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STRATIGRAPHICAL LIST

OF

BRITISH FOSSILS;

ARRANGED UNDER THE

PRINCIPAL DIVISIONS OF THE BRITISH STRATA,

WITH A FEW

ELEMENTARY REMARKS

ON THEIR

CHARACTER AND LOCALITIES.

BY

JAMES TENNANT, F.G.S.

*Lecturer on Mineralogy in King's College, London. Member of the
Geol. Soc. of France, etc.*

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L O N D O N :

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“Geology tells us of the successive revolutions and changes in the crust of the earth. Organic changes are our surest guides in making out this history, but they form only a part of our evidence, and the great physical groups of deposits, however rude and mechanical, are historical monuments of perhaps equal importance in obtaining any true and intelligible history of the past ages of the earth; and after we have descended through a certain number of stages, they become, indeed, our only monuments and indexes of past events.”—*Sedgwick*.









## P R E F A C E.

THIS little work is merely intended to assist the Geological Student, by affording him a general view of the Fauna and Flora of some of the principal formations as they are developed in the British Isles, so as to enable him more readily to comprehend the numerical proportion of these fossil organisms, as well as the objects to which his attention should be directed in his various examinations of the different strata. Appended to each division adopted in this volume, is a very slight sketch of the subordinate beds belonging to them, as compiled from the principal authors who have written on the subject. A few of the chief localities are given where the deposits may be best examined, and lists are also inserted of the more important works, memoirs, or papers which have especial reference to each of the formations, so that the Student may be directed to those sources where more detailed information is to be obtained of any particular deposits, which may, at any time, engage his attention.

By these aids, as well as by the careful study of a well selected series of minerals and fossils, illustrative of the different periods, it is hoped that the beginner may become somewhat acquainted with this interesting branch of Natural Science.

The List of Minerals, given at page vi., is chiefly taken from the work of the late William Phillips, and may appear too extensive; it only includes those minerals which are either the components of Rocks, or frequently found imbedded in them, as well as a few others not hitherto discovered in Great Britain.

I have to acknowledge my obligation to Mr. Morris, F.G.S. for assistance and suggestions in preparing this work, and beg to announce that an elementary work on MINERALOGY is in preparation as an accompaniment to it.

149, *Strand*, August, 1847.





## INTRODUCTION.

THE superficial crust of the Globe, as far as it has hitherto been exposed to observation, in the various sections afforded by deep mines, sea cliffs, or by valleys and mountainous regions, is found to consist of certain layers or strata, differently composed, and arranged in a certain order as regards each other. The composition of these mineral masses, the position which they occupy, the changes they have undergone, and the organic remains contained in them, form the chief objects of Geological inquiry.

An acquaintance with the collateral branches of Science, Chemistry, Mineralogy, and Palæontology, will materially facilitate any researches connected with the early history of our globe, as by the two former we acquire a knowledge of the composition, form, structure, &c., of the various simple or compound mineral bodies, which are either found, combined with or constituting the chief portion of different rocks or strata; and Palæontology teaches us the character and relations, to existing beings, of the numerous genera of Plants, Shells, and Animals, which are more or less abundantly entombed in all the stratified rocks.

The Rocks or Strata have been generally divided by Geologists into two great groups; viz., STRATIFIED, and UNSTRATIFIED, and these are again subdivided as follows:—

|                    |   |                   |   |                    |
|--------------------|---|-------------------|---|--------------------|
| Stratified Rocks   | { | resulting from    | { | Fossiliferous.     |
|                    |   | Aqueous agencies. |   | Non-fossiliferous. |
| Unstratified Rocks | { | resulting from    | { | Volcanic.          |
|                    |   | Igneous agencies. |   | Plutonic.          |

The composition of the Stratified fossiliferous rocks may be stated generally, as consisting of Argillaceous, Calcareous, or Siliceous masses, as Clay, Lime or Silex, form their chief proportions. The Unstratified rocks are far more variable in their composition, as numerous other mineral bodies constitute their component parts, or frequently occur in them, of which the minerals in the subjoined list are among the principal, and as some vary in their external characters, the Student should be provided with several varieties, to illustrate the crystalline form, fracture, and colour, or other physical characters.

## SILICEOUS MINERALS.

## ZEOLITIC MINERALS,

Chiefly found in Amygdaloid Rocks in the western parts of Scotland, Giant's Causeway &c.

Rock Crystal, hexagonal prism.

Rock Crystal, with conchoidal fracture.

Quartz crystallized.

Violet Quartz, or Amethyst.

Yellow Quartz Cairngorum.

Brown Quartz.

Rose Quartz.

Ferruginous Quartz.

Arenaceous Quartz, Saud.

Arenaceous Quartz, coloured by oxides of Iron.

Opal.

Semi-Opal.

Wood Opal.

Calcedony.

Agate, from Amygdaloid rocks.

Agate, enclosing fossil sponge, &c.

Flint.

Hornstone.

Jasper.

Porcelain Jasper.

Apophyllite.

Analcime.

Brewsterite.

Chabasie.

Gmelinite.

Harmotome.

Heulandite.

Laumonite.

Mesole.

Mesotype.

Natrolite.

Phillipsite.

Prehnite.

Stilbite.

Thomsonite.

## CLAYS.

Slate Clay, Shale.

Bituminous Shale.

Rotten-stone.

Adhesive slate.

Fuller's Earth.











The following consist of SILICA, ALUMINA, LIME, &c.

|                                   |                                                  |
|-----------------------------------|--------------------------------------------------|
| Garnet, in rhombic dodecahedrons. | Andalusite.                                      |
| Garnet, in trapezoidal crystals.  | Chiasolite.                                      |
| Precious Garnet.                  | Pinite.                                          |
| Pyrope Garnet.                    | Chlorite.                                        |
| Cinnamon stone.                   | Steatite.                                        |
| Idocrase.                         | Soapstone.                                       |
| Axinite.                          | Felspar, crystallized.                           |
| Epidote.                          | Felspar, with lamellar fracture.                 |
| Augite.                           | Glassy Felspar.                                  |
| Diopside.                         | Decomposed Felspar.                              |
| Sahlite.                          | Compact Felspar.                                 |
| Hornblende, massive.              | Labradorite.                                     |
| Hornblende, crystallized.         | Albite.                                          |
| Tremolite.                        | Boracic Acid.                                    |
| Actynolite.                       | Subsulphate of Alumina.                          |
| Asbestos.                         | Subphosphate of Alumina.                         |
| Fibrous Asbestos. Amianthus.      | Calcareous Spar, rhomb, obtained<br>by cleavage. |
| Hypersthene.                      | Calcareous Spar, crystallized.                   |
| Bronzite.                         | Stalactitic Carbonate of Lime.                   |
| Schiller Spar.                    | Calcareous Tufa.                                 |
| Corundum.                         | Arragonite.                                      |
| Emery.                            | Pearl Spar.                                      |
| Kyanite.                          | Apatite.                                         |
| Topaz.                            | Phosphorite.                                     |
| Spinel.                           | Fluor Spar, in cubes.                            |
| Chrysolite.                       | Fluor Spar, nodular.                             |
| Olivine.                          | Anhydrite.                                       |
| Zircon.                           | Selenite.                                        |
| Hyacinth.                         | Fibrous Gypsum.                                  |
| Beryl.                            | Granular Gypsum.                                 |
| Tourmaline.                       | Carbonate of Barytes.                            |
| Schorl.                           | Sulphate of Barytes.                             |
| Talc, foliated.                   | Carbonate of Strontian.                          |
| Talc, compact.                    | Sulphate of Strontian.                           |
| Mica.                             | Chloride of Sodium, Rock Salt.                   |
| Leucite.                          |                                                  |

## NATIVE METALS AND METALLIFEROUS MINERALS.

(Chiefly found in veins.)

|                                 |                                   |
|---------------------------------|-----------------------------------|
| Iron Pyrites, in cubes.         | Purple Copper.                    |
| Nodular Iron Pyrites.           | Grey Copper.                      |
| Magnetic oxide of Iron.         | Copper Pyrites.                   |
| Specular Iron.                  | Red oxide of Copper.              |
| Micaceous oxide of Iron.        | Green carb. of Copper, Malachite. |
| Iron Hæmatite.                  | Arseniate of Copper.              |
| Hydrous oxide of Iron.          | Native Gold.                      |
| Carbonate of Iron.              | Native Platina.                   |
| Argillaceous Carbonate of Iron. | Sulphuret of Antimony.            |
| Phosphate of Iron.              | Sulphuret of Lead. Galena.        |
| Sulphate of Iron.               | Carbonate of Lead.                |
| Tungstate of Iron.              | Phosphate of Lead.                |
| Chromate of Iron.               | Arseniate of Lead.                |
| Oxide of Manganese.             | Sulphuret of Zinc.                |
| Sulphuret of Molybdena.         | Carbonate of Zinc.                |
| Oxide of Tin.                   | Sulphuret of Mercury.             |
| Stream Tin.                     |                                   |
| Sulphuret of Tin.               |                                   |
| Rutile.                         |                                   |
| Menaccanite.                    |                                   |
| Uranite.                        |                                   |
| Native Bismuth.                 |                                   |
| Sulphuret of Arsenic.           |                                   |
| Native Arsenic.                 |                                   |
| Arsenical Cobalt.               |                                   |
| Native Silver.                  |                                   |
| Sulphuret of Silver.            |                                   |
| Native Copper.                  |                                   |
| Sulphuret of Copper.            |                                   |
|                                 | COMBUSTIBLE MINERALS.             |
|                                 | Sulphur.                          |
|                                 | Plumbago.                         |
|                                 | Anthracite.                       |
|                                 | Elastic Bitumen.                  |
|                                 | Coal.                             |
|                                 | Cannel Coal.                      |
|                                 | Jet.                              |
|                                 | Lignite.                          |
|                                 | Amber.                            |
|                                 | Retin asphalt.                    |
|                                 | Mellite.                          |

The study of Fossil Organic Remains, or Palæontology,\* is an important branch of Geological Science, as, by its assistance, the Student may generally ascertain the position of a deposit in the series. Each of the Groups of Strata

\* παλαιὸς ancient, ὄντισσ being, λόγος discourse.





are characterized by a distinct set of organic forms, and in many instances, the subordinate beds have peculiar species. The Tertiary period contains many species of Testacea, the forms of which are analogous, and sometimes identical with, existing types; as well as the remains of the large Mammalia and Fishes belonging to the Cycloid and Ctenoid orders—orders which comprise nearly all the known living species, whereas the fossil fishes that are found in the Secondary and Palæozoic periods, belong to the Ganoid and Placoid orders, of which there are but very few existing forms. The Secondary period is characterized by two genera, which are peculiar to it, *Ammonites* and *Belemnites*, belonging to the Cephalopoda. The Saurian family also abound at this period.

The Palæozoic period is marked by other forms of Cephalopoda, *Goniatites*, *Orthoceras*, *Cyrtoceras*, &c., as also by the great abundance of the Brachiopoda, as *Productus*, *Leptaena*, *Spirifer*, *Orthis*, &c., and some singular forms of Crustacea, the *Trilobites*; as well as many species of Crinoidea.

Limited as is the extent of the British Islands, yet they contain (with one exception, the Muschelkalk) a full development of the Geologic series, and thus afford an index by which the formations in distant parts of the globe may be compared or studied.

By consulting a geological map of England, the Student will readily perceive that the physical features of the country are chiefly dependent on the geological structure, and that the formations succeed each other in chronological order as we proceed from the western to the eastern coast, thus, the oldest slate system and the associated unstratified

rocks, constitute, with the overlying Silurian group, the mountainous region of North Wales, Cumberland, and Westmoreland; to these progressively follow the beds belonging to the Carboniferous, Oolitic, and Cretaceous groups, occupying the central parts of England, and reposing on the latter are the Tertiary series, the newest members of which are found in Norfolk and Suffolk, on the eastern coast of the island.

For the convenience of arrangement, the Stratified Fossiliferous Rocks have been divided into certain groups; each group being composed of many subordinate beds, and characterized by a peculiarity or distinctness in their Fauna or Flora from that which precedes or follows them. The following scheme is a chronological arrangement of the different members of this division in a descending order; as occurring in England.

### STRATIFIED FOSSILIFEROUS ROCKS.

#### TERTIARY PERIOD. (CAINOZOIC SERIES, *Phillips.*)

|                                          |   |                                               |                                                                          |
|------------------------------------------|---|-----------------------------------------------|--------------------------------------------------------------------------|
| Superior Order.<br>( <i>Conybeare.</i> ) | } | Recent Group.                                 | { Travertine, Peat.<br>Shell, Marl, &c.                                  |
|                                          |   | Pleistocene Group.<br>(Erratic block period.) | { Marine beds.<br>Fresh-water beds.                                      |
|                                          |   | Pleiocene Group.                              | Mammaliferous Crag.                                                      |
|                                          |   | Miocene Group.                                | { Red Crag.<br>Coralline Crag.                                           |
|                                          |   | Eocene Group.                                 | { Fluvio-marine beds.<br>Bagshot Sands.<br>London Clay.<br>Plastic Clay. |







SECONDARY PERIOD. (MESOZOIC SERIES, *Phillips.*)

|  |                                             |   |                                                   |
|--|---------------------------------------------|---|---------------------------------------------------|
|  | Cretaceous Group.                           | { | Upper Chalk.                                      |
|  |                                             |   | Lower Chalk.                                      |
|  | Wealden Group.                              | { | Upper Green Sand.                                 |
|  |                                             |   | Gault.                                            |
|  |                                             |   | Lower Green Sand.                                 |
|  |                                             |   | (?) Speeton Clay.                                 |
|  | Supermedial Order.<br>( <i>Conybeare.</i> ) | { | <i>Upper.</i>                                     |
|  |                                             |   | Portland beds.                                    |
|  |                                             |   | Kimmeridge Clay.                                  |
|  |                                             |   | <i>Middle.</i>                                    |
|  |                                             |   | Upper Calcareous<br>Grit. Coral Rag.              |
|  |                                             |   | Lower Calcareous<br>Grit. Oxford Clay.            |
|  |                                             |   | Kelloway Rock.                                    |
|  |                                             |   | <i>Lower.</i>                                     |
|  |                                             |   | Cornbrash.                                        |
|  |                                             |   | Forest Marble.                                    |
|  | Bradford Clay.                              |   |                                                   |
|  | Bath Oolite.                                |   |                                                   |
|  | Fullers' Earth.                             |   |                                                   |
|  | Inferior Oolite.                            |   |                                                   |
|  | Oolitic Group.                              | { | <i>Lias.</i>                                      |
|  |                                             |   | Upper Lias Shale.                                 |
|  |                                             |   | Marlstone.                                        |
|  |                                             |   | Lower Lias Lime-<br>stones and Shales.            |
|  | Triassic Group.                             | { | Variegated Marls.                                 |
|  |                                             |   | Muschelkalk. ( <i>Want-<br/>ing in England.</i> ) |
|  |                                             |   | Variegated Sandstone.                             |

PRIMARY PERIOD. (PALEOZOIC SERIES, *Phillips*.)

|                                           |                                         |                                                                                                                                                                        |
|-------------------------------------------|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                           | { Permian or Magnesian Limestone Group. | { Magnesians Limestone. Lower Red Sandstone.                                                                                                                           |
| Medial Order.<br>( <i>Conybeare</i> .)    | { Carboniferous Group.                  | { Coal Measures. Millstone Grit. Mountain Limestone                                                                                                                    |
|                                           | { Devonian Group.                       | { Conglomerate and Sandstone. Cornstone and Marl. Tilestone.                                                                                                           |
| Submedial Order.<br>( <i>Conybeare</i> .) | { Silurian Group.                       | { <i>Upper.</i><br>Upper Ludlow Rock. Aymestry Limestone. Lower Ludlow Rock. Wenlock Limestone. Wenlock Shale.<br><i>Lower.</i><br>Caradoc Sandstone. Llandeilo Flags. |

## CAMBRIAN GROUP.

Under this head are now arranged the older slate rocks of North Wales, Cumberland, Westmoreland, &c. (See Professor Sedgwick's Memoirs.)

|                                                                    |                                            |                                                                    |
|--------------------------------------------------------------------|--------------------------------------------|--------------------------------------------------------------------|
| Stratified Non-fossiliferous. Metamorphic Rocks. ( <i>Lyell</i> .) | { Inferior Order.<br>( <i>Conybeare</i> .) | { Clay Slate. Talcose Slate. Mica Slate. Hornblende Slate. Gneiss. |
|--------------------------------------------------------------------|--------------------------------------------|--------------------------------------------------------------------|





|                     |   |           |   |             |                |
|---------------------|---|-----------|---|-------------|----------------|
| Unstratified Rocks. | } | Volcanic. | } | Basalt.     |                |
|                     |   |           |   |             | Greenstone.    |
|                     |   |           |   | Claystone.  |                |
|                     |   |           |   | Trachyte.   |                |
|                     |   |           |   | Porphyry.   |                |
|                     |   |           |   | Amygdaloid. |                |
|                     |   |           |   | Lava, &c.   |                |
|                     |   | Plutonic. | } | Granite.    |                |
|                     |   |           |   |             | Syenite.       |
|                     |   |           |   |             | Eurite.        |
|                     |   |           |   |             | Pegmatite, &c. |

The following arrangement, by M. Brongniart, is a useful summary of the series of Unstratified Rocks, and is abridged from Professor Phillips's 'Geology,' in 'Cabinet Encyclopædia,' vol. ii. p. 59.

#### MIXED ROCKS.

- I. CRYSTALLIZED ISOMEROUS ROCKS, *in which the constituent parts are equally blended.*
- A. Felspathic Rocks, the characteristic mineral being Felspar  
Granite, Protogine, Pegmatic or Graphic Granite, Mimose.
  - B. Hornblendic Rocks, the characteristic mineral being Hornblende.  
Sienite, Diabase or Greenstone.
- II. CRYSTALLIZED ANISOMEROUS ROCKS, *in which the constituent parts are not equally mixed.*
- A. Basis of Serpentine, with imbedded minerals.—Ophiolite.
  - B. Basis of Cornean, with imbedded minerals.—Variolite, Vakite.
  - C. Basis of Hornblende or Basalt, with imbedded minerals.—Amphibolite, Basanite, Trappite, Melaphyre or Trap Porphyry.
  - D. Basis of Petrosilex coloured by Hornblende.—Porphyry, Ophite, Amygdaloid, Euphotide.
  - E. Basis of Petrosilex or compact Felspar. — Eurite, Leptenite, Trachyte.

F. Basis of Claystone (an earthy or granular Felspar). Clay Porphyry, Domite Porphyry.

G. Basis of Pitchstone, or Obsidian.—Stigmitite.

A LIST OF SOME OF THE PRINCIPAL WORKS  
ON GENERAL GEOLOGY AND  
PALÆONTOLOGY.

GEOLOGY.

Ansted, D. T., 'Geology'—Introductory, Descriptive, and Practical.  
2 vols.

————— 'The Ancient World', 1 vol.

Beudant, F. S., 'Minéralogie et Geologie.'

Conybeare, Rev. W., 'Report on Geology,' in the 1st vol. of 'Reports of British Association.'

Conybeare and Phillips, 'Outlines of Geology of England and Wales.'

De la Beche, Sir H. T., 'Geological Manual.'

————— 'Geological Report on Cornwall, Devon, and West Somerset.'

Leonhard, 'Agenda Geognostica.'

Lyell, C., 'Elements of Geology,' 2 vols.

————— 'Principles of Geology,' 1 vol. 1847.

Mantell, G. A., 'Wonders of Geology.'

————— 'Geological Excursion round the Isle of Wight,' &c.

A valuable and interesting Hand-Book for the Geological Student visiting the Island, and the adjacent coasts.

————— 'The Geology of the South East of England,' 1 vol.

Morris, J.,\* 'A Catalogue of British Fossils,' 8vo, 1843; containing

\* I must here mention that an Illustrated Edition of this work has been prepared under the auspices of Mr. Horner, late President of the Geological Society, in which the original figures, cited in Mr. Morris's Catalogue, have been cut from the respective works, and placed on the page with the references, so that any species can be compared at one view without referring to numerous works. These volumes are placed in the Library of the Geological Society for the use of its members.











references to the works in which they are figured, as well as the Strata and Localities.

Murchison, Sir R. I., 'The Silurian System,' 2 vols. 4to.

Phillips, J., 'A Treatise on Geology,' 2 vols. (Cabinet Cyclopædia.)

————— 'Geology in the Penny Cyclopædia.'

————— 'Encyclopædia Metropolitana.'

### PALÆONTOLOGY.

Agassiz, L., 'Poissons Fossiles,' &c.

Austin, T., 'Monographs on Recent and Fossil Crinoidea,' No. 1—6.

Bronn, H. G., 'Lethæa Geognostica.

Buckland, Rev. W., 'Mineralogy and Geology,' 2 vols., 'Bridgewater Treatise.'

————— 'Reliquæ Diluvianæ.'

Burmeister, H., 'On Trilobites,' &c., translated and published by the Ray Society, 1847.

Deshayes, G. P., 'Coquilles Fossiles des Environs de Paris,' 2 vols.

Dunker, Dr. Wilh., und Herm. von Meyer, 'Palæontographica,' &c.

Goldfuss, A., 'Petrefacta Germaniæ,' 1826—1844.

Konincke, L. de, 'Description des Animaux Fossiles qui se trouvent dans le Terrain Carbonifère de Belgique.

Luid, 'Lithophylacii Britannica Ichnographia,' Svo, 1699.

Mantell, G. A., 'Medals of Creation,' 2 vols.

Miller, 'Natural History of the Crinoidea,' 1 vol.

Nyst, P. H., 'Description des Coquilles et des Polypiers Fossiles des Terrains Tertiaires de Belgique.

D'Orbigny A., 'Palæontologie Française, Terrains Crétacés.' Terrains Jurassiques.

Owen, R., 'British Fossil Mammals and Birds.'

Portlock, J. E., 'Geological Report on Londonderry,' &c.

Roemer, F. A., 'Die Versteinerungen des Norddeutschen Oolithen-Gebirges.

————— 'Die Versteinerungen des Nordeutschen Kreide-Gebirges.

Sowerby, J. D. C. 'Mineral Conchology of Great Britain.'

**FOSSIL BOTANY.**

- Bowerbank, J. S., 'A History of the Fossil Fruits and Seeds of the London Clay.'
- Brongniart, Ad., 'Histoire des Végétaux Fossiles,' 2 vols.
- Goppert, H. R., 'Systema Filicum Fossilium,' 1 vol.
- Lindley and Hutton, 'The Fossil Flora of Great Britain.'
- Sternberg, 'Flora der Vorwelt.'

**GEOLOGICAL MAPS.**

- Gardner, 'Map of England and Wales.'
- Greenough, G. B., 'Map of England and Wales.' Published by the Geological Society.
- Griffith, R., 'Map of Ireland.'
- Knipe, 'Map of England and Wales.'
- Maculloch, J., 'Map of Scotland.'
- Phillips, J., 'Map of the British Isles.'
- 'Geological Map of the Society for the Diffusion of Useful Knowledge.'

The Maps and Sections of the Ordnance Survey, geologically surveyed and coloured, under the superintendence of Sir H. T. De la Beche, for accuracy and minuteness of detail are invaluable. Those Maps relating to the western parts of England are the only ones at present coloured geologically.

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Those Works or Memoirs, which treat more particularly of certain formations or series of strata, will be found under the respective divisions.

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The Palæontographical Society is established for the purpose of publishing figures and descriptions of all the British Fossils; this Society, and the Ordnance Geological Survey, will materially increase our knowledge of the Fossil Fauna of this country.







STRATIGRAPHICAL LIST

OF

BRITISH FOSSILS.

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THE TERTIARY OR SUPRACRETACEOUS PERIOD.

|                       |   |                                                                                  |
|-----------------------|---|----------------------------------------------------------------------------------|
| PLEISTOCENE . . . . . | { | MARINE.<br>FRESHWATER.                                                           |
| PLEIOCENE . . . . .   | { | MAMMALIFEROUS CRAG.                                                              |
| MIOCENE . . . . .     | { | RED CRAG.<br>CORALLINE CRAG.                                                     |
| EOCENE . . . . .      | { | FLUVIO-MARINE.<br>BAGSHOT SAND.<br>LONDON CLAY.<br>BOGNOR BEDS.<br>PLASTIC CLAY. |

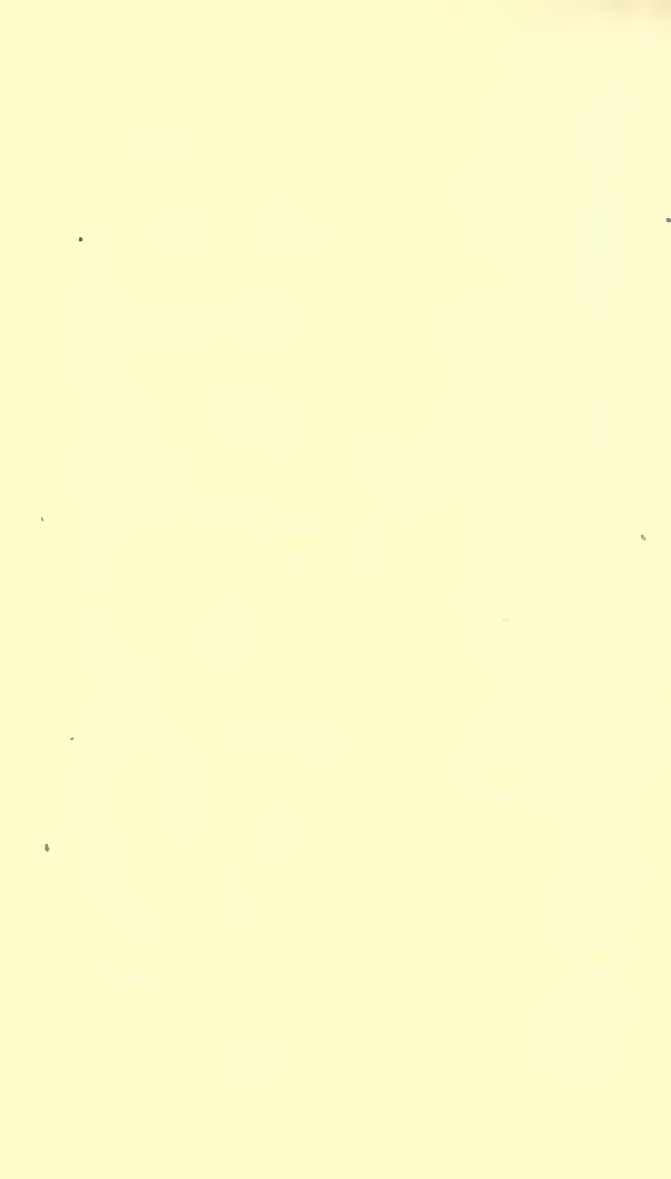
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PLEISTOCENE MARINE FORMATION.

ALTHOUGH it appears slightly difficult to classify with satisfaction some of the superficial deposits of England, as regards their relative ages, it may be found convenient to include under this division, 1st. certain strata of sand or loam,

containing marine testacea some species of which are extinct or not indigenous to the British Coasts; 2ndly, the drift or the Boulder formation consisting chiefly of loam, clay and sand, with pebbles and boulders of older rocks, more or less stratified, or sometimes entirely devoid of stratification. The unstratified portion, to which the term "till" has been commonly applied in Scotland, has abundantly interspersed in it, transported blocks of various degrees of magnitude and from nearly every older formation, such as granite, poryhyry, trap, mica schist, mountain limestone the oolites, green sand, chalk &c. The drift in the north-eastern part of Norfolk overlies the chalk, the crag (at Sherringham) the fluviatile deposits (at Runton Gap) the latter being sometimes intercalated with it (at Mundesley), these freshwater beds being apparently of similar age to those in the valley of the Thames. The drift of Siluria, a loam or clay with fragments of granite and Cambrian rocks, is frequently accompanied with marine shells most of which are identical with species now inhabiting our seas (Kempsey, near Worcester). In Scotland the drift or till reposing on the older rocks appears to be overlaid by stratified sand and clay, which is sometimes fossiliferous, as at certain points in the estuaries of the Tay, the Forth and Clyde. On the other hand Sir R. I. Murchison has shown that the boulder formation of Russia between St. Petersburg and Archangel, is superior to strata, containing many species of shells now living in the Arctic sea, and Mr. Lyell mentions that the stratified sand and gravel, near Upsala, with Baltic species of testacea, is overlaid by large erratic blocks. From the Arctic character of several shells occurring in the Scottish deposits, it has been inferred that the climate of those latitudes was colder at the period of their deposition than at the present time. Sir R. I. Murchison somewhat dissents from this opinion as far as





the phænomena in the British Islands are concerned, "for we can easily imagine, that when very different physical features prevailed, and when lands now above the sea were beneath it, cold currents may have extended very far southwards of the Arctic circle, and have been inhabited by species now restricted (through geographical changes) to a less horizontal range" (Russia and the Ural mountains, p. 551. note). Prof. E. Forbes considers the mammaliferous crag as belonging to this group.

#### LOCALITIES FOR FOSSILS, &c.

Cliffs between Hasborough and Weybourne, Mundesley, Runton, Trimmingham, Cliff End, Weybourne, Norfolk; Ballingdon Hill, Essex; Muswell hill, Middlesex; Kempsey, Worcester; Powick and Bromwich on the Severn. Marrington Green, seven miles north of Shrewsbury; Steventon and Largs, Ayrshire; the Kyles of Bute; Paisley, Glasgow, Helensburg, Dalmuir, &c., Scotland.

#### LIST OF PUBLICATIONS, &c.

- Brown, J., 'On the Gravel at Stanway, Essex,' *Mag. Nat. Hist.* 1835, p. 349.
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- Corbula nucleus*, Lam.  
*Cyprina vulgaris*, Sow.  
*Donax trunculus*, Linn.  
*Dosina fasciata*, Mont. sp.  
*Goodallia striata*, Brown.  
     *triangularis*, Turt.  
*Kellia suborbicularis*, Turt.  
*Lucina flexuosa*, Flem.  
     *undata*, Lam.  
*Lutraria elliptica*, Lam.  
     *compressa*, Lam.  
*Mactra solida*, Linn.  
     *truncata*, Flem.  
     *subtruncata*, Mont.  
*Modiola vulgaris*, Flem.  
*Mya arenaria*, Linn.  
     *truncata*, Linn.  
*Mytilus edulis*, Linn.  
*Nucula minuta*, Flem.  
     (Leda, Schum.)  
     *nuclens*, Linn. sp.  
     *oblongoides*, S. Wood.  
     *proxima*, Gould.  
     *pygmæa*, Goldf.  
     *rostrata*, Lam.  
     (Leda, Schum.)  
     *tenuis*, Mont.  
*Panopæa Bivonæ*, Phil.  
*Pectunculus pilosus*, Linn. sp.  
*Pholas crispata*, Linn.  
*Psammobia Ferroensis*, Gmel. sp.  
*Pullastra aurea*, Linn. sp.  
     *decussata*, Linn. sp.  
     *virginea*, Linn. sp.  
     *vulgaris*, Sow.  
*Saxicava rugosa*, Linn. sp.  
     *sulcata*, Smith.  
*Solen ensis*, Linn.  
     *legumen*, Linn.  
     *siliqua*, Linn.  
*Sphenia Swainsoni*, Turt.  
*Tellina Balthica*, Linn.  
     *calcareæ*, Gmel.  
     *crassa*, Gmel.  
     *Groenlandica*, Beck.  
     *tenuis*, Penn.  
*Thracia declivis*, (Mya), Penn.  
*Venus casina*, Linn.  
     *dysera*, Linn.  
     *gallina*, Linn.  
     *ovata*, Penn.  
     *rugosa*, Flem.  
     *verrucosa*, Linn. sp.

## CONCHIFERA MONOMYARIA.

- Anomia ephippium*, Linn.  
     *squamula*, Linn.  
     (*aculeata*, Gmel.)  
     *undulata*, Flem.  
*Ostrea edulis*, Linn.  
*Pecten Islandicus*, Mull. sp.  
*Pecten maximus*, Linn. sp.  
     *opercularis*, Linn. sp.  
     *sinnosus*, Linn. sp.  
     *triradiatus*, Mull.  
     *varius*, Linn. sp.

## BRACHIOPODA.

- Terebratula psittacea*, Lam.

## GASTEROPODA.

- |                                           |                                         |
|-------------------------------------------|-----------------------------------------|
| Aporrhais pes-pellicani, <i>Linn. sp.</i> | <i>Nassa pliocena, Strickl.</i>         |
| <i>Buccinum ciliatum, Fabr.</i>           | <i>reticulata, Linn.</i>                |
| <i>striatum, Smith.</i>                   | <i>semistriata, Brocchi.</i>            |
| <i>undatum, Linn.</i>                     | <i>Natica Alderi, Forbes.</i>           |
| <i>Cemoria Noachina, Chemn. sp.</i>       | <i>catenoides, S. Wood.</i>             |
| <i>Cingula cingilla, Flem.</i>            | <i>clausa, Gray.</i>                    |
| <i>ventricosa, Flem.</i>                  | <i>Patella pellucida, Linn.</i>         |
| <i>Conovulus pyramidalis, Sow. sp.</i>    | <i>lævis, Penn.</i>                     |
| <i>Dentalium entale, Lam.</i>             | <i>vulgata, Linn.</i>                   |
| <i>Fissurella Græca, Linn. sp.</i>        | <i>Phasianella subulata, Flem.</i>      |
| <i>Fusus antiquus, Mull.</i>              | <i>Pleurotoma discrepans, Brown.</i>    |
| <i>Barvicensis, Johnst.</i>               | <i>rufa, Mont.</i>                      |
| <i>Bamffius, Flem.</i>                    | <i>septangularis, Mont.</i>             |
| <i>despectus, Linn. sp.</i>               | <i>turricula, Mont. sp.</i>             |
| <i>Forbesii, Strickl.</i>                 | <i>Purpura lapillus, Linn.</i>          |
| <i>Islandicus, Martin.</i>                | <i>Rissoa cimex, Linn. sp.</i>          |
| <i>muricatus, Mont. sp.</i>               | <i>costata, Mont. sp.</i>               |
| <i>scalariformis, Gould.</i>              | <i>striatula, Mont. sp.</i>             |
| <i>Sabini, Gray.</i>                      | <i>subumbilicata, Mont. sp.</i>         |
| <i>Globulus Smithii, Brown, sp.</i>       | <i>Scalaria Grœulandica, Chemn. sp.</i> |
| <i>Lacuna vineta, Turt.</i>               | <i>Trichotropis borealis, Sow.</i>      |
| <i>Montacuti, Turt.</i>                   | <i>Trochus cinerarius, Flem.</i>        |
| <i>Littorina littorea, Linn. sp.</i>      | <i>exasperatus, Penn.</i>               |
| <i>palliata, Say.</i>                     | <i>magus, Flem.</i>                     |
| <i>rudis, Maton.</i>                      | <i>tumidus, Mont.</i>                   |
| <i>Lottia virginea, Mull. sp.</i>         | <i>ziziphinus, auct.</i>                |
| <i>Margarita inflata, Smith.</i>          | <i>Turritella incrassata, Sow.</i>      |
| <i>Murex erinaceus, Linn.</i>             | <i>terebra, Linn. sp.</i>               |
| <i>Nassa granulata, Sow.</i>              | <i>Velutina lævigata, Flem.</i>         |
| <i>incrassata, Mull. sp.</i>              | <i>(Helix, Linn.)</i>                   |
| <i>Monensis, Forbes.</i>                  | <i>undata, Smith.</i>                   |

## MAMMALIA.

*Cetacea.*

- |                                |                           |
|--------------------------------|---------------------------|
| <i>Phocæna crassidens.</i>     | <i>Balænoptera boops.</i> |
| <i>Monodon monoceros.</i>      | <i>Balæna mysticetus.</i> |
| <i>Physeter macrocephalus.</i> |                           |









## PLEISTOCENE FRESH-WATER FORMATION.

THE deposits which are arranged under this head are chiefly found along the valleys of our existing river courses, and generally more or less elevated above the level of the present streams. They contain numerous remains of herbivorous and carnivorous mammalia; the Elephant, Rhinoceros, and Hippopotamus, as well as the Ox, Deer, and Horse, are particularly abundant; the Bear and Hyæna have also been found, but more rarely. Associated with these mammals, are many species (nearly forty) of terrestrial and fresh-water shells, the majority of which are identical with those now living in England. Of the four or five that are not British species, two (*Paludina marginata* and *Unio littoralis*) are living in France, one (*Cyrena trigonula*) is said to be the same as a Nile species, and one (*Valvata antiqua*) has not yet been identified, as also a species of *Paludina* or *Littorina*. These deposits consist of layers of Clay, Sand, Loam, and Gravel, varying very much according to the different localities; that some of the layers have been quietly deposited is evinced from the fact, that fifteen or twenty laminae may be counted in the space of an inch, whilst the gravel beds prove a more irregular movement.

The excavations in these deposits are chiefly for extracting the valuable brick-earth they contain, and the fine sand which accompanies it.

The remains found in the Bone Caves of England, &c., probably belong to this period; the animal remains, more or less entire, are generally mixed with mud, rolled pebbles, and broken fragments, a deposition of Stalagmite covering and forming a compact crust over the whole. Among the

most interesting, are those of Kirkdale, in Yorkshire; the caves of Banwell and Hutton, Somerset; those of Kent's hole near Torquay, and Oreston near Plymouth. At the following localities fluviatile shells may be obtained:—Ilford, Grays and Clacton, Essex; Erith and Crayford, Kent; on the Stour at Stutton; Crophorn in Worcestershire; Market Weighton, Yorkshire.

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#### LIST OF FOSSILS.

