfractibus 13, convexis, longitudinaliter costatis, spiraliter 4-sulcatis, ad suturam marginatis.

Long. $0\frac{5}{12}$. Lat. $0\frac{1}{24}$ unc. Sporades.

Fam. *Muricidæ*. Genus Pleurotoma, *Lam.*

Pleurotoma teres, F., v. Reeve, Conchologia Iconica.

„ *turgida*, F., loc. cit.

„ *fortis*, F., loc. cit.

„ *lyciaca*, F., loc. cit.

„ *minuta*, F., loc. cit.

„ *abyssicola*, F., loc. cit.

„ *ægeensis*, F., loc. cit.

„ *fallax*, F., sp. nov.

P. testâ fusiformi, fulvâ, fasciâ albidâ, anfractibus 8, tumidis, longitudinaliter (16) costatis, spiraliter sulcato-striatis, suturis impressis, aperturâ ovato-lanceolatâ, caudâ brevi, latâ.

Long. $0\frac{1}{2}$ unc. Paros.

Genus Fusus, *Lam.*

Fusus fasciolarioides, sp. nov.

F. testâ oblongâ, aurantiâ fasciâ interruptâ albâ, anfractibus 5, spiraliter striatis, noduloso-(9) costatis, ad suturas appressis, ultimo subangulato; aperturâ lanceolatâ, canali obliquâ, longiusculâ.

Long. $0\frac{5}{12}$. Lat. $0\frac{5}{24}$. Apert. $0\frac{5}{24}$ unc. Cyclades, Lycia.

Fusus karamanensis, sp. nov.

F. testâ elongatâ, succineo-brunneâ, fasciâ centrali angustâ flavâ, albo maculatâ, anfractibus 7, angulatis, longitudinaliter 7-costatis, costis in carinam tuberculatis; aperturâ lanceolatâ, canali latiusculo.

Long. $0\frac{13}{24}$. Lat. $0\frac{5}{24}$. Apert. $0\frac{6}{24}$ unc. Lycia.

Genus Murex, *Lin.*

Murex brevis, sp. nov.

M. testâ albâ, ovato-ventricosâ, subumbilicatâ, anfractibus 6 (ultimo maximo), longitudinaliter 8-costatis, spiraliter costato-striatis, costis spiralibus numerosis, alternatis majoribus, omnibus squamosis; canali brevi, angusto, labro externo fimbriato-plicato.

Long. $0\frac{10}{12}$. Lat. $0\frac{1}{2}$. Apert. $0\frac{1}{2}$ unc. Paros, Crete.

Genus Nassa, *Lam.*

Nassa intermedia, sp. nov.

N. testâ ovato-oblongâ, ventricosâ, albâ fasciâ flavâ, anfractibus 6, ultimo

spiram excedente, omnibus longitudinaliter costatis, spiraliterque striatis; costis 12 fortibus, rotundatis; aperturâ rotundatâ, canali brevi.

Long. $0\frac{4}{12}$. Lat. $0\frac{2}{4}$. Apert. $0\frac{2}{12}$. Asia Minor, Sporades.

Fam. *Involutæ*. Genus Mitra, *Lam.*

Mitra phillippiana, sp. nov.

M. testâ lanceolatâ flavâ, fasciâ obscurâ albidâ; anfractibus 7 convexiusculis, lævigatis, politis, labro columellari 3-plicato.

Long. $0\frac{5}{12}$. Lat. $0\frac{2}{4}$. Apert. $0\frac{3}{12}$ unc. Milo, Cerigo.

Mitra granum, sp. nov.

M. testâ lineari, lævigatâ, nigridâ, fasciâ albâ maculis nigris interruptis, anfractibus 7; apice costulato, labro interno plicis 3 fortissimis.

Long. $\frac{4}{12}$. Lat. $\frac{2}{12}$. Naxia.

Mitra littoralis, sp. nov.

M. testâ lanceolatâ, viridi-fuscâ, fasciâ albâ maculis fulvis interruptis; anfractibus 6, apice costulato, labro interno 3-plicato.

Long. $\frac{3}{12}$. Lat. $\frac{2}{4}$. Paros, &c.

Genus Tornatella, *Lam.*

Tornatella pusilla, sp. nov.

T. testâ ovato-globosâ, albidâ, anfractibus 4 regulariter profundeque punctato-striatis, aperturâ oblongâ.

Long. $0\frac{2}{12}$. Lat. $0\frac{1}{12}$ unc. Lycia, Naxia.

Tornatella globulina, sp. nov.

