

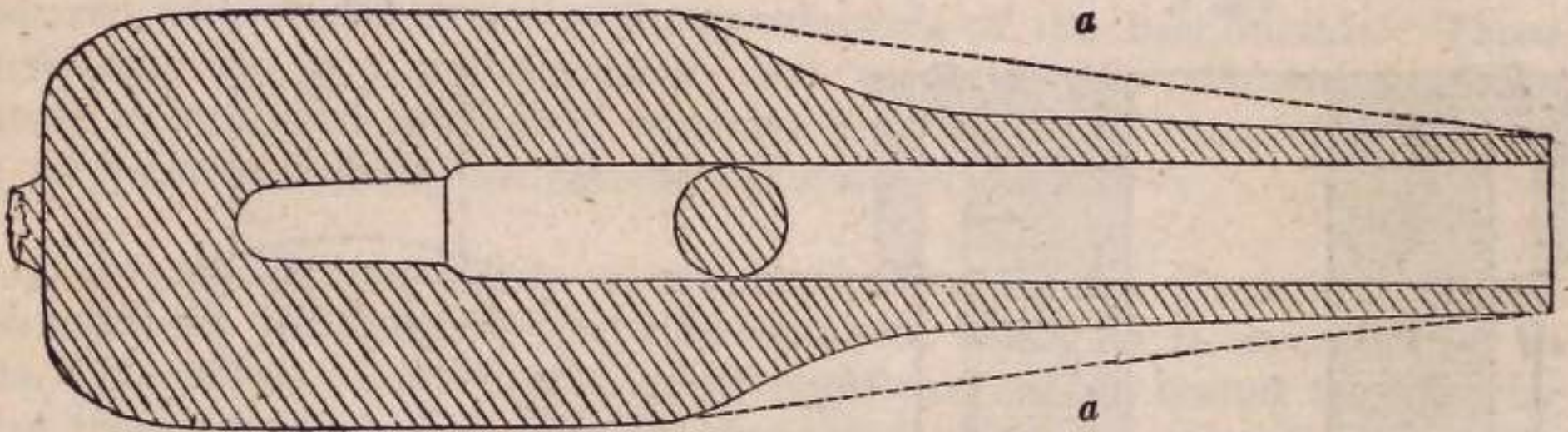
the trunnions slabbed longitudinally and ringed as shown. Mr. Handyside adopted this method in order to make use of wrought iron, as he conceives that they could not be made of it entire. He was led to this plan by having successfully made in this way an hydraulic press cylinder after a cast one had broken. The forged one has stood for six years and is still sound. Others made since in the same way have been equally successful.

It is questionable whether any built gun can long resist the violence of the explosion, and we believe that wrought iron is not the best material for heavy ordnance. Nevertheless, in our opinion, Mr. Handyside's gun and mortar are constructed on a better principle than most we have yet seen.

Extracts from a letter from Mr. Cochran addressed to Mr. Fairbairn.  
Without date.

Mr. Cochran attributes the failures of ordnance of the present day to the inferiority of the metal and to the defective manner of casting. He would obviate the first by the use of iron from the Acadian mines of Nova Scotia, which he states to be equal if not superior to the celebrated Swedish metal,

Fig. 7.



Gun as now adopted in the United States—from a drawing sent by Mr. Cochran.  
We think it would be improved if the metal were filled up as far as the dotted lines *a a*.

and is used extensively by the Government of the United States for artillery. The defective mode of casting he would remedy by the use of the water core which he has invented. He encloses the ordinary mould in a case of non-conducting materials so thick as entirely to prevent the passage of heat from the exterior of the casting. To accelerate the cooling on the interior of the casting he uses a hollow core through which he can draw a stream of water or current of air at pleasure.

*On Typical Objects in Natural History.*

[Circular.]

DEAR SIR,

Hitcham, Bildeston, Suffolk,  
June 1855.

To secure materials for a Report called for by the Natural History Section of the British Association "On a Typical Series of Objects in Natural History adapted to local Museums," I would thank the Members of the Committee to furnish me with the names and addresses of Naturalists whom they know to have paid special attention to particular groups in either the animal, vegetable, or mineral kingdoms. I will then request these parties, as I now do the Members of the Committee, to send me their opinion of

what objects they regard as *most typical* of those groups and their principal subdivisions. May I request that returns be made as speedily as convenient, and that they be not delayed beyond the end of this month, or at furthest the middle of the next?

As an example of what may be considered sufficient for the purpose intended, I here subjoin the information afforded me by Mr. Darwin, whose close study of the Cirripedia has rendered him so competent a judge of what may be regarded as the most typical species of this group of animals.

J. S. HENSLOW.

[N.B.—The list referred to is inserted under *Crustacea*.]

P.S. I would further suggest, that where the *best* type is not a British object, some British species *in addition* (the more common the better), belonging to the same group, should be named. These, being superadded to the typical series, will point out the full extent to which the groups illustrated occur in Britain.

In regard to typical objects for a geological series, I would suggest some such formula as the following to be filled up and forwarded:—

Under each formation, its—

I. Lithology.

1. Typical rock specimens (*ex. gr.* from Red Crag):—

- (1) Comminuted shells, more or less cemented by oxide of iron.
- (2) Detrital materials from the lower beds, viz. rolled and altered fragments of *Septaria*, phosphate nodules, and a few characteristic fossils from London Clay, from Coralline Crag, &c.

2. Simple minerals frequently associated with the rock series (*ex. gr.* from London Clay):—

Gypsum (crystals), Iron Pyrites (nodules).

3. Illustrations of volcanic agency:—

- (1) Rocks ejected during the period.
- (2) Rocks modified by eruptions subsequent to the period in question (*ex. gr.* coal charred, limestone crystallized, by incursion of trap in dykes subsequent to the consolidation of the coal-measures).

II. (Botany) FLORA.

Best examples for proving the fact, that either or each of the three Natural Classes have been met with in the formation illustrated:—

- (3) Acotyledones.
- (2) Monocotyledones.
- (1) Dicotyledones.