##### PLANTÆ.

- |                                      |                                      |
|--------------------------------------|--------------------------------------|
| Ceratophyllum demersum, <i>auct.</i> | Chara vulgaris, <i>Smith.</i>        |
| Chara hispida, <i>Smith.</i>         | Strobilites Woodwardi, <i>Lindl.</i> |

##### INSECTA.

Copris lunaris, *Linn.*

##### CONCHIFERA DIMYARIA.

- |                              |                             |
|------------------------------|-----------------------------|
| Anodon cygneus, <i>Linn.</i> | Cyclas cornea, <i>Lam.</i>  |
| Cyclas amnica, <i>Turt.</i>  | Henslowiana, <i>Jenyns.</i> |







*Cyclas pusilla*, *Turt.*  
*rivicola*, *Lam.*  
*Cyrena trigonula*, *Wood.*  
*Unio littoralis*, *Drap.*

*Unio ovalis*, *Turt.*  
*pictorum*, *Lam.*  
*tumidus*, *Retz.*

## GASTEROPODA.

*Achatina acicula*, *Mull.*  
*Acme fusca*, *Turt.*  
*Ancylus fluviatilis*, *Mull.*  
*lacustris*, *Mull.*  
*Azeca tridens*, *Leach.*  
*Balæa perversa*, *Turt.*  
*Bithynia tentaculata*, *Linn.*  
*ventricosa*, *Turt.*  
*Bulimus Lackhamensis*, *Mont.*  
*lubricus*, *Brug.*  
*obscurus*, *Drap.*  
*Carychium minimum*, *Mull.*  
*Clausilia bidens*, *Drap.*  
*biplicata*, *Turt.*  
*nigricans*, *Turt.*  
*Rolphii*, *Leach.*  
*Cyclostoma elegans*, *Drap.*  
*Helix aculeata*, *Mull.*  
*alliaris*, *Mill.*  
*arbustorum*, *Linn.*  
*cellaris*, *Mull.*  
*crystallina*, *Drap.*  
*excavata*, *Bean.*  
*fruticum*, *Drap.*  
*fulva*, *Mull.*  
*hispida*, *Mull.*  
*hortensis*, *Lister.*  
*lamellata*, *Turt.*  
*lapicida*, *Linn.*  
*lucida*, *Drap.*  
*nemoralis*, *Mull.*

*Helix nitidula*, *Drap.*  
*plebeia*, *Drap.*  
*pulchella*, *Mull.*  
*pura*, *Alder.*  
*radiatula*, *Alder.*  
*rotundata*, *Mull.*  
*ruderata*, *Studer.*  
*rufescens*, *Penn.*  
*virgata*, *Mont.*  
*Limax agrestis*, *Linn.*  
*Limnæus auricularis*, *Drap.*  
*palustris*, *Drap.*  
*pereger*, *Drap.*  
*stagnalis*, *Mont.*  
*truncatulus*, *Mull.*  
*Paludina marginata*, *Mich.*  
*Physa fontinalis*, *Drap.*  
*hynorum*, *Drap.*  
*Planorbis albus*, *Mull.*  
*carinatus*, *Mull.*  
*contortus*, *Drap.*  
*corneus*, *Drap.*  
*imbricatus*, *Mull.*  
*lævis*, *Alder.*  
*marginatus*, *Drap.*  
*nitidus*, *Mull.*  
*spirorbis*, *Mull.*  
*vortex*, *Mull.*  
*Pupa anglica*, *Mich.*  
*cylindrica*, *Fer.*  
*edentula*, *Drap.*

|                              |                                 |
|------------------------------|---------------------------------|
| Pupa marginata, <i>Drap.</i> | Succinea oblonga, <i>Drap.</i>  |
| palustris, <i>Leach.</i>     | Pfcifferi, <i>Rossm.</i>        |
| pusilla, <i>Mull.</i>        | putris, <i>Linn.</i>            |
| pygmæa, <i>Drap.</i>         | Valvata antiqua, <i>Morris.</i> |
| substriata, <i>Alder.</i>    | cristata, <i>Mull.</i>          |
| umbilicata, <i>Drap.</i>     | piscinalis, <i>Lam.</i>         |

## PISCES.

*Esox lucius. auct.*

## MAMMALIA.

(Belonging to the Freshwater deposits and caves.)

|                                   |                                       |
|-----------------------------------|---------------------------------------|
| Asinus fossilis, <i>Owen.</i>     | Machairodus latideus, <i>Owen.</i>    |
| Arvicola agrestis, <i>Owen.</i>   | Megaceros Hibernicus, <i>Owen.</i>    |
| amphibia, <i>Owen.</i>            | Meles taxus, <i>Owen.</i>             |
| pratensis, <i>Owen.</i>           | Mus decumanus, <i>Pallas.</i>         |
| Bison minor, <i>Owen.</i>         | musculus, <i>Linn.</i>                |
| priscus, <i>Owen.</i>             | Palæospalax magnus, <i>Owen.</i>      |
| Bos primigenius, <i>Meyer.</i>    | Putorius ermineus, <i>Owen.</i>       |
| longifrons, <i>Owen.</i>          | vulgaris, <i>Owen.</i>                |
| Canis lupus, <i>Linn.</i>         | Rhinolophus ferrum-equinum,           |
| Castor Europæus, <i>Owen.</i>     | <i>Owen.</i>                          |
| Cervus elephas, <i>Linn.</i>      | Rhinoceros leptorhinus, <i>Owen.</i>  |
| euryceros, <i>Aldrov.</i>         | tichorinus, <i>Cuvier.</i>            |
| Tarandus, <i>Owen.</i>            | Sorex fodiens, <i>Owen.</i>           |
| Elephas primigenius, <i>Blum.</i> | remifer, <i>Owen.</i>                 |
| Equus fossilis, <i>Cuv.</i>       | vulgaris, <i>Owen.</i>                |
| Felis Catus, <i>Owen.</i>         | Sus scrofa, <i>Owen.</i>              |
| spelæa, <i>Goldf.</i>             | Strongyloceros spelæus, <i>Owen.</i>  |
| Hippopotamus major, <i>Cuv.</i>   | Talpa Europæa, <i>Owen.</i>           |
| Hyæna spelæa, <i>Goldf.</i>       | Trogotherium Cuvieri, <i>Fischer.</i> |
| Lagomys spelæus, <i>Owen.</i>     | Ursus arctos, <i>Linn.</i>            |
| Lepus cuniculus, <i>Linn.</i>     | priscus, <i>Goldf.</i>                |
| timidus, <i>Linn.</i>             | spelæus, <i>Blum.</i>                 |
| Lutra vulgaris, <i>Owen.</i>      | Vespertilio noctula, <i>Penn.</i>     |
| Macacus pliocænus, <i>Owen.</i>   | Vulpes vulgaris, <i>Owen.</i>         |





## THE CRAG FORMATION.

1. *Mammaliferous or Norwich Crag.*
2. *Red Crag.*
3. *Coralline Crag.*

THE deposits to which the term Crag has been applied in Norfolk and Suffolk, were formerly considered as belonging to one period. Mr. Charlesworth, however, after a careful examination of the localities and organic remains, suggested the triple division as given above. Mr. Lyell places the Upper or Mammaliferous Crag in the Older Pleiocene, and the Red and Coralline Crag in the Miocene strata. The Mammaliferous Crag consists of shelly beds of sand, laminated clay, and loam, with layers of flinty shingle, reposing on the chalk, and generally covered with a thick bed of gravel. This stratum contains above one hundred species of testacea, about twenty of which are land and fresh-water shells, and associated with these are numerous remains of Fish (*Platax, Myliobates*), and Mammalia (Mastodon, Elephant, Horse, Pig, &c.), and also bones of Birds. The Red Crag is a deep ferruginous shelly sand, and loam, with an abundance of marine shells, many of which are rolled and frequently comminuted, and the layers are sometimes obliquely arranged, proving an irregular movement during their deposition. Between two and three hundred species of testacea are known from this bed (*Fusus contrarius, Murex alveolatus*, are abundant), and bones and teeth of fishes (*Carcharias, Myliobates, &c.*). The Coralline Crag is a mass of shells and corals in calcareous sand, or compact and forming flaggy beds of limestone with bands of greenish marl; some of the harder portions are used as a building stone. Corals, Zoophytes, Echinoderms, and about four hundred species of shells constitute the fauna of this bed, which

appears to have been partially consolidated anterior to the deposition of the Red Crag, as in some cases it has evidently been denuded, and frequently perforated by the *Pholades*. Mr. Lyell (1841) gives the following table as illustrative of the numerical proportion of recent and fossil species in the English tertiary formations.

| <i>Periods.</i>   | <i>Localities, &amp;c.</i>                  | <i>Per centage of recent.</i> | <i>Number of fossils compared.</i> |
|-------------------|---------------------------------------------|-------------------------------|------------------------------------|
| Post Pleiocenc. . | { Fresh-water of the Valley of the Thames } | . . 99 to 100                 | . . 40                             |
| Newer Pleiocene.  | { Marine strata near Glasgow. }             | . . 85 to 90                  | . . 160                            |
| Older Pleiocene . | { Mammaliferous or Norwich Crag. }          | . . 60 to 70                  | . . 111                            |
| Miocene . . . . . | { Red and Coralline Crag, Suffolk. }        | . . 20 to 30                  | . . 450                            |
| Eocene . . . . .  | { London and Hampshire. }                   | . . 1 or 2                    | . . . . 400                        |

#### LOCALITIES FOR FOSSILS, &c.

*Mammaliferous Crag*.—Easton-Bavant, Southwold, Henham, Bramerton, Thorpe, Postwick, Whitlingham near Norwich; Bridlington, Yorkshire.

*Red Crag*.—Felixstow, Sutton, Tattingstone, Ipswich, Woodbridge, Suffolk; Walton, Essex.

*Coralline Crag*.—Ramsholt, Orford, Sutton.

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 527: *ibid.* vol. xiii. p. 10. (*Zoophytes*) *Mag. Nat. Hist.*, 1839,  
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## LIST OF FOSSILS.

## AMORPHOZOA.

*Grantia compressa*, *Johnst.*

## ZOOPHYTA.

- |        |                                                  |                                              |      |
|--------|--------------------------------------------------|----------------------------------------------|------|
|        | <i>Alcyonidium circumvestiens</i> , <i>Wood.</i> | <i>Flustra coriacea</i> , <i>Esper.</i>      | c.c. |
|        | <i>Alecto gracilis</i> , <i>M. Edw.</i>          | <i>distans</i> , <i>Johnst.</i>              | "    |
| c.c.r. | <i>Alveolites clavatus</i> , <i>Blainv.</i>      | <i>holostoma</i> , <i>Wood.</i>              | "    |
|        | <i>Balanophyllia calyculus</i> , <i>Wood.</i>    | <i>membranacea</i> , <i>Johnst.</i>          |      |
|        | <i>Catenaria dentata</i> , <i>Wood.</i>          | <i>trifolium</i> , <i>Wood.</i>              | c.c. |
|        | <i>Cellaria fistulosa</i> , <i>auct. sp.</i>     | <i>Fungia semilunata</i> , <i>Defr.</i>      | "    |
|        | <i>crassa</i> , <i>Wood.</i>                     | <i>Heteropora dichotoma</i> , <i>Blainv.</i> | c.c. |
| c.c.   | <i>Cellepora cellulosa</i> , <i>Goldf.</i>       | <i>septosa</i> , <i>Wood.</i>                | "    |
| "      | <i>coronopus</i> , <i>Wood.</i>                  | <i>Horuera reteporacea</i> , <i>M. Edw.</i>  | c.c. |
| "      | <i>pumicosa</i> , <i>Johnst.</i>                 | <i>striata</i> , <i>M. Edw.</i>              | "    |
| "      | <i>ramulosa</i> ? <i>Johnst.</i>                 | <i>Idmouca disticha</i> , <i>Blainv.</i>     | "    |
| "      | <i>Cladocora cariosa</i> , <i>Lons.</i>          | <i>Lepralia abstersa</i> , <i>Wood.</i>      | n.c. |
| "      | <i>Crisia eburnea</i> , <i>Lamx.</i>             | <i>catena</i> , <i>Wood.</i>                 | c.c. |
| "      | <i>luxata</i> ? <i>Flem.</i>                     | <i>ciliata</i> , <i>Johnst.</i>              | "    |
| "      | <i>Diastopora meandrina</i> , <i>Wood.</i>       | <i>geniculata</i> , <i>Wood.</i>             | "    |
| "      | <i>Discopora hispida</i> , <i>Flem.</i>          | <i>mammillata</i> , <i>Blainv. sp.</i>       |      |
| "      | <i>Eschara foliacea</i> , <i>Johnst.</i>         | <i>puncturata</i> , <i>Wood.</i>             | "    |
| "      | <i>incisa</i> , <i>M. Edw.</i>                   | <i>umbonella</i> , <i>Wood.</i>              | "    |
| "      | <i>monilifera</i> , <i>M. Edw.</i>               | <i>unicornis</i> , <i>Johnst.</i>            | "    |
| "      | <i>pertusa</i> , <i>M. Edw.</i>                  | <i>variolosa</i> , <i>Johnst.</i>            | "    |
| "      | <i>porosa</i> , <i>M. Edw.</i>                   | <i>Luulites alveolatus</i> , <i>Wood.</i>    | c.c. |
| "      | <i>Sedgwickii</i> , <i>M. Edw.</i>               | <i>Owenii</i> , <i>Gray.</i>                 | "    |
| "      | <i>Fascicularia aurantium</i> , <i>M. Edw.</i>   | <i>Melicertina Charlesworthii</i> ,          | "    |
| "      | <i>Filicella anguinea</i> , <i>Wood.</i>         | ( <i>Ulidium</i> , <i>S. Wood.</i> ).        |      |

|                                              |                                     |      |
|----------------------------------------------|-------------------------------------|------|
| Membranipora membranacea.                    | Tubulipora obelia, <i>Johnst.</i>   | c.c. |
| <i>Johnst. sp.</i>                           | patina, <i>Johnst.</i>              | "    |
| pilosa ? <i>Johnst.</i>                      | serpens, <i>Johnst.</i>             | "    |
| c.c. Orbitulites coscinodiscus, <i>Wood.</i> | palmata, <i>Wood.</i>               | R.C. |
| " Retepora cellulosa, <i>Johnst.</i>         | repens, <i>Wood.</i>                | c.c. |
| " Thconoa ? globosa, <i>Wood.</i>            | Turbinolia Milletiana, <i>Defr.</i> | "    |
| (Blumenbachium, <i>Konig</i> ).              |                                     |      |

## ECHINODERMATA.

|                                             |                   |
|---------------------------------------------|-------------------|
| c.c. Echinocyamus Suffolciensis, <i>Ag.</i> | Spatangus, — ?    |
| Echinus, — ?                                | Temnopleurus, — ? |
| c.c. Amphidctus, — ?                        | Asterias, — ?     |

## FORAMINIFERA.

|                                           |                                              |
|-------------------------------------------|----------------------------------------------|
| c.c. Biloculina bullata, <i>Wood.</i>     | R.C. Polymorphina frondiformis, <i>Wood.</i> |
| "    umbonata, <i>Wood.</i>               | c.c.    gibba, <i>D'Orb.</i>                 |
| " Cristellaria producta, <i>Wood.</i>     | " Polystomella crispa, <i>D'Orb.</i>         |
| R "    subarcuata, <i>Wood.</i>           | " Quinqueloculina subrotunda,                |
| Dentalina communis, <i>Wood.</i>          | <i>D'Orb.</i>                                |
| "    clava, <i>Wood.</i>                  | " Robulina cultrata, <i>D'Orb.</i>           |
| "    jugosa, <i>Wood.</i>                 | " Rosalina rugosa, <i>Wood.</i>              |
| R " Glandulina levigata, <i>Wood.</i>     | R.C.    Beccarii, <i>D'Orb.</i>              |
| Lagena acuticosta, <i>Wood.</i>           | c.c. Spiroloculina depressa, <i>D'Orb.</i>   |
| striata, <i>Walker.</i>                   | " Textularia aciculata, <i>Ehr.</i>          |
| R. c.c. Nodosaria radicular, <i>Wood.</i> | "    media, <i>Wood.</i>                     |
| " Nonioniana globulata, <i>Wood.</i>      | "    sagittula, <i>D'Orb.</i>                |
| " Planorbulina Mediterraneusis,           | "    tumida, <i>Wood.</i>                    |
| <i>D'Orb.</i>                             | " Triloculina oblonga, <i>D'Orb.</i>         |
| R " Polymorphina communis, <i>D'Orb.</i>  | "    tricarinata, <i>D'Orb.</i>              |

## ANNELIDA.

|                                        |                                           |
|----------------------------------------|-------------------------------------------|
| c.c. Cyclogyra multiplex, <i>Wood.</i> | c.c. Spirorbis semistrorsus, <i>Mont.</i> |
| " Spirorbis granulatus, <i>Mont.</i>   | " Vermilia tricuspudata, <i>Sow.</i>      |
| " heterostrophus, <i>Mont.</i>         | " vermicularis, <i>Linn.</i>              |

## CIRRHIPEDA.

|                                 |                              |
|---------------------------------|------------------------------|
| " Acasta Montagui, <i>Linn.</i> | " Adna sulcata, <i>Wood.</i> |
|---------------------------------|------------------------------|





- |      |                                   |      |                                     |
|------|-----------------------------------|------|-------------------------------------|
| R.B. | <i>Balanus balanoides</i> , Linn. | R.B. | <i>Clitia verruca</i> , Sow.        |
| C.C. | <i>crassus</i> , Sow.             | C.C. | <i>Coronula diadema</i> , auct. sp. |
| R.B. | <i>rugosus</i> , Mont.            | "    | <i>Scalpellum magnum</i> , Wood.    |

## CRUSTACEA.

- |      |                                   |      |                               |
|------|-----------------------------------|------|-------------------------------|
| C.C. | <i>Ebalia Bryerii</i> , Leach.    | C.C. | <i>Cancer pagurus</i> , Linn. |
| "    | <i>Pagurus Bernhardus</i> , Fabr. | "    | <i>Atelecyclus</i> , — ?      |

## CONCHIFERA DIMYARIA.

- |           |                                       |                                      |                |
|-----------|---------------------------------------|--------------------------------------|----------------|
| C.C.      | <i>Agina purpurea</i> , Turt.         | <i>Cytherea chione</i> , Turt.       | C.C.           |
| M.C.      | <i>Amphidesma album</i> , Flem.       | <i>Donax trunculus</i> , Linn.       | M.C.           |
|           | <i>intermedia</i> , Thomp.            | <i>Dosina fasciata</i> , Don. sp.    | " R.C.         |
| C.C.      | <i>prismaticum</i> , Flem.            | <i>imbricata</i> , Sow. sp.          | "              |
|           | ( <i>Ligula</i> , Mont.)              | <i>turgida</i> , Sow. sp.            | C.C. "         |
| C.C.      | <i>Arca Noæ</i> , Linn.               | <i>Ensis complanatus</i> , Sow.      |                |
| "         | <i>raridentata</i> , Wood.            | ( <i>Solen siliqua</i> ?)            |                |
| R.C.      | <i>lactanea</i> , Wood.               | <i>ensiformis</i> , Sow.             |                |
| "         | <i>Artemis lentiformis</i> , Sow. sp. | <i>Gastrochæna pholadia</i> , Turt.  | C.C.           |
| C.C.      | <i>sinuata</i> , Turt. sp.            | <i>Glycimeris vagina</i> , Wood.     | R.C.           |
| C.C.      | <i>Astarte bipartita</i> , Sow.       | <i>Hippagus cardiiformis</i> , Wood. |                |
| M.C.      | <i>compressa</i> , Flem.              | <i>Isocardia cor</i> , Lam. sp.      | R.C.-C.C.      |
| C.C.      | <i>gracilis</i> , Goldf.              | <i>Kellia cycladea</i> , Wood.       |                |
| "         | <i>mutabilis</i> , Wood.              | <i>dubia</i> , Wood.                 | " "            |
| "         | <i>nitida</i> , Sow.                  | <i>flexuosa</i> , Wood.              |                |
| R.C.      | <i>obliquata</i> , Sow.               | <i>orbicularis</i> , Wood.           |                |
|           | <i>pisiformis</i> , Wood.             | <i>pumila</i> , Wood.                |                |
| C.C.      | <i>pygmæa</i> , Munst.                | <i>suborbicularis</i> , Turt.        | C.C.           |
| R.C.      | <i>Cardium angustatum</i> , Sow.      | <i>Lucina astartea</i> , Nyst.       |                |
| M.C.-R.C. | <i>edule</i> , Linn.                  | <i>digitaria</i> , Lam.              | C.C.           |
| "         | <i>edulinum</i> , Sow.                | <i>dilatata</i> , Philippi, sp.      | "              |
| C.C.      | <i>elongatum</i> , Turt.              | <i>divaricata</i> , Lam.             | M.C.           |
| "         | <i>Grænländicum</i> , Chemn.          | <i>radula</i> , Lam.                 | R.C. "         |
| "         | <i>Parkinsoni</i> , Sow.              | <i>rotundata</i> , Turt.             | " C.C.         |
|           | <i>Chama gryphina</i> , Lam.          | <i>Lutraria compressa</i> , Lam.     | M.C.-R.C.      |
| R.C.      | <i>Corbula complanata</i> , Sow.      | <i>elliptica</i> , Lam.              | C.C. "         |
| C.C.      | <i>granulata</i> , Nyst.              | <i>Mactra arcuata</i> , Sow.         | M.C.-R.C.-C.C. |
| M.C.-R.C. | <i>nucleus</i> , Lam.                 | <i>deaurata</i> , Turt.              | "              |
|           | <i>Cultellus cultellatus</i> , Wood.  | <i>glauca</i> , Gmel.                | "              |
| C.-C.C.   | <i>Cyprina rustica</i> , Sow. sp.     | <i>solida</i> , Linn.                | " "            |
| M.C.      | <i>vulgaris</i> , G. Sow.             | <i>stultorum</i> , Lam.              | " "            |

- |       |                                               |       |                                               |
|-------|-----------------------------------------------|-------|-----------------------------------------------|
| 1. 2. | <i>Mactra subtruncata</i> , <i>Mont.</i>      | 2.    | <i>Pholas candida</i> , <i>Linn.</i>          |
| 3     | <i>Modiola discors</i> , <i>Turt.</i>         |       | <i>crispata</i> , <i>Linn.</i>                |
| 1     | <i>vulgaris</i> , <i>Flem.</i>                | 2.    | <i>cylindrica</i> , <i>Sow.</i>               |
|       | <i>Montacuta bidentata</i> , <i>Mont. sp.</i> | 3     | <i>papyracea</i> , <i>Turt.</i>               |
| 3     | <i>ovata</i> , <i>Brown, sp.</i>              |       | <i>Piinna ingens</i> , <i>Lam.</i>            |
| 3     | <i>substriata</i> , <i>Turt.</i>              | 3     | <i>Pleurodon ovalis</i> , <i>Wood.</i>        |
| 1     | <i>Mya arenaria</i> , <i>Linn.</i>            | 3     | <i>Psammobia Ferroensis</i> , <i>Turt.</i>    |
| 2. 3. | <i>truncata</i> , <i>Linn.</i>                | 3     | <i>Florida</i> , <i>Turt.</i>                 |
|       | ( <i>M. ovalis</i> , <i>Turt.</i> )           | 3     | <i>scopula</i> , <i>Turt.</i>                 |
| 1     | <i>lata</i> , <i>Sow.</i>                     | —     | <i>vespertina</i> , <i>Turt.</i>              |
| 1     | <i>Mytilus antiquorum</i> , <i>Sow.</i>       | 2.    | <i>Pullastra virginea</i> , <i>Linn. sp.</i>  |
| 1. 2. | <i>edulis</i> , <i>Linn.</i>                  | 1. 2. | <i>Saxicava rugosa</i> , <i>Linn.</i>         |
| 3     | <i>Neæra sulcata</i> , <i>Wood.</i>           | 1     | <i>Solen siliqua</i> , <i>Linn.</i>           |
| 1     | <i>Nucula Cobboldiæ</i> , <i>Sow.</i>         | 3     | <i>Solecurtus quadratus</i> , <i>Sow.</i>     |
| 2. 3. | <i>lævigata</i> , <i>Sow.</i>                 | 3     | <i>Sphenia Binghami</i> , <i>Turt.</i>        |
| 2     | <i>minuta</i> , <i>Flem.</i>                  | 2.    | <i>Tellina Benedenii</i> , <i>Nyst.</i>       |
| 2. 3. | <i>nucleus</i> , <i>Linn. sp.</i>             | 1. 2. | <i>Balthica</i> , <i>Linn.</i>                |
| 1     | <i>oblongoides</i> , <i>Wood.</i>             | 1. 2. | <i>calcarca</i> , <i>Gmel.</i>                |
| 3     | <i>pygmæa</i> , <i>Goldf.</i>                 | 1. 2. | <i>crassa</i> , <i>Gmel.</i>                  |
| 1     | <i>tenuis</i> , <i>Mont. sp.</i>              | 3     | <i>donacina</i> , <i>Linn.</i>                |
| 3     | <i>trigonula</i> , <i>Wood.</i>               | 1     | <i>fabula</i> , <i>Mont.</i>                  |
| 2. 3. | <i>Pandora margaritacea</i> , <i>Lam.</i>     |       | <i>solidula</i> , <i>Turt.</i>                |
| 2     | <i>Panopæa gentilis</i> , <i>Sow.</i>         |       | <i>Thracia inflata</i> , <i>Sow.</i>          |
| 3     | <i>Ipsvicencis</i> , <i>Valenc.</i>           | 2. 3  | <i>pubescens</i> , <i>Lam.</i>                |
| 2.    | <i>Norwegica</i> , <i>Sow.</i>                | 3     | <i>Teredo navalis</i> , <i>Linn.</i>          |
|       | ( <i>P. arctica</i> , <i>Lam.</i> )           | 1. 2. | <i>Venericardia corbis</i> , <i>Phillipi.</i> |
| 1. 3  | <i>Pectunculus pilosus</i> , <i>Flem.</i>     | 2.    | <i>orbicularis</i> , <i>Sow.</i>              |
| 3     | <i>pygmæus</i> , <i>Phil.</i>                 | —     | <i>scalaris</i> , <i>Sow.</i>                 |
| 3     | <i>sublævigatus</i> , <i>Nyst.</i>            | 2. 3  | <i>senilis</i> , <i>Sow.</i>                  |
| 2. 3  | <i>Petricola laminosa</i> , <i>Sow.</i>       | 2.    | <i>Venus ovata</i> , <i>Penn.</i>             |
|       | <i>Pholadomya Hesterna</i> , <i>Sow.</i>      |       |                                               |

## CONCHIFERA MONOMYARIA.

*Hinnites Dubuissoni*, *Sow.**Lima exilis*, *Wood.**fragilis*, *auct.**oblonga*, *Wood.**plicatula*, *Wood.**Limatula ovata*, *Wood.**subauriculata*, *Mont. sp.**Ostrea edulis*, *Linn.**Pecten gracilis*, *Sow.**grandis*, *Sow.*







*Pecten obsoletus*, Sow.  
 (*P. triradiatus*, Mull.).  
*opercularis*, Linn.

*Pecten striatus*, Sow.  
 (*P. sinuosus*, Linn.?).  
*tumidus*, Turt.

## BRACHIOPODA.

*Terebratula psittacea*, Lam.  
*variabilis*, Sow.

*Lingula fusca*, Wood.  
*Orbicula Norwegica*, Sow.

## GASTEROPODA.

*Actæon Noæ*, Sow.  
*tornatilis*, Mont. sp.  
*Adeorbis striatus*, Wood.  
*subcarinatus*, Mont. sp.

*Chiton fascicularis*, Sow.  
*Columbella sulcata*, Sow. sp.  
*Conovulus myosotis*, Drap. sp.  
*pyramidalis*, Sow. sp.

*Alvania snpranitida*, Wood.  
*Aporrhais pes-pellicani*, auct.  
*Buccinum Dalei*, Sow.  
*nndatum*, Linn.

*Dentalium costatum*, Sow.  
*entalis*, Linn.  
*Emarginula crassa*, Sow.  
*fissura*, Linn. sp.

*Bulla acuminata*, Brug.  
*catenata*, Wood.  
*concinna*, Wood.  
*conulus*, Desh.  
*cylindracea*, Penn.  
*Lajonkaireana*, Bast.  
*lignaria*, Linn.  
*nana*, Wood.  
*obtusa*, Mont.  
*quadrata*, Wood.  
*sculpta*, Wood.  
*truncata*, Mont.  
*ventrosa*, Wood.

*Erato lævis*, Gray.  
*Maugeria*, Gray.  
*Eulima polita*, Risso.  
*subulata*, Risso.  
*Fissurella cancellata*, List, sp.  
 (*Patella Græca*, Linn.?).

*Cancellaria costellifera*, Sow. sp.  
*Mitræformis*, Broc. sp.

*Fusus alveolatus*, Sow.  
*antiquus*, Mull. sp.  
*cancellatus*, Sow.  
*costatus*, Sow.  
*despectus*, Linn. sp.  
*echinatus*, Sow.  
*elegans*, Wood.

*Capulus ungaricus*, Linn. sp.  
*Cassidaria bicatenata*, Sow.

*Islandicus*, Martin.  
*nebula*, Mont.  
*scalariformis*, Gould.  
*Sabini*, Gray.

*Cerithium adversum*, Mont. sp.  
*punctatum*, Woodw.  
*trilineatum*, Phil.

*turriculus*, Flem.  
*Infundibulum Sinense*, Mont.  
*Litiopa papillosa*, Wood.

*Cerithium tuberculare*, Mont. sp.

- Littorina littorea*, *Linn. sp.*  
     *suboperta*, *Sow.*  
*Lottia parvula*, *Gray.*  
     *virginea*, *Gray.*  
*Macromphalus reticulatus*, *Wood.*  
*Marsenia depressa*, *Wood.*  
*Murex alveolatus*, *Sow.*  
     *erinaceus*, *Mont.*  
     *tortuosus*, *Sow.*  
*Nassa conglobata*, *Brocchi, sp.*  
     *elegans*, *Sow.*  
     *granulata*, *Sow.*  
     *incrassata*, *Flem.*  
     *labiosa*, *Sow. sp.*  
     *propinqua*, *Sow.*  
     *reticosa*, *Sow.*  
     *rugosa*, *Sow.*  
*Natica catena*, *Wood.*  
     *catenoides*, *Wood.*  
     *cirriformis*, *Sow.*  
     *clausa*, *Gray.*  
     *helicoides*, *Johnst.*  
     *hemiclaua*, *Sow.*  
     *patula*, *Sow.*  
*Odostomia plicata*, *Flem.*  
     *pupa*, *Dubois, sp.*  
*Ovula Leathesii*, *Sow.*  
*Patella vulgata*, *Linn.*  
*Phasianema sulcata*, *Wood.*  
*Pleurotoma intorta*, *Brocch.*  
     *linearis*, *Mont. sp.*  
     *mitrula*, *Sow.*  
*Purpura incrassata*, *Sow.*  
     *lapillus*, *Lam.*  
     *tetragona*, *Sow.*  
*Pyrula reticulata*, *Lam.*  
*Ringicula buccinea*, *Desh.*  
     *ventricosa*, *Sow.*  
*Rissoa reticulata*, *Mont.*  
     *semicostata*, *Mont.*  
     *striata*, *Mont.*  
     *subumbilicata*, *Mont.*  
     *Zetlandica*, *Mont.*  
*Scalaria clathratula*, *Flem.*  
     *foliacea*, *Sow.*  
     *frondosa*, *Sow.*  
     *similis*, *Sow.*  
*Scissurella crispata*, *Flem. sp.*  
*Solariella maculata*, *Wood.*  
*Tornatella tornatilis*, *Linn. sp.*  
*Trichotropis borealis*, *Brod.*  
*Trivia avellana*, *Sow.*  
     *Europæa*, *Gray.*  
     *retusa*, *Sow.*  
*Trochus lævigatus*, *Sow.*  
     *littoralis*, *Brown.*  
     *Montacuti. auct.*  
     *pseudo-ziziphinus*, *Schl.*  
     *tumidus*, *Mont.*  
*Turbo sphæroidea*, *Wood.*  
*Turbonilla acieula*, *Phil.*  
     *elegantissima*, *Mont.*  
     *rufa*, *Phil.*  
*Turritella bicincta*, *Wood.*  
     *incrassata*, *Sow.*  
     *terebra*, *Lam.*  
*Velutina elongata*, *Forbes.*  
     *lævigata*, *Flem.*  
*Voluta Lamberti*, *Sow.*

## PTEROPODA.

- Cæcum glabrum*, *Mont. sp.*  
     *mammillum*, *Wood.*  
*Cæcum trachea*, *Flem.*  
*Cleodora infundibulum*, *Wood.*













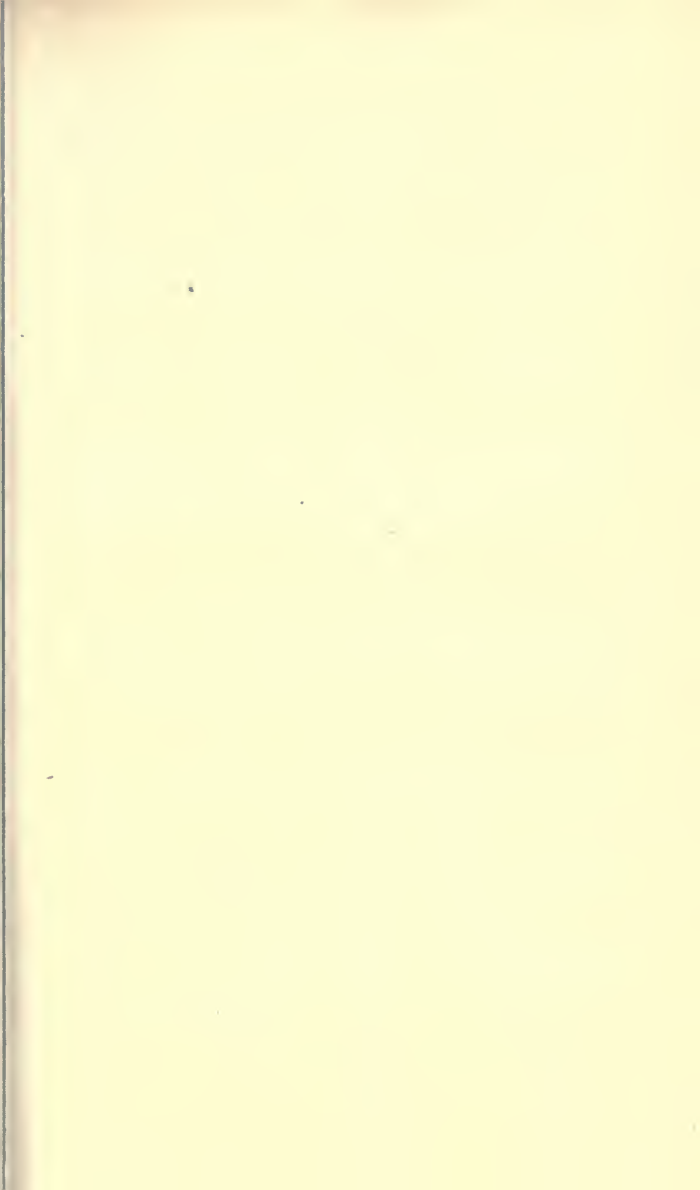
## FLUVIO-MARINE GROUP OF THE ISLE OF WIGHT, &c.

*Upper and lower fresh-water formation (Webster).  
Headon-hill Marls and Limestones (Prestwich).*

THE fresh-water formations of the Hampshire basin, extend over the northern part of the Isle of Wight, and the adjoining coast of Hampshire, reposing in both districts on the London clay. This group consists of numerous layers of calcareous and argillaceous marls of various colours, sometimes indurated, alternating with beds of sand, sandy clays, &c. ; and associated with them, are bands of earthy limestone, sometimes siliceous and compact. These beds contain numerous fluviatile and terrestrial shells (*Bulinus, Helix, Planorbis, Lymnea, &c.*), and intercalated with them, towards the middle of the series, are some layers of green sandy marls, sometimes indurated, containing marine or estuary testacea (*Ostrea, Natica, Potamides, Melania, &c.*).

The relations of these strata with those in the Paris basin, have long been a subject of great interest ; and it has usually been considered that in the Isle of Wight, we possess a similar sequence of all the beds above the Calcaire grossier.

Mr. Prestwich, however, after a careful examination of this district, and whose memoir contains full details of the whole subject, has arrived at a different conclusion. He considers the upper portion of the Parisian series to be wanting in the Isle of Wight, and that the whole of the fresh-water and estuary series of the island are synchronous, or nearly so, with the upper calcaire grossier. The





following view is abstracted from Mr. Prestwich's paper, shewing the probable foreign equivalents :—\*

|               |                                                                                          |                                                                |
|---------------|------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| Upper Group.  | { Upper and Lower Headon Hill<br>Marls and Limestones. }                                 | Upper calcaire<br>grossier.                                    |
| Middle Group. | { Headon Hill Sands.<br>London Clay (upper division).<br>London Clay (lower division). } | Lower calcaire<br>grossier, and<br>Glanconie grossiere         |
| Lower Group.  | { Bognor Beds . . . . .<br>Mottled clays and sand. . . }                                 | { Lits coquilliers.<br>Sables inferieurs.<br>Argile plastique. |

\* In a subsequent communication to the Geological Society, (Proceedings, Feb. 3, 1847,) Mr. Prestwich considers that the term "London Clay," which, following the usually received nomenclature, he has applied in the above table to the equivalents in the Isle of Wight basin, of the Barton and Bracklesham beds of Hampshire and Sussex, must be abandoned; for in his paper it is clearly shown that the "London Clay" of the London basin is not synchronous with the Barton and Bracklesham deposits.

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#### LOCALITIES FOR FOSSILS, &c.

Headon Hill and Colwell Bay; Hampstead Cliff; Shalcombe, near Cowes; Binstead near Ryde, White Cliff Bay, Isle of Wight. Hordwell Cliff, Hampshire.

#### LIST OF PUBLICATIONS, &c.

- Lyell, C. 'On the fresh-water strata of Hordwell Cliff, *Geol. Trans.* vol. ii.  
 Lyell, C. ' *Elements of Geology*, ' (Eocene Formations), v. i. p. 336.  
 Owen, Prof. R. ' *British Fossil Mammals and Birds*.  
 Prestwich, J. ' On the Tertiary Formations of the Isle of Wight, ' &c. *Quart. Geol. Journ.* vol. ii. p. 223. [This paper contains a list of all the previous publications on these deposits,]  
 Sedgwick, Rev. Prof. ' *Annals of Philosophy*, ' 1822, p. 339.  
 Webster, T. ' On a Freshwater Formation in Hordwell Cliff, Hampshire, and on the subjacent Beds from Hordwell to Muddiford. ' *Geol. Trans.* vol. i.  
 Wood, S.V. ' On the Discovery of an Alligator, ' &c. *Geol. Journ.* No. 1.
-

## LIST OF FOSSILS.

## PLANTÆ.

- |                                   |                                   |
|-----------------------------------|-----------------------------------|
| Carpolithes ovulum, <i>Brong.</i> | Chara medicaginula, <i>Brong.</i> |
| thalictroides, <i>Brong.</i>      | tuberculata, <i>Lyell.</i>        |

## ANNELIDA

- |                                |                             |
|--------------------------------|-----------------------------|
| Serpula corrugata, <i>Sow.</i> | Serpula tenuis, <i>Sow.</i> |
|--------------------------------|-----------------------------|

## CIRRHIPEDA.

- |                               |                                  |
|-------------------------------|----------------------------------|
| Balanus reflexus, <i>Sow.</i> | Balanus unguiformis, <i>Sow.</i> |
|-------------------------------|----------------------------------|

## CONCHIFERA DIMYARIA.

- |                                     |                                  |
|-------------------------------------|----------------------------------|
| Arca elegans, <i>Wood.</i>          | Lucina pulvinata, <i>Wood.</i>   |
| Corbula cuspidata, <i>Sow.</i>      | Mya angustata, <i>Sow.</i>       |
| nitida, <i>Sow.</i>                 | Mytilus affinis, <i>Sow.</i>     |
| Cyrena Cycladiformis, <i>Desh.</i>  | Nucula deltoidea, <i>Lam.</i>    |
| obovata, <i>Sow.</i>                | Potamomya gregarea, <i>Sow.</i>  |
| pulchra, <i>Sow.</i>                | plana, <i>Sow.</i>               |
| Cytherea incrassata, <i>Sow.</i>    | Psammobia compressa, <i>Sow.</i> |
| obliqua, <i>Desh.</i>               | solida, <i>Sow.</i>              |
| Dreissena Brardii, <i>Fauj. sp.</i> | Unio Solandri, <i>Sow.</i>       |
| Lucina divaricata, <i>Lam.</i>      | Ostrea ———?                      |

## GASTEROPODA.

- |                                       |                                        |
|---------------------------------------|----------------------------------------|
| Ancillaria subulata, <i>Lam.</i>      | Melania fasciata, <i>Sow.</i>          |
| Ancylus elegans, <i>Sow.</i>          | minima, <i>Sow.</i>                    |
| Bulimus costellatus, <i>Sow.</i>      | muricata, <i>Wood.</i>                 |
| ellipticus, <i>Sow.</i>               | truncata, <i>Sow.</i>                  |
| Fusus labiatus, <i>Sow.</i>           | Melanopsis ancillaroides, <i>Desh.</i> |
| Globulus depressus, <i>Sow.</i>       | brevis, <i>Sow.</i>                    |
| Limnæus columellaris, <i>Sow.</i>     | carinata, <i>Sow.</i>                  |
| fusiformis, <i>Sow.</i>               | fusiformis, <i>Sow.</i>                |
| longiscatus, <i>Brong.</i>            | minuta, <i>Wood.</i>                   |
| maximus, <i>Sow.</i>                  | subulata, <i>Sow.</i>                  |
| minimus, <i>Sow.</i>                  | Murex sexdentatus, <i>Sow.</i>         |
| pyramidalis, <i>Sow.</i>              | Natica similis, <i>Sow.</i>            |
| Melania angulata, <i>Wood, ? MSS.</i> | glaucinoïdes, <i>Lam.</i>              |
| costata, <i>Sow.</i>                  | Nerita aperta, <i>Sow.</i>             |







|                                      |                                     |
|--------------------------------------|-------------------------------------|
| Nematura ———?                        | Planorbis rotundatus, <i>Brong.</i> |
| Neritina concava, <i>Sow.</i>        | Potamides acutus, <i>Sow.</i>       |
| Odostomia subulata, <i>Wood.</i>     | cinctus, <i>Sow.</i>                |
| Paludina angulosa, <i>Sow.</i>       | concauus, <i>Sow.</i>               |
| lenta, <i>Sow.</i>                   | duplex, <i>Sow.</i>                 |
| ( <i>P. concinna</i> , <i>Sow.</i> ) | margaritaceus, <i>Sow.</i>          |
| minnta, <i>Sow.</i>                  | plicatus, <i>Sow.</i>               |
| Planorbis cylindricus, <i>Sow.</i>   | terebrais, <i>Wood.</i>             |
| enomphalus, <i>Sow.</i>              | ventricosus, <i>Sow.</i>            |
| lens, <i>Sow.</i>                    | Voluta spinosa, <i>Lam.</i>         |
| obtusus, <i>Sow.</i>                 |                                     |

## REPTILIA.

Crocodylus Hantoniensis, *Wood.*

## MAMMALIA.

|                                    |                                  |
|------------------------------------|----------------------------------|
| Auoplotherium commune, <i>Cuv.</i> | Palæotherium medium, <i>Cuv.</i> |
| secundiarum, <i>Cuv.</i>           | minum, <i>Cuv.</i>               |
| Chæropotamus Cuvieri, <i>Owen.</i> | Microchærus erinaceus,           |
| Dichobune cervinum, <i>Owen.</i>   | <i>Charlsw.</i>                  |
| Palæotherium crassum, <i>Cuv.</i>  | Spalacodon ———? <i>Charlsw.</i>  |
| curtum, <i>Cuv.</i>                |                                  |

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## LONDON CLAY.

CALCAIRE GROSSIER, &amp;c., OF PARIS.