T. testâ albâ, globosâ, spirâ brevi, anfractibus 4 spiraliter striatis, striis numerosis, simplicibus; aperturâ pyriformi, columellâ incrassatâ.

Long. $0\frac{1}{10}$. Serpho.

Lamellibranchiata.

Section *Dimyaria*.

Fam. *Pyloridæ*. Genus Thracia, *Leach.*

Thracia pholadomyoides, sp. nov.

T. testâ ventricosâ, sinuosâ, granulatâ, concentricè sulcatâ, sulcis longitudinalibus paucis (6) decussatâ; umbonibus acutis.

Long. $0\frac{9}{12}$. Lat. $1\frac{2}{12}$ unc. Cape Artemisium (1808).

Genus Ligula, *Montagu.*

Ligula profundissima, sp. nov.

L. testâ oblongâ, depressâ, tenui, pellucidâ, candidâ, posticè angulatâ, anticè rotundatâ; foveâ ligamentali lanceolatâ.

Long. $0\frac{3}{4}$. Lat. $0\frac{1}{2}$ unc.

In the 8th Region of depth, everywhere: nearly allied to *L. boysii*.

Genus Neæra, *Gray.*

Neæra attenuata, Forbes in Zool. Proc. 1843.

„ *abbreviata*, Do. do. 1843.

Genus Poromya, *Forbes.*

Testa transversa, subæquivalvis, omnino clausa, punctata seu granulata; cardo in utrâque valvulâ dente cardinali erecto, subspathuliformi, dentibus obliquis duobus ad alterum anticum.

Poromya anatinoides, sp. nov.

Testa convexa, orbicularis, subcarinata, ovata, minutè granulata, anticè truncata, posticè subtruncata.

Long. $0\frac{5}{4}$ unc. Lat. $0\frac{4}{12}$. Reg. VIII. Asia Minor, Cyclades.

Fam. *Conchaceæ*. Genus KELLIA, *Turton* (=BORNIA, *Philippi*).

Kellia abyssicola, sp. nov.

K. testâ minutâ, lævi, politâ, candidâ, tenui, orbiculari, convexâ, umbonibus prominentibus.

Long. $0\frac{1}{12}$. Lat. $0\frac{1}{12}$ unc. In the 8th Region of depth, everywhere.

Kellia transversa, sp. nov.

K. testâ tenuissimâ, lævi, albâ, pellucidâ, valdè inæquilaterali, transversè oblongâ, extremitatibus rotundatis.

Long. $0\frac{1}{24}$ unc. Lat. $0\frac{3}{24}$. Crete (119 f.) [Capt. Graves and Lieut. Spratt]. Morea.

Kellia ferruginosa, sp. nov.

K. testâ orbiculari, subinæquilaterali, inflatâ, internè purpureâ, externè ferruginosâ.

Long. $0\frac{1}{12}$. With the last.

Genus ASTARTE, *Sowerby*.

Astarte pusilla, sp. nov.

A. testâ minutâ, triangulari, concentricè striatâ, margine interno denticulato.

Long. $0\frac{1}{12}$. Naxos. (Mr. Hoskyn.)

Fam. *Arcaceæ*. Genus NUCULA, *Lamarck*.

Nucula ægeensis, sp. nov.

N. testâ ovatâ, subdepressâ, lævi, inæquilaterali, anticè rotundatâ, posticè angulatâ, marginibus internis lævibus.

Long. $0\frac{1}{12}$. Lat. $0\frac{2}{12}$. Macri (180 f.), Crete (119 f.).

Section *Monomyaria*.

Fam. *Pectinidæ*. Genus PECTEN, *Brugière*.

Pecten fenestratus, sp. nov.

P. testâ minutâ (æquivalvi), orbiculari, costis (5) longitudinalibus, striis (10—15) transversis, interstitiis minutissimè longitudinaliter striatis; auriculis æqualibus, magnis, longitudinaliter striatis.

Lat. $0\frac{2}{12}$. Region VIII. Cyclades, Asia Minor.

Pecten concentricus, sp. nov.

P. testâ minutâ (æquivalvi) orbiculari, concentricè striatâ; auriculis inæqualibus transversè radiato-costatis.

Lat. $0\frac{2}{12}$. With the last.

Pecten hoskynsi, sp. nov.

P. testâ minutâ (æquivalvi), orbiculari, albâ, pellucidâ, costis longitudinalibus distantibus squamosis, squamis vesiculosis.

Lat. $0\frac{2}{12}$. Reg. VIII. Asia Minor.

Genus LIMA, *Brug*.