III. (Zoology) FAUNA.

One species of one or more genera characteristic of the formation in each Class, and its main subdivisions, as,

Classes or Subclasses.	Example of Subdivisions.
Amorphozoa.	
Foraminifera.	
Zoophyta.	{ Crinoïdea. Asteroïdea. Echinoïdea.
Echinodermata. . . . .	
-----	
Annelida.	
Crustacea. . . . .	Cirripedia.
Insecta.	

Bryozoa.  
 Brachiopoda.  
 Monomyaria.  
 Dimyaria.  
 Gasteropoda.  
 Pteropoda.  
 Cephalopoda.

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Pisces.  
 Reptilia.  
 Aves.  
 Mammalia.

The following Report, with the Lists received, were presented at the Glasgow meeting:—

THE late lamented Prof. E. Forbes devoted his Introductory Lecture\* at the Museum of Practical Geology, in 1853, to a consideration of the "Educational Uses" of Museums, and he has there commented, with some degree of severity, upon the very inefficient manner in which many local Museums are arranged. Without wishing to extend his censures to Curators who have devoted time and labour to the due arrangement of whatever objects have been placed under their care, we cannot help remarking how inefficient their exertions have proved in respect to the general "educational uses" to which they might have been rendered subservient. Great care may often have been bestowed in displaying numerous species belonging to one or more favourite groups, whilst many others, more or less extensive (tribes, orders, and even classes) among animals, plants, and minerals, are entirely unrepresented.

Although our great National Establishments in London are adapted for displaying a large proportion of all procurable objects of natural history, it would require larger funds than local Museums are likely to command, to adopt the plan which they follow. But it is within the power of every Museum, however humble its pretensions, to procure and display such instructive series of objects as may bring the entire range of natural history in a forcible manner before the attention of the public. Wherever a specimen of some species regarded as a sufficient type of a particular group cannot be conveniently procured, then a model, a drawing, or a tracing from some published figure may be introduced as a substitute. Naturalists often differ in regard to what species they consider the best representatives of certain groups; but still, the judgement of Curators would be greatly assisted in making choice of objects for public display, if they were furnished with lists of types selected by naturalists who had paid special attention to particular groups. If they considered it the primary object of their duty to secure specimens of as many of these types as possible, and to obtain representations (models or figures) of whatever they could not procure, they would possess a basis on which to ground their arrangement of whatever else their Museums contained. There would no longer be great gaps in the general

\* On the Educational Uses of Museums (a pamphlet of 19 pp.), by Edw. Forbes, F.R.S. &c. Longman and Co., 1853.

series; but good types of all the main groups in the three great kingdoms of nature would be publicly displayed.

Frequent additions to a general collection necessitate continual rearrangements among the objects deposited in Museums; but a set of horizontal cases on the floor may be advantageously appropriated to the display of the selected types. These will form a sort of "Typical Epitome" of natural history, distinct from the rest of the collection. This Epitome will serve as a general index to the whole; and where a typical specimen (from size or other consideration) could not be ranged in the horizontal cases, a model or figure would occupy its place, accompanied by a reference to the spot where (if it be in the Museum) it may be seen. By a little tact and contrivance, such a Typical Epitome may be reduced within a narrow compass. Very limited Museums might advantageously restrict their collections to little more than a general typical series; always excepting those special collections which are to illustrate the natural history of their own neighbourhoods.

Perhaps the plan of a general circular inviting naturalists to cooperate in furnishing typical series for the departments with which they happen to be best acquainted, has not been so successful as a more special application to individual Members of the Association might have proved. A few, however, have kindly favoured us with lists, and the publication of these may probably prevail with others to assist in completing a scheme which the Natural History Section has twice sanctioned, and which partial experience has proved to be of considerable utility. No Curator can be equally competent in all departments of natural history, to select the types best adapted for illustrating the principal groups\* in which genera are ranged.

## ANIMAL KINGDOM.

N.B.—In the present imperfect state of the returns, the divisions into Classes, Orders, &c. are retained as the respective authors have employed these terms.

### Class MAMMALIA.

No list sent in.

### Class AVES.

The types are selected for groups nearly according with the arrangement of Mr. G. R. Gray. List supplied by Philip Lutley Sclater, Esq.

#### Ordo I. ACCIPITRES.

- |                    |                                    |    |
|--------------------|------------------------------------|----|
| 1. Vulturidæ ..... | <i>Neophron percnopterus</i> ..... | B. |
| 2. Falconidæ ..... | <i>Falco peregrinus</i> .....      | B. |
| 3. Strigidæ .....  | <i>Strix flammea</i> .....         | B. |

\* Great service will be rendered, if those who furnish the lists, will, as far as possible, give references to good figures of the types selected. A (B) should be placed after such species as occur in Britain.

## Ordo II. PASSERES.

## a. FISSIROSTRES.

- |                      |                                   |    |
|----------------------|-----------------------------------|----|
| 4. Caprimulgidæ..... | <i>Caprimulgus europæus</i> ..... | B. |
| 5. Hirundinidæ ..... | <i>Hirundo rustica</i> .....      | B. |
| 6. Coraciadæ .....   | <i>Coracias garrula</i> .....     | B. |
| 7. Todidæ .....      | <i>Todus viridis.</i>             |    |
| 8. Momotidæ .....    | <i>Momotus brasiliensis.</i>      |    |
| 9. Trogonidæ.....    | <i>Trogon curucui.</i>            |    |
| 10. Alcedinidæ.....  | <i>Alcedo ispida</i> .....        | B. |
| 11. Galbulidæ .....  | <i>Galbula viridis.</i>           |    |
| 12. Meropidæ .....   | <i>Merops apiaster</i> .....      | B. |
| 13. Bucerotidæ.....  | <i>Buceros rhinoceros.</i>        |    |

## b. TENUIROSTRES.

- |                       |                                 |    |
|-----------------------|---------------------------------|----|
| 14. Upupidæ .....     | <i>Upupa epops</i> .....        | B. |
| 15. Promeropidæ ..... | <i>Nectarinia senegalensis.</i> |    |
| 16. Cærebidæ .....    | <i>Cæreba cærulea.</i>          |    |
| 17. Trochilidæ .....  | <i>Trochilus colubris.</i>      |    |
| 18. Meliphagidæ ..... | <i>Meliphaga phrygia.</i>       |    |
| 19. Certhiidæ .....   | <i>Certhia familiaris</i> ..... | B. |