1. *Bagshot Sands.*
2. *London Clay, Bognor Beds.*
3. *Plastic Clay and Sands.*

THE fluvio-marine deposits of the last section might have been included under this division, as they evidently form a continuation of the same series, and also belong to the Eocene period. For the convenience of reference however, the list of fossils has been kept separate; and under this division, those beds belonging to the Bagshot Sand, London and Plastic Clays, are associated. The Bagshot Sands are extensively developed over Purbright, Frimley, and Woking Commons, and the adjacent country, consisting of a series of loose sands, sandstone, greenish sandy clay, and fissile marls, shales, &c., some of the beds, especially those composed of green sand and clays being more fossiliferous, containing a few species of marine testacea, and some interesting forms of fishes related to the Saw-fish, Sharks, Rays, &c.:—Goldsworth hill, near Woking, affords a good section of these beds. The London Clay is a brown or dark-blue, or blackish tenaceous clay, with layers at irregular depths of argillo-calcareous nodules, used for preparing Roman Cement. Veins of green sand, and masses of sulphate of lime and iron pyrites also occur. The Bognor beds, which are found towards the base of the London Clay, consist of calcareous and siliceous nodules, or of coarse green sand, or friable sand-rock with numerous marine shells. In the Isle of Wight, the Bognor Beds are a massive brown clay and clayey green sand, with layers of iron sand and septaria. The beds usually termed





Plastic Clay separate the London Clay from the chalk, and are composed of sand, shingle, mottled clays and loam; marine shells sometimes occur in them, and along a portion of the southern side of the London basin, a fluvio-marine deposit (Woolwich, &c.), is intercalated in the beds immediately overlying the chalk, proving the existence of streams charged with their peculiar testacea, and emptying themselves into the ancient estuary. The London Clay formation is separated into two distinct basins, those of London and Hampshire, which are bounded by the rising grounds of the chalk, except on the seaward side; the intervening tract between the clay and chalk being usually occupied by the sands, &c. of the Plastic Clay.\*

The Fauna and Flora of this period have decidedly a tropical aspect. Among the testacea are many species of *Conus*, *Cancellaria*, *Voluta*, *Nautilus*; besides numerous species of fish and a great abundance of the fruit and seeds belonging to tribes and genera indicative of the warmer regions of the globe.

\* The deposits in the London and Hampshire districts have hitherto generally been considered to be synchronous; that is, the Clays of the London basin being equivalent to the Barton and Bracklesham beds, and the variegated sands of Alum Bay representing the Plastic Clays, &c.

Mr. Prestwich, however, suggests that this view of their arrangement is somewhat erroneous, and in a recent memoir communicated to the Geological Society, (Geol. Proceedings Feb. 3, 1847,) he has explained by the aid of numerous and extensive sections over both districts, by which the superposition of the beds is clearly exhibited, that the formation comprised within them, may be conveniently subdivided into certain groups, in the following descending order, and to which their foreign equivalents are added.

| <i>English Series.</i>              | <i>French Series.</i>                  |
|-------------------------------------|----------------------------------------|
| Barton Clays. . . . . }             | Calcaire Grossier (in part.) . . . . . |
| Bracklesham Sands. . . . . }        | Glanconie Grossiere. . . . .           |
| London Clay and . . . . . }         | Lits Coquilliers et . . . . .          |
| Bognor Beds. . . . . }              | Sables Inferieurs. . . . .             |
| Mottled or Plastic Clays and Sands. | Argile Plastique et Lignites. . . . .  |

This view is also corroborated by the distribution of the organic remains, for, although many species are common to all the divisions, still a large number of species are peculiar to each of them, thus forming a somewhat distinctive and characteristic Fauna.

### LOCALITIES FOR FOSSILS.

*Of the London Clay.*—Isle of Sheppy, Whitstable, Kent; Harwich, Southend, Essex; Highgate, Finchley, Middlesex; Newnham,

and near Basingstoke, Hants; Bracklesham Bay, Sussex; Barton Cliffs, Hants; Alum and White Cliff Bays, Isle of Wight; Hedgerley, Bucks.

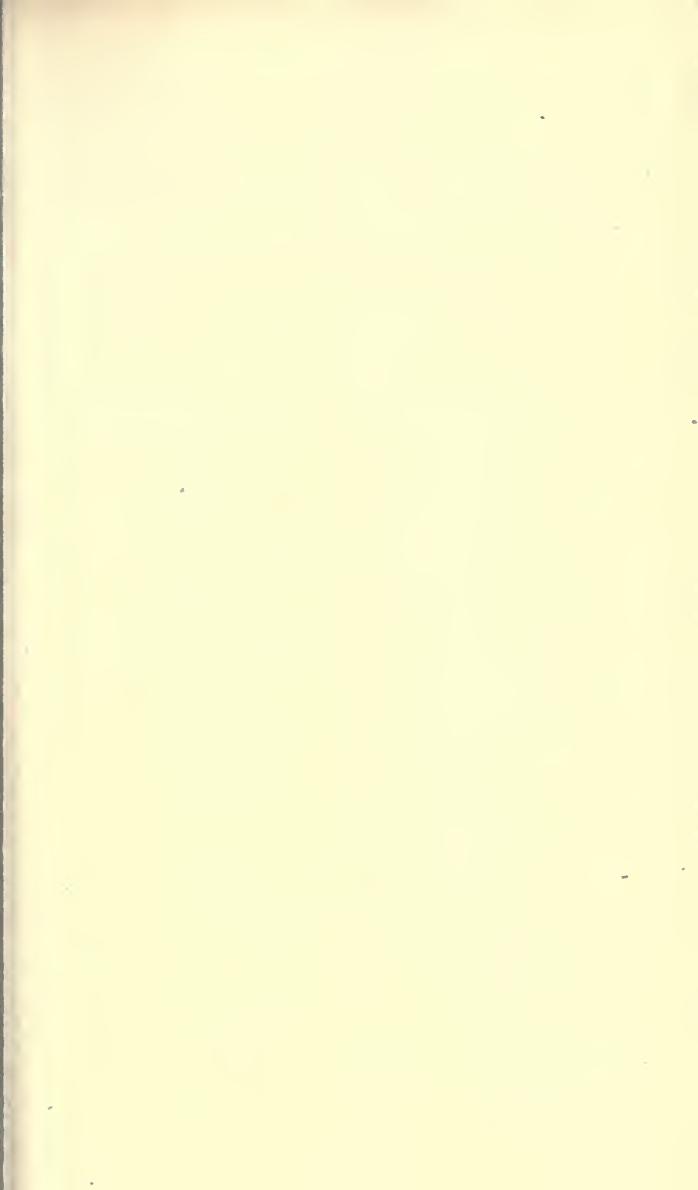
*Of the Bognor Beds.*—Reading, Berks; Hungerford, Wilts; near Basingstoke, Hants; Bognor, Sussex; Alum and White Cliff Bays, Isle of Wight; Herne and Pegwell Bay, Kent.

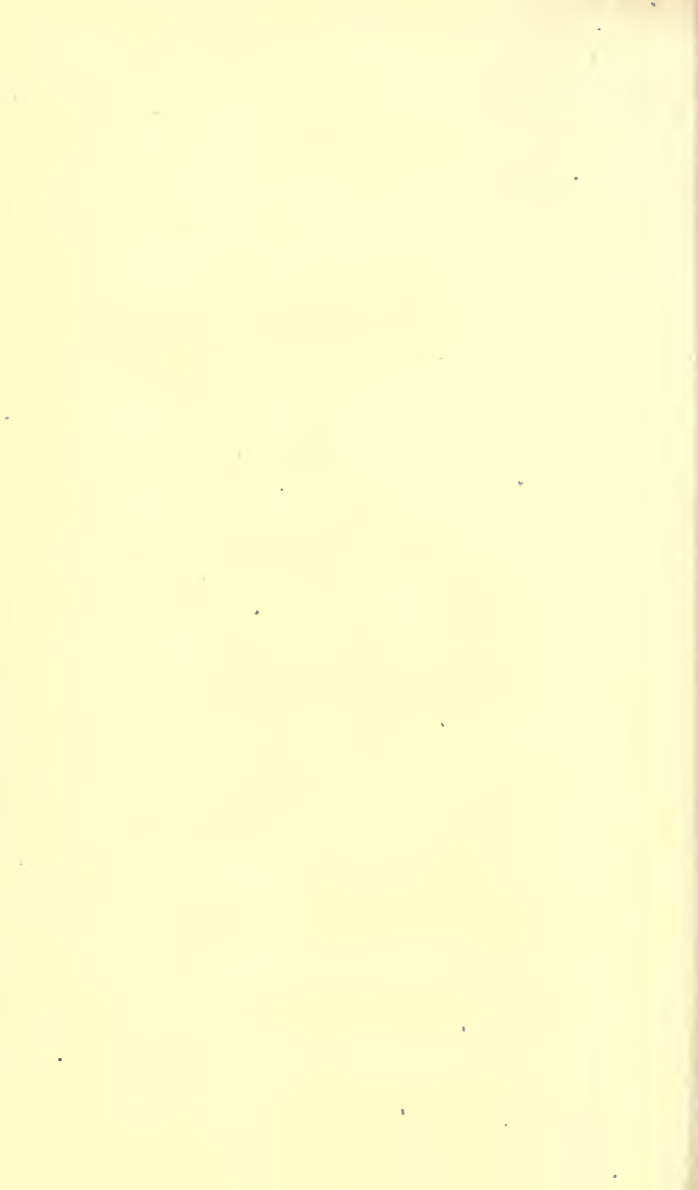
*Of the Woolwich Beds.*—Woolwich, Lewisham, Plumstead, Upnor, Erith, Kent; Newhaven, Sussex; Railway between Guildford and Woking.

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- Brander, 'Fossilia Hantoniensia,' 1766.
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- Richardson, W. 'On the locality of the Hyracotherium,' *Geol. Trans.* vol. vi.  
 Warburton, H. 'On the Bagshot Sand,' *Geol. Trans.* vol. i.  
 Webster, T. 'On a freshwater formation in Hordwell Cliff,' &c.,  
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 Wetherell, N. T. 'On a well at Hampstead Heath,' &c., *Geol. Trans.*  
 vol. v.

## LIST OF FOSSILS.

## PLANTÆ.

- |                                     |                                          |
|-------------------------------------|------------------------------------------|
| Cucumites variabilis, <i>Bow.</i>   | Faboidea larga, <i>Bow.</i>              |
| Cupanoides corrugatus, <i>Bow.</i>  | marginata, <i>Bow.</i>                   |
| depressus, <i>Bow.</i>              | oblouga, <i>Bow.</i>                     |
| grandis, <i>Bow.</i>                | ovata, <i>Bow.</i>                       |
| inflatus, <i>Bow.</i>               | pinguis, <i>Bow.</i>                     |
| lobatus, <i>Bow.</i>                | plana, <i>Bow.</i>                       |
| pygmæus, <i>Bow.</i>                | planimeta, <i>Bow.</i>                   |
| subangulatus, <i>Bow.</i>           | planodorsa, <i>Bow.</i>                  |
| tumidus, <i>Bow.</i>                | quadrupes, <i>Bow.</i>                   |
| Cupressinites Comptoni, <i>Bow.</i> | robusta, <i>Bow.</i>                     |
| corrugatus, <i>Bow.</i>             | rostrata, <i>Bow.</i>                    |
| crassus, <i>Bow.</i>                | subdisca, <i>Bow.</i>                    |
| curtus, <i>Bow.</i>                 | subtenuis, <i>Bow.</i>                   |
| elongatus, <i>Bow.</i>              | symmetrica, <i>Bow.</i>                  |
| globatus, <i>Bow.</i>               | teuuis, <i>Bow.</i>                      |
| recurvatus, <i>Bow.</i>             | ventricosa, <i>Bow.</i>                  |
| semiplotus, <i>Bow.</i>             | Hightea attenuata, <i>Bow.</i>           |
| subangulatus, <i>Bow.</i>           | elegans, <i>Bow.</i>                     |
| subfusiformis, <i>Bow.</i>          | elliptica, <i>Bow.</i>                   |
| sulcatus, <i>Bow.</i>               | fusiformis, <i>Bow.</i>                  |
| tessellatus, <i>Bow.</i>            | inflata, <i>Bow.</i>                     |
| Thuoides, <i>Bow.</i>               | minima, <i>Bow.</i>                      |
| Faboidea acuta, <i>Bow.</i>         | orbicularis, <i>Bow.</i>                 |
| bifalcis, <i>Bow.</i>               | oviformis, <i>Bow.</i>                   |
| complanata, <i>Bow.</i>             | turbinata, <i>Bow.</i>                   |
| crassa, <i>Bow.</i>                 | Leguminosites æquilateralis, <i>Bow.</i> |
| crassicutis, <i>Bow.</i>            | cordatus, <i>Bow.</i>                    |
| doliformis, <i>Bow.</i>             | crassus, <i>Bow.</i>                     |

|                                           |                                                |
|-------------------------------------------|------------------------------------------------|
| Leguminosites <i>curtus</i> , <i>Bow.</i> | <i>Nipadites Parkinsonis</i> , <i>Bow.</i>     |
| <i>dimidiatus</i> , <i>Bow.</i>           | <i>pruniformis</i> , <i>Bow.</i>               |
| <i>elegans</i> , <i>Bow.</i>              | <i>pyramidalis</i> , <i>Bow.</i>               |
| <i>enormis</i> , <i>Bow.</i>              | <i>Petrophiloides cellularis</i> , <i>Bow.</i> |
| <i>gracilis</i> , <i>Bow.</i>             | <i>conoideus</i> , <i>Bow.</i>                 |
| <i>inconstans</i> , <i>Bow.</i>           | <i>cylindricus</i> , <i>Bow.</i>               |
| <i>lentiformis</i> , <i>Bow.</i>          | <i>ellipticus</i> , <i>Bow.</i>                |
| <i>lobatus</i> , <i>Bow.</i>              | <i>imbricatus</i> , <i>Bow.</i>                |
| <i>planus</i> , <i>Bow.</i>               | <i>oviformis</i> , <i>Bow.</i>                 |
| <i>reniformis</i> , <i>Bow.</i>           | <i>Richardsonii</i> , <i>Bow.</i>              |
| <i>rotundatus</i> , <i>Bow.</i>           | <i>Tricarpellites aciculatus</i> , <i>Bow.</i> |
| <i>subovatus</i> , <i>Bow.</i>            | <i>communis</i> , <i>Bow.</i>                  |
| <i>Mimosites Browniana</i> , <i>Bow.</i>  | <i>crassus</i> , <i>Bow.</i>                   |
| <i>Nipadites acutus</i> , <i>Bow.</i>     | <i>curtus</i> , <i>Bow.</i>                    |
| <i>clavatus</i> , <i>Bow.</i>             | <i>gracilis</i> , <i>Bow.</i>                  |
| <i>cordiformis</i> , <i>Bow.</i>          | <i>patens</i> , <i>Bow.</i>                    |
| <i>crassus</i> , <i>Bow.</i>              | <i>rugosus</i> , <i>Bow.</i>                   |
| <i>ellipticus</i> , <i>Bow.</i>           | <i>Wetherellia variabilis</i> , <i>Bow.</i>    |
| <i>giganteus</i> , <i>Bow.</i>            | <i>Xulionospirionites latus</i> , <i>Bow.</i>  |
| <i>lanccolatus</i> , <i>Bow.</i>          | <i>Zingiberiformis</i> , <i>Bow.</i>           |

## ZOOPHYTA.

|                                      |                                             |
|--------------------------------------|---------------------------------------------|
| <i>Astrea Websteri</i> , <i>Bow.</i> | <i>Turbinolia elliptica</i> , <i>Brong.</i> |
| <i>Desmophyllum</i> , — ?            | <i>sulcata</i> , <i>Lam.</i>                |

## ECHINODERMATA.

|                                                |                                         |
|------------------------------------------------|-----------------------------------------|
| <i>Glypticus</i> , — ?                         | <i>Pentacrinus Sowerbii</i> <i>Sow.</i> |
| <i>Ophiura Wetherellii</i> , <i>Morr. MSS.</i> | <i>Spatangus</i> , — ?                  |

Remains of this family belonging to two or three genera have been found at Sheppy, but are not yet described.

## FORAMINIFERA.

|                           |                                         |
|---------------------------|-----------------------------------------|
| <i>Cristellaria</i> , — ? | <i>Nummularia elegans</i> , <i>Bow.</i> |
| <i>Dentalina</i> , — ?    | <i>laevigata</i> , <i>Lam.</i>          |
| <i>Fronicularia</i> , — ? | <i>variolaria</i> , <i>Lam.</i>         |
| <i>Marginulina</i> , — ?  | <i>Rotalina</i> , — ?                   |

## ANNELIDA.

|                                     |                                                |
|-------------------------------------|------------------------------------------------|
| <i>Serpula crassa</i> , <i>Sow.</i> | <i>Serpula heptagona</i> , <i>Sow.</i>         |
| <i>exigua</i> , <i>Sow.</i>         | <i>prismatica</i> , <i>Sow.</i>                |
| <i>extensa</i> , <i>Brander.</i>    | <i>trilineata</i> , <i>Sow.</i>                |
| <i>flagelliformis</i> , <i>Sow.</i> | <i>Vermicularia Bognoriensis</i> , <i>Sow.</i> |







- Cyrena tellinella*, *Fer.*  
*Cytheræa Branderi*, *Ed.*  
     *convexa*, *Brong.*  
     *elegans*, *Lam.*  
     *incurvata*, *Ed.*  
     *lævigata*, *Lam.*  
     *lucida*, *Ed.*  
     *nitidula*, *Lam.*  
     *obliqua*, *Desh.*  
     (*C. tenuistriata*, *Sow.*)  
     *orbicularis*, *Ed.*  
     *planulata*, *Ed.*  
     *pusilla*, *Desh.*  
     *suberycinoides*, *Desh.*  
     *sulcataria*, *Desh.*  
     *transversa*, *Sow.*  
     *trigonula*, *Desh.*  
     *tellinaria*, *Lam.*  
*Diplodonta dilatata* ?  
*Fistulana ampullaria*, *Lam.*  
*Gastrochæna contorta*, *Sow.*  
*Glycimeris angustata*, *Ed.*  
*Goodallia grauculosa*, *Ed.*  
*Isocardia sulcata*, *Sow.*  
*Kellia compressa*, *Ed.*  
     *Tellinæformis*, *Ed.*  
*Lepton æqualis*, *Ed.*  
*Limopsis granulatus*, *Desh.*  
     *scalaris*, *Sow.*  
*Lucina ambigua*, *Def.*  
     *concava*, *Ed.*  
     *concentrica*, *Lam.*  
     *divaricata*, *Lam.*  
     *gigantea*, *Desh.*  
     *Goodallii*, *Sow.*  
     *inflata*, *Ed.*  
     *immersa*, *Dixon.*  
     *Menardi*, *Desh.*  
     *mitis*, *Sow.*  
     *radiata*, *Ed.*  
*Lucina serrata*, *Sow.*  
     *spinulosa*, *Ed.*  
*Mactra depressa*, *Desh.*  
     *fastigiata*, *Ed.*  
     *filosa*, *Ed.*  
     *semisulcata*, *Lam.*  
*Mesodesma tenera*, *Ed.*  
*Modiola depressa*, *Sow.*  
     *elegans*, *Sow.*  
     *seminuda*, *Desh.*  
     *subcarinata*, *Sow.*  
     *sulcata*, *Lam.*  
     *tenuistriata*, *Melleville.*  
*Mytilus affinis*, *Sow.*  
*Mya angustata*, *Sow.*  
*Næera dispar*, *Desh.*  
     *inflata*, *Sow.*  
     (*Nucula. sp.* *Sow.*)  
     *lamellosa*, *Ed.*  
     *trilineata*, *Ed.*  
*Nucula amygdaloides*, *Sow.*  
     *Bowerbankii*, *Sow.*  
     *compressa*, *Sow.*  
     *deltoides*, *Lam.*  
     *minima*, *Sow.*  
     *ovata*, *Desh.*  
     *serrata*, *Ed.*  
     *similis*, *Sow.*  
     *striata*, *Lam.*  
     *trigona*, *Sow.*  
     *Wetherellii*, *Sow.*  
     *bisulcata*, *Ed.*  
*Panopæa intermedia*, *Sow.*  
     *corrugata*, *Ed.*  
*Pectunculus brevirostrum*, *Sow.*  
     *decussatus*, *Sow.*  
     *deletus*, *Brand.*  
     *Plumsteadiensis*, *Sow.*  
     *pulvinatus*, *Lam.*  
*Petricola compressa*, *Desh.*











- Pholadomya cuneata*, Sow.  
     *Dixoni*, Sow.  
     *margaritacea*, Sow.  
     *virgulosa*, Sow.  
*Pholas conoidea*, Desh.  
     *Pechellii*, Dixon.  
*Pinna affinis*, Sow.  
     *arcuata*, Sow.  
     *margaritacea*, Dixon.  
*Psammobia compressa*, Sow.  
     *rudis*, Lam.  
*Sanguinolaria Hollowaysii*, Sow.  
     *lamellata*, Ed.  
*Saxicava vaginoides*, Desh.  
*Solen Dixoni*, Sow.  
     *gracilis*, Sow.  
     *obliquus*, Sow.  
*Solenocurtus Parisiensis*, Lam.  
*Tellina ambigua*, Sow.  
     *Branderi*, Sow.  
     *canaliculata*, Ed.  
     *concinna*, Ed.  
     *dis-stria*, Ed.  
     *donacialis*, Lam.  
     *filosa*, Sow.  
     *granulosa*, Ed.  
*Tellina Hantoniensis*, Ed.  
     *inflata*, Ed.  
     *lamellulata*, Ed.  
     *laevis*, Ed.  
     *lunulata*, Desh.  
     *obovata*, Ed.  
     *plagia*, Ed.  
     *rhomboidalis*, Ed.  
     *scalaroides*, Lam.  
     *speciosa*, Ed.  
     *squamula*, Ed.  
     *textilis*, Ed.  
     *tenuistria*, Desh.  
*Teredo antenautæ*, Sow.  
     *personata*, Desh.  
*Thracia oblata*, Sow.  
     *sulcata*, Sow.  
*Venericardia acuticostata*, Lam.  
     *Brogniartii*, Mant.  
     *deltoides*, Sow.  
     *elegans*, Ed.  
     *globosa*, Sow.  
     *oblonga*, Sow.  
     *mitis*, Lam.  
     *planicosta*, Lam.

## CONCHIFERA MONOMYARIA.

- Anomia lineata*, Sow.  
*Avicula arcuata*, Sow.  
     *media*, Sow.  
     *papyracea*, Sow.  
*Lima dilatata*, Ed.  
*Ostrea Bellovacina*, Lam.  
     *dorsata*, Desh.  
     *edulina*, Sow.  
     *elegans*, Desh.  
     *flabellula*, Lam.  
     *gigantea*, Sow.  
     *pulchra*, Sow.  
*Ostrea radiosa*, Desh.  
     *tenera*, Sow.  
*Pecten carinatus*, Sow.  
     *corneus*, Sow.  
     *duplicatus*, Sow.  
     *multicarinatus*, Desh.  
     *multistriatus*, Desh.  
     *plebeius*, Desh.  
     *reconditus*, Brand.  
     *squamula*, Desh.  
     *tripartitus*, Desh.  
*Vulsella deperdita*, Lam.

## BRACHIOPODA.

- Hipponyx cornucopiæ, *Def.*      Lingula tenuis, *Sow.*  
 squamæformis, *Lam.*      Terebratula striatula, *Mant.*

## GASTEROPODA.

- Actæon crenatus, *Sow.*      Conus lineatus, *Brand.*  
     elongatus, *Sow.*           scabriculus, *Brand.*  
     simulatus, *Brand.*           velatus, *Sow.*  
 Ancillaria subulata, *Lam.*      Cypræa inflata, *Lam.*  
     olivula, *Lam.* ?           oviformis, *Sow.*  
 Aporrhais Sowerbii, *Mant. sp.*           tuberculosa, *G. Sow.*  
 Bifrontia Laudinensis, *Desh.*      Delphinula Warnii, *Desh.*  
 Buccinum junceum, *Brand.*      Dentalium acuminatum, *Sow.*  
     Stromboides, *Lam.*           anceps, *Sow.*  
 Bulimus tenuistriatus, *Weth.*           eburneum, *Desh.*  
 Bulla acuminata, *Sow.*           nitens, *Sow.*  
     attenuata, *Sow.*           striatum, *Sow.*  
     constricta, *Sow.*      Fasciolaria funiculosa *Desh.*  
     elliptica, *Sow.*      Fusus acuminatus, *Sow.*  
     Edwardsii, *Dixon.*           asper, *Sow.*  
     filosa, *Sow.*           bulbiformis, *Lam.*  
     striatella, *Desh.*           canaliculatus, *Sow.*  
 Cancellaria cvulsa, *Brand.*           carinella, *Sow.*  
     læviuscula, *Sow.*           complanatus, *Sow.*  
     quadrata, *Sow.*           coniferus, *Sow.*  
     costulata, *Lam.*           curtus, *Sow.*  
 Cassidaria carinata, *Sow.*           desertus, *Brand.*  
     coronata, *Desh.*           errans, *Brand.*  
     striata, *Sow.*           (*F. bifaciatus*, *Sow.*)  
 Cerithium cornucopiæ, *Sow.*           gradatus, *Sow.*  
     geminatum, *Sow.*           interruptus, *Pilk.*  
     giganteum, *Lam.*           intortus, *Desh.*  
     hexagonum, *Lam.*           latus, *Sow.*  
     rigidum, *Sow.*           lavatus, *Brand.*  
     turris, *Desh.*           lima, *Sow.*  
 Conus concinnus, *Sow.*           longævus, *Lam.*  
     coreulum, *Sow.*           Noæ, *Lam.*  
     deperditus, *Brug.*           porrectus, *Brand.*  
     diversiformis, *Desh.*           regularis, *Sow.*  
     dormitor, *Brand.*           trilineatus, *Sow.*





- Fusus tuberosus*, *Sow.*  
     *unicarinatus*, *Desh.*  
*Globulus ambulacrum*, *Sow.*  
     *acutus*, *Sow.*  
     *depressus*, *Sow.*  
     *hybridus*, *Desh.*  
     *patulus*, *Sow.*  
     *pachicheilus*, *Sow.*  
     *ponderosus*, *Desh.*  
     *scalariformis*, *Desh.*  
     *sigaretinus*, *Sow.*  
     *Willemettii*, *Desh.*  
     *labellatus*, *Lam.*  
*Infundibulum obliquum*, *Sow.*  
     *trochiforme*, *Lam.*  
*Littorina sulcata*, *Pilk.*  
*Marginella dentifera*, *Desh.*  
     *ovulata*, *Lam.*  
     *eburnea*? *Lam.*  
*Melania costata*, *Sow.*  
     *costellata*, *Lam.*  
     *inquinata*, *Def.*  
*Melanopsis fusiformis*, *Sow.*  
     *carinata*, *Sow.*  
*Mitra monodonta*, *Desh.*  
     *parva*, *Sow.*  
     *pumila*, *Sow.*  
     *scabra*, *Sow.*  
*Murex asper*, *Brand.*  
     *bispinosus*, *Sow.*  
     *coronatus*, *Sow.*  
     *cristatus*, *Sow.*  
     *defossus*, *Sow.*  
     *frondosus*, *Sow.*  
     *minax*, *Brand.*  
     *crispus*? *Lam.*  
     *tripteroides*? *Lam.*  
     *spinulosus*, *Desh.*  
*Natica glaucinoides*, *Lam.*  
     *Hantoniensis*, *Pilk.*  
     *lineolata*, *Desh.*  
     *obovata*, *Dixon.*  
     *turgida*, *Dixon.*  
*Nerita globosa*, *Sow.*  
*Neritina globulus*, *Def.*  
*Oliva aveniformis*, *Sow.*  
     *Branderi*, *Sow.*  
     *canalifera*, *Lam.*  
     *Salisburiana*, *Sow.*  
*Ovulum retusum*, *Sow.*  
*Parmophorus angustus*, *Desh.*  
*Patella striata*, *Sow.*  
*Pleurotoma acuminata*, *Sow.*  
     *amphiconus*, *Sow.*  
     *attenuata*, *Sow.*  
     *brevirostrum*, *Sow.*  
     *cataphracta*, *Brocchi.*  
     *colon*, *Sow.*  
     *comma*, *Sow.*  
     *conoides*, *Brand.*  
     *dentata*, *Lam.*  
     *exerta*, *Brand.*  
     *fusiformis*, *Sow.*  
     *granulata*, *Lam.*  
     *innexa*, *Brand.*  
     *lævigata*, *Sow.*  
     *macileuta*, *Brand.*  
     *prisca*, *Sow.*  
     *rostrata*, *Brand.*  
     *semicolon*, *Sow.*  
     *turbida*, *Brand.*  
*Potamides variabilis*, *Desh.*  
*Pseudoliva obtusa*, *Desh.*  
     *patula*, *Desh.*  
     *semicostata*, *Desh.*  
*Pyrula Greenwoodii*, *Sow.*  
     *lævigata*, *Lam.*  
     *nexilis*, *Brand.*  
     *Smithii*, *Sow.*

- Pyrua tricolorata*, *Desh.*  
*Ringicula turgida*, *Sow.*  
*Rostellaria lucida*, *Sow.*  
     *macroptera*, *Lam.*  
     *rimosa*, *Brand.*  
*Scalaria acuta*, *Sow.*  
     *interrupta*, *Sow.*  
     *reticulata*, *Brand.*  
     *semicostata*, *Sow.*  
     *undosa*, *Sow.*  
*Seraphs convolutus*, *Montf.*  
*Sigaretus canaliculatus*, *Sow.*  
*Solarium canaliculatum*, *Lam.*  
     *discoideum*, *Sow.*  
     *patulum*, *Sow.*  
     *plicatum*, *Sow.*  
     *trochiforme*, *Desh.*  
*Strepsidura ficulnea*, *Lam. sp.*  
*Strombus Bartonensis*, *Sow.*  
*Terebellum fusiforme*, *Sow.*  
*Triton argutus*, *Sow.*  
     *expansus*, *Sow.*  
     *viperinus*, *Lam.*  
*Trochus agglutinans*, *Lam.*  
     *extensus*, *Sow.*  
     *monilifer*, *Sow.*  
*Turbo plicatus*, *Desh.*  
*Turritella abbreviata*, *Desh.*  
     *brevis*, *Sow.*  
     *fasciata*, *Lam.*  
     *imbricataria*, *Lam.*  
     *sulcata*, *Lam.*  
*Turritella sulcifera*, *Desh.*  
     *multisulcata*, *Desh.*  
     *terebellata*, *Lam.*  
*Typhis fistulosus*, *Sow.*  
     *muticus*, *Sow.*  
     *pungens*, *Brand.*  
*Voluta ambigua*, *Sow.*  
     *angusta*, *Desh.*  
     *athleta*, *Sow.*  
     *bicorona*, *Lam.*  
     *bulbula*, *Lam.*  
     *cithara*, *Lam.*  
     *costata*, *Sow.*  
     *denudata*, *Sow.*  
     *depauperata*, *Sow.*  
     *elevata*, *Sow.*  
     *geminata*, *Sow.*  
     *harpula*, *Lam.*  
     *labrella*, *Lam.*  
     *lima*, *Sow.*  
     *luctatrix*, *Sow.*  
     *magorum*, *Sow.*  
     *muricina*, *Lam.*  
     *nodosa*, *Sow.*  
     *protensa*, *Sow.*  
     *scalaris*, *Sow.*  
     *spinosa*, *Sow.*  
     *suspensa*, *Sow.*  
     *tricornata*, *Sow.*  
     *Wetherellii*, *Sow.*  
*Volvaria acutiuscula*, *Sow.*

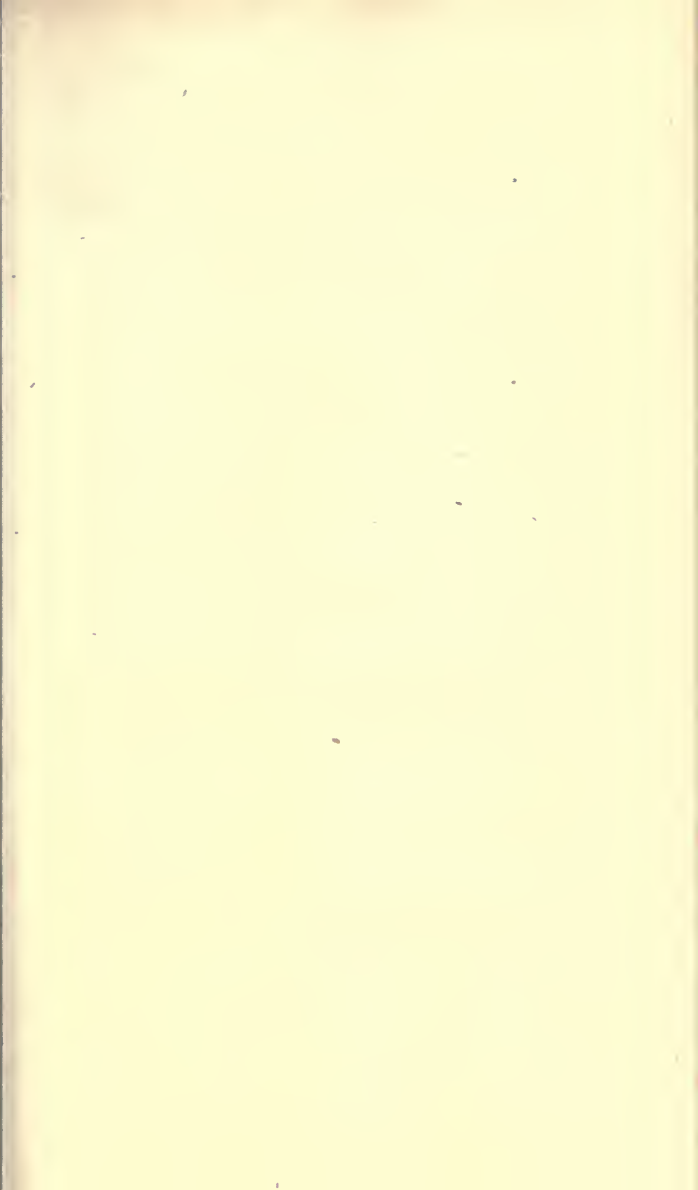
## PTEROPODA.

*Ditrupa plana*, *Sow.**Ditrupa incrassata*, *Sow.*

## CEPHALOPODA.

*Beloptera anomala*, *Sow.**Nautilus imperialis*, *Sow.**Scpia*, — ?*Sowerbii*, *Weth.**Nautilus centralis*, *Sow.**urbanus*, *Sow.**regalis*, *Sow.**ziczac*, *Sow.*







## PISCES.

*Placoides.*

- |                                     |                                     |
|-------------------------------------|-------------------------------------|
| <i>Myliobates toliapicus, Ag.</i>   | <i>Glyphis hastalis, Ag.</i>        |
| <i>Dixonii, Ag.</i>                 | <i>Carcharodon subserratus, Ag.</i> |
| <i>Owenii, Ag.</i>                  | <i>toliapicus, Ag.</i>              |
| <i>acutus, Ag.</i>                  | <i>Otodus obliquus, Ag.</i>         |
| <i>goniopleurus, Ag.</i>            | <i>macrotus, Ag.</i>                |
| <i>canaliculatus, Ag.</i>           | <i>Lamna elegans, Ag.</i>           |
| <i>striatus, Ag.</i>                | <i>compressa, Ag.</i>               |
| <i>lateralis, Ag.</i>               | <i>Hopei, Ag.</i>                   |
| <i>jugalis, Ag.</i>                 | <i>verticalis, Ag.</i>              |
| <i>marginalis, Ag.</i>              | <i>contortidens, Ag.</i>            |
| <i>punctatus, Ag.</i>               | <i>Pristis bisulcatus, Ag.</i>      |
| <i>Colei, Ag.</i>                   | <i>Hastingsiæ, Ag.</i>              |
| <i>gyratus, Ag.</i>                 | <i>Elasmodus Hunterii, Egert.</i>   |
| <i>nitidus, Ag.</i>                 | <i>Edaphodon Bucklandii, Ag.</i>    |
| <i>heteropleurus, Ag.</i>           | <i>eurygnathus, Ag.</i>             |
| <i>Ætobatis irregularis, Ag.</i>    | <i>leptognathus, Ag.</i>            |
| <i>subarcuatus, Ag.</i>             | <i>Passalodon rostratus, Ag.</i>    |
| <i>Notidanus serratissimus, Ag.</i> | <i>Psaliodus compressus, Egert.</i> |

*Ganoides.*

- |                                   |                                     |
|-----------------------------------|-------------------------------------|
| <i>Gyrodus lævior, Ag.</i>        | <i>Phyllodus toliapicus, Ag.</i>    |
| <i>Phyllodus irregularis, Ag.</i> | <i>Pycnodus toliapicus, Ag.</i>     |
| <i>medius, Ag.</i>                | <i>Periodus Konigii, Ag.</i>        |
| <i>marginalis, Ag.</i>            | <i>Pisodus Owenii, Ag.</i>          |
| <i>planus, Ag.</i>                | <i>Acipenser toliapicus, Ag.</i>    |
| <i>polyodus, Ag.</i>              | <i>Glyptocephalus radiatus, Ag.</i> |

*Ctenoides.*

- |                                     |                                     |
|-------------------------------------|-------------------------------------|
| <i>Sciænurus Bowerbankii, Ag.</i>   | <i>Eurygnathus cavifrons, Ag.</i>   |
| <i>crassior, Ag.</i>                | <i>Podocephalus nitidus, Ag.</i>    |
| <i>Ptychocephalus radiatus, Ag.</i> | <i>Synophrys Hopei, Ag.</i>         |
| <i>Pomaphractus Egertoni, Ag.</i>   | <i>Brachygnathus tenniceps, Ag.</i> |
| <i>Myripristis toliapicus, Ag.</i>  | <i>Percostoma augustum, Ag.</i>     |
| <i>Cæloperca latifrons, Ag.</i>     | <i>Calopomus porosus, Ag.</i>       |

*Cycloides.*

|                                     |                                       |
|-------------------------------------|---------------------------------------|
| Cybiium macropomum, <i>Ag.</i>      | Cælopoma læve, <i>Ag.</i>             |
| Sphyrænodus priscus, <i>Ag.</i>     | Bothrosteus latus, <i>Ag.</i>         |
| crassidens, <i>Ag.</i>              | brevifrons, <i>Ag.</i>                |
| Hypsodon oblongus, <i>Ag.</i>       | minor, <i>Sow.</i>                    |
| toliapicus, <i>Ag.</i>              | Phalacrus cybioides, <i>Sow.</i>      |
| Tetrapterus priscus, <i>Ag.</i>     | Rhoncus carangoides, <i>Sow.</i>      |
| Goniognathus maxillaris, <i>Ag.</i> | Echenus politus, <i>Sow.</i>          |
| coryphænoides, <i>Ag.</i>           | Scombrinus nuchalis, <i>Sow.</i>      |
| Cælorhynchus rectus, <i>Ag.</i>     | Laparus alticeps, <i>Sow.</i>         |
| sinuatus, <i>Ag.</i>                | Brychetus Mulleri, <i>Sow.</i>        |
| Phasganus declivis, <i>Ag.</i>      | Rhinocephalus planiceps, <i>Sow.</i>  |
| Auchenilabrus frontalis, <i>Ag.</i> | Merlinus cristatus, <i>Sow.</i>       |
| Acestrus ornatus, <i>Ag.</i>        | Ampheristus toliapicus, <i>Sow.</i>   |
| Megalops priscus, <i>Ag.</i>        | Rhyncorhinus branchialis, <i>Sow.</i> |
| Halecopsis lævis, <i>Ag.</i>        | Pachycephalus cristatus, <i>Sow.</i>  |
| Cælocephalus salmoneus, <i>Ag.</i>  | Rhipidolepis elegans, <i>Sow.</i>     |
| Naupygyus Bucklandii, <i>Ag.</i>    | Gadopsis breviceps, <i>Sow.</i>       |
| Cælopoma Colei, <i>Ag.</i>          | Loxostomus maucus, <i>Sow.</i>        |

## REPTILIA.

|                                |                                    |
|--------------------------------|------------------------------------|
| Chelonia antiqua <i>Konig.</i> | Chelonia subcristata, <i>Owen.</i> |
| breviceps, <i>Owen.</i>        | Crocodylus Spenceri, <i>Buckl.</i> |
| convexa, <i>Owen.</i>          | Emys testudiniformis, <i>Owen.</i> |
| Harvicensis, <i>Woodw.</i>     | Palæophis toliapicus, <i>Owen.</i> |
| laticutata, <i>Owen.</i>       | Platemys Bowerbankii, <i>Owen.</i> |
| longiceps, <i>Owen.</i>        | Bullockii, <i>Owen.</i>            |
| planimentum, <i>Owen.</i>      |                                    |

## AVES.

Lithornis vulturinus, *Owen.*

## MAMMALIA.

|                                       |                                       |
|---------------------------------------|---------------------------------------|
| Coryphodon Eocænus, <i>Owen.</i>      | Hyracotherium leporinum, <i>Owen.</i> |
| Didelphis Colchesteri, <i>Owen.</i>   | Lophiodon minimus, <i>Owen.</i>       |
| Hyracotherium cuniculus, <i>Owen.</i> | Macacus Eocænus, <i>Owen.</i>         |





SECONDARY SERIES.