Lima (*Limatula*) *elongata*, sp. nov.

L. testâ æquilaterali pellucidâ, elongatâ, fragilissimâ, valdè tumidâ, clausâ, longitudinaliter costato-striatâ; costis lævibus, auriculis æqualibus, umbonibus valdè prominentibus.

Long. $0\frac{1}{12}$. Lat. $0\frac{1}{12}$. Cyclades, Cerigo, Lycia. Reg. VIII.

Lima (*Limatula*) *cuneata*, sp. nov.

L. testâ æquilaterali, ovatâ, candidâ, fragili, convexâ, clausâ, longitudinaliter costatâ, costis crenulatis, interstitiis longitudinaliter striatis, striis lævibus; auriculis inæqualibus, umbonibus valdè prominentibus; margine frontali argutè (12) dentato.

Long. $0\frac{3}{12}$. Lat. $0\frac{2}{12}$. Cyclades.

Lima (*Limatula*) *crassa*, sp. nov.

L. testâ æquilaterali, ovatâ, albâ, crassâ, subdepressâ, clausâ, longitudinaliter costatâ, costis crenulatis, auriculis æqualibus, umbonibus prominentibus.

Long. $0\frac{3}{4}$. Lat. $0\frac{1}{2}$. Everywhere in Reg. VIII.

Order Brachiopoda.

Fam. *Terebratulidæ*. Genus Terebratula, *Brug.*

Terebratula appressa, sp. nov.

T. testâ transversè ovatâ, planiusculâ, fuscâ, punctatâ, margine frontali recto, foramine magno incompleto, sceleto è dissepimento simplicissimo dentiformi, erecto, versus foramen arcuato.

Lat. $0\frac{3}{4}$ unc. Lycia.

APPENDIX No. III.

In the tables of species of Mollusca, several, which are familiar to continental authors under other names, are there enumerated under the specific appellations by which they had originally been described by Montagu and other authors. In order to prevent mistakes I add a concordance of such Mediterranean species as are now identified with described British forms, or have received new names in consequence of their old ones having been preoccupied.

Doris coccinea, Forbes = *Doris argo* of many British authors.
Bulla truncata, Adams = *B. semisulcata*, Philippi.
Eulima subulata (Turbo, sp.), Donovan = *Melania Cambessedesii*, Payraudeau.
Eulima polita (Helix, sp.), Montagu = *Rissoa boscii*, Payraudeau.
Parthenia elegantissima (Turbo, sp.), Montagu = *Melania campanellæ*, Philippi.
Rissoa rubra (Turbo, sp.), Adams = *Rissoa fulva*, Michaud.
Rissoa reticulata (Turbo, sp.), Montagu = *Rissoa reticulata*, Philippi.
Rissoa conifera (Turbo, sp.), Montagu = *Rissoa Brugieri*, Payraudeau.
Rissoa striata (Turbo, sp.), Adams = *Rissoa minutissima*, Michaud.
Pleurotoma gracilis (Murex, sp.), Montagu = *Pleurotoma suturale*, Bronn.
Pleurotoma attenuata (Murex, sp.), Montagu = *Pleurotoma gracile*, Philippi.
Fusus muricatus (Murex, sp.), Montagu = *Fusus echinatus*, Philippi.
Ligula sicula (Amphidesma, sp.), Sowerby = *Lutraria cottardi*, Payraudeau.
Ligula boysii, Montagu = *Erycina renieri*, Bronn.
Kellia suborbicularis (Mya, sp.), Montagu = *Bornia inflata*, Philippi.
Lyonsia striata (Mya, sp.), Montagu = *Pandorina coruscans*, Philippi.
Lucina flexuosa (Venus, sp.), Montagu = *Ptychina biplicata*, Philippi.
Lucina spinifera (Venus, sp.), Montagu = *Lucina hiatelloides*, Basterot.
Venus ovata, Montagu = *Venus radiata*, Brocchi.
Venus fasciata, Montagu = *Venus Brongniarti*, Payraudeau.
Modiola marmorata, Forbes = *Modiola discors* of British authors.
Lima subauriculata, Montagu = *Lima nivea*, Risso.

P.S. Since the Report was read and the preceding papers laid before the British Association at Cork, an additional and extensive set of researches with the dredge in various parts of the Archipelago, including the shores of Crete, have been forwarded to the reporter by Captain Graves, R.N., having been obtained by that distinguished officer and the officers of Her Majesty's surveying vessel Beacon during 1843. It is no small satisfaction to be able to state, that they fully confirm the inferences and observations embodied in this Report. E. F.