## c. DENTIROSTRES.

- |                       |                                |    |
|-----------------------|--------------------------------|----|
| 20. Sylviidæ .....    | <i>Sylvia luscinia</i> .....   | B. |
| 21. Turdidæ .....     | <i>Turdus viscivorus</i> ..... | B. |
| 22. Muscicapidæ ..... | <i>Muscicapa grisola</i> ..... | B. |
| 23. Ampelidæ .....    | <i>Ampelis garrula</i> .....   | B. |
| 24. Laniidæ .....     | <i>Lanius excubitor</i> .....  | B. |

## d. CONIROSTRES.

- |                       |                               |    |
|-----------------------|-------------------------------|----|
| 25. Corvidæ .....     | <i>Corvus corax</i> .....     | B. |
| 26. Paradiseidæ ..... | <i>Paradisea apoda.</i>       |    |
| 27. Sturnidæ.....     | <i>Sturnus vulgaris</i> ..... | B. |
| 28. Fringillidæ ..... | <i>Fringilla cælebs</i> ..... | B. |

## Ordo III. SCANSORES.

- |                       |                             |    |
|-----------------------|-----------------------------|----|
| 29. Psittaciidæ ..... | <i>Psittacus erithacus.</i> |    |
| 30. Ramphastidæ ..... | <i>Ramphastos toco.</i>     |    |
| 31. Capitonidæ.....   | <i>Capito cayanensis.</i>   |    |
| 32. Picidæ .....      | <i>Picus major</i> .....    | B. |
| 33. Cuculidæ .....    | <i>Cuculus canorus.</i>     | B. |
| 34. Musophagidæ.....  | <i>Musophaga violacea.</i>  |    |

## Ordo IV. COLUMBÆ.

- |                    |                               |    |
|--------------------|-------------------------------|----|
| 35. Columbidæ..... | <i>Columba palumbus</i> ..... | B. |
|--------------------|-------------------------------|----|

## Ordo V. GALLINÆ.

- |                      |                                  |    |
|----------------------|----------------------------------|----|
| 36. Cracidæ .....    | <i>Crax alector.</i>             |    |
| 37. Megapodidæ ..... | <i>Megapodius lapeyrousi.</i>    |    |
| 38. Phasianidæ.....  | <i>Phasianus colchicus</i> ..... | B. |
| 39. Tetraonidæ.....  | <i>Tetrao tetrix</i> .....       | B. |
| 40. Chionididæ.....  | <i>Chionis alba.</i>             |    |
| 41. Tinamidæ .....   | <i>Tinamus major.</i>            |    |

## Ordo VI. STRUTHIONES.

42. Struthionidæ . . . . . *Struthio camelus*.  
 43. Apterygidæ . . . . . *Apteryx australis*.

## Ordo VII. GRALLÆ.

44. Otididæ . . . . . *Otis tarda* . . . . . B.  
 45. Charadriidæ . . . . . *Charadrius pluvialis* . . . . . B.  
 46. Gruidæ . . . . . *Grus cinerea* . . . . . B.  
 47. Ardeidæ . . . . . *Ardea cinerea* . . . . . B.  
 48. Scolopaciidæ . . . . . *Scolopax rusticola* . . . . . B.  
 49. Palamedeidæ . . . . . *Palamedea cornuta* . . . . . B.  
 50. Rallidæ . . . . . *Rallus aquaticus* . . . . . B.

## Ordo VIII. ANSERES.

51. Anatidæ . . . . . *Anas boschas* . . . . . B.  
 52. Colymbidæ . . . . . *Podiceps minor* . . . . . B.  
 53. Alcidæ . . . . . *Utamania torda* . . . . . B.  
 54. Procellariidæ . . . . . *Procellaria pelagica* . . . . . B.  
 55. Laridæ . . . . . *Larus canus* . . . . . B.  
 56. Pelecanidæ . . . . . *Phalacrocorax carbo* . . . . . B.

## Class REPTILIA.

No list sent in.

## Class PISCES.

No typical series sent in; but Jonathan Couch, Esq. has furnished the following list of British Fish, which he considers may be useful to local Museums, as they can all be procured at small expense.

Blue Shark, *Carcharias glaucus*, or else the Toper, *Galerius vulgaris*.

Picked Dog, as an example of such as have spines on the back.

Nursehound, *Scyllium Catulus*, as one of the Ground Sharks.

Porbeagle, as one of the class that bears a ridge on the side near the tail.

The Common Skate, or the Thornback; and for examples of variations in the teeth, as being conspicuous objects of distinction among Sharks and Rays, the jaws should be exhibited separately. A complete series of them from all the British species of these two subfamilies would be very instructive, and might be easily obtained.

As aberrant genera, the Monk, Torpedo, and Sting-ray.

The Perch, or Bass.

Smooth Serranus, for those with a single dorsal fin and serrated gill-covers.

The greater Weaver.

Surmullet.

Common Gurnard; the mailed Gurnard for an aberrant type.

Common Cottus and armed Bullhead.

Of Sticklebacks; the fifteen-spined should be preferred, as being easy to be procured, and more easily examined than the smaller species.

The Common Sea Bream. Ray's Bream.

Common Mackerel, or else the Tunny. Scad.

Doree.

Red Band-fish.

Grey Mullet.

Common Blenny. Wolf-fish. Gattorugine. Butter-fish.

Rock Goby.

Either of the Callionymi, but *C. Lyra* in preference.

Angler.

Ballan Wrass, and as an example of the Wrass tribe with serrated gill-covers, the Corkwing. The Cook also would be desirable, as displaying beauty of colouring; which by art may be preserved from fading.

I pass over the freshwater fishes, to name the Gar-fish, and its congener, the Skopster.

Flying-fish, and in preference the *Exocetus exiliens*, as being perhaps the only species ever yet found in our seas.

Herring or Pilchard.

Cod-fish.

Coal-fish.