CRETACEOUS GROUP.                      NEW RED SANDSTONE OR  
 WEALDEN GROUP.                      TRIASSIC GROUP.  
 OOLITIC GROUP.

CRETACEOUS GROUP.

|                    | <i>English Authors.</i> | <i>French Authors.</i> | <i>Roemer.</i>                          | <i>D'Orbigny.</i>           |
|--------------------|-------------------------|------------------------|-----------------------------------------|-----------------------------|
| UPPER.             | Chalk with flints . .   | Craie . . . . .        | Obere Kreide . .                        | L'etage Senonien.           |
|                    | Chalk without flints .  | — . . . . .            | Untere Kreide .                         |                             |
|                    | Chalk marl . . . . .    | Craie Tufau . . . .    | Planer . . . . .                        | — Turonien.                 |
| Upper Green Sand . | Glauconie Crayeuse      | Grunsand . . . .       |                                         |                             |
| LOWER.             | Gault . . . . .         | — . . . . .            | Galt . . . . .                          | — Albien.                   |
|                    | Lower Green Sand .      | Glauconie sableuse     | { Quader . . . . .<br>Hilsconglomerat } | { — Aptien.<br>— Neocomien. |

ALTHOUGH the subordinate beds of this group present many distinctive characters, still they form but portions of one continuous series, as evinced by their organic contents; and for the sake of convenience, we have classed the fossils together, from the Chalk to the Lower Green Sand, inclusive. This group is composed chiefly of cretaceous, argillaceous and arenaceous beds, the former predominating in the upper and the two latter in the lower division.

The White Chalk, a nearly pure carbonate of lime with minute fragments of Shells and Foraminifera, has usually been divided into two parts, the Upper Chalk being characterized by the presence of flint nodules, more or less horizontally arranged; and the Lower Chalk, which is

comparatively free from them. This character, however correct for the south of England, is not constant over a wide area; for the lower chalk of Yorkshire contains an abundance of flint nodules, and the same fact is remarked in the neighbourhood of Havre, and elsewhere. The Lower Chalk and Chalk Marl consist of greyish earthy or yellowish marly chalk, sometimes indurated. In Dorset and Devonshire, a bed with numerous fossils occurs towards the base of the Chalk, which is composed of chalk with green particles and minute grains of quartz, and we find, also, towards the base of the chalk in Norfolk and Yorkshire, a stratum of red chalk which may be considered to represent the gault of the southern counties.

The Upper Green Sand consists of a silicious sand, or of a marly calcareous sand with green grains and mica; the celebrated firestone of Merstham belongs to this division. The Gault next succeeds in a descending order and is a blueish tenacious clay, sometimes marly and with indurated argillaceous concretions. The Lower Green Sand is chiefly an arenaceous deposit, formed of sands, and indurated and ferruginous sandstones, with beds of clay and clayey sand, and containing, in some localities, bands of limestone (Kentish Rag), and regular seams of chert, and sometimes a coarse and highly ferruginous conglomerate, as near Calne, &c. The Kentish Rag is largely quarried near Maidstone, and is used extensively as a building stone in Kent and the adjoining counties; it was in one of these quarries that the fine specimen of the *Iguanodon*, now in the British Museum, was discovered by Mr. Bensted. The calcareous matter appears to have been developed towards the eastern part of this formation, (Kent, &c.), for in the Isle of Wight there is scarcely any trace of it, and certainly no masses of thick-bedded limestone; the best Fuller's earth is obtained from this division, as at Nutfield, Surrey; Woburn, Bedford. Dr.







Fitton considers the Lower Green Sand capable of a triple division. (Geol. Trans. vol. iv. p. 115.) The Neocomian beds of foreign authors, are the equivalent of this portion of the Cretaceous Group. The Chalk formation is an interesting feature in the geology of England, extending from Yorkshire and Norfolk to Dorsetshire, into Wiltshire, and diverging eastward through Hampshire, Kent, Surrey, and Sussex, as seen on the geological map.

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#### LOCALITIES FOR FOSSILS, &c.

*Upper Chalk.* — Lewisham, Bromley, Northfleet, Kent; Purfleet, Grays, Essex; Basingstoke, Hants.; Norwich; Horstead, Brighton, Arundel, Worthing, Sussex; Dane's Dyke, Yorkshire; Isle of Wight.

*Lower Chalk.* — Burham and Dover, Wrotham, Charing, Kent; Southeram, Lewes, and many pits in that neighbourhood, Sussex; Guildford, Dorking, &c., Surrey; Swaffham, Norfolk; Cherry Hinton, near Cambridge.

*Chalk Marl.*—Dover, Kent; near Devizes and Calne, Wilts.; Clayton, near Hurst, Sussex.

*Red Chalk.*—Hunstanston, Norfolk; Speeton Cliffs, Yorkshire.

*Upper Green Sand.*—Alton, Petersfield, Hants.; Godstone, Merstham, Surrey; Earlstoke, Devizes, Warminster, Wilts.; Isle of Wight; Blackdown.

*Gault.*—Folkstone, Charing, near Maidstone, Kent; Hamsey, Ringmer, Sussex; near Devizes, Wilts; near Cambridge.

*Lower Green Sand.*—Folkstone, Hythe, Pluckley; Boughton and Loose, near Maidstone, Kent; Parham Park, Sussex; near Devizes and Calne, Wilts.; Sandown, Shanklin, Atherfield, &c., Isle of Wight.

The organic remains of the Cretaceous Group, with one or two exceptions, are all marine, comprising Fucoidal Plants, Sponges, Star-fishes, Mollusks, Crustacea, Fishes and Reptiles. The Echinoderms are abundant in the Upper Chalk, and the Cephalopods in the Lower, and which also

contains fine remains of Fishes. The Gault is extremely rich in fossils of great beauty, Ammonites, Hamites, &c. The Lower Green Sand is very fossiliferous, containing many species of Shells, univalve and bivalve, and large specimens of Ammonites, Crioceras, &c., &c.

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- 'Comparative Remarks, &c.,' *Geol. Proc.* vol. iv. pp. 396 and 198.
- Forbes, Prof. E., 'Catalogue of Lower Green Sand Fossils,' *Quart. Geol. Journ.* vol. i. pp. 237 and 345.
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- Lonsdale, W., 'On the Oolite District of Bath, &c.,' *Geol. Trans.* vol. iii.
- Mantell, G. A., '*Geology of Sussex,*' 4to. 1822.
- '*Geology of South-East of England,*' 8vo. 1833.
- '*Medals of Creation,*' (for Chalk Fossils,) 1844.
- 'On the Fossil Remains of Turtles, &c.,' *Phil. Trans.* 1841, p. 153.
- D'Orbigny, A., 'Memoire sur les Foraminifères de la craie blanche,' *Mem. Soc. Geol. de France,* vol. iv.
- Phillips, J., '*Geology of Yorkshire,*' part I, 1835.





Rose, C. B., 'Geology of West Norfolk,' *Phil. Mag.* 1836.

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Woodward, S., 'Geology of Norfolk,' 1833.

### LIST OF FOSSILS.

*Found in the Chalk, Upper Green Sand, Gault, Lower Green Sand.*

#### PLANTÆ.

|                                        |                                           |
|----------------------------------------|-------------------------------------------|
| <i>Abies Benstedii, Mant.</i>          | <i>Dracæna Benstedii, Mant.</i>           |
| <i>oblonga, Lindl.</i>                 | <i>Strobilites Bucklandi, Lindl.</i>      |
| <i>Carpolithes Smithiæ, Mant.</i>      | <i>Zamiostrobus macrocephalus, Lindl.</i> |
| <i>Chondrites Targionii, Brong.</i>    | <i>ovatus Lindl.</i>                      |
| <i>Confervites fasciculata, Brong.</i> | <i>Sussexiensis, Mant.</i>                |

#### AMORPHOZOA.

|                                        |                                         |
|----------------------------------------|-----------------------------------------|
| <i>Achilleum fungiforme, Goldf.</i>    | <i>Siphonia cervicornis, Goldf.</i>     |
| <i>Chenendopora fungiformis, Lamx.</i> | <i>clava, Lee.</i>                      |
| <i>Choanites flexuosus, Mant.</i>      | <i>fusiformis, Lee.</i>                 |
| <i>Konigii, Mant.</i>                  | <i>pyriformis, Goldf.</i>               |
| <i>subrotundus, Mant.</i>              | <i>Spongia capitata, Phil.</i>          |
| <i>Hallirhoa costata, Lamx.</i>        | <i>convoluta, Phil.</i>                 |
| <i>Hippalimus fungoides, Lamx.</i>     | <i>cribrosa, Phil.</i>                  |
| <i>Jerea pyriformis, Lamx.</i>         | <i>labyrinthica, Mant.</i>              |
| <i>Manon peziza, Goldf.</i>            | <i>lævis, Phil.</i>                     |
| <i>Polypothecia clavellata, Ben.</i>   | <i>marginata, Phil.</i>                 |
| <i>complexa, Ben.</i>                  | <i>osculifera, Phil.</i>                |
| <i>dichotoma, Ben.</i>                 | <i>plana, Phil.</i>                     |
| <i>expansa, Ben.</i>                   | <i>porosa, Phil.</i>                    |
| <i>fissa, Ben.</i>                     | <i>terebrata, Phil.</i>                 |
| <i>gregaria, Ben.</i>                  | <i>Ventriculites Alcyonoides, Mant.</i> |
| <i>obliqua, Ben.</i>                   | <i>Benettiiæ, Mant.</i>                 |
| <i>palmata, Ben.</i>                   | <i>infundibuliformis,</i>               |
| <i>Scyphia furcata, Goldf.</i>         | <i>Mant.</i>                            |
| <i>infundibuliformis, Goldf.</i>       | <i>quadrangularis, Mant.</i>            |
| <i>Siphonia anguilla, Lee.</i>         | <i>radiatus, Mant.</i>                  |

## ZOOPHYTA.

|                                                  |                                               |
|--------------------------------------------------|-----------------------------------------------|
| <i>Alecto gracilis</i> , <i>Edw.</i>             | <i>Flustra retiformis</i> , <i>Woodw.</i>     |
| <i>ramosa</i> , <i>Blainv.</i>                   | <i>utricularis</i> , <i>Desm.</i>             |
| <i>Alveolites milleporaceus</i> , <i>Blainv.</i> | <i>Fungia coronula</i> , <i>Goldf.</i>        |
| <i>tubiporaceus</i> , <i>Blainv.</i>             | <i>Idmonea cretacea</i> , <i>Edw.</i>         |
| <i>Astrea elegans</i> , <i>Goldf.</i>            | <i>disticha</i> , <i>Blainv.</i>              |
| <i>escharoides</i> , <i>Goldf.</i>               | <i>truncata</i> , <i>Blainv.</i>              |
| <i>Ceriopora polymorpha</i> , <i>Goldf.</i>      | <i>Lunulites radiatus</i> , <i>Lam.</i>       |
| <i>Cricopora gracilis</i> ,                      | <i>urcolatus</i> , <i>Lam.</i>                |
| <i>Diastopora gracilis</i> , <i>Edw.</i>         | <i>Millepora globularis</i> , <i>Phil.</i>    |
| <i>Eschara disticha</i> , <i>Goldf.</i>          | <i>Orbitolites lenticulatus</i> , <i>Lam.</i> |
| <i>Lonsdalii</i> , <i>Edw.</i>                   | <i>Retepora clathrata</i> , <i>Goldf.</i>     |
| <i>sexangularis</i> , <i>Goldf.</i>              | <i>Turbinolia Konigii</i> , <i>Mant.</i>      |
| <i>Flustra tessellata</i> , <i>Desm.</i>         | <i>Verticillipora anastomosans.</i>           |

## ECHINODERMATA.

|                                               |                                                |
|-----------------------------------------------|------------------------------------------------|
| <i>Ananchytes conoideus</i> , <i>Goldf.</i>   | <i>Galerites albogalerus</i> , <i>Lam.</i>     |
| <i>hemisphæricus</i> , <i>Brong.</i>          | <i>conicus</i> , <i>Ag.</i>                    |
| <i>ovatus</i> , <i>Lam.</i>                   | <i>vulgaris</i> , <i>Lam.</i>                  |
| <i>striatus</i> , <i>Lam.</i>                 | <i>subrotundus</i> , <i>Ag.</i>                |
| <i>Apiocrinus ellipticus</i> , <i>Mill.</i>   | <i>Goniophorus lunulatus</i> , <i>Ag.</i>      |
| <i>Arbacia granulosa</i> , <i>Goldf.</i>      | <i>Glenotremites paradoxus</i> , <i>Goldf.</i> |
| <i>Caratomus hemisphæricus</i> , <i>Des.</i>  | <i>Holaster complanatus</i> , <i>Ag.</i>       |
| <i>rostratus</i> , <i>Ag.</i>                 | <i>granulosus</i> , <i>Goldf.</i>              |
| <i>Cidaris claviger</i> , <i>Konig.</i>       | <i>nodulosus</i> , <i>Goldf.</i>               |
| <i>cretosa</i> , <i>Park.</i>                 | <i>subglobosus</i> , <i>Goldf.</i>             |
| <i>marginata</i> , <i>Goldf.</i>              | <i>Marsupites Milleri</i> , <i>Mant.</i>       |
| <i>Cassidulus lapis-canceri</i> , <i>Lam.</i> | <i>Micraster Bufo</i> , <i>Ag.</i>             |
| <i>Catopygus carinatus</i> , <i>Ag.</i>       | <i>cor-anguinum</i> , <i>Brong.</i>            |
| <i>Cidaris saxatilis</i> , <i>Park.</i>       | <i>cor-testudinarium</i> , <i>Goldf.</i>       |
| <i>vesiculosa</i> , <i>Goldf.</i>             | <i>lacunosus</i> , <i>Park.</i>                |
| <i>Comptonia elegans</i> , <i>Gray.</i>       | <i>Murchisonii</i> , <i>Konig.</i>             |
| <i>Diadema granulosum</i> , <i>Ag.</i>        | <i>prunella</i> , <i>Lam.</i>                  |
| <i>variolare</i> , <i>Ag.</i>                 | <i>rostratus</i> , <i>Mant.</i>                |
| <i>Discoidea cylindrica</i> , <i>Ag.</i>      | <i>Nucleolites lacunosus</i> , <i>Goldf.</i>   |
| <i>hemisphærica</i> , <i>Ag.</i>              | <i>Ophiura serrata</i> , <i>Roemer.</i>        |
| <i>subuculus</i> , <i>Bronn.</i>              | <i>Pyrina depressa</i> , <i>Desm.</i>          |
| <i>Galerites abbreviatus</i> , <i>Goldf.</i>  | <i>Salenia petalifera</i> , <i>Ag.</i>         |











- |                                        |                                         |
|----------------------------------------|-----------------------------------------|
| <i>Salenia geometrica</i> , <i>Ag.</i> | <i>Spatangus ornatus</i> , <i>Defr.</i> |
| <i>scutigera</i> , <i>Gray.</i>        | <i>Tosia lunata</i> , <i>Woodw.</i>     |
| <i>stellulata</i> , <i>Ag.</i>         | <i>regularis</i> , <i>Park.</i>         |

## FORAMINIFERA.

- |                                              |                                                  |
|----------------------------------------------|--------------------------------------------------|
| <i>Bulimina Muchisoniana</i> , <i>D'Orb.</i> | <i>Rotalia Cordieriana</i> , <i>D'Orb.</i>       |
| <i>obliqua</i> , <i>D'Orb.</i>               | <i>crassa</i> , <i>D'Orb.</i>                    |
| <i>obtusa</i> , <i>D'Orb.</i>                | <i>globulosa</i> , <i>Ehr.</i>                   |
| <i>variabilis</i> , <i>D'Orb.</i>            | <i>Micheliniana</i> , <i>D'Orb.</i>              |
| <i>Cristellaria rotulata</i> , <i>D'Orb.</i> | <i>turgida</i> , <i>Ehr.</i>                     |
| <i>Dentalina aculeata</i> , <i>D'Orb.</i>    | <i>umbilicata</i> , <i>D'Orb.</i>                |
| <i>gracilis</i> , <i>D'Orb.</i>              | <i>Voltziana</i> , <i>D'Orb.</i>                 |
| <i>sulcata</i> , <i>D'Orb.</i>               | <i>Spirolina Comptoni</i> , <i>Mant.</i>         |
| <i>Gaudryina pupoides</i> , <i>D'Orb.</i>    | <i>Textularia aspera</i> , <i>Ehr.</i>           |
| <i>Globigerina cretacea</i> , <i>D'Orb.</i>  | <i>globulosa</i> , <i>Ehr.</i>                   |
| <i>elevata</i> , <i>D'Orb.</i>               | <i>perforata</i> , <i>Ehr.</i>                   |
| <i>Marginulina trilobata</i> , <i>D'Orb.</i> | <i>striata</i> , <i>Ehr.</i>                     |
| <i>Rosalina Clementiana</i> , <i>D'Orb.</i>  | <i>turris</i> , <i>D'Orb.</i>                    |
| <i>globularis</i> , <i>Ehr.</i>              | <i>Truncatulina Beaumontiana</i> , <i>D'Orb.</i> |
| <i>Lorneiana</i> , <i>D'Orb.</i>             | <i>Turbinulina Italica</i> , <i>Ehr.</i>         |

## ANNELIDA.

- |                                          |                                           |
|------------------------------------------|-------------------------------------------|
| <i>Cyclogyra granulata</i> , <i>Sow.</i> | <i>Serpula rustica</i> , <i>Sow.</i>      |
| <i>Entobia cretacea</i> , <i>Portl.</i>  | <i>tuba</i> , <i>Sow.</i>                 |
| <i>Serpula antiquata</i> , <i>Sow.</i>   | <i>Turbinella</i> , <i>Sow.</i>           |
| <i>avita</i> , <i>Sow.</i>               | <i>variabilis</i> , <i>Sow.</i>           |
| <i>articulata</i> , <i>Sow.</i>          | <i>vermes</i> , <i>Sow.</i>               |
| <i>carinata</i> , <i>Woodw.</i>          | <i>vortex</i> , <i>Woodw.</i>             |
| <i>carinella</i> , <i>Sow.</i>           | <i>Vermilia ampullacea</i> , <i>Sow.</i>  |
| <i>contracta</i> , <i>Woodw.</i>         | <i>macropus</i> , <i>Sow.</i>             |
| <i>filiformis</i> , <i>Sow.</i>          | <i>pentangulata</i> , <i>Woodw.</i>       |
| <i>fluctuata</i> , <i>Sow.</i>           | <i>striata</i> , <i>Woodw.</i>            |
| <i>Ilium</i> , <i>Goldf.</i>             | <i>Vermicularia concava</i> , <i>Sow.</i> |
| <i>plana</i> , <i>Woodw.</i>             | <i>polygonalis</i> , <i>Sow.</i>          |
| <i>plexus</i> , <i>Sow.</i>              | <i>radiatus</i> , <i>Sow.</i>             |
| <i>Proteus</i> , <i>Sow.</i>             | <i>Sowerbii</i> , <i>Mant.</i>            |
| <i>pusilla</i> , <i>Sow.</i>             | <i>umbonatus</i> , <i>Sow.</i>            |

## CIRRHIPEDA.

|                                    |                                 |
|------------------------------------|---------------------------------|
| Loricula pulchella, <i>G. Sow.</i> | Pollicipes rigidus, <i>Sow.</i> |
| Pollicipes lævis, <i>Sow.</i>      | sulcatus, <i>Sow.</i>           |
| maximus, <i>Sow.</i>               | unguis, <i>Sow.</i>             |
| radiatus, <i>Sow.</i>              |                                 |

## CRUSTACEA.

|                               |                                    |
|-------------------------------|------------------------------------|
| Astacus Leachii, <i>Mant.</i> | Orithya Bechei, <i>Desl.</i>       |
| longimanus, <i>Sow.</i>       | Pagurus Faujasii, <i>Brong.</i>    |
| Sussexiensis, <i>Mant.</i>    | Scyllarus Mantellii, <i>Brong.</i> |

## CONCHIFERA DIMYARIA.

|                                       |                                         |
|---------------------------------------|-----------------------------------------|
| Amphidesma tenuistriatum, <i>Sow.</i> | Cardium subhillanum, <i>Leym.</i>       |
| Arca carinata, <i>Sow.</i>            | Corbula elegans, <i>Sow.</i>            |
| Carteroni, <i>D' Orb.</i>             | gigantea, <i>Sow.</i>                   |
| Cornuellianna, <i>D' Orb.</i>         | striatula, <i>Sow.</i>                  |
| Dupiniana, <i>D' Orb.</i>             | truncata, <i>Sow.</i>                   |
| Gabrielis, <i>Leym.</i>               | Crassatella Robinaldina, <i>D' Orb.</i> |
| rotundata, <i>Sow.</i>                | Cucullæa carinata, <i>Sow.</i>          |
| Raulini, <i>Leym.</i>                 | costellata, <i>Sow.</i>                 |
| securis, <i>Leym.</i>                 | glabra, <i>Sow.</i>                     |
| Astarte concinna, <i>Sow.</i>         | formosa, <i>Sow.</i>                    |
| formosa, <i>Sow.</i>                  | Cypricardia undulata, <i>Forbes.</i>    |
| impolita, <i>Sow.</i>                 | Cyprina angulata, <i>Sow.</i>           |
| multistriata, <i>Sow.</i>             | cuneata, <i>Sow.</i>                    |
| obovata, <i>Sow.</i>                  | rostrata, <i>Sow.</i>                   |
| striata, <i>Sow.</i>                  | Cytherea caperata, <i>Sow.</i>          |
| Cardium Austeni, <i>Forbes.</i>       | lineolata, <i>Sow.</i>                  |
| concentricum, <i>Forbes.</i>          | parva, <i>Sow.</i>                      |
| Cornuellianum, <i>D' Orb.</i>         | plana, <i>Sow.</i>                      |
| Gentianum, <i>Sow.</i>                | subrotunda, <i>Sow.</i>                 |
| Hillanum, <i>Sow.</i>                 | truncata, <i>Sow.</i>                   |
| Ibbetsoni, <i>Forbes.</i>             | Fistulana pyriformis, <i>Mant.</i>      |
| imbricatorium, <i>D' Orb.</i>         | Isocardia ornata, <i>Forbes.</i>        |
| peregrinorsum, <i>D' Orb.</i>         | Lucina globiformis, <i>Leym.</i>        |
| proboscideum, <i>Sow.</i>             | orbicularis, <i>Sow.</i>                |
| sphæroideum, <i>Forbes.</i>           | pisum, <i>Sow.</i>                      |







- Lucina solidula*, *Forbes*.  
*Lutraria carinifera*, *Sow.*  
     *striata*, *Sow.*  
*Mactra angulata*, *Sow.*  
*Modiola Archiaci*, *Leym.*  
     *aspera*, *Sow.*  
     *bella*, *Sow.*  
     *depressa*, *Sow.*  
     *lineata*, *Sow.*  
     *reversa*, *Sow.*  
*Mya læviuscula*, *Sow.*  
     *mandibula*, *Sow.*  
*Mytilus Carteroni*, *D'Orb.*  
     *edentulus*, *Sow.*  
     *inæquivalvis*, *Sow.*  
     *prælongus*, *Sow.*  
     *simplex*, *Leym.*  
     *tridens*, *Sow.*  
*Nucula angulata*, *Sow.*  
     *antiquata*, *Sow.*  
     *apiculata*, *Sow.*  
     *bivirgata*, *Sow.*  
     *imprensa*, *Sow.*  
     *lineata*, *Sow.*  
     *obtusa*, *Sow.*  
     *ovata*, *Mant.*  
     *pectinata*, *Sow.*  
     *scapha*, *D'Orb.*  
     *spathulata*, *Forbes*.  
*Pachymya gigas*, *Sow.*  
*Panopæa gurgitis*, *Sow.*  
     *Neocomiensis*, *Desh. sp.*  
     *ovalis*, *Sow.*  
     *plicata*, *Sow.*  
     *rotundata*, *Sow.*  
*Pectunculus sublævis*, *Sow.*  
     *umbonatus*, *Sow.*  
*Petricola canaliculata*, *Sow.*  
     *nuciformis*, *Sow.*
- Pholadomya Agassizii*, *D'Orb.*  
     *decussata*, *Mant. sp.*  
     *gigantea*, *Sow. sp.*  
     *Martini*, *Forbes*.  
*Pholas prisca*, *Sow.*  
*Pinna crassa*, *Sow.*  
     *Robinaldina*, *D'Orb.*  
*Psammobia gracilis*, *Sow.*  
*Solen Warburtoni*, *Forbes*.  
*Sphæra corrugata*, *Sow.*  
*Tellina Carteroni*, *D'Orb.*  
     (*T. angulata*, *Desh.*)  
     *inæqualis*, *Sow.*  
     *striatula*, *Sow.*  
     *Vectiana*, *Forbes*.  
*Thetis major*, *Sow.*  
     *minor*, *Sow.*  
*Trigonia affinis*, *Sow.*  
     *alæformis*, *Park.*  
     *Archiacana*, *D'Orb.*  
     *carinata*, *Ag.*  
     *caudata*, *Ag.*  
     *dædalea*, *Park.*  
     *elongata*, *Sow.*  
     *excentrica*, *Sow.*  
     *nodosa*, *Sow.*  
     *pennata*, *Sow.*  
     *spectabilis*, *Sow.*  
     *spinosa*, *Sow.*  
*Venericardia Neocomiensis*, *D'Orb.*  
     *quadrata*, *D'Orb.*  
     *tenuicosta*, *Sow.*  
*Venus Brongniartiana*, *Leym.*  
     *fabæ*, *Sow.*  
     *fenestrata*, *Forbes*.  
     *immersa*, *Sow.*  
     *Orbigniana*, *Forbes*.  
     *ovalis*, *Sow.*  
     *Ricordiana*, *D'Orb.*

- Venus striato-costata, *Forbes*.      Venus submersa, *Sow*.  
 sublævis, *Sow*.                              Vectensis, *Forbes*.

## MONOMYARIA.

- Anomia convexa, *Sow*.  
 lævigata, *Sow*.  
 radiata, *Sow*.  
 Avicula anomala, *Sow*.  
 depressa, *Forbes*.  
 ephemera, *Forbes*.  
 gryphæoides, *Sow*.  
 lanceolata, *Forbes*.  
 pectinata, *Sow*.  
 Dianchora lata, *Sow*.  
 obliqua, *Mant*.  
 striata, *Sow*.  
 truncata, *Lam*.  
 Gervillia anceps, *Desh*.  
 alæformis, *Sow. sp.*  
 Forbesiana, *D'Orb.*  
 linguloides, *Forbes*.  
 Gryphæa auricularis, *Brong.*  
 canaliculata, *Sow. sp.*  
 columba, *Lam*.  
 conica, *Sow. sp.*  
 digitata, *Sow. sp.*  
 globosa, *Sow*.  
 haliotoidea, *Lam*.  
 harpa, *Goldf.*  
 lævigata, *Sow*.  
 sinuata, *Sow*.  
 undata, *Sow*.  
 vesiculosa, *Sow*.  
 Inoceramus annulatus, *Goldf.*  
 Brongniartii, *Sow*.  
 concentricus, *Park*.  
 cordiformis, *Sow*.  
 Crispii, *Mant*.  
 Inoceramus Cuvierii, *Sow*.  
 gryphæoides, *Sow*.  
 involutus, *Sow*.  
 Lamarckii, *Brong.*  
 lævigatus, *Leym*.  
 latus, *Sow*.  
 Mytiloides, *Sow*.  
 pictus, *Sow*.  
 striatus, *Sow*.  
 sulcatus, *Park*.  
 undulatus, *Mant*.  
 Websterii, *Mant*.  
 Lima expansa, *Forbes*.  
 globosa, *Sow. sp.*  
 lingua, *Forbes*.  
 semisulcata, *Sow*.  
 subovalis, *Sow*.  
 undata, *Desh*.  
 Ostrea alæformis *Woodw.*  
 canaliculata, *Sow*.  
 carinata, *Lam*.  
 inæquicostata, *Woodw.*  
 macroptera, *Sow*.  
 retusa, *Sow*.  
 semiplana, *Mant*.  
 triangularis, *Woodw.*  
 Pecten asper, *Lam*.  
 Beaveri, *Sow*.  
 Boissyi, *D'Arch*.  
 compositus, *Sow*.  
 concentricus, *Woodw.*  
 circularis, *Goldf.*  
 Milleri, *Sow*.  
 nitidus, *Mant*.





- |                              |                                   |
|------------------------------|-----------------------------------|
| Pecten obliquus, <i>Sow.</i> | Plagiostoma asperum, <i>Mant.</i> |
| orbicularis, <i>Sow.</i>     | Brightoniense, <i>Mant.</i>       |
| quadricostatus, <i>Sow.</i>  | elongatum, <i>Mant.</i>           |
| quinquecostatus, <i>Sow.</i> | Hoperi, <i>Sow.</i>               |
| sexcostatus, <i>Woodw.</i>   | Mantellii, <i>Brong.</i>          |
| Stutchburianus, <i>Sow.</i>  | ? spinosum, <i>Sow.</i>           |
| Perna Mulleti, <i>Desh.</i>  | Plicatula inflata, <i>Sow.</i>    |
| Ricordiana, <i>D'Orb.</i>    | pectinoides, <i>Sow.</i>          |
| rostrata, <i>Sow.</i>        | placunæa, <i>Lam.</i>             |

## RUDISTES.

- |                                        |                                  |
|----------------------------------------|----------------------------------|
| Diceras inæquirostratus, <i>Woodw.</i> | Hippurites Mortoni, <i>Mant.</i> |
| Lonsdalii, <i>Sow.</i>                 |                                  |

## BRACHIOPODA.

- |                                    |                                      |
|------------------------------------|--------------------------------------|
| Crania ovalis, <i>Woodw.</i>       | Terebratula Mantelliana, <i>Sow.</i> |
| Parisiensis, <i>Defr.</i>          | Martini, <i>Mant.</i>                |
| spinulosa, <i>Nills.</i>           | megatrema, <i>Sow.</i>               |
| striata, <i>Lam.</i>               | Menardi, <i>Lam.</i>                 |
| Lingula ovalis, <i>Sow.</i>        | (truncata, <i>Sow.</i> )             |
| truncata, <i>Sow.</i>              | nuciformis, <i>Sow.</i>              |
| Magas pumila, <i>Sow.</i>          | obesa, <i>Sow.</i>                   |
| truncata, <i>Woodw.</i>            | obliqua, <i>Sow.</i>                 |
| Orbicula lævigata, <i>Desh.</i>    | obtusa, <i>Sow.</i>                  |
| Terebratula buplicata, <i>Sow.</i> | octoplicata, <i>Sow.</i>             |
| brevirostris <i>Roemer.</i>        | ovata, <i>Sow.</i>                   |
| carnea, <i>Sow.</i>                | parvirostris, <i>Sow.</i>            |
| chrysalis, <i>Schloth.</i>         | pectita, <i>Sow.</i>                 |
| convexa, <i>Sow.</i>               | pentagonalis, <i>Phil.</i>           |
| decemcostata, <i>Roemer.</i>       | plicatilis, <i>Sow.</i>              |
| depressa, <i>Sow.</i>              | prælonga, <i>Sow.</i>                |
| dilatata, <i>Sow.</i>              | quadrata, <i>Sow.</i>                |
| dimidiata, <i>Sow.</i>             | rigida, <i>Sow.</i>                  |
| elegans, <i>Sow.</i>               | rostrata, <i>Sow.</i>                |
| elongata, <i>Sow.</i>              | sella, <i>Sow.</i>                   |
| faba, <i>Sow.</i>                  | semiglobosa, <i>Sow.</i>             |
| Gibbsiana, <i>Sow.</i>             | striatula, <i>Mant.</i>              |
| latissima, <i>Sow.</i>             | subplicata, <i>Mant.</i>             |

|                                     |                                   |
|-------------------------------------|-----------------------------------|
| Terebratula subrotunda, <i>Sow.</i> | Terebratula sulcata, <i>Park.</i> |
| subundata, <i>Sow.</i>              | tamarindus <i>Sow.</i>            |

## GASTEROPODA.

|                                        |                                        |
|----------------------------------------|----------------------------------------|
| Actæon Albensis, <i>D'Orb.</i>         | Natica Gaultina, <i>D'Orb.</i>         |
| elongatus, <i>Sow.</i>                 | granosa, <i>Sow.</i>                   |
| marginatus, <i>D'Orb.</i>              | rotundata, <i>Sow. sp.</i>             |
| Avellana cassis, <i>D'Orb.</i>         | Nerinea unicarinata, <i>Woodw.</i>     |
| incrassata, <i>Mant. sp.</i>           | Phasianella formosa, <i>Sow.</i>       |
| Cerithium attenuatum, <i>Forbes.</i>   | * pusilla, <i>Sow.</i>                 |
| Clementinum, <i>D'Orb.</i>             | striata, <i>Sow.</i>                   |
| Lallierianum, <i>D'Orb.</i>            | Pleurotomaria Anstedii, <i>Forbes.</i> |
| Neocomiense, <i>D'Orb.</i>             | gigantea, <i>Sow.</i>                  |
| Phillipsii, <i>Leym.</i>               | perspectiva, <i>D'Orb.</i>             |
| turriculatum, <i>Forbes.</i>           | Rhodani, <i>D'Orb.</i>                 |
| Cirrus plicatus, <i>Sow.</i>           | Pterocera Fittoni, <i>Forbes.</i>      |
| Dentalium cylindricum, <i>Sow.</i>     | bicarinata, <i>Desh.</i>               |
| decussatum, <i>Sow.</i>                | retusa, <i>Sow. sp.</i>                |
| ellipticum, <i>Sow.</i>                | Pyruia Brightii, <i>Sow.</i>           |
| medium, <i>Sow.</i>                    | depressa, <i>Sow.</i>                  |
| septangulare,                          | Smithii, <i>Sow.</i>                   |
| Dolium nodosum, <i>Sow.</i>            | Ringinella incrassata, <i>Sow. sp.</i> |
| Emarginula Neocomiensis, <i>D'Orb.</i> | inflata, <i>Sow. sp.</i>               |
| Eulima Melanoides, <i>Desh.</i>        | Rostellaria Buccinoides, <i>Sow.</i>   |
| Fusus clathratus, <i>Sow.</i>          | calcarata, <i>Sow.</i>                 |
| quadratus, <i>Sow.</i>                 | carinata, <i>Sow.</i>                  |
| rigidus, <i>Sow.</i>                   | glabra, <i>Forbes.</i>                 |
| rusticus, <i>Sow.</i>                  | macrostoma, <i>Sow.</i>                |
| Littorina carinata, <i>Sow.</i>        | marginata, <i>Sow.</i>                 |
| conica, <i>Sow.</i>                    | Parkinsonii, <i>Mant.</i>              |
| extensa, <i>Sow.</i>                   | Robinaldina, <i>D'Orb.</i>             |
| gracilis, <i>Sow.</i>                  | Scalaria Dupiniana, <i>D'Orb.</i>      |
| monilifera, <i>Sow.</i>                | pulchra, <i>Sow.</i>                   |
| Murex calcar, <i>Sow.</i>              | Solarium conoideum, <i>Sow.</i>        |
| Nassa costellata, <i>Sow.</i>          | granulatum, <i>Mant.</i>               |
| liucata, <i>Sow.</i>                   | minimum, <i>Forbes.</i>                |
| Natica carinata, <i>Sow.</i>           | ornatum, <i>Sow.</i>                   |
| Cornuelliiana, <i>D'Orb.</i>           | Trochus Albensis, <i>D'Orb.</i>        |







- Trochus decussatus*, *Leym. sp.*      *Turritella costata*, *Sow.*  
*Turbo munitus*, *Forbes.*              *Dupiniana*, *D' Orb.*  
*Yonnius*, *D' Orb.*                          *granulata*, *Sow.*

## CEPHALOPODA.

- Ammonites auritus*, *Sow.*              *Ammonites Rhotomagensis*, *Brong.*  
     *Benettiæ*, *Sow.*                          *rostratus*, *Sow.*  
     *Beudanti*, *Brong.*                      *rusticus*, *Sow.*  
     *Catillus*, *Sow.*                          *Selliguinus*, *Brong.*  
     *Catinus*, *Mant.*                          *splendens*, *Sow.*  
     *complanatus*, *Mant.*                      *tetrammatus*, *Sow.*  
     *Cornuellianus*, *D' Orb.*                      *triserialis*, *Sow.*  
     *Coupei*, *Brong.*                          *tuberculatus*, *Sow.*  
     *cristatus*, *De Luc.*                          *varians*, *Sow.*  
     *curvatus*, *Mant.*                          *varicosus*, *Sow.*  
     *decipiens*, *Sow.*                          *Woolgari*, *Mant.*  
     *denarius*, *Sow.*                          *Ancylloceras grandis*, *D' Orb.*  
     *dentatus*, *Sow.*                          *Baculites anceps*, *Lam.*  
     *Deshayesii*, *Leym.*                          *baculoides*, *D' Orb.*  
     *falcatus*, *Mant.*                          *Faujasii*, *Sow.*  
     *furcatus*, *Sow.*                          *Belemnites granulatus*, *Defr.*  
     *Goodhalli*, *Sow.*                          *lanceolatus*, *Sow.*  
     *Hambrovii*, *Forbes.*                          *minimus*, *Lister.*  
     *hippocastanum*, *Sow.*                          *mucronatus*, *Schloth.*  
     *inflatus*, *Sow.*                          *Crioceras Bowerbankii*, *Sow.*  
     *lautus*, *Sow.*                          *Hamites armatus*, *Sow.*  
     *mammillaris*, *Schloth.*                          *attenuatus*, *Sow.*  
     *Mantelli*, *Sow.*                          *compressus*, *Sow.*  
     *Martini*, *Forbes.*                          *elegans*, *Park.*  
     *Mayorianus*, *D' Orb.*                          *intermedius*, *Sow.*  
     *multiplicatus*, *Roemer.*                          *nodosus*, *Sow.*  
     *uavicularis*, *Mant.*                          *rotundus*, *Sow.*  
     *ornatus*, *Park.*                          *simplex*, *D' Orb.*  
     *pansus*, *Park.*                          *spiniger*, *Sow.*  
     *peramplus*, *Mant.*                          *spinulosus*, *Sow.*  
     *planulatus*, *Sow.*                          *tuberculatus*, *Sow.*  
     *planus*, *Mant.*                          *turgidus*, *Sow.*  
     *proboscideus*, *Sow.*                          *Nautilus elegans*, *Sow.*

|                                              |                                              |
|----------------------------------------------|----------------------------------------------|
| <i>Nautilus inæqualis</i> , <i>Sow.</i>      | <i>Scaphites constrictus</i> , <i>D'Orb.</i> |
| <i>expansus</i> , <i>Sow.</i>                | <i>gigas</i> , <i>Sow.</i>                   |
| <i>plicatus</i> , <i>Fitton.</i>             | <i>Hillsii</i> , <i>Sow.</i>                 |
| <i>radiatus</i> , <i>Sow.</i>                | <i>Turrilites Bergeri</i> , <i>Brong.</i>    |
| <i>simplex</i> , <i>Sow.</i>                 | <i>costatus</i> , <i>Lam.</i>                |
| <i>undulatus</i> , <i>Sow.</i>               | <i>tuberculatus</i> , <i>Bosc.</i>           |
| <i>Ptychoceras adpressum</i> , <i>D'Orb.</i> | <i>undulatus</i> , <i>Sow.</i>               |
| <i>Scaphites æqualis</i> , <i>Sow.</i>       |                                              |

## PTEROPODA.

|                                            |                                   |
|--------------------------------------------|-----------------------------------|
| <i>Bellerophina minuta</i> , <i>D'Orb.</i> | ( <i>Nautilus</i> , <i>Sow.</i> ) |
|--------------------------------------------|-----------------------------------|

## PISCES.

*Placoides.*

The following list of Fossil Fishes having been described by Agassiz, (*Poissons Fossiles*), it is unnecessary to repeat his name after each species.

|                                         |                                          |
|-----------------------------------------|------------------------------------------|
| <i>Ptychodus acutus</i> , <i>Egert.</i> | <i>Strophodus sulcatus.</i>              |
| <i>specabilis.</i>                      | <i>Scylliodus antiquus.</i>              |
| <i>gibberulus.</i>                      | <i>Notidanus microdon.</i>               |
| <i>arcuatus.</i>                        | <i>pectinatus.</i>                       |
| <i>articulatus.</i>                     | <i>Corax falcatus.</i>                   |
| <i>Hybodus sulcatus.</i>                | <i>Otodus appendiculatus.</i>            |
| <i>Chimæra Mantelli.</i>                | <i>Oxyrrhina Mantelli.</i>               |
| <i>Spinax major.</i>                    | <i>Lamna acuminata.</i>                  |
| <i>Ptychodus mammillaris.</i>           | <i>raphiodon.</i>                        |
| <i>decurrentis.</i>                     | <i>subulata.</i>                         |
| <i>altior.</i>                          | <i>Chimæra Agassizii</i> , <i>Buckl.</i> |
| <i>polygyrus.</i>                       | <i>brevirostris.</i>                     |
| <i>latissimus.</i>                      | <i>gigas.</i>                            |
| <i>Aerodus transversus.</i>             | <i>Mantelli.</i>                         |
| <i>Strophodus asper.</i>                | <i>Sedgwicki.</i>                        |

*Ganoïdes.*

|                               |                          |
|-------------------------------|--------------------------|
| <i>Lepidotus punctulatus.</i> | <i>Acrotemnus Faba.</i>  |
| <i>Caturus similis.</i>       | <i>Gyrodus angustus.</i> |
| <i>Maeropoma Mantelli.</i>    | <i>cretaceus.</i>        |
| <i>Egertoni.</i>              | <i>mammillaris.</i>      |





Gyrodus minor.  
 Pycnodus angustus.  
     cretaceus.  
     elongatus.

Pycnodus minor.  
     subclavatus.  
 Dercetis elongatus.

*Ctenoides.*

Beryx ornatus.  
     radians.

Beryx microcephalus.

*Cycloides.*

Hypsodon Lewesiensis.  
 Enchodus Halocyon.  
 Saurocephalus lanciformis.  
     striatus.  
 Saurodon Leanus,

Tetrapterus minor.  
 Acrognathus boops.  
 Aulelepis Typus.  
 Osmeroides Lewesiensis.  
     granulatus.

## REPTILIA.

Chelonia pulchriceps, *Owen*,  
     Benstedii *Owen*.  
 Ignanodon Mantelli, *Meyer*.  
 Leiodon anceps, *Owen*.  
 Mososaurus Hoffmanni, *Mant*.

Plesiosaurus pachyomus, *Owen*.  
 Polyptychodon ——— ?  
 Raphiosaurus subulidens, *Owen*.  
 Pterodaetylus gigantens, *Bov*.

## AVES.

Cimoliornis Diomedeus, *Owen*.

WEALDEN GROUP.—WALDERTHONGEBILDE, *Germ.*

| <i>English Authors.</i>                  | <i>French Authors.</i>      | <i>German Authors.</i> |
|------------------------------------------|-----------------------------|------------------------|
| Weald Clay. . . .                        | Argile Veldienne . .        | Waldertou . . . .      |
| Hastings Sands. . .                      | Sable ferrugineux . .       | Hastings sandsteine .  |
| Ashburnham Beds. }<br>Purbeek Beds . . } | Calcaire Lumachelle .       | Ashburnham Schiete .   |
|                                          | Purbeckien, <i>Brong.</i> . |                        |

The Wealden Group comprises a series of layers of clay, sand, and shale, with subordinate beds of limestone, grit, and sandstone, containing, more or less regularly distributed, fluviatile shells, *Cyrena*, *Unio*, *Paludina*, &c.; remains of land-plants, *Ferns*, *Cycas*, *Palms*, &c.; bones and teeth of Saurians, *Iguanodon*, &c.; and fishes, *Pycnodus*, *Lepidotus*, &c.: occasionally, however, a few marine testacea, *Bulla*, *Ostrea*, &c., may be observed, which appear to mark the estuary character of the Wealden. The following subdivisions are adopted from Dr. Mantell, (*Geol. S. E. of England*, p. 182.)

## 1. WEALD CLAY.—Average thickness 140 to 200 feet.

|                                                                                                                 |                                                                                                                                                                                                                                   |                                                                                                                                                                                                |
|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Stiff clay of various shades of blue and brown; with subordinate beds of limestone and sand; <i>Sep-taria</i> . | $\left\{ \begin{array}{l} \textit{Paludina}, \textit{Cypris Val-} \\ \textit{densis}, \textit{Cyrena}, \textit{\&c.}, \\ \text{bones of reptiles, rare-} \\ \text{ly; scales and bones of} \\ \text{fishes.} \end{array} \right.$ | $\left. \begin{array}{l} \text{The Wealds of Sus-} \\ \text{sex, Surrey, and Kent;} \\ \text{forming the vale be-} \\ \text{tween the Downs and} \\ \text{Forest Ridge.} \end{array} \right\}$ |
|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|







## 2. HASTINGS SANDS.—Average thickness 400 to 500 feet.

*Horsted Sand.*

Grey, white, ferruginous, and fawn-coloured sand and friable sandstone, with abundance of small portions of lignite.

Traces of carbonized vegetables.

Little Horsted, Uckfield, Framfield, Berhill, Chailey, Fletching, Eridge Park, Tunbridge Wells, &c.

*Strata of Tilgate Forest.*

Sand, and friable sandstone, of various shades of green, yellow, and ferruginous, surface oftentimes deeply furrowed.

Tilgate stone, very fine, compact bluish or greenish grey grit, in lenticular masses, surface oftentimes covered with mamillary concretions; the lower beds frequently conglomeritic, and containing large quartz pebbles.

Ferns, and stems of vegetables, bones of Saurian animals, Birds, Turtles, Fishes, &c. Shells of the genera *Unio*, *Cyclas*, *Cyrena*, *Paludina*, &c. Lignite wood.

Loxwood, Horsham, Tilgate, and St. Leonard's Forests; Chailey, Ore near Battle, Hastings, &c., Rye, Winchelsea.

Clay or marl; of a bluish grey colour; alternating with sand, sandstone, and shale.

Bones, and shells but rarely. Ferns; and stems of vegetables.

Tunbridge Wells.

*Worth Sandstone.*

White and yellow friable sandstone and sand.

Ferns and Arundinaceous plants. Lignite, &c.

Worth, near Crawley, St. Clement's Caves, Hastings, &c.

## 3. ASHBURNHAM BEDS.

|                                                                                                          |                       |                                                                         |
|----------------------------------------------------------------------------------------------------------|-----------------------|-------------------------------------------------------------------------|
| A series of highly ferruginous sands, alternating with clay and shale, containing ironstone and lignite. | } Ferns, Lignite, &c. | } Lower part of Hastings Cliffs; near Buxted; West Hothly, Crawley, &c. |
| Shelly limestone, alternating with sandstone, shale, and marl; and concretionary masses of grit.         |                       |                                                                         |

The greatest superficial extent of the Wealden is comprised within the Chalk escarpment of Kent, Surrey, Sussex, and Hampshire, and forms an area of a somewhat irregular triangular form, the base extending along the sea-coast from Pevensey to Hythe. The Wealden is very clearly exposed at the southern side of the Isle of Wight, and forms the Cliffs between Atherfield Point and Compton Bay; it also occurs in Sandown Bay. The Purbeck beds and overlying sands are well exhibited in Swanage Bay, Worbarrow Bay, and Durdle Cove, Dorsetshire; and the existence of similar strata in the Vale of Wardour, has long been known. A slaty limestone with *Cypris*, &c., considered by Dr. Fitton to be similar to that which occurs in the upper part of the Isle of Portland, is found at Brill, and Whitchurch, near Aylesbury, Bucks. The Wealden also occurs at Linksfield, near Elgin, according to Mr. Malcomson, (Geol. Soc. Pro. vol. ii. p. 667.)

## LOCALITIES FOR FOSSILS.

Quarries near Bethersden, Kent; and around Tunbridge Wells, (*Cyprides*, *Cyrena*, &c.); Heathfield, Pounceford, (*Equisetum Lyellii*), Burwash, &c.









Quarries on Tilgate Forest, and near Horsham; St. Leonard's and Hastings Cliffs, (*Endogenites erosa*); Atherfield Point, and Compton Bay, (*Unio Faldensis*), Isle of Wight; Vale of Wardour.

The Dover Railway traverses the Wealden between Red Hill and Ashford, and the branch line leading to Tunbridge Wells affords a good section of the Weald Clay, and Upper Hasting Sands; in the spoil banks near the tunnel, good specimens of the cypriferous shales, and other fossils, were obtained.

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LIST OF PUBLICATIONS, &c.

- Brodie, Rev. P. B., 'A History of the Fossil Insects of the Secondary Rocks of England,' 1845. *Geol. Proc.* vol. iii. p. 134.
- Buckland, Rev. W., 'On the Cycadoideæ, found in the Oolite of the Isle of Portland.' *Geol. Trans.* vol. ii.
- Dunker, Dr. Wilhelm, '*Monographie der Norddeutschen Wealdenbildung,*' &c. 4to. 1846.
- '*Ueber den Norddeutschen Fogenannten Walderton,*' &c. Svo.
- Fitton, W. H., M.D., '*A Geological Sketch of the Vicinity of Hastings,*'
- 'Observations on some of the Strata between the Chalk and Oxford Oolite.' *Geol. Trans.* vol. iv.
- Hopkins, W., 'On the Geological Structure of the Wealden District.' *Geol. Trans.* vol. vii.
- Mantell, G. A., '*The Geology of the South-east of England.*' 1833.
- '*Illustrations of the Geology of Sussex.*' 1827.
- 'On the Bones of Birds discovered in Tilgate Forest.' *Geol. Trans.* vol. v.
- 'Notes on the Wealden of the Isle of Wight.' *Quart. Geol. Journ.* vol. ii. p. 91.
- Oweu, R., 'On the supposed Fossil Bones of Birds, &c.' *Quart. Geol. Journ.* vol. ii. p. 97.
- Webster, Thomas, 'Observations on the Strata of Hastings.' *Geol. Journ.*
-

## FOSSILS OF THE WEALDEN GROUP.

## PLANTÆ.

|                                     |                                        |
|-------------------------------------|----------------------------------------|
| Carpolithes Mantelli.               | Lonchopteris Mantelli, <i>Brong.</i>   |
| Clathraria Lyellii, <i>Mant.</i>    | Pterophyllum Brongniarti, <i>Mant.</i> |
| Endogenites erosa, <i>Mant.</i>     | Sphenopteris Mantelli, <i>Brong.</i>   |
| Equisetites Lyelli, <i>Mant.</i>    | Phillipsii, <i>Mant.</i>               |
| Lonchopteris Huttoni, <i>Presl.</i> | Sillimani, <i>Mant.</i>                |

## INSECTÆ.

|                                  |                                    |
|----------------------------------|------------------------------------|
| Carabus elongatus, <i>Brod.</i>  | Termes grandævus, <i>Brod.</i>     |
| Cerylon striatum, <i>Brod.</i>   | Æshna perampla, <i>Brod.</i>       |
| Acheta Sedgwickii, <i>Brod.</i>  | Simulium humidum, <i>Brod.</i>     |
| Blatta Stricklandi, <i>Brod.</i> | Platyura Fittoni, <i>Brod.</i>     |
| Cixius maculatus, <i>Brod.</i>   | Tanypus dubius, <i>Brod.</i>       |
| Ricania fulgens, <i>Brod.</i>    | Sciophila defossa, <i>Brod.</i>    |
| Asiraca Egertoni, <i>Brod.</i>   | Macrocerca rustica, <i>Brod.</i>   |
| Aphis Valdensis, <i>Brod.</i>    | Culex ? fossilis, <i>Brod.</i>     |
| Cicada punctata, <i>Brod.</i>    | Chironomus extinctus, <i>Brod.</i> |
| Delphax pulcher, <i>Brod.</i>    | Rhiphus prisceus, <i>Brod.</i>     |

## CRUSTACEA.

|                              |                                 |
|------------------------------|---------------------------------|
| Cypris Fittoni, <i>Mant.</i> | Cypris tuberculata, <i>Sow.</i> |
| granulosa, <i>Sow.</i>       | Valdensis, <i>Sow.</i>          |
| spiniigera, <i>Sow.</i>      |                                 |

## CONCHIFERA DIMYARIA.

|                                    |                           |
|------------------------------------|---------------------------|
| Corbula alata, <i>Sow.</i>         | Unio aduncus, <i>Sow.</i> |
| Cyclas angulata, <i>Sow.</i>       | antiquus, <i>Sow.</i>     |
| elongata, <i>Sow.</i>              | compressus, <i>Sow.</i>   |
| major, <i>Sow.</i>                 | cordiformis, <i>Sow.</i>  |
| media, <i>Sow.</i>                 | Gaulterii, <i>Sow.</i>    |
| membranacea, <i>Sow.</i>           | Mantelli, <i>Sow.</i>     |
| parva, <i>Sow.</i>                 | Martini, <i>Sow.</i>      |
| subquadrata, <i>Sow.</i>           | porrectus, <i>Sow.</i>    |
| Mytilus Lyelli, <i>Sow.</i>        | subtruncatus, <i>Sow.</i> |
| Psammobia Tellinoides, <i>Sow.</i> | Valdensis, <i>Mant.</i>   |







## MONOMYARIA.

Gryphæa bulla, *Sow.*Ostrea distorta, *Sow.*

## GASTEROPODA.

Actæon Popii, *Sow.*Paludina carinifera, *Sow.*Bulla Mantelliana, *Sow.*elongata, *Sow.*Melanopsis attenuata, *Sow.*fluviorum, *Sow.*tricarinata, *Sow.*Sussexiensis, *Mant.*Neritina Fittoni, *Sow.*

Potamidum carbonarium.

## PISCES.

*Placoides.*Acrodus Hirudo, *Ag.*Hybodus dubius, *Ag.*Hybodus striatulus, *Ag.*undulatus, *Ag.*strictus, *Ag.*Sphenonchus elongatus, *Ag.*subcarinatus, *Ag.*Martini, *Ag.*grossiconus, *Ag.**Ganoides.*Tetragonolepis mastodontus, *Ag.*Ophiopsis penicillatus, *Ag.*Lepidotus Fittoni, *Ag.*Gyrodus Mantelli, *Ag.*Mantelli, *Ag.*radiatus, *Ag.*subdenticulatus, *Ag.*Pycnodus Mantelli, *Ag.*Pholidophorus ornatus, *Ag.*

## REPTILIA.

Cetiosaurus brachyurus, *Owen.*Megalosaurus Bucklandi, *Mant.*brevis, *Owen.*Platemys Mantelli, *Owen.*Chelonia obovata, *Owen.*Poikilopleuron Bucklandi, *Desl.*Bellii, *Mant.*Streptospondylus major, *Owen.*Goniopholis crassidens, *Owen.*Suchosaurus cultridens, *Owen.*Hylæosaurus armatus, *Mant.*Trionyx Bakewelli, *Mant.*Iguanodon Mantelli, *Meyer.*(Trestosternon punctatum, *Owen.*)

## SPEETON CLAY.

THE Speeton Clay, of Yorkshire, is a dark blue or black clay, generally laminated, and containing distinct layers of large and small nodules of argillaceous ironstone; the fissures of the larger nodules are more or less partially filled with calcareous spar, selenite and iron pyrites, and occasionally contain fragments of fossil shells, as Ammonites, Crioceras, &c. In the smaller nodules, remains of Crustacea and other fossils are frequently enclosed. This deposit has hitherto only been observed in Yorkshire, and is well exposed for about a mile in the Speeton Cliffs adjoining Filey Bay. At one part of the Cliff, the Clay attains an elevation of about 200 feet, but decreases in thickness towards the north, and becomes lost beneath the level of the sea. Southwards of the spot where it is most elevated, and dipping with the superincumbent beds in the same direction, it may be traced immediately underlying the Red and White Chalk of the Speeton Cliffs.

The real position of the Speeton Clay\* has not yet, we believe, been satisfactorily determined, as some of the fossils have a great analogy to those occurring in the Gault of Kent and Sussex, whilst others bear a great resemblance to some from the Kimmeridge Clay.

Of the seventy-one species mentioned in the 'Geology of Yorkshire,' p. 96, five appear to be found in the Kim-

\* The Lower Green Sand, Wealden Formation, and Portland Strata, are all wanting in this district. M. Roemer considers the Hilsthon of Germany as the equivalent of the Speeton Clay.





meridge Clay, one in the Lower Green Sand, thirteen in the Gault, and one in the Chalk; from which statement Professor Phillips observes, "That the Blue Clay of Speeton, in Yorkshire, is especially to be referred to the Gault, or Blue and Grey Marls of Cambridgeshire, Kent, and Sussex; but that it also contains some characteristic indications of the Kimmeridge Clay, and therefore we should expect that in Yorkshire these two strata are not separated as in the South of England."

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LIST OF PUBLICATIONS.

Phillips, J., '*Geology of Yorkshire*,' part 1. p. 47 and 93, plate of sections, No 3.

FOSSILS OF THE SPEETON CLAY.

POLYPARIA.

Caryophyllia conulus, *Phil.*

RADIATA.

Spatangus argillaceus, *Phil.*

ANNELIDA.

Vermicularia Sowerbii, *Mant.*

CRUSTACEA.

Astacus ornatus, *Phil.*

CONCHIFERA.

Thracia depressa, *Sow.*

Astarte lævis, *Phil.*

Mya phaseolina, *Phil.*

Nucula ovata, *Mant.*

Pholas constricta, *Phil.*

subrecurva, *Phil.*

Pholadomya decussata, *Mant.*

Lucina sculpta, *Phil.*

Corbula punctum, *Phil.*

Pinna gracilis, *Phil.*

Isocardia angulata, *Phil.*

Gryphæa sinuata, *Sow.*

## BRACHIOPODA.

|                                     |                                    |
|-------------------------------------|------------------------------------|
| Terebratula inconstans, <i>Sow.</i> | Terebratula subundata, <i>Sow.</i> |
| tetraedra ? <i>Sow.</i>             | lineolata, <i>Phil.</i>            |
| striatula, <i>Mant.</i>             |                                    |

## GASTEROPODA.

|                                         |                                    |
|-----------------------------------------|------------------------------------|
| Littorina pulcherrima, <i>Bean, sp.</i> | Auricula obsoleta, <i>Phil.</i>    |
| Solarium tabulatum, <i>Phil.</i>        | Rostellaria composita, <i>Sow.</i> |

## CEPHALOPODA.

|                                  |                                       |
|----------------------------------|---------------------------------------|
| Ammonites venustus, <i>Phil.</i> | Belemnites lateralis, <i>Phil.</i>    |
| concinnus, <i>Phil.</i>          | minimus, <i>Sow.</i>                  |
| rotula, <i>Sow.</i>              | Ancylloceras Beanii, <i>Phil. sp.</i> |
| trisulcosus, <i>Phil.</i>        | intermedius, <i>Phil. sp.</i>         |
| marginatus, <i>Phil.</i>         | Phillipsii, <i>Bean, sp.</i>          |
| hystrix, <i>Phil.</i>            | Crioceras Duvalii, <i>Lév.</i>        |
| fissicostatus, <i>Phil.</i>      | plicatilis, <i>Phil. sp.</i>          |
| curvinodus, <i>Phil.</i>         | Hamites alternatus, <i>Mant.</i>      |
| planus ? <i>Mant.</i>            | attenuatus, <i>Mant.</i>              |
| Belemnites jaculum, <i>Phil.</i> | varicostatus, <i>Phil.</i>            |

## PISCES.

Gyrodus minor, *Ag.*







OOLITIC GROUP.

CALCAIRE JURASSIQUE. JURAKALK.

|         | <i>Conybeare.</i>                                 | <i>Roemer.</i>                          | <i>D'Orbigny.</i>    |
|---------|---------------------------------------------------|-----------------------------------------|----------------------|
| UPPER.  | { Portland Stone and Sand.                        | Portland Kalk.                          | L'etage Portlandien. |
|         | { Kimmeridge Clay . . .                           | ———— . .                                | ———— Kimmeridgien.   |
| MIDDLE. | { Coral Rag . . . . .                             | Korallen Kalk.                          | ———— Corallien.      |
|         | { Oxford Clay . . . . .                           | Oxford Thon .                           | ———— Oxfordien.      |
| LOWER.  | { Cornbrash and Forest . . . . .                  | . . . . .                               | } ——— Bathonien.     |
|         | { Marble . . . . .                                | . . . . .                               |                      |
|         | { Great Oolite and<br>Stonesfield Slate . . . . . | . . . . .                               |                      |
|         | { Fuller's Earth and<br>Inferior Oolite . . . . . | Walker-Erde<br>Dogger,<br>Unter Oolith. |                      |
|         | { Lias . . . . .                                  | Lias-Kalk .                             |                      |

THE Oolitic Group which forms so conspicuous a portion of the physical structure of England, traversing the island as a wide central but oblique band, from Yorkshire on the north-east, to the Dorsetshire coast, may be stated, in a general manner, (although it is not uniform throughout,) as composed of two groups of strata, the one consisting chiefly of coarse, somewhat crystalline, shelly, oolitic limestone, with alternations of sandstones, marls, &c., which form the Upper, Middle, and Lower ridges of the Oolites, separated by distinct bands of dark coloured clays, known

as the Kimmeridge, Oxford, and Lias Clays; these clays generally forming vales throughout their extent, and modifying both the agricultural character and physical aspect of the different districts.

The subdivisions, however, of the Oolitic Group, have been subjected to considerable modifications, when traced over the area occupied by them, both as regards their mineral composition and thickness, some beds thinning out and becoming entirely wanting. The labours of Mr. W. Smith, Mr. Lonsdale, Professor J. Phillips, Mr. Conybeare, and Sir H. T. de la Beche, have contributed materially towards the elucidation of the Oolitic districts, and their works (quoted at the end of this article,) should be consulted for full and valuable details of this highly interesting portion of English Geology. It has been emphatically called, "The Age of Reptiles," but numerous species of Fish, Corals, Crustacea, Conchifera, Gasteropoda, Cephalopoda, especially Ammonites and Belemnites abounded at this period. The most interesting feature, however, in the organic history of this system, is the appearance, for the first time, of warm-blooded animals; viz., the Amphitherium and Phascolotherium, found in the Stonesfield Slate, and considered, by analogy of structure, to belong to the Marsupialia, a family now inhabiting the Australian continent.

The following is a slight account of the mineral character of the various members of the Oolitic Series, and some of the localities where they are best developed.

|                              |                                                                                                                                                                    |                                                                                        |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| Portland Stone,<br>and Sand. | { Coarse oolitic shelly<br>limestone; sometimes<br>fine-grained or compact,<br>thick-bedded, and with<br>layers of chert, and<br>with subordinate beds<br>of sand. | } Isle of Portland.<br>Brill, &c. Aylesbury,<br>Bucks. Thame, Oxon.<br>Tisbury, Wilts. |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|





- Kimmeridge Clay. { Dark blue and greyish laminated clay, with gypsum and bituminous shale. } Kimmeridge, Dorset. Near Oxford. Stone and Hartwell, Bucks. Near Swindon.
- Upper Calcareous Grit. { Coarse, shelly limestones; more or less thick-bedded: coarse oolitic limestone, sandy } Headington, Oxon. Westbrook, Calne and Steeple Ashton, Wilts. Malton and Scarboro', Yorkshire.
- Coral Rag. Lower Calcareous Grit. { limestones, abounding in corals. Calcareo-siliceous grits. }
- Oxford Clay. Kelloway Rock. { Dark blue clay, with *Septaria*; sometimes slaty and bituminous; with a subordinate band of ferruginous sandy limestone, (Kel. Rock.) } Chippenham and Wootton Bassett, Wilts; Oxford; Yorkshire, &c.
- Cornbrash. { Coarse rubbly limestone, thinly laminated, with layers of clay. } Stanton, Malmesbury, Ashford, Wilts.
- Forest Marble. { Thinly laminated shelly limestone, sand and gritstone, with layers of clay. } Corsham, Box, &c., Wilts. Sapperton. Bradford. Cirencester.
- Bradford Clay. { Layers of Clay; sometimes alternating with bands of limestone. } Bradford Burfield. Pickwick. Tetbury.
- Great Oolite. { Oolitic, shelly limestone, more or less compact, and sandy, sometimes thick-bedded. } Bath. Bradford. Minchinhampton, common, (very fossiliferous.)

|                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>On the Yorkshire coast the Great or Bath Oolite (<i>b</i>) (a hard blue limestone; fine-grained oolite; hard bluish clay;) is contained between two thick beds (<i>a, c,</i>) of gritty laminated sandstones and shales, containing an abundance of terrestrial plants.</p> | <p>(<i>a</i>) Cayton and Gristhorpe Bays.<br/> (<i>b</i>) Cloughton and White Nab.<br/> (<i>c</i>) Between Cloughton Wyke and Blue Wick.</p>                                                                       |
| <p>Stonesfield Slate.</p>                                                                                                                                                                                                                                                      | <p>{ Oolite, shelly and gritty limestone. Slaty. } Stonesfield, Oxon. Sevenhampton Common, &amp;c.</p>                                                                                                             |
| <p>Fuller's Earth Clay.</p>                                                                                                                                                                                                                                                    | <p>{ . . . . . } Bath; Box; near Stroud; and Hamp-ton Common.</p>                                                                                                                                                  |
| <p>Inferior Oolite.</p>                                                                                                                                                                                                                                                        | <p>{ Two layers of coarse shelly ragstone, with intervening bands of marl, and soft free-stone. Fine-grained sandstone and iron-stone. } Dundry. Painswick. Brinscombe. The Cotteswolds. Blue Wick, Yorkshire.</p> |
| <p>Lias.</p>                                                                                                                                                                                                                                                                   | <p>{ Alum shale; rubbly and sandy shales, &amp;c. Lower Lias lime-stones, and shales. } Whitby, Redcar, Yorksh. Gloucestershire. Somerset. Lyme-Regis, &amp;c.</p>                                                 |

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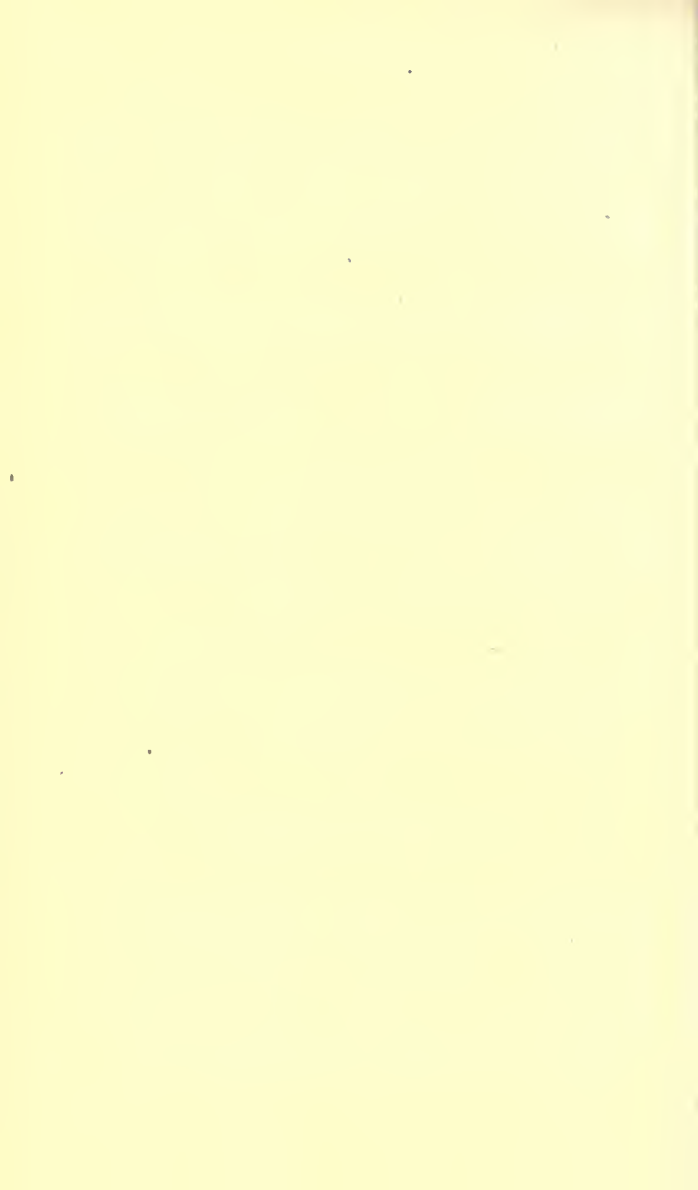
#### LOCALITIES FOR FOSSILS, &c.

Fine sections of the Oolitic Group are to be seen along the coast of Yorkshire, and that of Dorsetshire. In the hills and country around Cheltenham, and Bath, and Bristol; around Swindon, and in the vicinity of Oxford, and Aylesbury. Consult the table given above, and the works referred to, for other localities where the subordinate beds may be observed. Also the sections of the Great and North Western Railways, constructed by Captain L. L. B. Ibbetson, for the Geological Survey of Great Britain.

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## FOSSILS OF THE OOLITIC GROUP.

## PLANTÆ.

|                                         |                                      |
|-----------------------------------------|--------------------------------------|
| Alethopteris insignis, <i>Gopp.</i>     | Carpolithes areolatus, <i>Lindl.</i> |
| Phillipsii, <i>Gopp.</i>                | Bucklandi, <i>Lindl.</i>             |
| Araucarites peregrinus, <i>Presl.</i>   | conicus, <i>Lindl.</i>               |
| Bensonia ovata, <i>Buckm.</i>           | Cyclopteris Beanii, <i>Lindl.</i>    |
| Brachyphyllum mammillare, <i>Lindl.</i> | digitata, <i>Brong.</i>              |
| Bucklandia squamosa, <i>Brong.</i>      | Dictyophyllum rugosum, <i>Lindl.</i> |







## ZOOPHYTA.

- Alecto dichotoma*, Lamx.  
*Apsendesia cristata*, Lamx.  
*Agaricia lobata*, Goldf.  
*Astrea concinna*, Goldf.  
     *favosoides*, Phil.  
     *micrastron*, Phil.  
     *oculata*, Goldf.  
     *tubulosa*, Goldf.  
*Caryophyllia annularis*, Flem.  
     *cylindrica*, Phil.  
*Ceripora clavata*, Goldf.  
*Chrysaora damicornis*, Lamx.  
     *spinosa*, Lamx.  
*Cricopora cæspitosa*, Bronn.  
     *straminea*, Phil.  
*Diastopora diluviana*, Ed.  
     *foliacea*, Lamx.  
*Diastopora verrucosa*, Ed.  
*Eunomia radiata*, Lamx.  
*Fungia orbulites*, Lamx.  
*Heteropora conifera*, Blainv.  
     *dumetosa*, Lam.  
*Idmonea triquetra*, Lamx.  
*Intricaria Bajocensis*, Bronn.  
*Lithodendron elegans*, Goldf.  
*Madrepora limbata*, Goldf.  
*Meandrina Soemmeringii*, Goldf.  
*Millepora pyriformis*, Lamx.  
     *ramosa*, Flem.  
*Montlivaltia caryophyllata*, Lam.  
*Terebellaria ramosissima*, Lamx.  
*Theonoea clathrata*, Lamx.  
*Turbinolia dispar*, Phil.

## ECHINODERMATA.

- Amphiura Pratti*, Forbes.  
*Apiocerinus Pratti*, Gray.  
     *rotundus*, Mill.  
*Aspidura loricata*, Ag.  
*Asterias Cottesswoldiæ*, Buckm.  
*Cidaris Blumenbachii*, Goldf.  
     *coronata*, Goldf.  
     *crenularis*, Lam.  
     *elegans*, Goldf.  
     *glandifera*, Goldf.  
     *gracilis*, Benson.  
     *maxima*, Goldf.  
     *monilipora*, Phil.  
     *propinquus*, Goldf.  
     *subangularis*, Goldf.  
*Clypeus emarginatus*, Phil.  
     *orbicularis*, Phil.  
     *ornatus*, Buckm.  
*Clypeus patella*, Ag.  
     *sinuatus*, Park.  
*Diadema Bechei*, Ag.  
     *priscum*, Ag.  
     *vagans*, Phil.  
*Disaster ovalis*, Ag.  
*Discoidea depressa*, Ag.  
*Echinolampas pentagonalis*, Phil.  
*Echinus germinans*, Phil.  
     *perlatus*, Desm.  
*Nucleolites clunicularis*,  
     *dimidiatus*,  
*Ophioderma Egertoni*, Forbes.  
     (*Ophiura*, Brod.)  
     *Milleri*, Forbes.  
     (*Ophiura*, Phil.)  
     *tenuibrachiata*, Forbes.  
*Ophiura Murravii*, Forbes.

|                                         |                                      |
|-----------------------------------------|--------------------------------------|
| Pentacrinus basaltiformis, <i>Mill.</i> | Pentacrinus vulgaris, <i>Schlot.</i> |
| Briareus, <i>Mill.</i>                  | Pygaster petalliformis, <i>Ag.</i>   |
| scalaris, <i>Goldf.</i>                 | semisulcatus, <i>Phil.</i>           |
| subangularis, <i>Mill.</i>              |                                      |

## ANNELIDA.

|                                |                                      |
|--------------------------------|--------------------------------------|
| Scrpula capitata, <i>Phil.</i> | Serpula tetragona, <i>Sow.</i>       |
| convoluta, <i>Goldf.</i>       | triangulata, <i>Sow.</i>             |
| deplexa, <i>Bean.</i>          | tricarinata, <i>Sow.</i>             |
| filiaria, <i>Goldf.</i>        | triserrata, <i>Sow.</i>              |
| flaccida, <i>Goldf.</i>        | vertebralis, <i>Sow.</i>             |
| grandis, <i>Goldf.</i>         | Vermilia sulcata, <i>Sow.</i>        |
| intestinalis, <i>Phil.</i>     | Vermicularia compressa, <i>Phil.</i> |
| lacerata, <i>Phil.</i>         | concinna, <i>Sow.</i>                |
| plicatilis, <i>Munst.</i>      | nodus, <i>Phil.</i>                  |
| quadrilatera, <i>Goldf.</i>    | ovata, <i>Sow.</i>                   |
| quinquangularis, <i>Goldf.</i> | tumida, <i>Sow.</i>                  |
| squamosa, <i>Bean.</i>         |                                      |

## CIRRIPEDA.

|                                     |                                     |
|-------------------------------------|-------------------------------------|
| Pollicipes complanatus, <i>Mor.</i> | Pollicipes ooliticus, <i>Buckm.</i> |
| concinus, <i>Mor.</i>               |                                     |

## INSECTA.

*Stonesfield Slate.*

|                                 |                                  |
|---------------------------------|----------------------------------|
| Prionus ooliticus, <i>Brod.</i> | Coccinella Wittsii, <i>Brod.</i> |
|---------------------------------|----------------------------------|

*Lias.*

|                                       |                                      |
|---------------------------------------|--------------------------------------|
| Laccophilus ? aquaticus, <i>Brod.</i> | Agrion Buckmani, <i>Brod.</i>        |
| Gyrinus natans, <i>Brod.</i>          | Orthophlebia communis, <i>West.</i>  |
| Gryllus Bucklandi, <i>Brod.</i>       | Hemerobius ? Higginsii, <i>Brod.</i> |
| Libellula Brodiei, <i>Buckm.</i>      | Æshna liassina, <i>Strickl.</i>      |
| ? Hopci, <i>Brod.</i>                 | Asilus ? ignotus, <i>Brod.</i>       |

## CRUSTACEA.

|                                  |                                 |
|----------------------------------|---------------------------------|
| Astacus leptomanus, <i>Phil.</i> | Astacus scabrosus, <i>Phil.</i> |
| mucronatus, <i>Phil.</i>         | rostratus, <i>Phil.</i>         |







## CONCHIFERA MONOMYARIA.

- Amphidesma decussatum*, *Bean*.  
     *recurvum*, *Phil*.  
     *securiforme*, *Phil*.
- Anatina undulata*, *Sow. sp.*
- Arca æmula*, *Phil*.  
     *Buckmani*, *Rich*.  
     *elongata*, *Buckm*.  
     *gracilis*, *Buckm*.  
     *ovata*, *Buckm*.  
     *pulchra*, *Sow*.  
     *quadrisulcata*, *Sow*.  
     *rugosa*, *Lycett*.  
     *truncata*, *Buckm*.
- Astarte aliena*, *Phil*.  
     *carinata*, *Phil*.  
     *elegans*, *Sow*.  
     *excavata*, *Sow*.  
     *extensa*, *Phil*.  
     *Hartwellensis*, *Sow*.  
     *lurida*, *Phil*.  
     *lævis*, *Goldf*.  
     *minima*, *Phil*.  
     *modiolaris*, *Desh*.  
     *obliqua*, *Desh*.  
     *orbicularis*, *Sow*.  
     *ovata*, *Smith*.  
     *pulla*, *Bronn*.  
     *pumila*, *Sow*.  
     *trigonalis*, *Sow*.  
     *zonata*, *Roemer*.
- Cardinia abducta*, *Stutch*.  
     *attenuata*, *Stutch*.  
     *concinna*, *Sow. sp.*  
     *crassissima*, *Sow. sp.*  
     *crassiuscula*, *Sow. sp.*  
     *cuneata*, *Stutch*.  
     *hybrida*, *Sow. sp.*
- Cardinia imbricata*, *Stutch*.  
     *lanceolata*, *Stutch*.  
     *Listeri*, *Sow. sp.*  
     *ovalis*, *Stutch*.  
     *unionides*, *Ag*.
- Cardium acutangulum*, *Phil*.  
     *citrinoideum*, *Phil*.  
     *cognatum*, *Phil*.  
     *dissimile*, *Sow*.  
     *gibberulum*, *Phil*.  
     *globosum*, *Bean*.  
     *incertum*, *Phil*.  
     *lobatum*, *Phil*.  
     *multicostatum*, *Phil*.  
     *semiglabrum*, *Phil*.  
     *striatulum*, *Sow*.  
     *truncatum*, *Sow*.
- Corbis lævis*, *Sow*.  
     *ovalis*, *Phil*.  
     *uniformis*, *Phil*.
- Corbula depressa*, *Phil*.  
     *obscura*, *Sow*.  
     *rugosa*, *Buckm*.  
     *striata*, *Buckm*.
- Cucullæa cancellata*, *Phil*.  
     *concinna*, *Phil*.  
     *contracta*, *Phil*.  
     *cylindrica*, *Phil*.  
     *elongata*, *Sow*.  
     *imperialis*, *Phil*.  
     *inæquivalvis*, *Goldf*.  
     *lævis*, *Buckm*.  
     *minuta*, *Sow*.  
     *oblonga*, *Sow*.  
     *ornata*, *Buckm*.  
     *pectinata*, *Phil*.  
     *reticulata*, *Phil*.