Hake, Rockling, for aberrant genera.

The Plaice, or Flounder, looking to the right.

Brill, looking to the left. *Rhombus hirtus*, as possessing peculiarities of form, roughness of skin, and remarkable position of the dorsal fin.

The Sole, showing an elongated form.

The Lump-fish, and any of the smaller species in spirit.

The Remora, as displaying a variation in the mode of forming adhesion (which may be illustrated by another method of doing the same thing, although with a very different object, in the Sea Lamprey).

The Common Eel, or Conger.

The larger Launce.

*Syngnathus acus*, for the subfamily with tail and pectoral fin, bearing its young in a pouch; and *S. Ophidion*, not having these fins, and bearing its ova adhering to the belly.

Sun-fish.

## MOLLUSCA.

The following list, from Cephalopoda to Tunicata, has been supplied by S. P. Woodward, Esq.

### Classis I. CEPHALOPODA.

Best example, SPIRULA.

#### Ordo I. DIBRANCHIATA.

(Onychoteuthis or Ommastrephes.)

Fam. 1.	Argonautidæ ..	<i>Argonauta argo</i> .	
2.	Octopodidæ....	<i>Octopus vulgaris</i> .....	B.
3.	Teuthidæ ....	<i>Loligo vulgaris</i> .....	B.
4.	Belemnitidæ ..	<i>Belemnites Oweni</i> ....	B.
5.	Sepiadæ .....	<i>Sepia officinalis</i> .....	B.
6.	Spirulidæ ....	<i>Spirula Peronii</i> .....	B.

#### Ordo II. TETRABRANCHIATA. (Orthoceras.)

Fam. 1.	Nautilidæ ....	<i>Nautilus pompilius</i> .	
2.	Orthoceratidæ..	<i>Actinoceras giganteum</i>	B.
3.	Ammonitidæ ..	<i>Ammonites Jason</i> ....	B.

### Classis II. GASTEROPODA.

(*Turbo marmoratus*.)

#### Ordo I. NUCLEOBRANCHIATA. (Carinaria.)

Fam. 1.	Firolidæ .....	<i>Firola coronata</i> .	
2.	Atlantidæ ....	<i>Atlanta Peronii</i> .	

## Ordo II. PROSOPOBRANCHIATA. (Buccinum and Turbo.)

Fam. 1.	Strombidæ . . . .	<i>Strombus giganteus.</i>	
2.	Buccinidæ . . . .	<i>Buccinum undatum.</i>	. . . . B.
3.	Conidæ . . . . .	<i>Conus marmoreus.</i>	
4.	Volutidæ . . . . .	<i>Voluta musica.</i>	
5.	Cypræidæ . . . .	<i>Cypræa tigris.</i>	
6.	Naticidæ . . . . .	<i>Natica millepunctata.</i>	
7.	Cancellariadæ . .	<i>Trichotropis borealis</i>	. . B.
8.	Pyramidellidæ . .	<i>Pyramidella dolabrata.</i>	
9.	Calyptræidæ . .	<i>Calyptræa sinensis</i>	. . . . B.
10.	Ianthinidæ . . . .	<i>Ianthina exigua</i>	. . . . . B.
11.	Turritellidæ . . . .	<i>Turritella communis</i>	. . B.
12.	Cerithiadæ . . . .	<i>Cerithium vulgatum.</i>	
13.	Melaniadæ . . . .	<i>Melania inguinata.</i>	
14.	Litorinidæ . . . .	<i>Litorina liorea</i>	. . . . . B.
15.	Paludinidæ . . . .	<i>Paludina vivipara</i>	. . . . B.
16.	Turbinidæ . . . .	<i>Trochus Zizyphinus</i>	. . B.
17.	Haliotidæ . . . .	<i>Haliotis tuberculata</i>	. . B.
18.	Fissurellidæ . .	<i>Fissurella reticulata</i>	. . B.
19.	Neritidæ . . . . .	<i>Nerita peloronta.</i>	
		( <i>Neritina fluviatilis</i>	. . B.)
20.	Patellidæ . . . . .	<i>Patella vulgata</i>	. . . . . B.
21.	Dentaliadæ . . . .	<i>Dentalium Tarentinum</i>	B.
22.	Chitonidæ . . . .	<i>Chiton levis</i>	. . . . . B.

Ordo III. PULMONIFERA. (a great *Bulimus* or *Achatina*.)

## §§ 1. Inoperculata.

Fam. 1.	Helicidæ . . . . .	<i>Helix pomatia</i>	. . . . . B.
2.	Limacidæ . . . .	<i>Limax antiquorum</i>	. . . . B.
3.	Oncidiadæ . . . .	<i>Oncidium celticum</i>	. . . . B.
4.	Limneidæ . . . .	<i>Limnæa stagnalis</i>	. . . . B.
5.	Auriculidæ . . . .	<i>Conovulus denticulatus</i>	B.

## §§ 2. Operculata.

6.	Cyclostomidæ . .	<i>Cyclostoma elegans</i>	. . . . B.
7.	Aciculidæ . . . .	<i>Acicula fusca</i>	. . . . . B.

## Ordo IV. OPISTHOBRANCHIATA. (Aplysia.)

## §§ 1. Tectibranchiata.

Fam. 1.	Tornatellidæ . .	<i>Tornatella fasciata</i>	. . . . B.
2.	Bullidæ . . . . .	<i>Bulla hydatis</i>	. . . . . B.

## §§ 2. Inferobranchiata.

Fam. 3.	Aplysiadæ . . . .	<i>Aplysia hybrida</i>	. . . . . B.
4.	Pleurobranchidæ	<i>Pleu. membranaceus</i>	. . B.
5.	Phyllidiadæ . . .	<i>Diphyllidia lineata</i>	. . . . B.

## §§ 3. Nudibranchiata.

Fam. 6.	Doridæ . . . . .	<i>Doris tuberculata</i>	. . . . . B.
7.	Tritoniadæ . . . .	<i>Tritonia Hombergi</i>	. . . . B.
8.	Æolidæ . . . . .	<i>Æolis papillosa</i>	. . . . . B.
9.	Phyllirhoïdæ . .	<i>Phyllirhoa bucephala.</i>	
10.	Elysiadæ . . . . .	<i>Elysia viridis</i>	. . . . . B.



## Classis III. PTEROPODA.

## Ordo 5. APOROBANCHIATA. (Cleodora.)

Fam. 1.	Hyaleidæ ....	<i>Hyalea telemus.</i>
2.	Limacinidæ....	<i>Limacina arctica.</i>
3.	Cliidæ .....	<i>Clio borealis.</i>

## Classis IV. ACEPHALA. (Cytherea, Chione.)

## Classis V. CONCHIFERA.

## Ordo I. LAMELLIBRANCHIATA.

## §§ 1. Asiphonida.

Fam. 1.	Pectinidæ ....	<i>Pecten maximus</i> .....	B.
2.	Ostreidæ .....	<i>Ostrea edulis</i> .....	B.
3.	Aviculidæ ....	<i>Avicula margaritifera.</i>	
4.	Mytilidæ .....	<i>Mytilus edulis</i> .....	B.
5.	Arcadæ .....	<i>Arca Noë.</i>	
6.	Nuculidæ.....	<i>Nucula nucleus</i> .....	B.
7.	Trigoniadæ ....	<i>Trigonia clavellata</i> ....	B.
8.	Unionidæ.....	<i>Unio pictorum</i> .....	B.

## §§ 2. Integropallialia.

9.	Chamidæ.....	<i>Chama macrophylla.</i>	
10.	Hippuritidæ ..	( <i>Caprotina semistriata</i> .)	
11.	Tridacnidæ ....	<i>Tridacna gigas.</i>	
12.	Cardiadæ.....	<i>Cardium (echinatum)</i> ..	B.
13.	Lucinidæ.....	<i>Lucina borealis</i> .....	B.
14.	Astartidæ ....	<i>Astarte sulcata</i> .....	B.
15.	Cyprinidæ ....	<i>Cyprina Islandica</i> ....	B.

## §§ 3. Sinupallialia.

16.	Veneridæ ....	<i>Cytherea chione</i> .....	B.
17.	Mactridæ ....	<i>Mactra stultorum</i> ....	B.
18.	Tellinidæ ....	<i>Tellina (crassa)</i> .....	B.
19.	Solenidæ.....	<i>Solen ensis</i> .....	B.
20.	Myacidæ.....	<i>Mya arenaria</i> .....	B.
21.	Anatinidæ ....	( <i>Thracia pubescens</i> ) ..	B.
22.	Gastrochænidæ	<i>Gastrochæna modiolina</i>	B.
23.	Pholadidæ ....	<i>Pholas dactylus</i> .....	B.

## Classis VI. BRACHIOPODA.

## Ordo II. PALLIOBRANCHIATA.

Fam. 1.	Terebratulidæ..	<i>Terebratula caput-ser-</i> <i>pentis</i> .....	B.
2.	Spiriferidæ ....	<i>Spirifera striata</i> .....	B.
3.	Rhynchonellidæ	<i>Rhynchonella psittacea</i>	B.
4.	Orthisidæ .....	<i>Orthis resupinata</i> ....	B.
5.	Productidæ....	<i>Producta gigantea</i> ....	B.
6.	Craniadæ ....	<i>Crania anomala</i> ....	B.
7.	Discinidæ ....	<i>Discina lamellosa.</i>	
8.	Lingulidæ ....	<i>Lingula anatina.</i>	

## Classis VII. TUNICATA.

## Ordo III. HETEROBRANCHIATA, Bl.

- |                         |                                      |    |
|-------------------------|--------------------------------------|----|
| 1. Ascidiadæ . . . . .  | <i>Ascidium intestinale</i> ..       | B. |
| 2. Clavellinidæ ..      | <i>Clavellina lepadiformis</i>       | B. |
| 3. Botryllidæ . . . . . | <i>Botryllus violaceus</i> . . . . . | B. |
| 4. Pyrosomidæ ..        | <i>Pyrosoma atlanticum</i> .         |    |
| 5. Salpidæ . . . . .    | <i>Salpa democratica</i> .           |    |

*Mollusca* (continued).—G. Busk, Esq. has furnished the following list for the lower groups of Mollusca.

## Classis POLYZOA.

## Ordo I. P. INFUNDIBULATA.

## Subordo I. CHEILOSTOMATA. (Celleporina.)

§ A. *Polyzoarium articulated.*§§ a. *Uniserial.*

- |                                 |                              |  |
|---------------------------------|------------------------------|--|
| Fam. 1. Catenicellidæ . . . . . | <i>Catenicella hastata</i> . |  |
|---------------------------------|------------------------------|--|

§§ b. *Bi-multiserial.*

- |                                  |                                      |    |
|----------------------------------|--------------------------------------|----|
| Fam. 2. Salicornariadæ . . . . . | <i>Salicornaria farciminoïdes</i> .. | B. |
| 3. Cellulariadæ . . . . .        | <i>Cellularia Peachii</i> . . . . .  | B. |

§ B. *Polyzoarium not articulated, but continuous throughout.*§§ a. *Uniserial.*

- |                               |                                    |    |
|-------------------------------|------------------------------------|----|
| Fam. 4. Scrupariadæ . . . . . | <i>Scruparia chelata</i> . . . . . | B. |
|-------------------------------|------------------------------------|----|

§§ b. *Bi-multiserial.*

- |                           |   |    |
|---------------------------|---|----|
| Fam. 5. Farciminariadæ .. | <i>Farciminaria aculeata</i> .                        |    |
| 6. Gemellariadæ . . . . . | <i>Gemellaria loricata</i> . . . . .                  | B. |
| 7. Cabereadæ . . . . .    | <i>Caberea Hookeri</i> . . . . .                      | B. |
| 8. Bicellariadæ . . . . . | <i>Bicellaria ciliata</i> . . . . .                   | B. |
| 9. Flustradæ . . . . .    | <i>Flustra foliacea</i> . . . . .                     | B. |
| 10. Membraniporadæ ..     | <i>Membranipora membrana-</i><br><i>cea</i> . . . . . | B. |
|                           | <i>Lepralia auriculata</i> . . . . .                  | B. |
| 11. Celleporadæ . . . . . | <i>Cellepora pumicosa</i> . . . . .                   | B. |
| 12. Escharadæ . . . . .   | <i>Eschara foliacea</i> . . . . .                     | B. |
| 13. Vinculadæ . . . . .   | <i>Vincularia ornata</i> .                            |    |
| 14. Selenariadæ . . . . . | <i>Cupularia Lowei</i> .                              |    |