- Cucullæa rudis*, *Sow.*  
*Cypricardia solida*, *Lycett.*  
*Cytherea dolabra*, *Phil.*  
     *rugosa*, *Sow.*  
*Gastrochæna tortuosa*, *Sow.*  
*Gresslya Anglica*, *Ag.*  
*Hippopodium ponderosum*, *Sow.*  
*Isocardia abrupta*, *Sow.*  
     *concentrica*, *Sow.*  
     *cordata*, *Buckm.*  
     *minima*, *Sow.*  
     *nitida*, *Phil.*  
     *rhomboidalis*, *Phil.*  
     *rostrata*, *Sow.*  
     *striata*, *Sow.*  
     *tener*, *Sow.*  
     *triangularis*, *Bean.*  
     *tumida*, *Phil.*  
*Lucina crassa*, *Sow.*  
     *despecta*, *Phil.*  
     *lirata*, *Phil.*  
     *Portlandica*, *Sow.*  
*Intraria decurtata*, *Goldf.*  
     *donaciforme*, *Goldf.*  
     *gibbosa*, *Phil.*  
     *rotundata*, *Goldf.*  
     *Unionides*, *Goldf.*  
*Lysianassa angulifera*, *Goldf.*  
     *literata*, *Goldf.*  
     *rhomboifera*, *Goldf.*  
     *v-scripta*, *Goldf.*  
*Mactromya Cardioides*, *Phil. sp.*  
*Modiola anatina*, *Smith.*  
     *bipartita*, *Sow.*  
     *compressa*, *Goldf.*  
     *cuneata*, *Sow.*  
     *gibbosa*, *Sow.*  
     *Hillana*, *Sow.*  
     *imbricata*, *Sow.*  
*Modiola Jurensis*, *Bronn.*  
     *lævis*, *Sow.*  
     *minima*, *Sow.*  
     *pallida*, *Sow.*  
     *plicata*, *Sow.*  
     *pulchra*, *Phil.*  
     *reniformis*, *Sow.*  
     *scalprum*, *Sow.*  
     *parvula*, *Roemer.*  
     *tenuistriata*, *Goldf.*  
*Mya æquata*, *Phil.*  
     *calceiformis*, *Phil.*  
     *dilata*, *Phil.*  
*Myoconcha crassa*, *Sow.*  
*Mytilus cuneatus*, *Phil.*  
     *pectinatus*, *Sow.*  
     *pulcher*, *Goldf.*  
     *sublævis*, *Sow.*  
*Nucula axiniformis*, *Phil.*  
     *claviformis*, *Sow.*  
     *complanata*, *Roemer.*  
     *elliptica*, *Phil.*  
     *lachryma*, *Sow.*  
     *Menkii*, *Roemer.*  
     *mucronata*, *Sow.*  
     *nuda*, *Phil.*  
     *ovum*, *Sow.*  
     *rostralis*, *Roemer.*  
     *variabilis*, *Sow.*  
*Opis lunulatus*, *Sow. sp.*  
     *similis*, *Sow. sp.*  
*Panopæa elongata*, *Roemer.*  
     *gibbosa*, *Sow.*  
     *oblata*, *Sow.*  
*Pectunculus minimus*, *Sow.*  
     *oblongus*, *Sow.*  
*Pholadomya acuticosta*, *Sow.*  
     *æqualis*, *Sow.*  
     *ambigua*, *Sow.*





- Phioladomya angustata*, *Sow.*  
*decorata*, *Hartm.*  
*deltoides*, *Sow.*  
*fidicula*, *Sow.*  
*lyrata*, *Sow.*  
*Murchisoniæ*, *Sow.*  
*nana*, *Phil.*  
*obliquata*, *Phil.*  
*obsoleta*, *Phil.*  
*obtusa*, *Sow.*  
*ovalis*, *Sow.*  
*producta*, *Sow.*  
*parvula*, *Roemer.*  
*simplex*, *Phil.*  
*truncata*, *Buckm.*  
*ventricosa*, *Goldf.*
- Pholas compressa*, *Sow.*  
*recondita*, *Phil.*
- Pinna ampla*, *Sow.*  
*cuneata*, *Bean.*  
*fissa*, *Goldf.*  
*folium*, *Phil.*  
*granulata*, *Sow.*  
*Hartmanni*, *Ziet.*  
*lanceolata*, *Sow.*  
*mitis*, *Phil.*
- Psammobia lævigata*, *Phil.*
- Pullastra arenicola*, *Strickl.*  
*oblita*, *Phil.*
- Pullastra* ? *perigrina*, *Phil.*  
*recondita*, *Phil.*
- Sphæra Madridi*, (*Cardium*.) *Arch.*  
*Sanguinolaria elegans*, *Phil.*  
*oblonga*, *Buckm.*  
 ? *obtusa*, *Buckm.*  
*parvula*, *Bean.*  
 ? *punctata*, *Buckm.*  
 ? *rotunda*, *Buckm.*  
 ? *striata*, *Buckm.*  
*vetusta*, *Phil.*
- Tellina ampliata*, *Phil.*  
*Thetis varicosa* (*Venus*.) *Sow.*  
*Thracia depressa*, *Sow. sp.*  
*Trigonia angulata*, *Sow.*  
*clavellata*, *Park.*  
*conjungens*, *Phil.*  
*costata*, *Park.*  
*cuspidata*, *Sow.*  
*duplicata*, *Sow.*  
*gibbosa*, *Sow.*
- Trigonia imbricata*, *Sow.*  
*impressa*, *Sow.*  
*incurva*, *Sow.*  
*literata*, *Phil.*  
*pullus*, *Sow.*  
*striata*, *Sow.*
- Unio distortus*, *Bean.*  
*Venus Nuculæformis*, *Roemer.*

## MONOMYARIA.

- Anomia jurensis*, *Roemer. sp.*  
*semistriata*, *Bean.*
- Avicula Braamburiensis*, *Phil.*  
*complicata*, *Buckm.*  
*contorta*, *Portl.*  
*costata*, *Sow.*  
*cygnipes*, *Phil.*  
*echinata*, *Sow.*
- Avicula elegantissima*, *Bean.*  
*expansa*, *Phil.*  
*inæquivalvis*, *Sow.*  
*lanceolata*, *Sow.*  
*longiaxis*, *Buckm.*  
*modiolaris*, *Munst.*  
*Munsteri*, *Goldf.*  
*ovalis*, *Phil.*

- Avicula ovata*, *Sow.*  
     *tonsipluma*, *Young.*  
*Crenatula Listeri*, *Park.*  
     *ventricosa*, *Sow.*  
*Gervillia acuta*, *Sow.*  
     *aviculoides*, *Sow.*  
     *costatula*, *Deslong.*  
     *crassa*, *Strick.*  
     *Hartmanni*, *Goldf.*  
     *lauceolata*, *Goldf.*  
     *lævis*, *Buckn.*  
     *monotis*, *Deslong.*  
     *pernoides*, *Deslong.*  
     *siliqua*, *Deslong.*  
*Gryphæa auriformis*, *Goldf.*  
     *Chamæformis*, *Smith.*  
     *cymbium*, *Lam.*  
     *depressa*, *Phil.*  
     *dilatata*, *Sow.*  
     *gigantea*, *Sow.*  
     *incurva*, *Sow.*  
     *inhærens*, *Phil.*  
     *Maccullochii*, *Sow.*  
     *mima*, *Phil.*  
     *nana*, *Sow.*  
     *obliquata*, *Sow.*  
     *suillæ*, *Goldf.*  
     *virgula*, *DeFr.*  
*Inoceramus amygdaloides*, *Goldf.*  
     ? *cinctus*, *Goldf.*  
     *dubius*, *Sow.*  
*Lima antiquata*, *Sow.*  
     *exarata*, *Goldf.*  
     *gibbosa*, *Sow.*  
     *minuta*, *Goldf.*  
     *proboscidea*, *Sow.*  
     *rudis*, *Sow.*  
*Limea duplicata*, *Goldf.*  
*Monotis decussata*, *Munst.*
- Ostrea acuminata*, *Sow.*  
     *archetypa*, *Phil.*  
     *costata*, *Sow.*  
     *duriuscula*, *Phil.*  
     *expansa*, *Sow.*  
     *falcata*, *Sow.*  
     *gregaria*, *Sow.*  
     *inæqualis*, *Phil.*  
     *læviuscula*, *Sow.*  
     *liassica*, *Strickl.*  
     *Marshii*, *Sow.*  
     *Meadii*, *Sow.*  
     *obscura*, *Sow.*  
     *palmetta*, *Sow.*  
     *sandalina*, *Goldf.*  
     *solitaria*, *Sow.*  
     *sulcifera*, *Phil.*  
     *undosa*, *Bean.*  
     *undulata*, *Sow.*  
*Pecten abjectus*, *Phil.*  
     *acutiradiatus*, *Munst.*  
     *æquivalvis*, *Sow.*  
     *ambiguus*, *Munst.*  
     *annulatus*, *Sow.*  
     *arcuatus*, *Sow.*  
     *articulatus*, *Schloth.*  
     *barbatus*, *Sow.*  
     *calvus*, *Goldf.*  
     *cancellatus*, *Bean.*  
     *cinctus*, *Sow.*  
     *cingulatus*, *Goldf.*  
     *demissus*, *Phil.*  
     *dentatus*, *Sow.*  
     *fibrosus*, *Sow.*  
     *inæquicostatus*, *Phil.*  
     *lamellosus*, *Sow.*  
     *lens*, *Sow.*  
     *obscurus*, *Sow.*  
     *rigidus*, *Sow.*







- Pecten similis*, Sow.  
     *strictus*, Munst.  
     *sublævis*, Phil.  
     *subarmatus*, Munst.  
     *subulatus*, Munst.  
     *textilis*, Munst.  
     *textorius*, Schloth.  
     *vagans*, Sow.  
     *Valoniensis*, DeFr.  
     *vimineus*, Sow.  
     *virguliferus*, Phil.  
*Perna Mytiloides*, Lam.  
     *rugosa*, Goldf.  
*Plagiostoma alternans*, Roemer.  
     *Cardiiforme*, Sow.  
     *concentricum*, Sow.  
     *duplicatum*, Sow.  
*Plagiostoma elongatum*, Goldf.  
     *giganteum*, Sow.  
     *Hermanni*, Voltz.  
     *interstinctum*, Phil.  
     *læve*, Buckm.  
     *læviusculum*, Sow.  
     *obliquatum*, Sow.  
     *obscurum*, Sow.  
     *punctatum*, Sow.  
     *rigidulum*, Phil.  
     *rigidum*, Sow.  
     *rusticum*, Sow.  
*Plicatula sarcinula*, Munst.  
     *spinosa*, Sow.  
     *ventricosa*, Goldf.  
*Spondylus comptus*, Goldf.

## BRACHIOPODA.

- Crania antiquior*, Jelly.  
*Lingula Beani*, Phil.  
*Orbicula granulata*, Sow.  
     *Humphreysiana*, Sow.  
     *latissima*, Sow.  
     *radiata*, Phil.  
*Spirifer acuticosta*, Munst.  
     *Hartmanni*, Ziet.  
     *rostratus*, Schloth.  
     *verrucosus*, Buck.  
     *Walcottii*, Sow.  
*Terebratula acuta*, Sow.  
     *angulata*, Sow.  
     *bidens*, Phil.  
     *bullata*, Sow.  
     *carinata*, Lam.  
     *concinna*, Sow.  
     *cornuta*, Sow.  
     *decussata*, Lam.  
*Terebratula digona*, Sow.  
     *emarginata*, Sow.  
     *fimbria*, Sow.  
     *flabellulum*, Sow.  
     *furcata*, Sow.  
     *globata*, Sow.  
     *hemisphærica*, Sow.  
     *inconstans*, Sow.  
     *indentata*, Sow.  
     *intermedia*, Sow.  
     *Kleinii*, Lam.  
     *lagenalis*, Schloth.  
     *lampas*, Sow.  
     *lata*, Sow.  
     *maxillata*, Sow.  
     *numismalis*, Lam.  
     *obsoleta*, Sow.  
     *orbicularis*, Sow.  
     *ornithocephala*, Sow.

|                                  |                                       |
|----------------------------------|---------------------------------------|
| Terebratula ovoides, <i>Sow.</i> | Terebratula simplex, <i>Buckm.</i>    |
| perovalis, <i>Sow.</i>           | sphæroidalis, <i>Sow.</i>             |
| plicata, <i>Buckm.</i>           | spinosa, <i>Smith.</i>                |
| plicatella, <i>Sow.</i>          | tetrahedra, <i>Sow.</i>               |
| punctata, <i>Sow.</i>            | trilineata, <i>Young.</i>             |
| quadrifida, <i>Lam.</i>          | triplicata, <i>Phil.</i>              |
| resupinata, <i>Sow.</i>          | varians, <i>Schloth.</i>              |
| rimosa, <i>Bronn.</i>            | ( <i>T. socialis</i> , <i>Phil.</i> ) |
| serrata, <i>Sow.</i>             |                                       |

## GASTEROPODA.

|                                    |                                    |
|------------------------------------|------------------------------------|
| Actæon acutus, <i>Sow.</i>         | Natica arguta, <i>Phil.</i>        |
| cuspidatus, <i>Sow.</i>            | cineta, <i>Phil.</i>               |
| Buccinum angulatum, <i>Sow.</i>    | elegans, <i>Sow.</i>               |
| carinatum, <i>Roemer.</i>          | hemisphærica, <i>Roemer.</i>       |
| Naticoide, <i>Sow.</i>             | inflata, <i>Buckm.</i>             |
| unilineatum, <i>Sow.</i>           | macrostoma, <i>Roemer.</i>         |
| Bulla? elongata, <i>Phil.</i>      | nodulata, <i>Phil.</i>             |
| subquadrata, <i>Roemer.</i>        | tumidula, <i>Phil.</i>             |
| undulata, <i>Bean.</i>             | Nerinea cingenda, <i>Phil. sp.</i> |
| Cirrus carinatus, <i>Sow.</i>      | elegans, <i>Thurm.</i>             |
| cingulatus, <i>Phil.</i>           | fasciata, <i>Voltz.</i>            |
| depressus, <i>Phil.</i>            | Goodhallii, <i>Sow.</i>            |
| Leachii, <i>Sow.</i>               | punctata, <i>Bronn.</i>            |
| nodosus, <i>Sow.</i>               | striata, <i>Buckm.</i>             |
| Dentalium angulatum, <i>Buckm.</i> | Nerita angulata, <i>Sow.</i>       |
| giganteum, <i>Phil.</i>            | costata, <i>Sow.</i>               |
| minimum, <i>Strickl.</i>           | lævigata, <i>Sow.</i>              |
| Delphinula coronata, <i>Flem.</i>  | minuta, <i>Sow.</i>                |
| Emarginula scalaris, <i>Sow.</i>   | sinuosa, <i>Sow.</i>               |
| tricarinata, <i>Sow.</i>           | Patella Ancilloides, <i>Sow.</i>   |
| Littorina concinna, <i>Roemer.</i> | lata, <i>Sow.</i>                  |
| muricata, <i>Sow.</i>              | latissima, <i>Sow.</i>             |
| ornata, <i>Sow.</i>                | nana, <i>Sow.</i>                  |
| punctura, <i>Bean.</i>             | rugosa, <i>Sow.</i>                |
| Murex Haccanensis, <i>Phil.</i>    | Phasianella cineta, <i>Phil.</i>   |
| Natica adducta, <i>Phil.</i>       | Pileolus lævis, <i>Sow.</i>        |
| alta, <i>Buckm.</i>                | plicatus, <i>Sow.</i>              |





- Pleurotomaria abbreviata*, *Sow.*  
*Anglica*, *Sow.*  
*bicarinata*, *Sow.*  
*elongata*, *Sow.*  
*fasciata*, *Sow.*  
*granulata*, *Sow.*  
*ornata*, *Deifr.*  
*pallium*, *Sow.*  
*reticulata*, *Sow.*  
*sulcata*, *Sow.*  
*tuberculosa*, *Deifr.*
- Rimula clathrata*, *Sow. sp.*
- Rissoa acuta*, *Sow.*  
*duplicata*, *Sow.*  
*lævis*, *Sow.*  
*obliquata*, *Sow.*
- Rostellaria bispinosa*, *Phil.*  
*composita*, *Sow.*  
*trifida*, *Bean.*
- Rotella compressa*, *Sow.*  
*expansa*, *Sow.*  
*polita*, *Bronn.*  
*Solarioides*, *Sow.*
- Solarium calyx*, *Phil.*
- Terebra granulata*, *Phil.*
- Terebra Heddingtonensis*, *Lons.*  
*lineata*, *Sow.*  
*Melanoides*, *Phil.*  
*Portlandica*, *Sow.*  
*striata*, *Lons.*  
*vetusta*, *Phil.*  
*vittata*, *Phil.*
- Trochotoma sulcata*, *Lycett.*
- Trochus angulatus*, *Sow.*  
*bisertus*, *Phil.*  
*dimidiatus*, *Sow.*  
*duplicatus*, *Sow.*  
*guttatus*, *Phil.*  
*imbricatus*, *Sow.*  
*monilitectus*, *Phil.*  
*obsoletus*, *Roemer.*  
*pyramidatus*, *Phil.*  
*tornatus*, *Phil.*
- Turbo funiculatus*, *Phil.*  
*obtusus*, *Phil.*  
*sulcostomus*, *Phil.*  
*undulatus*, *Phil.*
- Turritella muricata*, *Sow.*  
*quadrivittata*, *Phil.*

CEPHALOPODA.

- Ammonites accipitris*, *Buckm.*  
*acuticosta*, *Strickl.*  
*angulatus*, *Sow.*  
*anguliferus*, *Phil.*  
*annulatus*, *Sow.*  
*arcigerens*, *Phil.*  
*armatus*, *Sow.*  
*athletus*, *Phil.*  
*Bakeriæ*, *Sow.*  
*balteatus*, *Phil.*  
*Banksii*, *Sow.*  
*Bechei*, *Sow.*
- Ammonites bifrons*, *Brug.*  
*bifrons*, *Phil.*  
*binus*, *Sow.*  
*biplex*, *Sow.*  
*Birchii*, *Sow.*  
*bisulcatus*, *Brong.*  
*Blagdeni*, *Sow.*  
*Boblayei*, *D'Orb.*  
*Bodleyi*, *Buckm.*  
*Bonardi*, *D'Orb.*  
*Boulbiensis*, *Phil.*  
*Brackeuridgii*, *Sow.*

- Ammonites brevispina*, Sow.  
*Brightii*, Pratt.  
*Brocchii*, Sow.  
*Brodiei*, Sow.  
*Brongniartii*, Sow.  
*Brookii*, Sow.  
*Brownii*, Sow.  
*Callovicensis*, Sow.  
*caprotinus*, D'Orb.  
*catena*, Sow.  
*centaurus*, D'Orb.  
*Clevelandicus*, Phil.  
*Colesii*, Buckm.  
*communis*, Sow.  
*Comptoni*, Pratt.  
*concausus*, Sow.  
*Conybeari*, Sow.  
*cordatus*, Sow.  
*corrugatus*, Sow.  
*crassus*, Phil.  
*crenularis*, Phil.  
*cultellus*, Buckm.  
*Davæi*, Sow.  
*discus*, Sow.  
*Duncani*, Sow.  
*elegans*, Sow.  
*Elizabethæ*, Pratt.  
*ellipticus*, Sow.  
*erugatus*, Bean.  
*exaratus*, Phil.  
*excavatus*, Sow.  
*falcifer*, Sow.  
*fibulatus*, Sow.  
*fimbriatus*, Sow.  
*flexicostatus*, Phil.  
*fluctuosus*, Pratt.  
*forficatus*, Strickl.  
*Fowleri*, Buckm.  
*funiferus*, Phil.  
*gagateus*, Young.
- Ammonites gemmatus*, Phil.  
*geometricus*, Phil.  
*giganteus*, Sow.  
*Gowerianus*, Sow.  
*gracilis*, Buckl.  
*Greenoughii*, Sow.  
*Gulielmi*, Sow.  
*halecis*, Buckm.  
*Hawskerensis*, Phil.  
*Henleyi*, Sow.  
*Herveyi*, Sow.  
*heterophyllus*, Sow.  
*Humphriesianus*, Sow.  
*impendens*, Phil.  
*intermedius*, Portl.  
*Jamesoni*, Sow.  
*Johnstoni*, Sow.  
*jugosus*, Sow.  
*Kænigi*, Sow.  
*lævigatus*, Sow.  
*lacunatus*, Buckm.  
*læviusculus*, Sow.  
*Lamberti*, Sow.  
*laticostatus*, Sow.  
*Leachii*, Sow.  
*lenticularis*, Phil.  
*longispinus*, Sow.  
*Loscombii*, Sow.  
*Lonsdalii*, Pratt.  
*Lythensis*, Young.  
*Macdonnellii*, Portl.  
*maculatus*, Young.  
*margaritatus*, D'Orb.  
*marginatus*, Phil.  
*modiolaris*, Phil.  
*monilis*, Sow.  
*multicostatus*, Sow.  
*Murchisonæ*, Sow.  
*Murleyi*, Buckm.  
*mutabilis*, Sow.







- Ammonites Nautiliformis*, *Buckm.* *Ammonites subradiatus*, *Sow.*  
*nitescens*, *Young.* *sulcatus*, *Buckm.*  
*nodosus*, *Sow.* *Sutherlandiæ*, *Sow.*  
*nodulosus*, *D' Orb.* *Taylori*, *Sow.*  
*Nutfieldiensis*, *Sow.* *terebratus*, *Phil.*  
*obliquatus*, *Young.* *tortilis*, *D' Orb.*  
*obtusus*, *Sow.* *triplicatus*,  
*oculatus*, *Phil.* *Truelli*, *D' Orb.*  
*omphaloides*, *Sow.* *Turneri*, *Sow.*  
*ophioides*, *D' Orb.* *Valdani*, *D' Orb.*  
*ovatus*, *Young.* *varicostatus*, *Buckl.*  
*pansus*, *Park.* *Vernoni*, *Bean.*  
*Parkinsoni*, *Sow.* *vertebralis*, *Sow.*  
*perarmatus*, *Sow.* *vittatus*, *Young.*  
*planicostatus*, *Sow.* *Williamsoni*, *Phil.*  
*planorbis*, *Sow.* *Ancyloceras annulatus*, *Desh. sp.*  
*plicatilis*, *Sow.* *Calloviense*, *Morris.*  
*plicomphalus*, *Sow.* *costatum*, *Morris.*  
*radians*, *Rein.* *Belemnites acuarius*, *Schloth.*  
*retroflexus*, *Phil.* (*B. tubularis*, *Phil.*)  
*rotiformis*, *Sow.* *abbreviatus*, *Mill.*  
*rotundus*, *Sow.* *acutus*, *Mill.*  
*Sampsoni*, *Portl.* *attenuatus*, *Sow.*  
*Sedgwickii*, *Pratt.* *brevirostris*, *D' Orb.*  
*serpentinus*, *Schloth.* *Bruguierianus*, *D' Orb.*  
(*A. Strangwaysii*, *Sow.*) *canaliculatus*, *Schloth.*  
(*A. falcifer*, *Sow.*) *clavatus*, *D' Orb.*  
(*A. Mulgravius*, *Young.*) *compressus*, *Sow.*  
*Sigmifer*, *Phil.* *ellipticus*, *Mill.*  
*Smithii*, *Sow.* *elongatus*, *Mill.*  
*solaris*, *Phil.* (*B. aduncatus*, *Mill.*)  
*Sowerbyi*, *Sow.* *Fleurius*, *D' Orb.*  
*spinatus*, *D' Orb.* *fusiformis*, *Flem.*  
*spinosus*, *Sow.* *gracilis*, *Phil.*  
*stellaris*, *Sow.* *hastatus*, *Blainv.*  
*Stokesii*, *Sow.* *longissimus*, *Mill.*  
*striatulus*, *Sow.* *paxillosus*, *Voltz.*  
*subarmatus*, *Sow.* *penicillatus*, *Sow.*  
*subcarinatus*, *Phil.* *pistilliformis*, *Sow.*

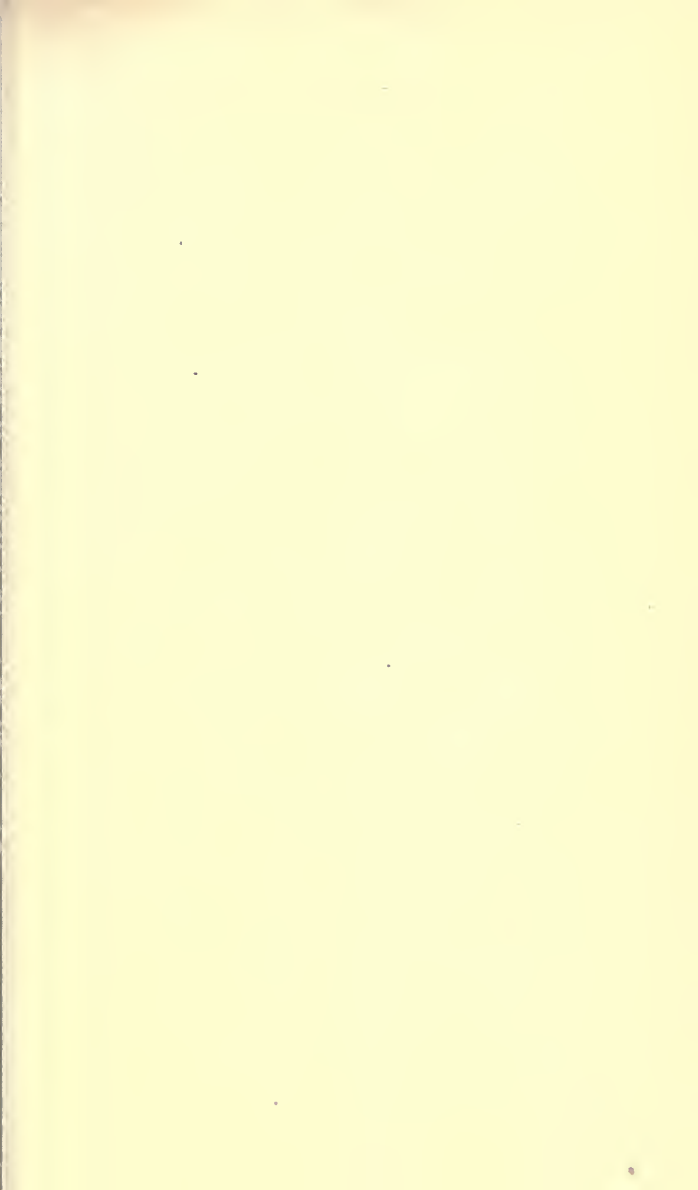
- Belemnites quinquesulcatus*, *Blainv.* *Nautilus intermedius*, *Sow.*  
     *subaduncatus*, *Voltz.*           *lineatus*, *Sow.*  
     *sulcatus*, *Mill.*                   *obesus*, *Sow.*  
     *tornatilis*, *Phil.*               *polygonalis*, *Sow.*  
     *trifidus*, *Voltz.*               *semistriatus*, *D' Orb.*  
     *unisolcatus*, *Blainv.*       *sinuatus*, *Sow.*  
*Nautilus annularis*, *Phil.*       *striatus*, *Sow.*  
     *astacoides*, *Phil.*               *truncatus*, *Sow.*  
     *hexagonus*, *Sow.*               *Onychoteuthis prisca*, *Munst.*  
     *inornatus*, *D' Orb.*

## PISCES.

*Placoides.*

All the species not having the author's name attached are described by Agassiz.

- |                                   |                               |
|-----------------------------------|-------------------------------|
| <i>Leptacanthus tenuispinus.</i>  | <i>Hybodus medius.</i>        |
| <i>semistriatus.</i>              | <i>polyprion.</i>             |
| <i>serratus.</i>                  | <i>rariocostatus.</i>         |
| <i>Nemacanthus brevispinus.</i>   | <i>carinatus.</i>             |
| <i>Myriacanthus paradoxus.</i>    | <i>Pristicanthus securis.</i> |
| <i>retrorsus.</i>                 | <i>Acrodus nobilis.</i>       |
| <i>granulatus.</i>                | <i>latus.</i>                 |
| <i>Asteracanthus Stutchburyi.</i> | <i>gibberulus.</i>            |
| <i>acutus.</i>                    | <i>undulatus.</i>             |
| <i>semisulcatus.</i>              | <i>Annigiæ.</i>               |
| <i>ornatissimus.</i>              | <i>leiopleurus.</i>           |
| <i>Hybodus crassispinus.</i>      | <i>minimus.</i>               |
| <i>reticulatus.</i>               | <i>Ciodus.</i>                |
| <i>formosus.</i>                  | <i>Ceratodus Phillipsii.</i>  |
| <i>ensatus.</i>                   | <i>Strophodus magnus.</i>     |
| <i>marginalis.</i>                | <i>tenuis.</i>                |
| <i>crassus.</i>                   | <i>favosus.</i>               |
| <i>apicalis.</i>                  | <i>reticulatus.</i>           |
| <i>dorsalis.</i>                  | <i>subreticulatus.</i>        |
| <i>leptodus.</i>                  | <i>Sphenonchus hamatus.</i>   |
| <i>acutus.</i>                    | <i>Thyellina prisca.</i>      |
| <i>reticulatus.</i>               | <i>Oxyrrhina paradoxa.</i>    |
| <i>pyramidalis.</i>               | <i>Arthropterus Rileyi.</i>   |











|                                   |                              |
|-----------------------------------|------------------------------|
| Cyclarthrus macropterus.          | Chimæra Oweni, <i>Buckl.</i> |
| Squaloraia polyspondyla.          | rugulosa, <i>Egert.</i>      |
| Chimæra emarginata, <i>Egert.</i> | neglecta, <i>Egert.</i>      |
| Egertoni, <i>Buckl.</i>           | curvidens, <i>Egert.</i>     |
| Townsendii, <i>Buckl.</i>         | falcata, <i>Egert.</i>       |
| Johnsoni.                         | psittacina, <i>Egert.</i>    |
| Colei, <i>Buckl.</i>              |                              |

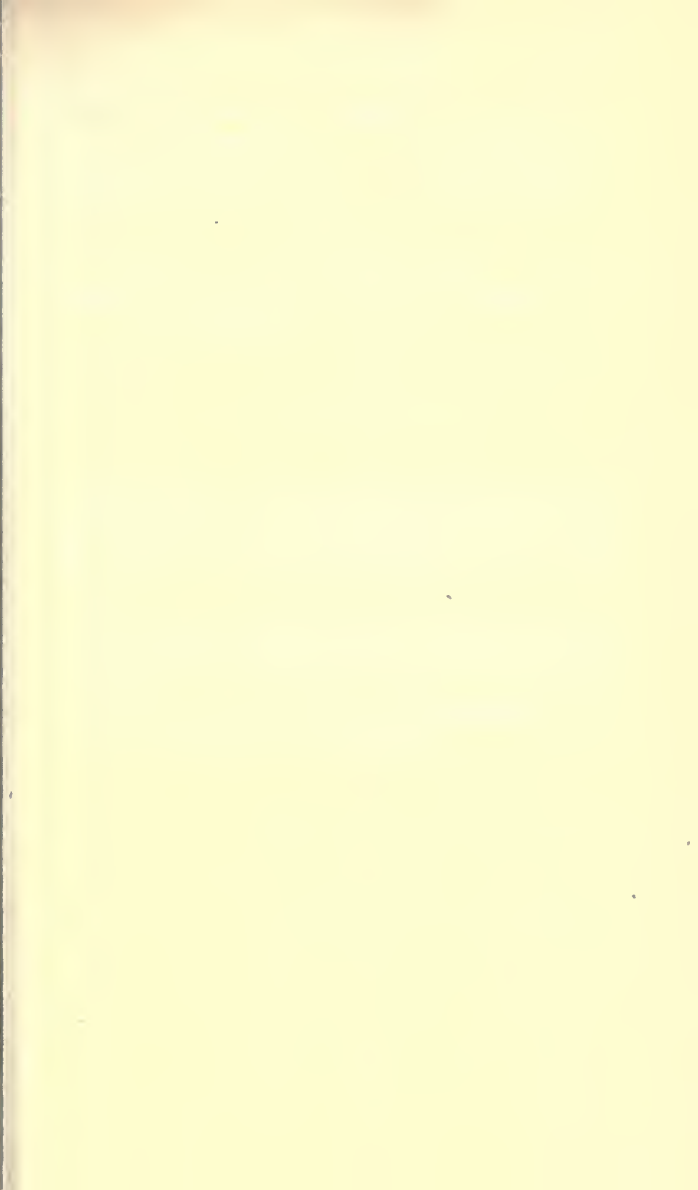
*Ganoides.*

|                                  |                           |
|----------------------------------|---------------------------|
| Dapedius arenatus.               | Lepidotus unguiculatus.   |
| Colei.                           | Pholidophorus Bechei.     |
| granulatus.                      | Flesheri.                 |
| micans.                          | Hastingsiæ.               |
| politus.                         | latiusculus.              |
| punctatus.                       | leptocephalus.            |
| Tetragonolepis angulifer.        | limbatus.                 |
| confluens.                       | minor.                    |
| dorsalis.                        | onychius.                 |
| heteroderma.                     | Stricklandi.              |
| Leachii.                         | Pachysomus, <i>Egert.</i> |
| monilifer.                       | crenulatus, <i>Egert.</i> |
| ovalis.                          | Nothosomus octostychius.  |
| pholidotus.                      | Ophiopsis dorsalis.       |
| pustulatus.                      | Eugnathus Chirotes.       |
| radiatus.                        | fasciculatus.             |
| speciosus.                       | leptodus.                 |
| striolatus.                      | mandibularis.             |
| Centrolepis asper, <i>Egert.</i> | minor.                    |
| Amblyurus macrostomus.           | opercularis.              |
| Seminotus rhombifer.             | ornatus.                  |
| Lepidotus fimbriatus.            | orthostomus.              |
| gigas.                           | Polyodon.                 |
| latimanus.                       | tenuidens.                |
| minor.                           | Ptycholepis Bollensis.    |
| rugosus.                         | Conodus ferox.            |
| semiserratus.                    | Pachycormus acutirostris. |
| serrulatus.                      | curtus.                   |
| tuberculatus.                    | gracilis.                 |
| undatus.                         | heterurus.                |

|                               |                           |
|-------------------------------|---------------------------|
| Pachycormus latipennis.       | Macrosemius brevirostris. |
| latirostris.                  | Gyrodus Cuvieri.          |
| latus.                        | trigonus.                 |
| leptosteus.                   | umbilicus.                |
| macrurus.                     | punctatus.                |
| Caturus Bucklandi.            | Sphærodus gigas.          |
| pleiodus.                     | microdon.                 |
| angustus.                     | minor.                    |
| Thrissonatus Colci.           | Gyronchus oblongus.       |
| Amblysemius gracilis.         | Microdon radiatus.        |
| Sauropsis latus.              | trigonus.                 |
| mordax.                       | Periodus marginalis.      |
| Leptolepis Bronnii.           | Pycnodus Bucklandi.       |
| caudalis.                     | didymus.                  |
| filipennis.                   | Stugii.                   |
| macrophthalmus, <i>Egert.</i> | ovalis.                   |
| Aspidorhynchus Anglicus.      | parvus.                   |
| enodus, <i>Egert.</i>         | Mantelli.                 |
| Belonostomus acutus.          | rugulosus.                |
| leptosteus.                   | umbonatus.                |
| tenellus.                     |                           |

## REPTILIA.

|                                         |                                          |
|-----------------------------------------|------------------------------------------|
| Cetiosaurus longus, <i>Owen.</i>        | Plesiosaurus brachyspondylus, <i>Ow.</i> |
| medius, <i>Owen.</i>                    | costatus, <i>Owen.</i>                   |
| Chelonia planiceps, <i>Owen.</i>        | dædicomus, <i>Owen.</i>                  |
| Icthyosaurus acutirostrum, <i>Owen.</i> | dolichodeirus, <i>Conyb.</i>             |
| communis, <i>Conyb.</i>                 | grandis, <i>Owen.</i>                    |
| intermedius, <i>Conyb.</i>              | Hawkinsii, <i>Owen.</i>                  |
| latifrons, <i>Kœnig.</i>                | latus, <i>Owen.</i>                      |
| lonchiodon, <i>Owen.</i>                | macrocephalus, <i>Conyb.</i>             |
| platyodon, <i>Conyb.</i>                | macromus, <i>Owen.</i>                   |
| tenuirostrum, <i>Conyb.</i>             | megacephalus, <i>Stutch.</i>             |
| thyreospondylus, <i>Owen.</i>           | rugosus, <i>Owen.</i>                    |
| trigonus, <i>Owen.</i>                  | subtrigonus, <i>Owen.</i>                |
| Megalosaurus Bucklandi, <i>Cuv.</i>     | trigonus, <i>Owen.</i>                   |
| Plesiosaurus affinis, <i>Owen.</i>      | trochanterius, <i>Owen.</i>              |
| arcuatus, <i>Owen.</i>                  | Pliosaurus brachydeirus, <i>Owen.,</i>   |
| brachycephalus, <i>Owen.</i>            | trochanterius, <i>Owen.</i>              |





|                                          |                                   |
|------------------------------------------|-----------------------------------|
| Pterodactylus Bucklandi, <i>Owen.</i>    | Teleosaurus brevior, <i>Owen.</i> |
| macronyx, <i>Owen.</i>                   | asthenodeirus, <i>Owen.</i>       |
| Steneosaurus brevirostrum, <i>Goldf.</i> | Cadomensis, <i>Geoff.</i>         |
| Streptospondylus Cuvieri, <i>Owen.</i>   | Chapmanni, <i>Koenig.</i>         |

## MAMMALIA.

|                                       |                                         |
|---------------------------------------|-----------------------------------------|
| Amphitherium Broderipii, <i>Owen.</i> | Phascolotherium Bucklandi, <i>Owen.</i> |
| Prevostii, <i>Owen.</i>               |                                         |

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\* Copies of Mr. Hawkins' 'Book of the Great Sea Dragons,' containing thirty lithographic plates of the remains of the *Ichtyosauri* and *Plesiosauri* from the Lias of Somerset, &c., may be obtained of Mr. Tennant, (149, Strand,) who has prepared a series of labels, so that each plate may be referred to the original specimens in the cases of the British Museum. Further information on this subject may be obtained from the 'Bridgewater Treatise,' by Dr. Buckland, and Professor Owen's 'Report on British Fossil Reptiles,' (Rep. Brit. Association.)

From Mr. Tennant may also be obtained, a fine Cast, in Plaster of Paris, of that interesting Fossil Saurian, the *Plesiosaurus dolichodeirus*. The original specimen of the unique skeleton of this species of Plesiosaurus, now in the British Museum, was obtained from the Lias, near Glastonbury, and is described and figured in the 'Bridgewater Treatise,' by Dr. Buckland, (Vol. ii. pl. 17).

The Cast, mounted on a strong wood frame, measuring 6 ft. 3 in. in length, by 3 ft. 4 in. in width, is well adapted for Scientific and Provincial Museums, as exhibiting the remarkable characters and peculiarity of structure of this singular Reptile.

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## TRIASSIC OR SALIFEROUS SYSTEM.

| <i>English Authors.</i>                                  | <i>German Authors.</i>          | <i>French Authors.</i>                         |
|----------------------------------------------------------|---------------------------------|------------------------------------------------|
| Variegated Marls . . .<br>( <i>Wanting in England</i> ). | Keuper . . .<br>Muschelkalk . . | Marnes Irisées . . .<br>Calcaire Conchylien. . |
| Variegated Sandstone. .                                  | Bunter Sandstein                | Grès Bigarré. . . .                            |

---

THE Muschelkalk, a shelly limestone, which occupies a central position in this system on the continent, has not yet been recognized in England, so that we have not a clear line of separation between the Upper Marls and Lower Sandstone of this country, although Sir R. I. Murchison considers the calcareous flags of Broughton, near Shrewsbury, to occupy the relative position of the Muschelkalk.

The New Red System consists of a series of variegated red, blue, and greenish marls and laminated clays, containing thick beds of rock salt and gypsum: below these are variegated and laminated sandstones with white and grey grits and conglomerates. The "Bone Bed," at first formerly classed with the Lias, is considered by Sir P. Egerton to belong to the Upper part of the New Red Sandstone, this bed has been traced from Axmouth, (Devon.) to Watchet, Aust Cliff, Westbury, &c., (Somerset,) and also at Combe Hill and Wainlode Cliff, (Gloucestershire).

This system is extensively developed in Gloucestershire, Worcestershire, Stafford, Shropshire, and Cheshire, and is the great source from which the Rock Salt and Sulphate of Lime are obtained, as well as of the Brine Springs and other mineral springs which arise from it, in some of these counties.







The Organic Remains of this System are not very numerous, the deposition of the marls and sandstones appearing to be unfavourable to the development of animal life. Besides the species of fishes which occur in the "Bone Bed," remains of plants and one or two shells (*Posidonomya*) have been found in the sandstones of Worcestershire and Warwickshire, where, also, impressions of footsteps of animals have been detected, as well as in Cheshire, the most remarkable being those from Storeton Hill, near Liverpool. The most interesting discovery, however, is probably that by Professor Owen, respecting the bones and teeth from the sandstones of Warwick and Leamington, in which he has proved that their affinity is, not with the Saurian, but with the Batrachian order, and from the complicated texture of the fossil teeth, has proposed the term *Labyrinthodon* for the genus to which these remains belong, suggesting at the same time that the foot impressions to which the name *Cheirotherium* had been applied, might have been produced by the above-mentioned creature.

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#### LOCALITIES FOR FOSSILS, &c.

Comb Hill, near Cheltenham, and Wainlode Cliff; Newnham, Flaxley, Tibberton, Burghill Quarries, near Stainton, Gloucestershire; Broughton Quarries, near Shrewsbury; Clive, Grinshill and Hawkstone Hills; Warwick and Leamington; Runcorn, Cheshire.

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Owen, Prof. R., 'On the Rhyncosaurus,' &c., *Camb. Phil. Trans.*  
vol. vii. p. 355.

————— 'On the Labyrinthodon,' &c., *Geol. Trans.* vol. vi.  
Sedgwick, Rev. A., 'On the New Red Sandstone,' &c., *Geol. Trans.*  
vol. iv.

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FOSSILS OF THE TRIASSIC SYSTEM.

PLANTÆ.

*Echinostachys oblongus*, *Brong.*

CONCHIFERA.

*Posidonomya minuta*, *Bronn.*

PISCES.

*Placoides.*

|                                           |                                      |
|-------------------------------------------|--------------------------------------|
| <i>Hybodus minor</i> , <i>Ag.</i>         | <i>Ceratodus parvus</i> , <i>Ag.</i> |
| <i>Nemacanthus monilifer</i> , <i>Ag.</i> | <i>emarginatus</i> , <i>Ag.</i>      |
| <i>filifer</i> , <i>Ag.</i>               | <i>gibbus</i> , <i>Ag.</i>           |
| <i>Leicanthus</i> —? <i>Ag.</i>           | <i>dædaleus</i> , <i>Ag.</i>         |
| <i>Acrodus minimus</i> , <i>Ag.</i>       | <i>altus</i> , <i>Ag.</i>            |
| <i>Ceratodus latissimus</i> , <i>Ag.</i>  | <i>obtusus</i> , <i>Ag.</i>          |
| <i>curvus</i> , <i>Ag.</i>                | <i>disauris</i> , <i>Ag.</i>         |
| <i>planus</i> , <i>Ag.</i>                | <i>Hybodus minor</i> , <i>Ag.</i>    |

*Ganoides.*

|                                            |                                          |
|--------------------------------------------|------------------------------------------|
| <i>Gyrolepis Albertii</i> , <i>Ag.</i>     | <i>Saurichthys apicalis</i> , <i>Ag.</i> |
| <i>maximus</i> , <i>Ag.</i>                | <i>acuminatus</i> , <i>Ag.</i>           |
| <i>tenuistriatus</i> , <i>Ag.</i>          | <i>longidens</i> , <i>Ag.</i>            |
| <i>Palæoniscus catopterus</i> , <i>Ag.</i> |                                          |

REPTILIA.

|                                               |                                                  |
|-----------------------------------------------|--------------------------------------------------|
| <i>Cheirotherium Hercules</i> , <i>Egert.</i> | <i>Labyrinthodon platygnathus</i> , <i>Owen.</i> |
| <i>Cladyodon Lloydii</i> , <i>Owen.</i>       | <i>scutulatus</i> , <i>Owen.</i>                 |
| <i>Labyrinthodon Jægeri</i> , <i>Owen.</i>    | <i>ventricosus</i> , <i>Owen.</i>                |
| <i>leptognathus</i> , <i>Owen.</i>            | <i>Rhyncosaurus articeps</i> , <i>Owen.</i>      |
| <i>pachygnathus</i> , <i>Owen.</i>            | <i>Testudo Duncani</i> , <i>Owen.</i>            |





PALÆOZOIC SERIES.