## Subordo II. CYCLOSTOMATA. (Tubuliporina.)

§ 1. *Erect, not adnate.*

§§ a. *Articulated, or having the polyzoary divided into internodes united by flexible joints.*

- |                            |                                 |    |
|----------------------------|---------------------------------|----|
| Fam. 1. Crisiadæ . . . . . | <i>Crisia eburnea</i> . . . . . | B. |
|----------------------------|---------------------------------|----|

§§ b. *Polyzoary continuous throughout.*

- |                             |                                      |    |
|-----------------------------|--------------------------------------|----|
| Fam. 2. Idmoneadæ . . . . . | <i>Idmonea atlantica</i> . . . . .   | B. |
|                             | <i>Pustulipora deflexa</i> . . . . . | B. |

§ 2. *Decumbent, more or less adnate.*

Fam. 3. Alectoadae . . . . .	<i>Alecto granulata</i> . . . . .	B.
4. Tubuliporadae . . . . .	<i>Tubulipora serpens</i> . . . . .	B.
5. Discoporadae . . . . .	<i>Discopora patina</i> . . . . .	B.

## Subordo III. CTENOSTOMATA. (Vesicularina.)

§ 1. *Corneous; the polyzoary composed of a horny substance, sometimes containing earthy matter.*

Fam. 1. Vesiculariadae . . . . .	<i>Serialaria lendigera</i> . . . . .	B.
2. Farelladae . . . . .	<i>Bowerbankia imbricata</i> . . . . .	B.

§ 2. *Carnose; the polyzoary composed of a fleshy or semigelatinous substance.*

Fam. 3. Alcyoniadae . . . . .	<i>Alcyonium gelatinosum</i> . . . . .	B.
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## Subordo IV. PEDICELLINEA.

Fam. 1. Pedicellinidae . . . . .	<i>Pedicellina echinata</i> . . . . .	B.
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## Ordo II. P. HIPPOCREPIA.

§ 1. *Lophophore bilateral; mouth furnished with a valve.*§§ a. *Free, locomotive.*

Fam. 1. Cristatellidae . . . . .	<i>Cristatella mucedo</i> . . . . .	B.
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§§ b. *Rooted.*

Fam. 2. Plumatellidae . . . . .	<i>Alcyonella fungosa</i> . . . . .	B.
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§ 2. *Lophophore orbicular, mouth destitute of a valve.*

Fam. Paludicellidae . . . . .	<i>Paludicella Ehrenbergi</i> . . . . .	B.
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*Arachnida*.—R. H. Meade, Esq., has forwarded the list for this group.

## Ordo I. ARANEIDEA.

## Tribus OCTONOCULINA.

*Epeira diadema* (best type for the whole order).

Fam. I. Mygalidae (Latebricolae)	<i>Mygale avicularia</i> .	
II. Lycosidae (Cursores) ..	<i>Lycosa tarantula</i> .	
	( <i>Lycosa saccata</i> ) . . . . .	B.
III. Salticidae . . . . .	<i>Salticus scenicus</i> . . . . .	B.
IV. Thomisidae (Laterigradae)	<i>Thomisus cristatus</i> . . . . .	B.
V. Drassidae (Niditelae) ..	<i>Clubiona holosericea</i> . . . . .	B.
VI. Agelenidae (Tassitelae)	<i>Agelena labyrinthica</i> . . . . .	B.
VII. Theridiidae . . . . .	<i>Theridion nervosum</i> . . . . .	B.
VIII. Linyphiidae (Retitelae)	<i>Linyphia montana</i> . . . . .	B.
IX. Epeiridae (Orbitelae) ..	<i>Epeira diadema</i> . . . . .	B.

## Tribus SENOCULINA.

Fam. X. Dysderidae (Tubicolae)	<i>Dysdera erythrina</i> . . . . .	B.
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## Ordo II. PHRYNEIDEA.

*Phrynus lunatus*.

## Ordo III. SCORPIONIDEA.

Fam. I. Scorpionidae . . . . .	<i>Scorpio Europaeus</i> .	
II. Buthides . . . . .	<i>Buthus afer</i> .	
III. Centruroides . . . . .	<i>Centruroides gallineus</i> .	
IV. Androctonides . . . . .	<i>Androctonus bicolor</i> .	

## Subordo I. THELYPHONIDÆ.

*Thelyphonus caudatus.*

## Subordo II. PSEUDO-SCORPIONIDÆ.

*Chelifera cancrivora* ..... B.

## Ordo IV. PHALANGIDEA.

Fam. I. Solpugiidæ .....	<i>Galeodes araneoides.</i>	
II. Phalangiidæ .....	<i>Phalangium parietinum</i> ....	B.
III. Troguliidæ .....	<i>Trogulus nepesiformis</i> .....	B.?
IV. Gonyleptiidæ .....	<i>Gonyleptes horridus.</i>	
V. Sironidæ .....	<i>Siro rubens</i> .....	B.

## Ordo V. ACARIDEA.

Fam. I. Trombidiadæ .....	<i>Trombidium holosericeum</i> ..	B.
II. Gamasidiæ.....	<i>Gamasus coleopratorum</i> ..	B.
III. Acariidæ .....	<i>Acarus domesticus</i> .....	B.
IV. Ixodiidæ .....	<i>Ixodes Ricinus</i> .....	B.
V. Cheyletiidæ .....	<i>Sarcoptes Scabiei</i> .....	B.
VI. Hydrachnidæ .....	<i>Limnochares holosericea</i> ....	B.

## CRUSTACEA.

The following list of the Podophthalma is furnished by T. Bell, Esq., President of the Linnean Society.