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PERMIAN GROUP.                      DEVONIAN GROUP.  
 CARBONIFEROUS GROUP.      SILURIAN GROUP.

PERMIAN OR MAGNESIAN LIMESTONE GROUP.  
 TERRAIN PENEEN. *Fr.*

| <i>English Authors.</i> | <i>German Authors.</i> | <i>French Authors.</i> |
|-------------------------|------------------------|------------------------|
| Magnesian Limestone . . | Zechstein . . . .      | Calcaire Magnésian.    |
| Dolomitic Conglomerate. | Kupfer-schiefer . .    | Schiste Cuivreux.      |
| Lower Red Sandstone . } | Rohte-todte-liegende.  | Grés des Vosges.       |
| Pontefract Rock. . . }  |                        |                        |

THE upper beds of this group consist, in the south of England (near Bristol), of calcareous conglomerate or breccia, in which rounded or angular pebbles of the older rocks are cemented by a red or yellow base of Magnesian Limestone or Dolomite; the pebbles being formed chiefly of the materials composing the subjacent rocks. In the north of England the limestone varies considerably, and contains more or less magnesia; the colours are white, grey, red, but generally yellow—sometimes fine-grained and thin-bedded, (Knottingley) — granular and flaglike, (Nottingham)—compact or somewhat crystalline and concretionary, with numerous fossils, (Sunderland.) With these are associated, variegated marls, marl slate, red marl and gypsum, and thin-bedded grey limestone. (Sedgwick, Geol. Trans. vol. iii.)

In the neighbourhood of Manchester, Mr. Binney has described red and variegated marls, containing thin bands of limestone (with scarcely any magnesia) full of magnesian limestone fossils, and somewhat resembling, in their appearance and organic contents, the lowest beds of Bolsover. The following is a synopsis of the subordinate beds.

|                      |                                                                                                                                                                                                                                          |                                                                                                                                                                                                |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Magnesian Limestone  | Laminated limestones of Knottingley, Doncaster, &c., with layers of coloured marls.<br>Gypseous, red, bluish &c., marls.<br>Magnesian limestone, yellow, white, of various texture and structure; some parts full of fragmentary masses. | Red and variegated marls of Manchester.                                                                                                                                                        |
|                      |                                                                                                                                                                                                                                          | Calcareous conglomerates of Shropshire.                                                                                                                                                        |
|                      |                                                                                                                                                                                                                                          | Dolomitic conglomerate of Bristol.                                                                                                                                                             |
| Lower Red Sandstone. | Reddish siliceous grit, sometimes grey or yellow, pebbly — a loose sand; associated with micaceous sandy shale, or variegated marl, or a grey micaceous sandstone, resembling those of the coal measures. ( <i>Sedgwick</i> .            | Red sandstone and grits, sometimes argillaceous, frequently calcareous, with deep brown-red shales and marls, occasionally spotted green, and bands of impure concretionary spotted limestone. |
|                      |                                                                                                                                                                                                                                          | Shropshire, Worcestershire, ( <i>Murchison</i> .)                                                                                                                                              |







The name, Permian, was suggested by Sir R. I. Murchison, from the strata of this group covering an extensive area in the government of Perm, in Russia. The fauna and flora of this group are rather peculiar, presenting a general analogy with those of the carboniferous system upon which it reposes, and containing some species that are common to both eras; thus associating its position with the Palæozoic Series.

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#### LOCALITIES FOR FOSSILS, &c.

The quarries at Humbleton Hill, &c., near Sunderland, afford most of the characteristic fossil shells; Collyhurst, near Manchester, for shells; the *Axinus obscurus*, (*Schizodus*, King,) is found at Garforth Quarry, near Leeds, and very perfect remains of fish are obtained from Ferry Hill, Durham.

Saurians occur at Durdham Down, near Bristol.

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## FOSSILS OF THE PERMIAN GROUP.

## POLYPARIA.

- |                                      |                                 |
|--------------------------------------|---------------------------------|
| Tubuliclidia spinigera, <i>Lons.</i> | Fenestella ramosa, <i>Lons.</i> |
| Fenestella anceps, <i>Lons.</i>      | virgulacea, <i>Phil. sp.</i>    |
| flustracea, <i>Phil. sp.</i>         |                                 |

## CRINOIDEA.

- Encrinus ramosus, *Schlot.*

## BRACHIOPODA.

- |                                        |                                                    |
|----------------------------------------|----------------------------------------------------|
| Terebratula elongata, <i>Schlot.</i>   | Spirifer cristatus, <i>Schlot.</i>                 |
| sufflata, <i>Schlot.</i>               | Productus horridus, <i>Sow.</i>                    |
| Schlotheimii, <i>Vern.</i>             | Morrisianus, ( <i>Strophalosia</i> ,) <i>King.</i> |
| ( <i>Camerophoria</i> , <i>King.</i> ) | spiniferus, ( <i>Strophalosia</i> )                |
| Atrypa pectinifera, <i>Sow.</i>        | <i>King.</i>                                       |
| Spirifer undulatus, <i>Sow.</i>        | Lingula Mytiloides, <i>Sow.</i>                    |
| multiplicatus, <i>Sow.</i>             |                                                    |

## DIMYARIA.

- |                                     |                                       |
|-------------------------------------|---------------------------------------|
| Allorisma elegans, <i>King.</i>     | Schizodus pusillus, <i>Brown, sp.</i> |
| Schizodus obscurus, <i>Sow. sp.</i> | minimus, <i>Brown, sp.</i>            |
| parallelus, <i>King.</i>            | Nucula vinti, <i>King.</i>            |
| truncatus, <i>King.</i>             | Area tumida, <i>Sow.</i>              |
| rotundatus, <i>Brown, sp.</i>       | Mytilus acuminatus, <i>Sow.</i>       |
| parvus, <i>Brown, sp.</i>           | septiferus, <i>King.</i>              |
| undatus, <i>Brown, sp.</i>          | Modiola costata, <i>Vern.</i>         |

## MONOMYARIA.

- |                                       |                                 |
|---------------------------------------|---------------------------------|
| Avicula speluncularia, <i>Quenst.</i> | Avicula discors, <i>Brown.</i>  |
| keratophaga, <i>Quenst.</i>           | Gervillia? tumida, <i>King.</i> |
| antiqua, <i>Munst.</i>                | Pecten pusillus, <i>Schlot.</i> |
| inflata, <i>Brown.</i>                | Ostrea pusilla, <i>King.</i>    |
| Binneyi, <i>Brown.</i>                |                                 |





## GASTEROPODA.

|                                                 |                                         |
|-------------------------------------------------|-----------------------------------------|
| <i>Natica minima</i> , <i>Brown</i> .           | <i>Loxonema Urii</i> , <i>Flem. sp.</i> |
| <i>Pleurotomaria carinata</i> , <i>Sow.</i>     | <i>Rissoa pusilla</i> , <i>Brown</i> .  |
| <i>nodulosa</i> , <i>King</i> .                 | <i>Leighii</i> , <i>Brown</i> .         |
| <i>Turbo mancuniensis</i> , <i>Brown</i> .      | <i>minutissima</i> , <i>Brown</i> .     |
| <i>minutus</i> , <i>Brown</i> .                 | <i>Gibsoni</i> , <i>Brown</i> .         |
| <i>Macrocheilus symmetricus</i> , <i>King</i> . | <i>obtusata</i> , <i>Brown</i> .        |
| <i>Loxonema rugifera</i> , <i>Phil</i> .        |                                         |

## PISCES.

|                                         |                                             |
|-----------------------------------------|---------------------------------------------|
| <i>Palæoniscus comtus</i> , <i>Ag.</i>  | <i>Platysomus parvus</i> , <i>Ag.</i>       |
| <i>elegans</i> , <i>Ag.</i>             | <i>striatus</i> , <i>Ag.</i>                |
| <i>glaphyrus</i> , <i>Ag.</i>           | <i>Acrolepis Sedgwicki</i> , <i>Ag.</i>     |
| <i>longissimus</i> , <i>Ag.</i>         | <i>Pygopterus mandibularis</i> , <i>Ag.</i> |
| <i>macrophthalmus</i> , <i>Ag.</i>      | <i>Cælacanthus granulatus</i> .             |
| <i>Platysomus macrurus</i> , <i>Ag.</i> |                                             |

## REPTILIA.

|                                                 |                                                   |
|-------------------------------------------------|---------------------------------------------------|
| <i>Palæosaurus cylindrodon</i> , <i>Riley</i> . | <i>Thecodontosaurus antiquus</i> , <i>Riley</i> . |
| <i>platyodon</i> , <i>Riley</i> .               |                                                   |

## CARBONIFEROUS GROUP.

|                            |                           |                                    |
|----------------------------|---------------------------|------------------------------------|
| 1. <i>Coal Measures.</i>   | 2. <i>Millstone Grit.</i> | 3. <i>Carboniferous Limestone.</i> |
| Terrain Houillier. . . . . | . . . . .                 | Calcaire Carbonifère . . . .       |
| Kohlengebirge . . . . .    | Kohlensandstein.          | Ueberganskalk . . . . .            |

THE Carboniferous Group, consisting of a series of beds of Sandstone, Grit, Clay, Shale, Coal, Limestone, with layers of Chert and Ironstone, has been divided into the Coal Measures, Millstone Grit, and Carboniferous Limestone. This triple arrangement becomes considerably modified as we proceed towards the north of England and Scotland, for in Derbyshire and Yorkshire, the true coal-bearing strata do not cease with the millstone grit, but are intercalated with it, and in Yorkshire the limestone (Yoredale Rocks) contains several coal seams, flagstone, ironstone, &c., and still further northwards, in Northumberland and the south of Scotland, the lower limestones become frequently divided by intervening beds of grit, shale, and coal. The following short summary is abstracted from Professor Phillips.

| <i>South of England<br/>and South Wales.</i>  | <i>Derbyshire.</i>                                                                                                                      | <i>Yorkshire. &amp;c.</i>                                                                                                                                                       |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Coal Formation.                               | { Coal Formation.<br>Millstone Grit.<br>Limestone Shale.<br>Mountain Limestone.<br>Old Red Sandstone.<br>( <i>not much developed.</i> ) | } Coal Formation.<br>Millstone Grit.<br>Yoredale Rocks.<br>Scar Limestone.<br>Alternations of Red<br>Sandstones, Clays,<br>and Limestone.<br>Red Sandstone and<br>Conglomerate. |
| Millstone Grit.<br>( <i>not very thick.</i> ) |                                                                                                                                         |                                                                                                                                                                                 |
| Mountain Limestone.                           |                                                                                                                                         |                                                                                                                                                                                 |
|                                               |                                                                                                                                         |                                                                                                                                                                                 |
| Old Red Sandstone.                            |                                                                                                                                         |                                                                                                                                                                                 |











In the upper part of the Coal Measures of Shropshire, Nobold, &c., near Shrewsbury, occurs a deposit supposed to be of fresh-water origin, and extends for more than thirty miles; and in Coalbrook Dale, Mr. Prestwich has described some beds with fresh-water shells (*Unio*) alternating with others, containing marine remains (*Nautilus*, *Spirifer*, &c.) thus inferring that a river emptied itself into the ancient sea or estuary. In Yorkshire, and near Edinburgh, somewhat similar phænomena have been observed.

The characteristic fossils of the Coal Measures, are those belonging to terrestrial plants, as *Palms*, *Ferns*, *Calamites*, *Lepidodendron* and *Coniferæ*, few traces of marine vegetation having been observed. The carboniferous limestone abounds in marine testacea, the Brachiopoda (*Productus* *Spirifer*,) and Cephalopoda, (*Goniotites*, *Orthoceras*, &c.,) forming a large proportion, and these are associated with a great number of Crinoidea, and many Corals.

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#### LOCALITIES FOR FOSSILS, &c.

At most of the coal-workings, remains of plants may be obtained; those near Newcastle, in Coalbrook Dale, South Wales, and Radstock and Camerton, Somerset, are good localities for procuring them. The limestone shales of Halifax, Yorkshire; the shales and limestones of Northumberland (Howick, Hetton, Beadnell, &c.); the district around Bolland, Yorkshire, and the limestones of Derbyshire and Bristol, are a few places where the *Mollusca* and *Crinoidea* may be obtained. In Ireland, Hook Point, near Wexford, Cork, Fermanagh, and near Dublin.

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## FOSSILS OF THE CARBONIFEROUS GROUP.

## COAL MEASURES.

## PLANTÆ.

|                                   |                                     |
|-----------------------------------|-------------------------------------|
| Alethopteris Cistii, <i>Gopp.</i> | Alethopteris Mantelli, <i>Gopp.</i> |
| heterophylla, <i>Gopp.</i>        | nervosa, <i>Gopp.</i>               |
| Lindleyana, <i>Presl.</i>         | Sauverii, <i>Gopp.</i>              |
| lonchitidis, <i>Sternb.</i>       | Scrra, <i>Gopp.</i>                 |





- Alethopteris Serlii*, *Gopp.*  
     *urophylla*, *Gopp.*  
     *vulgator*, *Sternb.*  
*Anabathra pulcherrima*, *Lindl.*  
*Annularia fertilis*, *Sternb.*  
     *longifolia*, *Brong.*  
*Antholithes anomalus*, *Morris.*  
     *Pitcairnia*, *Lindl.*  
*Aphlebia adnascens*, *Presl.*  
*Artisia approximata*, *Brong.*  
     *distans*, *Brong.*  
     *transversa*, *Presl.*  
*Aspidiaria Anglica*, *Presl.*  
     *confuens*, *Presl.*  
     *cristata*, *Presl.*  
     *quadrangularis*, *Presl.*  
     *undulata*, *Presl.*  
*Asterophyllites comosus*, *Lindl.*  
     *foliosus*, *Lindl.*  
     *galioides*, *Lindl.*  
     *jubatus*, *Lindl.*  
     *rigidus*, *Lindl.*  
*Bechera charæformis*, *Sternb.*  
     *grandis*, *Sternb.*  
*Bornia equisetiformis*, *Sternb.*  
*Bruckmannia grandis*, *Lindl.*  
     *longifolia*, *Sternb.*  
     *rigida*, *Sternb.*  
     *tenuifolia*, *Sternb.*  
     *tuberculata*, *Sternb.*  
*Calamites approximatus*, *Brong.*  
     *cannæformis*, *Schlot.*  
     *Cistii*, *Brong.*  
     *decoratus*, *Brong.*  
     *dnbius*, *Brong.*  
     *inæqualis*, *Lindl.*  
     *Lindleyi*, *Sternb.*  
     *nodosus*, *Schlot.*  
     *pachyderma*, *Brong.*  
*Calamites ramosus*, *Brong.*  
     *Steinhaueri*, *Brong.*  
     *Suckowii*, *Brong.*  
     *undulatus*, *Brong.*  
     *varians*, *Sternb.*  
     *verticillatus*, *Lindl.*  
*Cardiocarpon acutum*, *Brong.*  
*Carpolithes alatus*, *Lindl.*  
     *helieteroides*, *Morris.*  
     *marginatus*, *Artis.*  
     *Zamioides*, *Morris.*  
*Caulopteris Phillipsii*, *Lindl.*  
     *primæva*, *Lindl.*  
*Chondrites Prestvici*, *Morris.*  
*Cyclopteris dilatata*, *Lindl.*  
     *flabellata*, *Brong.*  
     *oblata*, *Lindl.*  
     *obliqua*, *Brong.*  
     *orbicularis*, *Brong.*  
     *reniformis*, *Brong.*  
*Cyperites bicarinata*, *Lindl.*  
*Favularia tessellata*, *Lindl.*  
     *nodosa*, *Lindl.*  
*Flabellaria borassifolia*, *Sternb.*  
*Halonia disticha*, *Morris.*  
     *gracilis*, *Lindl.*  
     *regularis*, *Lindl.*  
     *tortuosa*, *Lindl.*  
     *tuberculosa*, *Lindl.*  
*Lepidodendron Bucklandi*, *Brong.*  
     *elegans*, *Brong.*  
     *Harcourtii*, *Lindl.*  
     *longifolium*, *Brong.*  
     *obovatum*, *Sternb.*  
     *plumarium*, *Lindl.*  
     *selaginoides*, *Sternb.*  
     *Serlii*, *Presl.*  
     *Sternbergii*, *Brong.*  
*Lepidophyllum intermedium*,

- Lepidophyllum lanceolatum*.  
     *trinerve*, *Lindl.*  
*Lepidostrobos comosus*, *Lindl.*  
     *ornatus*, *Lindl.*  
     *pinaster*, *Lindl.*  
     *variabilis*, *Lindl.*  
*Lycopodites cordatus*, *Sternb.*  
     *phlegmarioides*, *Sternb.*  
*Megaphyton Allani*, *Presl.*  
     *approximatum*, *Lindl.*  
     *distans*, *Lindl.*  
*Myriophyllites gracilis*, *Artis.*  
*Neuropteris acuminata*, *Brong.*  
     *acutifolia*, *Brong.*  
     *angustifolia*, *Brong.*  
     *attenuata*, *Lindl.*  
     *cordata*, *Brong.*  
     *flexuosa*, *Sternb.*  
     *gigantea*, *Sternb.*  
     *heterophylla*, *Brong.*  
     *Loshii*, *Brong.*  
     *macrophylla*, *Brong.*  
     *rotundifolia*, *Brong.*  
     *Soretii*, *Brong.*  
     *tenuifolia*, *Sternb.*  
*Noggerathia flabellata*, *Lindl.*  
*Odontopteris Britannica*, *Presl.*  
     *Lindleyana*, *Sternb.*  
     *obtusa*, *Brong.*  
     *Schotheimii*, *Brong.*  
*Pecopteris abbreviata*, *Brong.*  
     *adiantoides*, *Lindl.*  
     *arborescens*, *Brong.*  
     *Bucklandi*, *Brong.*  
     *dentata*, *Brong.*  
     *heterophylla*, *Lindl.*  
     *laciniata*, *Lindl.*  
     *Miltoni*, *Brong.*  
     *muricata*, *Brong.*  
*Pecopteris obliqua*, *Brong.*  
     *oreopteridis*, *Brong.*  
     *plumosa*, *Brong.*  
     *pteroides*, *Brong.*  
     *repanda*, *Lindl.*  
     *villosa*, *Brong.*  
*Peuce Withami*, *Lindl.*  
*Pinites ambiguus*, *Witham.*  
     *anthracina*, *Lindl.*  
     *Brandlingi*, *Lindl.*  
     *carbonaceus*, *Witham.*  
     *medullaris*, *Lindl.*  
     *Withami*, *Lindl.*  
*Pinnularia capillacea*, *Lindl.*  
*Pitys antiqua*, *Witham.*  
     *primæva*, *Witham.*  
*Poacites cocoina*, *Lindl.*  
*Rhodea dissecta*, *Presl.*  
     *furcata*, *Presl.*  
*Sagenaria aculeata*, *Presl.*  
     *cælata*, *Brong.*  
     *ophiura*, *Brong.*  
*Selaginites patens*, *Brong.*  
*Sigillaria alternans*, *Lindl.*  
     *catenulata*, *Lindl.*  
     *contracta*, *Brong.*  
     *elongata*, *Brong.*  
     *flexuosa*, *Lindl.*  
     *Knorrii*, *Brong.*  
     *leioderma*, *Brong.*  
     *lævigata*, *Brong.*  
     *Murchisoni*, *Lindl.*  
     *notata*, *Brong.*  
     *oculata*, *Lindl.*  
     *organum*, *Lindl.*  
     *ornata*, *Brong.*  
     *reniformis*, *Brong.*  
     *Saullii*, *Brong.*  
*Sphenophyllum dentatum*, *Brong.*







- Sphenophyllum emarginatum*,  
*Brong.*  
*erosum*, *Lindl.*  
*Schlotheimii*,  
*Brong.*
- Sphenopteris acntifolia*, *Brong.*  
*Adiantoides*, *Lindl.*  
*affinis*, *Lindl.*  
*artemisiæfolia*, *Sternb.*  
*bifida*, *Lindl.*  
*caudata*, *Lindl.*  
*Conwayi*, *Lindl.*  
*crassa*, *Lindl.*  
*crenata*, *Lindl.*  
*cuneolata*, *Lindl.*  
*dilatata*, *Lindl.*  
*elegans*, *Brong.*  
*excelsa*, *Lindl.*  
*gracilis*, *Brong.*  
*Hibbertii*, *Lindl.*
- Sphenopteris latifolia*, *Brong.*  
*linearis*, *Sternb.*  
*macilentata*, *Lindl.*  
*multifida*, *Lindl.*  
*obovata*, *Lindl.*  
*polyphylla*, *Lindl.*  
*tenella*, *Brong.*  
*trifoliata*, *Brong.*
- Stigmaria ficoides*, *Brong.*
- Trigonocarpum Dawesii*, *Lindl.*  
*Noeggerathii*, *Brong.*  
*oblongum*, *Lindl.*  
*olivæforme*, *Lindl.*  
*ovatum*, *Lindl.*
- Ulodendron Allani*, *Buckl.*  
*Conybearii*, *Buckl.*  
*Lucasii*, *Buckl.*  
*majus*, *Lindl.*  
*minus*, *Lindl.*
- Walchia piniformis*, *Schlot.*

## AMORPHOZOA.

*Tragos semicirculare*, *Mc' Coy.*

## ZOOPHYTA.

- Amplexus nodulosus*, *Phil.*  
*coralloides*, *Sow.*
- Astræa aranea*, *Mc' Coy.*
- Astreopora antiqua*, *Mc' Coy.*
- Aulopora campanulata*, *Mc' Coy.*  
*gigas*, *Mc' Coy.*
- Berenicea ? megastoma*, *Mc' Coy.*
- Caryophyllia affinis*, *Flem.*  
*duplicata*, *Flem.*  
*juncea*, *Flem.*
- Chætetes radians*, *Fischer.*
- Cladocora irregulare*, *Phil. sp.*  
*sexdecimale*, *Phil. sp.*
- Cyathophyllum fungites*.  
*plicatum.*
- Favosites capillaris*, *Phil.*
- Fenestella carinata*, *Mc' Coy.*  
*crassa*, *Mc' Coy.*  
*ejuncida*, *Mc' Coy.*  
*flabellata*, *Phil. sp.*  
*flustriformis*, *Phil. sp.*  
*formosa*, *Mc' Coy.*  
*frutex*, *Mc' Coy.*  
*hemisphærica*, *Mc' Coy.*  
*laxa*, *Phil. sp.*  
*membranacea*, *Phil. sp.*

- |                                          |                                        |
|------------------------------------------|----------------------------------------|
| Fenestella Morrisii, <i>Mc' Coy.</i>     | Lithodendron sociale, <i>Phil.</i>     |
| multiporata, <i>Mc' Coy.</i>             | Lithostrotion crenulare, <i>Phil.</i>  |
| nodulosa, <i>Phil. sp.</i>               | floriforme, <i>Flem.</i>               |
| oculata, <i>Mc' Coy.</i>                 | regium, <i>Phil.</i>                   |
| plebeia, <i>Mc' Coy.</i>                 | striatum, <i>Flem.</i>                 |
| polyporata, <i>Phil. sp.</i>             | Michelinia tenuisepta, <i>Kon.</i>     |
| quadradecimalis, <i>Mc' Coy.</i>         | Orbiculites antiquus, <i>Mc' Coy.</i>  |
| tenuifila, <i>Phil. sp.</i>              | Polypora dendroides, <i>Mc' Coy.</i>   |
| undulata, <i>Phil.</i>                   | marginata, <i>Mc' Coy.</i>             |
| varicosa, <i>Mc' Coy.</i>                | papillata, <i>Mc' Coy.</i>             |
| Flustra palmata, <i>Mc' Coy.</i>         | verrucosa, <i>Mc' Coy.</i>             |
| Glauconome gracilis, <i>Mc' Coy.</i>     | Ptylopora pluma, <i>Scouler.</i>       |
| grandis, <i>Mc' Coy.</i>                 | Pustulopora oculata, <i>Phil.</i>      |
| pluma, <i>Phil. sp.</i>                  | spicularis, <i>Phil.</i>               |
| pulcherrima, <i>Mc' Coy.</i>             | Retepora undata, <i>Mc' Coy.</i>       |
| Gorgonia Lonsdaliana, <i>Mc' Coy.</i>    | Stromatopora subtilis, <i>Mc' Coy.</i> |
| zic-zac, <i>Mc' Coy.</i>                 | Syrigopora geniculata, <i>Phil.</i>    |
| Hemitrypa Hibernica, <i>Scouler, sp.</i> | ramulosa, <i>Goldf.</i>                |
| Ichthyorachis Newenhami, <i>Mc' Coy.</i> | Turbinolia expansa, <i>Mc' Coy.</i>    |
| Iania antiqua, <i>Mc' Coy.</i>           | Vincularia dichotoma, <i>Mc' Coy.</i>  |
| Bacillaria, <i>Mc' Coy.</i>              | megastoma, <i>Mc' Coy.</i>             |
| crassa, <i>Mc' Coy.</i>                  | parallela, <i>Phil. sp.</i>            |
| Lithodendron fasciculatum, <i>Phil.</i>  | raricosta, <i>Mc' Coy.</i>             |
| pauciradialis, <i>Mc' Coy.</i>           |                                        |

## ECHINODERMATA.

- |                                      |                                    |
|--------------------------------------|------------------------------------|
| Actinocrinus aculeatus, <i>Aust.</i> | Cyathocrinus conicus, <i>Phil.</i> |
| amphora, <i>Gilb.</i>                | distortus, <i>Phil.</i>            |
| cataphractus, <i>Aust.</i>           | inequidactylus.                    |
| constrictus, <i>Mc' Coy.</i>         | macrocheirus, <i>Mc' Coy.</i>      |
| costus, <i>Mc' Coy.</i>              | mammillaris, <i>Phil.</i>          |
| globosus, <i>Phil.</i>               | ornatus, <i>Phil.</i>              |
| lævis, <i>Mill.</i>                  | planus, <i>Mill.</i>               |
| pusillus, <i>Mc' Coy.</i>            | Echinocrinus Benburbensis,         |
| tessellatus, <i>Phil.</i>            | <i>Portl. sp.</i>                  |
| triacontadactylus, <i>Mill.</i>      | glabrispina, <i>Phil. sp.</i>      |
| Atocrinus Milleri, <i>Mc' Coy.</i>   | Munsterianus,                      |
| Cyathocrinus bursa, <i>Phil.</i>     | <i>de Koninch.</i>                 |
| calcaratus, <i>Phil.</i>             | Urii, <i>Flem. sp.</i>             |





- |                                        |                                       |
|----------------------------------------|---------------------------------------|
| Echinocrinus vetustus <i>Phil. sp.</i> | Platycrinus elongatus, <i>Phil.</i>   |
| Euryocrinus concavus, <i>Phil.</i>     | expansus, <i>Mc' Coy.</i>             |
| Gilbertsocrinus bursa, <i>Phil.</i>    | gigas, <i>Phil.</i>                   |
| calcaratus, <i>Phil.</i>               | laciniatus, <i>Phil.</i>              |
| mammillaris, <i>Phil.</i>              | lævis, <i>Mill.</i>                   |
| simplex, <i>Portl.</i>                 | microstylus, <i>Phil.</i>             |
| Palæchinus elegans, <i>Mc' Coy.</i>    | ornatus, <i>Mc' Coy.</i>              |
| ellipticus, <i>Scouler.</i>            | punctatus, <i>Mc' Coy.</i>            |
| gigas, <i>Mc' Coy.</i>                 | rugosus, <i>Mill.</i>                 |
| Konigii, <i>Mc' Coy.</i>               | similis, <i>Mc' Coy.</i>              |
| sphæricus, <i>Scouler.</i>             | triacontadactylus,                    |
| Pentatremites acutus, <i>Sow.</i>      | <i>Mc' Coy.</i>                       |
| angulatus, <i>Sow.</i>                 | tuberculatus, <i>Mill.</i>            |
| Derbiensis, <i>Sow.</i>                | Poteriocrinus conicus, <i>Phil.</i>   |
| globosus, <i>Say.</i>                  | crassus, <i>Mill.</i>                 |
| inflatus, <i>Sow.</i>                  | gracilis, <i>Mc' Coy.</i>             |
| oblongus, <i>Sow.</i>                  | impressus, <i>Phil.</i>               |
| orbicularis, <i>Sow.</i>               | tennis, <i>Mill.</i>                  |
| pentagonalis, <i>Sow.</i>              | Rhodocrinus abnormis, <i>Mc' Coy.</i> |
| Phillipsocrinus caryocrinoides,        | verus, <i>Mill.</i>                   |
| <i>Mc' Coy.</i>                        | Symbathocrinus conicus, <i>Phil.</i>  |
| Platycrinus antheliontes, <i>Aust.</i> | Taxocrinus Egertoni, <i>Phil.</i>     |
| contractus, <i>Phil.</i>               | granulosus,                           |
| coronatus, <i>Goldf.</i>               | nobilis,                              |
| ellipticus, <i>Phil.</i>               | polydactylus, <i>Mc' Coy.</i>         |

## ANNELIDA.

All the species not having the author's name attached are described by *Mc' Coy.*

- |                                        |                          |
|----------------------------------------|--------------------------|
| Sabella antiqua.                       | Serpulites carbonarius.  |
| Serpula compressa, <i>Sow.</i>         | membranaceus.            |
| hemicarinata.                          | Spirorbis caperatus.     |
| omphalodes, <i>Goldf.</i>              | globosus.                |
| parallela.                             | intermedius.             |
| ( <i>S. socialis</i> , <i>Portl.</i> ) | minutus, <i>Portl.</i>   |
| scalaris.                              | Spiroglyphus marginatus. |

## INSECTA.

- |                                      |                                        |
|--------------------------------------|----------------------------------------|
| Curculioides Austicii, <i>Buckl.</i> | Curculioides Prestvicii, <i>Buckl.</i> |
|--------------------------------------|----------------------------------------|

## CRUSTACEA.

|                                                |                                                    |
|------------------------------------------------|----------------------------------------------------|
| <i>Apus dubius</i> , <i>Prestwich</i> .        | <i>Cytherina Phillipsiana</i> , <i>Koninck</i> .   |
| <i>Asaphus quadralimbus</i> , <i>Phil</i> .    | ( <i>Entomoconchus Scouleri</i> , <i>Mc'Coy</i> .) |
| <i>Bairdia curtus</i> .                        | <i>Daphnia primæva</i> .                           |
| <i>gracilis</i> .                              | <i>Dithyrocaris Colei</i> , <i>Portl</i> .         |
| <i>Cyclus radialis</i> , <i>de Koninck</i> .   | <i>Scouleri</i> .                                  |
| <i>Cypris</i> ? <i>arcuata</i> , <i>Bean</i> . | <i>tenuistriatus</i> .                             |
| ——? <i>inflata</i> , <i>Murch</i> .            | <i>Entomoconchus Scouleri</i> .                    |
| ——? <i>Scoto-Burdigalensis</i> , <i>Hibb</i> . | <i>Eurypterus Scouleri</i> , <i>Hibb</i> .         |
| ——? <i>subrectus</i> , <i>Portl</i> .          | <i>Griffithides calcaratus</i> .                   |
| <i>Cythere amygdalina</i> .                    | <i>globiceps</i> , <i>Portl</i> .                  |
| <i>arcuata</i> .                               | <i>longiceps</i> ,                                 |
| <i>bituberculata</i> .                         | <i>longispinus</i> ,                               |
| <i>costata</i> .                               | <i>platyceps</i> ,                                 |
| <i>cornuta</i> .                               | <i>Limulus anthrax</i> , <i>Prest</i> .            |
| <i>elongata</i> .                              | <i>rotundus</i> ,                                  |
| <i>excavata</i> .                              | <i>trilobitoides</i> , <i>Buckl</i> .              |
| <i>gibberula</i> .                             | <i>Phillipsia cælata</i> .                         |
| <i>impressa</i> .                              | <i>Colei</i> .                                     |
| <i>inflata</i> .                               | <i>discors</i> .                                   |
| <i>inornata</i> .                              | <i>Jonesii</i> , <i>Portl</i> .                    |
| <i>oblonga</i> .                               | <i>Kellii</i> ,                                    |
| <i>orbicularis</i> .                           | <i>Maccoyi</i> , <i>Portl</i> .                    |
| <i>pusilla</i> .                               | <i>mucronata</i> .                                 |
| <i>scutulum</i> .                              | <i>ornata</i> , <i>Portl</i> .                     |
| <i>spinigera</i> .                             | <i>quadriserialis</i> .                            |
| <i>trituberculata</i> .                        | <i>raniceps</i> , <i>Portl</i> .                   |
|                                                | <i>seminifera</i> , <i>Portl</i> .                 |

## CONCHIFERA DIMYARIA.

|                                                         |                                       |
|---------------------------------------------------------|---------------------------------------|
| <i>Amphidesma</i> ? <i>axiniformis</i> , <i>Portl</i> . | <i>Arca fimbriata</i> .               |
| ? <i>carbonarium</i> , <i>Sow</i> .                     | <i>Artemis parva</i> , <i>Bronn</i> . |
| <i>deltoide</i> , <i>Portl</i> .                        | <i>Astarte gibbosa</i> .              |
| <i>subtruncatum</i> .                                   | <i>quadrata</i> .                     |
| <i>Anatina attenuata</i> .                              | <i>Axinus centralis</i> .             |
| <i>deltoidea</i> .                                      | <i>deltoideus</i> .                   |
| <i>Arca cancellata</i> , <i>Sow</i> .                   | <i>nucleoides</i> .                   |

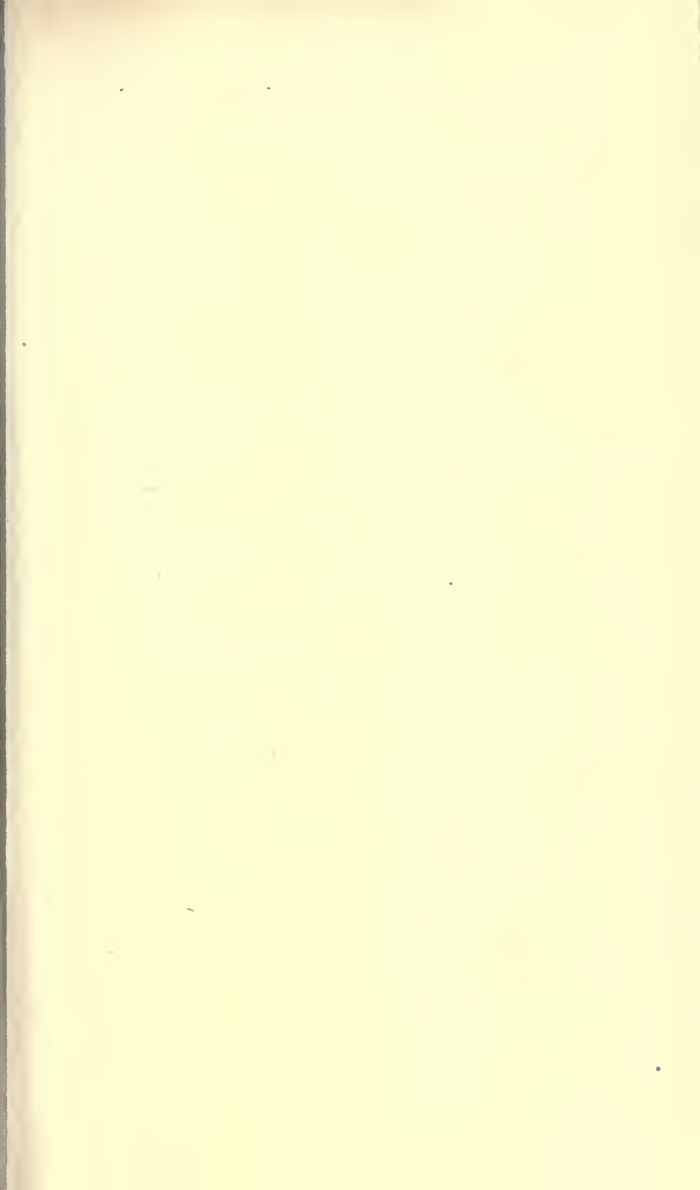






- Axinus obliquus.*  
     *obovatus.*  
     *orbicularis.*  
     *sulcatus, Sow.*  
*Byssoarca clathrata.*  
     *costellata.*  
     *lanceolata.*  
     *reticulata.*  
     *semicostata.*  
*Cardinia ? acuta, Koninck.*  
     *ovalis, Koninck.*  
     *Phaseola, Koninck.*  
     *robusta, Koninck.*  
     *subconstricta, Koninck.*  
*Cardiomorpha corrugata.*  
     *oblonga, Sow. sp.*  
     *ventricosa.*  
*Cardium orbiculare.*  
*Corbis cancellata.*  
*Corbula senilis, Phil.*  
*Crenella acutirostris.*  
*Cucullæa arguta, Phil.*  
     *obtusa, Phil.*  
     *tenuistria.*  
*Cypricardia concinna.*  
     *cuneata.*  
     *cylindrica.*  
     *glabrata, Phil.*  
     *modiolaris.*  
     *oblonga.*  
     *rhombea, Phil.*  
     *sinuata.*  
     *socialis.*  
     *tricostata, Portl.*  
     *tumida.*  
*Cyprina Egertoni.*  
     ? *compressa.*  
*Dolabra corrugata.*
- Dolabra equilateralis.*  
     *gregaria.*  
     *orbicularis.*  
     *rectangularis.*  
*Donax primigenius.*  
*Edmondia uniformis, Phil. sp.*  
*Isocardia axiniformis, Phil.*  
*Kellia gregaria.*  
*Lanistes obtusus.*  
     *rugosus.*  
*Leptodomus fragilis.*  
     *senilis.*  
     (*Corbula. sp. Phil.*)  
*Lithodomus dactyloides.*  
*Lucina antiqua.*  
     *Dunoyeri, Portl.*  
*Lutraria elongata.*  
     *prisca.*  
     *primæva, Portl.*  
*Mactra ovata.*  
*Modiola concinna.*  
     *divisa.*  
     *elongata, Phil.*  
     *granulosa, Phil.*  
     *lingualis, Phil.*  
     *megaloba.*  
     *patula.*  
     *squamifera, Phil.*  
     *subparallela, Portl.*  
*Mytilus comptus.*  
     *Flemingii.*  
     *triangularis, Sow.*  
*Nucula accipiens, Sow.*  
     *acuta, Sow.*  
     *æqualis, Sow.*  
     *attenuata, Flem.*  
     *birostrata.*  
     *brevirostrum, Phil.*

- Nucula carinata.*  
*clavata.*  
*cuneata, Phil.*  
*cylindrica.*  
*delta.*  
*gibbosa, Flem.*  
*lævirostrum, Portl.*  
*leiorhynchus.*  
*longirostrum.*  
*Luciniformis, Phil.*  
*oblonga.*  
*palmae, Sow.*  
*rectangularis.*  
*stillata.*  
*undulata, Phil.*  
*unilateralis.*
- Pandora? clavata.*  
*Pinna flabelliformis, Mart.*  
*flexicostata.*  
*inflata, Phil.*  
*mutica.*
- Pleurorhynchus aliformis, Sow. sp.*  
*armatus, Phil.*  
*elongatus, Sow. sp.*  
*fusiformis.*  
*giganteus.*  
*Hibernicus, Sow. sp.*  
*inflatus.*  
*minax, Phil.*  
*nodulosus.*  
*trigonalis, Phil.*
- Psammobia decussata.*  
*Pullastra bistrata, Portl.*  
*crassistria.*  
*elegans.*  
*ovalis.*
- Sanguinolites angustatus, Phil.*
- Sanguinolites arcuatus, Phil.*  
*attenuatus, Portl.*  
*contortus.*  
*costellatus.*  
*curtus.*  
*discors.*  
*gibbosus, Sow.*  
*Iridinoides.*  
*liratus, Phil.*  
*maximus, Portl.*  
*oblongus, Portl.*  
*plicatus, Portl.*  
*radiatus.*  
*sulcatus, Phil.*  
*transversus, Portl.*  
*tricostatus, Portl.*  
*tumidus, Phil.*  
*undatus, Portl.*
- Sedgwickia attenuata.*  
*bullata.*  
*corrugata.*  
*gigantea.*  
*globosa.*  
*minima.*
- Solemya primæva, Phil.*  
*Solen pelagicus, Goldf.*  
*Venerupis cingulatus.*  
*obsoletus.*  
*scalaris.*
- Venus centralis.*  
*elliptica, Phil.*  
*parallela, Phil.*  
*tenuistriata.*
- Ungulina antiqua.*  
*Unio? modiolaris, Sow.*  
*? nuciformis, Hibb.*  
*? parallelus, Sow.*





## CONCHIFERA MONOMYARIA.

- |                                   |                            |
|-----------------------------------|----------------------------|
| Anomia antiqua.                   | Meleagrina echinata.       |
| Avicula angusta.                  | lævigata.                  |
| bicostata.                        | pulchella.                 |
| cycloptera, <i>Phil.</i>          | ( <i>Avic. Dumontiana</i>  |
| flabellula.                       | De Kon.)                   |
| gibbosa.                          | quadrata.                  |
| informis.                         | rigida.                    |
| lævigata.                         | Monotis æqualis.           |
| lunulata, <i>Kon.</i>             | Pecten æqualis.            |
| papyracea, <i>Goldf.</i>          | anisotus, <i>Phil.</i>     |
| quadrata, <i>Sow.</i>             | arachnoideus, <i>Phil.</i> |
| radiata, <i>Phil.</i>             | arenosus, <i>Phil.</i>     |
| recta.                            | Bellis.                    |
| simplex, <i>Kon.</i>              | cancellatus.               |
| sublobata, <i>Phil.</i>           | cingendus.                 |
| tessellata, <i>Phil.</i>          | clathratus.                |
| Verneulii.                        | cælatus.                   |
| Gervillia elongata, <i>Portl.</i> | cognatus.                  |
| inconspicua, <i>Phil.</i>         | comptus.                   |
| laminosa, <i>Phil.</i>            | concauus.                  |
| squamosa, <i>Phil.</i>            | concentrico-striatus.      |
| Inoceramus auriculatus.           | conoideus.                 |
| costatus, <i>Brown.</i>           | consimilis.                |
| lævis, <i>Brown.</i>              | deornatus, <i>Phil.</i>    |
| lævissimus.                       | depilis.                   |
| obliquatus, <i>Brown.</i>         | dissimilis, <i>Flem.</i>   |
| orbicularis.                      | duplicicosta.              |
| pernoides, <i>Portl.</i>          | ellipticus, <i>Phil.</i>   |
| Lima alternata.                   | elongatus.                 |
| concinna.                         | exiguus.                   |
| decussata.                        | fallax.                    |
| lævigata.                         | filatus.                   |
| obliqua.                          | fimbriatus, <i>Phil.</i>   |
| planicostata.                     | flabellulum.               |
| prisca.                           | flexuosus.                 |
| semisulcata.                      | Forbesii.                  |
| Meleagrina alternata.             | gibbosus.                  |

*Pecten granosus*, *Sow.*  
*granulosus*, *Phil.*  
*Hardingii*.  
*hemisphaericus*, *Phil.*  
*hians*.  
*incrassatus*.  
*inornatus*, *Phil.*  
*intercostatus*.  
*interstitialis*, *Phil.*  
*irregularis*.  
*Jonesii*.  
*Knoconniensis*.  
*leiotis*.  
*macrotis*.  
*megalotis*.  
*Meleagrinooides*.  
*micropterus*.  
*mundus*.  
*Murchisoni*.  
*orbiculatus*.  
*Ottonis*, *Goldf.*  
*ovatus*.  
*pera*.  
*planicathratus*.  
*planicostatus*.  
*plicatus*, *Sow.*  
*politrachus*, *Phil.*  
*quinquelineatus*.  
*rugulosus*.  
*scalaris*, *Sow.*  
*sclerotis*.  
*Sedgwickii*.