## Subclassis PODOPHTHALMA.

## Ordo DECAPODA.

## Subordo BRACHYURA.

Fam. Leptopodiadæ .....	<i>Leptopodia sagittaria.</i> ( <i>Stenorynchus Phalangium</i> )	B.
Maiadæ .....	<i>Maia Squinado</i> .....	B.
Parthenopidæ .....	<i>Parthenope horrida.</i>	
Canceridæ .....	<i>Eurynome aspera</i> .....	B.
Subfam. Cryptopodia ( <i>Æthrina</i> )	<i>Æthra scruposa.</i>	
Arcuata ( <i>Cancerina</i> ) ..	<i>Cancer Pagurus</i> .....	B.
Quadrilatera ( <i>Eriphina</i> )	<i>Eriphia spinifrons.</i>	
Fam. Portunidæ .....	<i>Portunus puber</i> .....	B.
Thelphusidæ .....	<i>Thelphusa fluviatilis.</i>	
Gecarcinidæ .....	<i>Gecarcinus ruricola.</i>	
Pinnotheridæ .....	<i>Pinnotheres Pisum</i> .....	B.
Ocypodidæ .....	<i>Ocypode Ippeus.</i> ( <i>Gelasimus vocans</i> ).	
Gonoplacidæ .....	<i>Gonoplax angulata</i> .....	B.
Grapsidæ.....	<i>Grapsus pictus.</i> ( <i>Nautilograpsus minutus</i> )	B.
Leucosiadæ.....	<i>Leucosia Urania.</i> (Aberrans.) <i>Ebalia Pennantii</i> ..	B.
Calappadæ .....	<i>Calappa granulata.</i> (Aberrans.) <i>Matuta Victor.</i>	
Corystidæ .....	<i>Corystes Cassivelaninus</i> ..	B.
Dorippidæ .....	<i>Dorippe quadridentata.</i>	

## Subordo ANOMOURA.

Fam. Dromiadae .....	<i>Dromia vulgaris</i> .....	B.
Homoladae .....	<i>Homola spinifrons</i> .	
	<i>Lithodes arctica</i> .....	B.
Raninadae .....	<i>Ranina dentata</i> .	
Hippadae .....	<i>Remipes testudinarius</i> .	
Paguridae .....	<i>Pagurus Bernhardus</i> ....	B.
	(Abertrans.) <i>Birgus Latro</i> .	
Subfam. Porcellanidae .....	<i>Porcellana violacea</i> .	
Porcellanina .....	<i>Porcellana platycheles</i> ....	B.
Galatheina .....	<i>Galathea strigosa</i> .....	B.

## Subordo MACROURA.

Fam. Scyllaridae .....	<i>Scyllarus arctus</i> .	
Palinuridae .....	<i>Palinurus vulgaris</i> .....	B.
Thalassinidae .....	<i>Thalassina scorpionides</i> .	
	<i>Gebia Deltura</i> .....	B.
Astacidae .....	<i>Astacus fluviatilis</i> .....	B.
Crangonidae .....	<i>Crangon borealis</i> .	
	<i>Crangon vulgaris</i> .....	B.
Alpheidae .....	<i>Alpheus bidens</i> .	
	<i>Alpheus ruber</i> .....	B.
Palemonidae .....	<i>Palemon Carcinus</i> .	
	<i>Palemon serratus</i> .....	B.
Penaeidae .....	<i>Penæus Caramote</i> .	
	<i>Penæus trisulcatus</i> .....	B.
Cumadae .....	<i>Cuma trispinosa</i> .....	B.

## Ordo STOMOPODA.

Fam. Mysidae .....	<i>Mysis Chamæleon</i> .....	B.
Leuciferidae .....	<i>Leucifer Typus</i> .	
Phyllosomatidae .....	<i>Phyllosoma laticorne</i> .	
Erichthidae .....	<i>Erichthus vitreus</i> .	
Squilladae .....	<i>Squilla Mantis</i> .....	B.

Dr. Baird furnishes the following list for Entomostraca.

## Divisio ENTOMOSTRACA.

## Legio I. BRANCHIOPODA.

## Ordo I. PHYLLOPODA.

<i>Apus Cancriformis</i> .....	B.
<i>Chirocephalus (Branchipus) diaphanus</i> .....	B.

## Legio II. LOPHYROPODA.

## Ordo I. OSTRACODA.

<i>Cypris vidua</i> ,	} fresh water .....	B.
<i>Candona reptans</i>		
<i>Cythere reniformis</i> , sea water .....		B.

## Ordo II. CLADOCERA.

<i>Daphnia quadricornis</i> .....	B.
<i>Chydorus (Lynceus) sphaericus</i> .....	B.

## Ordo III. COPEPODA.

<i>Cyclops vulgaris</i> .....	B.
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## Legio III. PÆCILOPODA.

## Ordo I. SIPHONOSTOMA.

<i>Argulus foliaceus</i> (on Stickleback).....	B.
<i>Caligus Mulleri</i> (on Cod) .....	B.
<i>Lepeophtheirus (Caligus) Stromii</i> (on Salmon)....	B.

## Ordo II. LERNÆIDÆ.

<i>Chondracanthus lophii</i> . .....	B.
<i>Lernæa branchialis</i> .....	B.

The following list for the Cirripedia is communicated by C. Darwin, Esq.

## Subclassis CIRRIPEDIA.

## Ordo I. THORACICA.

*Pollicipes mitella* (best type for the order).

Fam. 1. Balanidæ (sessile Cirripeds).

Subfam. 1. Balaninæ.....	<i>Balanus tintinnabulum</i> .	
	— <i>porcatus</i> .....	B.
2. Chthamalinæ .....	<i>Chthamalus stellatus</i> ..	B.
	<i>Catophragnus polymerus</i> (as connecting Balanidæ with Lepadidæ).	

Fam. 2. Verrucidæ .....

3. Lepadidæ (pedunculated Cirripeds) .....	<i>Verruca stromia</i> .....	B
	<i>Lepas anatifera</i> .....	B

## Ordo II. ABDOMINALIA.

*Cryptophialus minutus*.

## Ordo III. APODA.

*Proteolepas bivincta*.

## RADIATA.

Among these, G. Busk, Esq. has furnished the following list for the class Anthozoa.

## Classis ANTHOZOA.

## Subclassis I. A. HYDROIDA.

## Ordo I. TUBULARINA.

Fam. 1. Corynidæ .....	<i>Coryne pusilla</i> .....	B.
2. Tubulariadæ .....	<i>Tubularia indivisa</i> .....	B.

## Ordo II. SERTULARINA.

- Fam. 3. Sertulariadae . . . . . *Sertularia abietina* . . . . . B.  
*Phumularia cristata* . . . . . B.  
 4. Campanulariadae . . . . . *Laomedea dichotoma* . . . . . B.

## Ordo III. HYDRINA.

- Fam. 5. Hydroidae . . . . . *Hydra viridis, or vulgaris.* B.

## Subclassis II. A. ASTEROIDA.

- Fam. 1. Pennatulidae . . . . . *Pennatula phosphorea* . . . . . B.  
 2. Gorgoniadae . . . . . *Gorgonia verrucosa* . . . . . B.  
 3. Alcyonidae . . . . . *Alcyonium digitatum* . . . . . B.  
 4. Antipathidae . . . . . *Antipathes myriophylla* . . . . . B.

## Subclassis III. A. HELIANTHOIDA (Zoantharia).

## Ordo I. MALACODERMATA.

§ 1. *Polypes associated by a common base.*

- Fam. 1. Zoanthidae . . . . . *Zoanthus Couchii* . . . . . B.

§ 2. *Polypes separate.*

- Fam. 2. Actiniadae . . . . . *Actinia mesembryanthemum* B.  
 3. Lucernariadae . . . . . *Lucernaria auricula.*

## Ordo II. SCLERENCHYMATOSA. (Corals.)

## Subordo I. APOROSA.

- Fam. 1. Turbinolidae.  
 Tribus 1. Cyathininae . . . . . *Cyathina cyathus.*  
 2. Turbinolinae . . . . . *Turbinolia borealis.*  
 Fam. 2. Oculinidae . . . . . *Oculina virginea.*  
 3. Astreidae.  
 Tribus 1. Eusmilinae.  
 § 1. *E. propriae* . . . . . *Eusmilia fastigiata.*  
 2. *E. confluentes* . . . . . *Ctenophyllia meandrites.*  
 3. *E. aggregatae* . . . . . *Stylina echinulata.*  
 4. *E. immersae* . . . . . *Sarcinula organum.*  
 Tribus 2. Astreinae.  
 § 1. *Astreinae hirtae* . . . . . *Caryophyllia Smithii* . . . . . B.  
 2. *A. confluentes* . . . . . *Meandrina filograna.*  
 3. *A. dendroidae* . . . . . *Cladocora caespitosa.*  
 4. *A. aggregatae* . . . . . *Astrea cavernosa.*  
 5. *A. reptantes* . . . . . *Angia rubeola.*  
 Fam. 4. Fungidae.  
 Tribus 1. Cyclolitinae . . . . . *Cyclolites elliptica.*  
 2. Funginae . . . . . *Anabacia orbulites.*  
 3. Lophoserinae . . . . . *Agaricia undata.*

## Subordo II. Z. PERFORATA SEU POROSA.

- Fam. 5. Eupsammidae . . . . . *Eupsammia trochiformis.*  
 6. Madreporidae.  
 Tribus 1. Madreporinae . . . . . *Madrepora muricata.*  
 2. Explanarinae . . . . . *Explanaria crater.*  
 Fam. 7. Poritidae.  
 Tribus 1. Poritinae . . . . . *Porites conglomerata.*  
 2. Montiporinae . . . . . *Alveopora rubra.*

## Subordo III. Z. TABULATA.

Fam. 8. Milleporidæ . . . . .	<i>Millepora alcicornis.</i>
9. Favositidæ.	
Tribus 1. Favositinæ . . . . .	<i>Favosites Gothlandica.</i>
2. Chætetinæ . . . . .	<i>Chætetes radians.</i>
3. Halysitinæ . . . . .	<i>Halysites escharoides.</i>
4. Pocilloporinæ . . . . .	<i>Pocillopora acuta.</i>
Fam. 10. Seriatoporidæ . . . . .	<i>Seriatopora subulata.</i>
11. Thecidæ . . . . .	<i>Thecia Swinderniana.</i>

## Subordo IV. Z. RUGOSA.

Fam. 12. Stauridæ . . . . .	<i>Stauria astreiformis.</i>
13. Cyathaxonidæ . . . . .	<i>Cyathaxonia cornu</i> (fossil).
14. Cyathophyllidæ . . . . .	
Tribus 1. Zaphrentinæ . . . . .	<i>Zaphrentis patula</i> (fossil).
2. Cyathophyllinæ . . . . .	<i>Cyathophyllum helianthoides</i> (fossil).
3. Lithodendroninæ . . . . .	<i>Lithodendron irregulare</i> (fossil).
Fam. 15. Cystiphyllidæ . . . . .	<i>Cystiphyllum Siluriense</i> (fossil).

## VEGETABLE KINGDOM.

Dried plants from the Herbarium cannot be advantageously displayed in glass cases. The following method may be adopted for the Typical Epitome:— a few wax models of flowers, with figures of such parts as require to be magnified; but especially entire fruits, with dissections exposing the seed and embryo. As a general plan for fruits and seeds, there should be exhibited,—

1. Entire fruit, dried or (where succulent) modelled in wax.
2. Section of the pericarp to expose the seed in position.
3. Entire seed.
4. Section of seed to expose the embryo.
5. Embryo. When minute, it may be preserved as a microscopic object, and accompanied by a figure of it magnified.

These preparations should be protected against the attacks of insects, by being steeped in a solution of corrosive sublimate.

In addition to the illustrations displayed in the Epitome, dried specimens and figures may be arranged in a "Typical Herbarium."

If the following plan of drawing up a joint list of objects for the "Typical Herbarium," and the Epitome to be exposed under glass, should be approved, it will be continued in a Second Report.

J. S. HENSLOW.