*Pecten segregatus*.  
*semicircularis*.  
*semicostatus*, *Portl.*  
*semistriatus*.  
*serratus*.  
*simplex*, *Phil.*  
*Sowerbyi*.  
*spinulosus*.  
*stellaris*, *Phil.*  
*tabulatus*.  
*transversus*, *Sow.*  
*tripartitus*.  
*undulatus*.  
*variabilis*.

*Posidonomya Bechei*, *Goldf.*  
*complanata*, *Portl.*  
*costata*.  
*lateralis*, *Sow.*  
*membranacea*.  
*similis*.  
*transversa*, *Portl.*  
*tuberculata*, *Sow.*  
*vetusta*, *Kon.*

*Pterinea desquamata*.  
*intermedia*.  
*Thompsoni*, *Portl.*

*Pteronites angustatus*.  
*latus*.  
*semisulcatus*.  
*sulcatus*.  
*ventricosus*.

## BRACHIOPODA.

*Atrypa depressa*.  
*expansa*, *Sow.*  
*fimbriata*, *Sow.*  
 ? *gibbera*, *Portl.*  
*lineata*, *Sow. sp.*

*Atrypa oblonga*, *Sow.*  
*obtusa*.  
*planisulcata*, *Sow.*  
*Roissyi*, *De Vern.*  
*Chonetes crassistria*.











- Chonetes Dalmaniana.  
     gibberula.  
     Hardrensis, *Phil. sp.*  
     multidentata.  
     papilionacea, *Phil. sp.*  
     papyracea.  
     perlata, *Phil.*  
     serrata.  
     sordida, *Sow. sp.*  
     tuberculata.  
     volva.  
 Crania vesiculosa.  
 Leptæna analoga, *Sow.*  
     distorta, *Sow.*  
     multirugata.  
     sordida, *Sow.*  
 Lingula elliptica, *Phil.*  
     marginata, *Phil.*  
     Mytiloides, *Sow.*  
     parallela, *Phil.*  
     squamiformis, *Phil.*  
 Orbicula cincta, *Portl.*  
     nitida, *Phil.*  
     quadrata.  
     trigonalis.  
 Orthis arachnoidea, *Phil.*  
     Bechei.  
     caduca.  
     connivens, *Phil.*  
     circularis.  
     comata.  
     crenistria, *Phil.*  
     cylindrica.  
     divaricata.  
     Kellii.  
     latissima.  
     Michelini, *Léo.*  
         (*O. filiaris*, *Phil.*)  
     quadrata.  
     ? resupinata, *Phil.*  
 Orthis senilis, *Phil.*  
     Sharpii, *Mor.*  
     sulcata.  
 Productus aculeatus, *Sow.*  
     antiquatus, *Sow.*  
     auritus, *Sow.*  
     conoides, *Sow.*  
     concinus, *Sow.*  
     corrugatus.  
     costatus, *Sow.*  
     costellatus.  
     crassus, *Flem.*  
     Edelburgensis, *Phil.*  
     elegans.  
     fimbriatus, *Sow.*  
     flexistria.  
     giganteus, *Sow.*  
     granulatus, *Sow.*  
     hemisphæricus, *Sow.*  
     humerosus, *Sow.*  
     intermedius.  
     laciniatus.  
     latissimus, *Sow.*  
     laxispinus, *Phil.*  
     lobatus, *Sow.*  
     longispinus, *Sow.*  
     margaritaceus, *Phil.*  
     Martini, *Sow.*  
     maximus.  
     mesolobus, *Phil.*  
     muricatus, *Phil.*  
     ovalis, *Phil.*  
     pectinoides, *Phil.*  
     personatus, *Sow.*  
     plicatilis, *Sow.*  
     pugilis, *Phil.*  
     punctatus, *Phil.*  
     pustulosus, *Phil.*  
     quincuncialis, *Phil.*

- Productus rugatus*, *Phil.*  
*scabriculus*, *Sow.*  
*Scoticus*, *Sow.*  
*setosus*, *Sow.*  
*spinosus*, *Sow.*  
*spinulosus*, *Sow.*  
*striatus*, *Fischer, sp.*  
*subaculeatus*, *De Vern.*  
*sulcatus*, *Sow.*  
*tortilis*.
- Spirifer acutus*, *Sow.*  
*attenuatus*, *Sow.*  
*bicarinatus*.  
*bisulcatus*, *Sow.*  
*clathratus*.  
*convolutus*, *Phil.*  
*cuspidatus*, *Sow.*  
*decemcostata*.  
*deccorus*, *Phil.*  
*distans*, *Sow.*  
*dorsatus*.  
*duplicicostatus*, *Phil.*  
*elongatus*, *Phil.*  
*exaratus*, *Flem.*  
*expansus*, *Phil.*  
*furcata*.  
*fusiformis*, *Sow.*  
*glaber*, *Sow.*  
*glabristria*, *Phil.*  
*globularis*, *Phil.*  
*hemisphaericus*.  
*humerosus*, *Phil.*  
*imbricatus*, *Sow.*  
*insculptus*, *Phil.*  
*integricostatus*, *Phil.*  
*laminosus*.  
*linguiferus*, *Phil.*  
*mesogonius*.  
*mesolobus*, *Phil.*
- Spirifer oblatum*, *Sow.*  
*ornithorhyncha*.  
*ovalis*, *Phil.*  
*pinguis*, *Sow.*  
*planatus*, *Phil.*  
*planicostatus*.  
*planisulcatus*, *Phil.*  
*princeps*.  
*quinquelobus*.  
*radialis*, *Phil.*  
*reticulatus*.  
*(Martinia, Mc'Coy.)*  
*rhomboidalis*.  
*rhomboideus*, *Phil.*  
*rotundatus*, *Sow.*  
*semicircularis*, *Phil.*  
*senilis*, *Phil.*  
*septosus*, *Phil.*  
*sexradialis*, *Phil.*  
*squamosus*, *Phil.*  
*striatellus*.  
*striatus*, *Sow.*  
*strigocephaloides*.  
*subconicus*, *Mant.*  
*symmetricus*, *Phil.*  
*transiens*.  
*triangularis*, *Sow.*  
*trigonalis*, *Sow.*  
*triradialis*, *Phil.*  
*trisulcosus*, *Phil.*  
*Urii*, *Flem.*
- Terebratula acuminata*, *Sow.*  
*ambigua*, *Phil.*  
*angulata*, *Linn.*  
*cordiformis*, *Sow.*  
*crumena*, *Sow.*  
*flexistria*, *Phil.*  
*gregaria*.  
*hastata*, *Sow.*





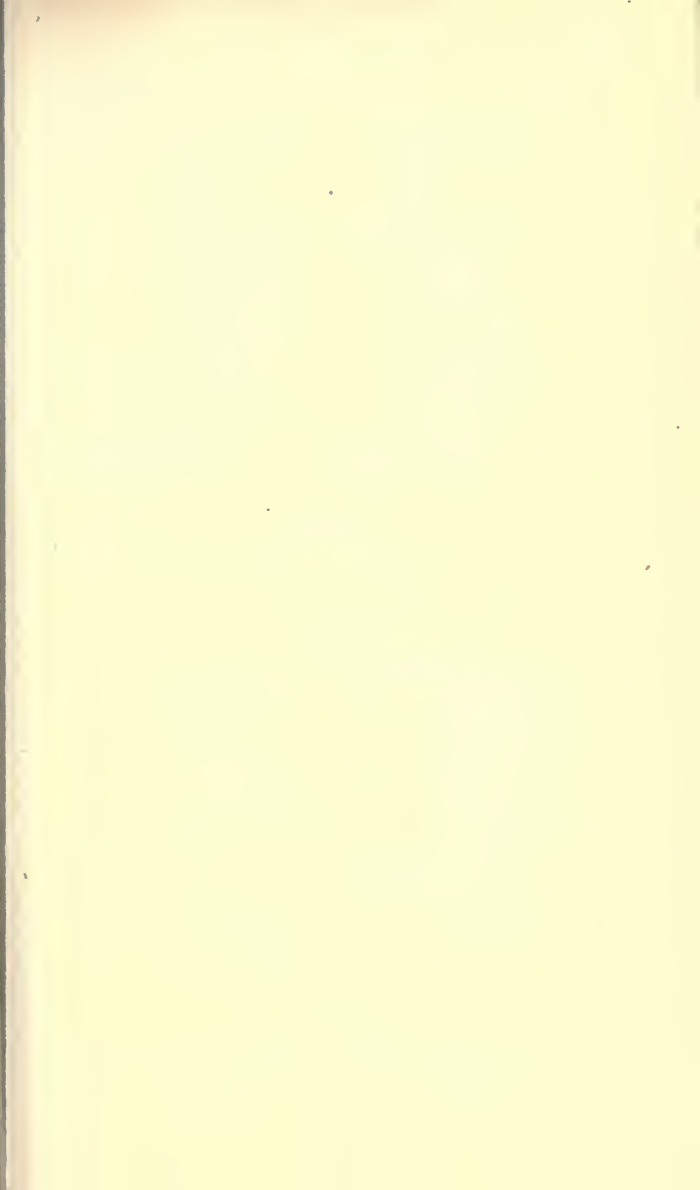


|                                |                            |
|--------------------------------|----------------------------|
| <i>Terebratula isorhyncha.</i> | <i>radialis, Phil.</i>     |
| <i>Mantiae, Sow.</i>           | <i>rhomboidea, Phil.</i>   |
| <i>mesogona, Sow.</i>          | <i>Roissy, Vern.</i>       |
| <i>nana.</i>                   | <i>sacculus, Sow.</i>      |
| <i>pentaedra, Phil.</i>        | <i>sulcirostris, Phil.</i> |
| <i>platyloba, Sow.</i>         | <i>triplex.</i>            |
| <i>pleurodon, Phil.</i>        | <i>tumida, Phil.</i>       |
| <i>proava, Phil.</i>           | <i>ventilabrum, Phil.</i>  |
| <i>pugnus, Sow.</i>            | <i>virgoides.</i>          |

## GASTEROPODA.

|                                 |                                    |
|---------------------------------|------------------------------------|
| <i>Acroculia angusta, Phil.</i> | <i>Euomphalus crotalostomus.</i>   |
| <i>canaliculata.</i>            | <i>Colei, Sow.</i>                 |
| <i>Neritoides, Phil.</i>        | <i>depressus, Sow.</i>             |
| <i>striata, Phil.</i>           | <i>elongatus.</i>                  |
| <i>Buccinum acutum, Sow.</i>    | <i>marginatus.</i>                 |
| <i>curvilineum, Phil.</i>       | <i>neglectus.</i>                  |
| <i>globulare, Phil.</i>         | <i>nodosus, Sow.</i>               |
| <i>imbricatum, Sow.</i>         | <i>pentangulatus, Sow.</i>         |
| <i>parallele, Phil.</i>         | <i>pugilis, Phil.</i>              |
| <i>rectilineum, Phil.</i>       | <i>tuberculatus, Flem.</i>         |
| <i>sigmilineum, Phil.</i>       | <i>Fissurella elongata.</i>        |
| <i>vittatum, Phil.</i>          | <i>Globulus Helicoides, Sow.</i>   |
| <i>Cirrus acutus, Sow.</i>      | <i>nobilis, Sow.</i>               |
| <i>pentagonalis, Phil.</i>      | <i>vetustus, Sow.</i>              |
| <i>pileopsidens, Phil.</i>      | <i>Lacuna antiqua.</i>             |
| <i>spiralis, Phil.</i>          | <i>Loxonema brevis.</i>            |
| <i>tabulatus, Phil.</i>         | <i>constricta, Phil.</i>           |
| <i>Dentalium inornatum.</i>     | <i>impedens.</i>                   |
| <i>Elenchus antiquus.</i>       | <i>polygyra.</i>                   |
| <i>subulatus.</i>               | <i>pulcherrima.</i>                |
| <i>Euomphalus æqualis, Sow.</i> | <i>rugifera, Phil.</i>             |
| <i>anguis.</i>                  | <i>scalaroidea, Phil.</i>          |
| <i>bifrons, Phil.</i>           | <i>sulcatula.</i>                  |
| <i>calyx, Phil.</i>             | <i>sulculosa, Phil.</i>            |
| <i>carbonarius, Sow.</i>        | <i>tumida, Phil.</i>               |
| <i>(E. quadratus.)</i>          | <i>turrita.</i>                    |
| <i>catillus, Sow.</i>           | <i>Littorina pusilla.</i>          |
| <i>clausus, Sow.</i>            | <i>Macrocheilus canaliculatus.</i> |

- Macrocheilus fimbriatus.  
     ovalis.  
     percinctus, *Portl.*  
     tricinctus.  
 Metoptoma elliptica, *Phil.*  
     imbricata, *Phil.*  
     oblonga, *Phil.*  
     pileus, *Phil.*  
     sulcata, *Phil.*  
 Microconchus carbonarius, *Murch.*  
 Murchisonia angulata, *Phil.*  
     elongata, *Portl.*  
     fusiformis, *Phil.*  
     Larcomi.  
     quadricarinata.  
     spinosa, *Phil.*  
     sulcata,  
     tæniata, *Vern.*  
 Natica ampliata, *Phil.*  
     elliptica, *Phil.*  
     ? elongata, *Phil.*  
     lirata, *Phil.*  
     planispira, *Phil.*  
     plicistria, *Phil.*  
     tabulata, *Phil.*  
     variata, *Phil.*  
 Naticopsis canaliculata.  
     dubia.  
     elongata, *Phil. sp.*  
     Neritoides.  
     Phillipsii.  
 Nerita striata, *Flem.*  
     spirata, *Sow.*  
 Patella curvata, *Phil.*  
     lateralis, *Phil.*  
     retrorsa, *Phil.*  
     scutiformis, *Phil.*  
     sinuosa, *Phil.*  
 Phanerotinus cristatus, *Sow.*  
     Phanerotinus nudus, *Sow.*  
     Platyceras trilobatum, *Phil.*  
     tubifer, *Phil.*  
     vetustum, *Sow.*  
     Platyschisma cirroides.  
     Jamesii.  
     Zonites.  
     Pleurotomaria abdita, *Phil.*  
     acuta, *Phil.*  
     altavittata.  
     atomaria, *Phil.*  
     biserrata, *Phil.*  
     canaliculata.  
     carinata, *Sow.*  
     clathrata.  
     concentrica, *Phil.*  
     conica, *Phil.*  
     decussata.  
     depressa, *Phil.*  
     excavata, *Phil.*  
     expansa, *Phil.*  
     filosa.  
     flammigera, *Phil.*  
     gemmulifera, *Phil.*  
     Griffithii.  
     Helicinoides.  
     inconspicua, *Phil.*  
     interstitialis, *Phil.*  
     lævis.  
     lenticulata.  
     limbata, *Phil.*  
     lyrata, *Phil.*  
     monilifera, *Phil.*  
     multicarinata.  
     Naticoides, *De Kon.*  
     (*P. Hainesii.*)  
     ovoidea, *Phil.*  
     rotundata, *Sow.*  
     sculpta, *Phil.*





- |                                        |                                    |
|----------------------------------------|------------------------------------|
| Pleurotomaria serrilimba, <i>Phil.</i> | Turbo appropinquans, <i>Portl.</i> |
| squamula, <i>Phil.</i>                 | biserialis, <i>Phil.</i>           |
| strialis, <i>Phil.</i>                 | semisulcatus, <i>Phil.</i>         |
| striata, <i>Sow.</i>                   | spirata.                           |
| sulcata, <i>Phil.</i>                  | tiara, <i>Sow.</i>                 |
| sulcatula, <i>Phil.</i>                | Turritella elongata, <i>Flem.</i>  |
| tornatilis, <i>Phil.</i>               | megaspira.                         |
| tumida, <i>Phil.</i>                   | minima, <i>Sow.</i>                |
| undulata, <i>Phil.</i>                 | spiralis, <i>Phil.</i>             |
| vittata, <i>Phil.</i>                  | suturalis, <i>Phil.</i>            |
| Pyramis Owenii, <i>Brown.</i>          | tenuistriata, <i>Phil.</i>         |
| reticulatus, <i>Brown.</i>             | triserialis, <i>Phil.</i>          |
| Siphonaria Konincki.                   | Urii, <i>Flem.</i>                 |
| Terebra constricta, <i>Sow.</i>        | Umbrella lævigata.                 |
| Trochella prisca.                      |                                    |

## PTEROPODA.

- Conularia quadrisulcata, *Sow.*

## HETEROPODA

- |                                  |                                 |
|----------------------------------|---------------------------------|
| Bellerophon apertus, <i>Sow.</i> | Bellerophon orbiculus.          |
| cornu-arietes, <i>Sow.</i>       | Orbignyi, <i>Portl.</i>         |
| costatus, <i>Sow.</i>            | recticostatus, <i>Portl.</i>    |
| decussatus, <i>Flem.</i>         | spiralis, <i>Phil.</i>          |
| ( <i>B. reticulatus.</i> )       | striatus, <i>Flem.</i>          |
| hiulcus, <i>Sow.</i>             | tangentialis, <i>Phil.</i>      |
| interlineatus, <i>Portl.</i>     | tenuifascia, <i>Sow.</i>        |
| intersectus.                     | Urii, <i>Flem.</i>              |
| lævis.                           | Porcellia levigata, <i>Lév.</i> |
| Larcomii, <i>Portl.</i>          | Puzo, <i>Lév.</i>               |
| navicula, <i>Sow.</i>            | Woodwardii, <i>Sow, sp.</i>     |
| Oldhamii, <i>Portl.</i>          |                                 |

## CEPHALOPODA.

- |                                     |                                     |
|-------------------------------------|-------------------------------------|
| Actinoceras Simmsii, <i>Stokes.</i> | Goniatites bidorsalis, <i>Phil.</i> |
| pyramidatum.                        | biferus, <i>Phil.</i>               |
| Cyrtoceras tuberculatum.            | Brownii.                            |

- Goniatites calyx*, *Phil.*  
*carina*, *Phil.*  
*crenistrìa*, *Phil.*  
*cyclolobus*, *Phil.*  
*discus*.  
*dorsalis*, *Brown.*  
*evolutus*, *Phil.*  
*excavatus*, *Phil.*  
*expansus*, *Buck.*  
*fasciculatus*.  
*foraminosus*, *Phil.*  
*Gibsoni*, *Phil.*  
*Gilbertsoni*, *Phil.*  
*granosus*, *Portl.*  
*Henslowi*, *Sow. sp.*  
*implicatus*, *Phil.*  
*intercostalis*, *Phil.*  
*intermedius*, *Brown.*  
*jugosus*, *Brown.*  
*Kenyoni*, *Brown.*  
*latus*.  
*Listeri*, *Sow. sp.*  
*Longhorni*, *Brown.*  
*Looneyi*, *Phil.*  
*mixonotus*, *Phil.*  
*minutissimus*, *Brown.*  
*mixolobus*, *Phil.*  
*mutabilis*, *Phil.*  
*nitidus*, *Phil.*  
*obtusus*, *Phil.*  
*paradoxicus*, *Brown.*  
*parvus*, *Brown.*  
*paucilobus*, *Phil.*  
*platyllobus*, *Phil.*  
*protens*, *Brown.*  
*reticulatus*, *Phil.*  
*rotiformis*, *Phil.*  
*serpentinus*, *Phil.*  
*Smithii*, *Brown.*
- Goniatites sphaericus*, *Sow, sp.*  
*sphaeroidalis*.  
*spirorbis*, *Phil.*  
*splendidus*, *Brown.*  
*stenolobus*, *Phil.*  
*striatus*, *Phil.*  
*striolatus*, *Phil.*  
*subsulcatus*, *Brown.*  
*truncatus*, *Phil.*  
*undulatus*, *Brown.*  
*vesica*, *Phil.*  
*vittiger*, *Phil.*
- Nautilus armatus*, *Sow.*  
*biangulatus*, *Sow.*  
*bilobatus*, *Sow.*  
*bistrialis*, *Phil.*  
*cariniferus*, *Sow.*  
*clitellarius*, *Sow.*  
*complanatus*, *Sow.*  
*compressus*, *Sow.*  
*concauus*, *Sow.*  
*coronatus*.  
*costellatus*.  
*costalis*, *Phil.*  
*crenatus*.  
*cyclostomus*, *Phil.*  
*discors*.  
*discus*, *Sow.*  
*(N. mutabilis, N. trochlea.)*  
*dorsalis*, *Phil.*  
*endosiphonns*, *Phil.*  
*falcatus*, *Sow.*  
*funatus*, *Sow.*  
*furcatus*.  
*globatus*, *Sow.*  
*goniolobus*, *Phil.*  
*ingens*, *Mart.*  
*latidorsatus*.  
*Luidi*, *Mart.*







- |                                           |                                    |
|-------------------------------------------|------------------------------------|
| <i>Nautilus marginatus</i> , <i>Flem.</i> | <i>Orthoceras distans</i> .        |
| <i>multicarinatus</i> , <i>Sow.</i>       | <i>filiferum</i> , <i>Phil.</i>    |
| <i>ovatus</i> , <i>Sow.</i>               | <i>fusiforme</i> , <i>Sow.</i>     |
| <i>oxystomus</i> , <i>Phil.</i>           | <i>Gesneri</i> , <i>Mart.</i>      |
| <i>pentagonus</i> , <i>Sow.</i>           | <i>giganteum</i> , <i>Sow.</i>     |
| <i>pinguis</i> .                          | <i>incomitatum</i> .               |
| <i>planidorsatus</i> , <i>Port.</i>       | <i>inequiseptum</i> , <i>Phil.</i> |
| <i>planotergatus</i> .                    | <i>lævigatum</i> .                 |
| • <i>porcatus</i> .                       | <i>laterale</i> , <i>Phil.</i>     |
| <i>quadratus</i> , <i>Flem.</i>           | <i>lineolatum</i> , <i>Phil.</i>   |
| <i>subsulcatus</i> , <i>Phil.</i>         | <i>mncronatum</i> .                |
| <i>sulcatus</i> , <i>Sow.</i>             | <i>ovale</i> , <i>Phil.</i>        |
| <i>sulcifer</i> , <i>Lév.</i>             | <i>paradoxicum</i> , <i>Sow.</i>   |
| <i>sulciferus</i> , <i>Phil.</i>          | <i>pyramidale</i> , <i>Flem.</i>   |
| <i>tetragonus</i> , <i>Phil.</i>          | <i>reticulatum</i> , <i>Phil.</i>  |
| <i>tuberculatus</i> , <i>Sow.</i>         | <i>rugosum</i> , <i>Flem.</i>      |
| <i>Orthoceras angulare</i> , <i>Flem.</i> | <i>scalpratum</i> , <i>Sow.</i>    |
| <i>annulare</i> , <i>Flem.</i>            | <i>Steinhauerii</i> , <i>Sow.</i>  |
| <i>arcuatum</i> , <i>Phil.</i>            | <i>sulcatulum</i> .                |
| <i>attenuatum</i> , <i>Flem.</i>          | <i>sulcatum</i> , <i>Flem.</i>     |
| <i>Breynii</i> , <i>Mart.</i>             | <i>undatum</i> , <i>Flem.</i>      |
| <i>cinctum</i> , <i>Sow.</i>              | <i>unguis</i> , <i>Phil.</i>       |
| <i>cordiforme</i> , <i>Sow.</i>           | <i>ventricosum</i> .               |
| <i>cylindraceum</i> , <i>Flem.</i>        | ( <i>Poterioceras</i> .)           |
| <i>dentaloideum</i> , <i>Phil.</i>        | <i>Phragmoceras flexistria</i> .   |

## PISCES.

*Placoides*.

The following list of Fossil Fishes having been described by *Agassiz*, it is unnecessary to repeat his name after each species.

- |                             |                                   |
|-----------------------------|-----------------------------------|
| <i>Onchus sulcatus</i> .    | <i>Ctenacanthus brevis</i> .      |
| <i>hamatus</i> .            | <i>heterogyrus</i> .              |
| <i>rectus</i> .             | <i>arcuatus</i> .                 |
| <i>plicatus</i> .           | <i>crenulatus</i> .               |
| <i>falcatus</i> .           | <i>Ptychacanthus sublævis</i> .   |
| <i>subulatus</i> .          | <i>Sphenacanthus serrulatus</i> . |
| <i>Ctenacanthus major</i> . | <i>Asteroptychius ornatus</i> .   |
| <i>teuistriatus</i> .       | <i>Portlockii</i> .               |

- Physonemus subteres.  
 Gyracanthus formosus.  
     tuberculatus.  
     Alnvincensis.  
     ornatus.  
 Oracanthus Milleri.  
     minor.  
     pustulosus.  
     confluens.  
 Lapracanthus Colei.  
     priscus.  
 Tristychius arcuatus.  
 Cladacanthus paradoxus.  
 Cricacanthus Jonesii.  
 Orodus cinctus.  
 Orthacanthus cylindricus.  
 Pleuracanthus lævissimus.  
     planus.  
     cylindricus.  
     ramosus.  
 Helodus simplex.  
     lævissimus.  
     subteres.  
     gibberulus.  
     turgidus.  
     mitratus.  
     didymus.  
     mammillaris.  
     planus.  
 Chomatodus cinctus.  
     linearis.  
     truncatus.  
 Cochliodus contortus.  
     magnus.  
     oblongus.  
     acutus.  
     striatus.  
 Psammodus rugosus.  
     porosus.
- Psammodus cornutus.  
     obtusus.  
 Pæcilodus Jonesii.  
     parallelus.  
     transversus.  
     obliquus.  
     sublævis.  
     angustus.  
 Pleurodus affinis.  
     Rankini.  
 Ctenoptychius apicalis.  
     pectinatus.  
     denticulatus.  
     cuspidatus.  
     dentatus.  
     serratus.  
     macrodus.  
     crenatus.  
 Ctenodus instatus.  
     Robertsoni.  
     alatus.  
     Murchisoni.  
 Petalodus acuminatus.  
     Hastingsiæ.  
     psittacinus.  
     lævissimus.  
     rectus.  
     radicans.  
     marginalis.  
     sagittatus.  
 Cladodus mirabilis.  
     marginatus.  
     Milleri.  
     conicus.  
     acutus.  
     Hibberti.  
     parvus.  
 Diplodus gibbosus.  
     minutus.





*Ganoïdes.*

|                         |                       |
|-------------------------|-----------------------|
| Acanthodes sulcatus.    | Palæoniscus Monensis. |
| Amblypterus nemopterus. | ornatissimus.         |
| punctatus.              | Robertsoni.           |
| striatus.               | striolatus.           |
| Palæoniscus carinatus.  | •Eurynotus crenatus.  |
| Egertoni.               | fimbriatus.           |

*Sauroides.*

|                          |                         |
|--------------------------|-------------------------|
| Megalichthys Hibberti.   | Cælacanthus lepturus.   |
| maxillaris.              | Holoptychius Hibberti.  |
| Diplopterus carbonarius. | sauroides.              |
| Robertsoni.              | falcatuſ.               |
| Pygopterus Bucklandi.    | Portlockii.             |
| Jamesoni.                | Garnei.                 |
| Greenockii.              | granulatus.             |
| Acrolepis acutirostris.  | striatus.               |
| Orognathus conidens.     | minor.                  |
| Graptolepis ornatus.     | Hoplopygus Bennevi.     |
| Pelodus capitatus.       | Ecronemus lobatus.      |
| Cælacanthus Phillipsii.  | Phylolepis tenuissimus. |









The Cliffs under the Castle at Lanstiphan, near the mouth of the Towey. In the vicinity of Hay, and in the valley of the Usk, near Abergavenny.

Fishes.—*Cephalaspis* and *Onchus*.

### 3. TILESTONE.

Finely laminated, hard, reddish or green, micaceous, quartzose sandstones, which split into tiles; with occasional beds of reddish shale.

In the gorge of the Teme, between Ludlow and Downton Castle, near the Tin Mill. Oakley Park, Ludlow. Horeb Chapel; the Valley of the Cwm Dwr, between Trecastle and Llandoverly.

Fishes.—*Dipterus*, &c., and remains of Testacea.

In Scotland this system is also largely developed, in Caithness and Cromarty, as described by Mr. Miller. In Dura Den, south of Cupar, in the valley of Strathmore and adjacent district, as observed by Mr. Lyell, (*Elements of Geology*, vol. ii. p. 148.)

The mineral characters are very similar, and the divisions appear to be characterized by the same genera of Fishes, but remains of Testacea have scarcely been observed; the lowest division, however, contains a larger number of the remains of Fishes, than the equivalent beds in England, and belonging to the genera, *Plerichthys*, *Coccosteus*, *Diplopterus*, *Dipterus*, *Cheiracanthus*, &c.

Strata of the same age have been recognized as occurring in Devonshire, but present a different lithological aspect, consisting of green chloritic and quartzose slates and sandstones, with some conglomerate and limestones, and contain a great abundance of the remains of Testacea and Crustacea, those of Fishes being on the other hand very scarce. Numerous species belonging to the families, *Brachiopoda*, *Cephalopoda*, *Conchifera* and *Gasteropoda*, have been collected.

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*Proc.* vol. iii. p. 141.  
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*paper*, 1843.  
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 ————— and Sedgwick, Prof., 'On Devonshire,' *Geol.*  
*Trans.* vol. v.  
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## FOSSILS OF THE DEVONIAN GROUP.

## AMORPHOZOA.

- Manon cribrosum, *Goldf.*                      Scyphia turbinata, *Goldf.*

## ZOOPHYTA.

- |                                         |                                     |
|-----------------------------------------|-------------------------------------|
| Amplexus tortuosus, <i>Phil.</i>        | Favosites Gothlandicus, <i>Lam.</i> |
| Astrea helianthoides, <i>Blainv.</i>    | polymorphus, <i>Goldf.</i>          |
| Hennahii, <i>Lons.</i>                  | spongites, <i>Goldf.</i>            |
| pentagona, <i>Blainv.</i>               | Fenestella antiqua, <i>Lons.</i>    |
| Aulopora conglomerata, <i>Goldf.</i>    | arthritica, <i>Phil.</i>            |
| Caunopora ramosa, <i>Phil.</i>          | flustriformis, <i>Phil. sp.</i>     |
| Coscinopora placenta, <i>Goldf.</i>     | prisca, <i>Goldf. sp.</i>           |
| Cyathophyllum cæspitosum, <i>Goldf.</i> | laxa, <i>Phil.</i>                  |
| turbinatum, <i>Goldf.</i>               | Glauconome bipinnata, <i>Phil.</i>  |
| Cystiphyllum Danmoniense, <i>Lons.</i>  | Gorgonia ripisteria, <i>Goldf.</i>  |
| vesiculosum, <i>Phil.</i>               | Hemitrypa oculata, <i>Phil.</i>     |
| Favosites fibrosus, <i>Lons.</i>        | Millepora gracilis, <i>Phil.</i>    |







## CONCHIFERA MONOMYARIA.

- |                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><i>Avicula anisota</i>, <i>Phil.</i><br/> <i>cancellata</i>, <i>Phil.</i><br/> <i>Damnoniensis</i>, <i>Sow.</i><br/> <i>exarata</i>, <i>Phil.</i><br/> <i>Pectinoides</i>, <i>Sow.</i><br/> <i>reticulata</i>, <i>Phil.</i><br/> <i>rudis</i>, <i>Phil.</i><br/> <i>subradiata</i>, <i>Sow.</i><br/> <i>texturata</i>, <i>Phil.</i></p> <p><i>Pecten alternatus</i>, <i>Phil.</i><br/> <i>arachnoideus</i>, <i>Phil.</i></p> | <p><i>Pecten granulosus</i>, <i>Phil.</i><br/> <i>nexilis</i>, <i>Sow.</i><br/> <i>plicatus</i>, <i>Sow.</i><br/> <i>polytrichus</i>, <i>Phil.</i><br/> <i>rugosus</i>, <i>Phil.</i><br/> <i>transversus</i>, <i>Sow.</i></p> <p><i>Posidonomya Becheri</i>, <i>Goldf.</i><br/> <i>lateralis</i>, <i>Sow.</i></p> <p><i>Pterinea radiata</i>, <i>Goldf.</i><br/> <i>spinosa</i>, <i>Phil.</i><br/> <i>ventricosa</i>, <i>Goldf.</i></p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## BRACHIOPODA.

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><i>Atrypa cassidea</i>, <i>Dalm.</i><br/> <i>crenulata</i>, <i>Sow.</i><br/> <i>decussata</i>, <i>Sow.</i><br/> <i>fallax</i>, <i>Sow.</i><br/> <i>hispida</i>, <i>Sow.</i><br/> <i>impleta</i>, <i>Sow.</i><br/> <i>implexa</i>, <i>Sow.</i><br/> <i>indentata</i>, <i>Sow.</i><br/> <i>lachryma</i>, <i>Sow.</i><br/> <i>latissima</i>, <i>Sow.</i><br/> <i>lineata</i>, <i>Phil.</i><br/> <i>oblonga</i>, <i>Sow.</i><br/> <i>plebeia</i>, <i>Sow.</i><br/> <i>protracta</i>, <i>Sow.</i><br/> <i>rhomboidea</i>, <i>Phil.</i><br/> <i>sphærica</i>, <i>Sow.</i><br/> <i>striatula</i>, <i>Sow.</i><br/> <i>triangularis</i>, <i>Sow.</i><br/> <i>triloba</i>, <i>Sow.</i></p> <p><i>Calccola sandalina</i>, <i>Lam.</i></p> <p><i>Chonetes Hardrensis</i>, <i>Phil. sp.</i><br/> <i>? membranacea</i>, <i>Phil. sp.</i><br/> <i>sordida</i>, <i>Sow.</i></p> | <p><i>Leptaena analoga</i>, <i>Sow.</i><br/> <i>caperata</i>, <i>Sow.</i><br/> <i>depressa</i>, <i>Dalm.</i><br/> <i>(L. rugosa, Dalm.)</i><br/> <i>fragaria</i>, <i>Sow.</i><br/> <i>interrupta</i>, <i>Sow.</i><br/> <i>membranacea</i>, <i>Phil.</i><br/> <i>nodulosa</i>, <i>Phil.</i></p> <p><i>Orthis arcuata</i>, <i>Phil.</i><br/> <i>arachnoidea</i>, <i>Phil.</i><br/> <i>alternata</i>, <i>Sow.</i><br/> <i>(compressa, Sow.)</i><br/> <i>calcar</i>, <i>Phil.</i><br/> <i>crenistria</i>, <i>Phil. sp.</i><br/> <i>granulosa</i>, <i>Phil.</i><br/> <i>interlineata</i>, <i>Sow.</i><br/> <i>interstitialis</i>, <i>Phil.</i><br/> <i>lens</i>, <i>Phil.</i><br/> <i>longisulcata</i>, <i>Phil.</i><br/> <i>parallela</i>, <i>Phil.</i><br/> <i>plicata</i>, <i>Sow.</i><br/> <i>resupinata</i>, <i>Mart. sp.</i><br/> <i>semicircularis</i>, <i>Sow.</i></p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|







- Orthis subarachnoidea*, *Vern.*  
*tennistriata*, *Sow.*  
*Productus convolutus*, *Phil.*  
*laxispinus*, *Phil.*  
*mesolobus*, *Phil.*  
*prælongus*, *Sow.*  
*reticulatus*, *Sow.*  
*scabriculus*, *Sow.*  
*Spirifer affinis*, *Sow.*  
*aperturatus*, *Schlot.*  
*Archiaci Murch.*  
*calcaratus*, *Sow.*  
*cassidea*, *Bronn.*  
*costatus*, *Sow.*  
*cuspidatus*, *Mart. sp.*  
*disjunctus*, *Sow.*  
*distans*, *Sow.*  
*extensus*, *Sow.*  
*giganteus*, *Sow.*  
*grandævus*, *Phil.*  
*heteroclitus*, *Phil.*  
*hirundo*, *Phil.*  
*inornatus*, *Sow.*  
*megalobus*, *Phil.*  
*mesomalus*, *Phil.*  
*microgemma*, *Phil.*  
*nudus*, *Sow.*  
*oblatns*, *Sow.*  
*obliteratus*, *Phil.*  
*ostiolatus*, *Schlot.*  
*phalæna*, *Phil.*  
*protensus*, *Phil.*  
*pulchellus*, *Sow.*  
*rotundatns*, *Sow.*  
*rudis*, *Phil.*  
*simplex*, *Phil.*  
*speciosus*, *Schlot.*  
*striatus*, *Sow.*  
*subconicus*, *Mart. sp.*  
*trapezoidalis*, *Dalm.*  
*Urii*, *Flem.*  
*Strigocephalus brevirostrum*, *Phil.*  
*Burtini*, *Defr.*  
*giganteus*, *Sow.*  
*Terebratula acuminata*, *Mart. sp.*  
*amblygona*, *Phil.*  
*angularis*, *Phil.*  
*(T. primipilaris,*  
*Buch.)*  
*anisodonta*, *Phil.*  
*aspera*, *Schlot.*  
*bifera*, *Phil.*  
*borealis*, *Schlot.*  
*compta*, *Phil.*  
*concentrica*, *Buch.*  
*crumena*, *Sow.*  
*cuboides*, *Sow.*  
*curvata*, *Schlot.*  
*desquamata*, *Sow.*  
*ferita*, *Buck.*  
*Gryphus*, *Schlot.*  
*hastata*, *Sow.*  
*insperata*, *Phil.*  
*juvenis*, *Sow.*  
*laticosta*, *Phil.*  
*Mantiæ*, *Sow.*  
*pleurodon*, *Phil.*  
*primipilaris*, *Buck.*  
*proboscidalis*, *Phil.*  
*pugnus*, *Sow.*  
*reniformis*, *Sow.*  
*reticularis*, *Bronn.*  
*rhomboidea*, *Phil.*  
*sacculus*, *Sow.*  
*subdentata*, *Sow.*  
*virgo*, *Phil.*  
*Wilsoni*, *Sow.*







## CEPHALOPODA.

- |                                          |                                             |
|------------------------------------------|---------------------------------------------|
| <i>Clymenia fasciata</i> , <i>Phil.</i>  | <i>Goniatites inconstans</i> , <i>Phil.</i> |
| <i>lævigata</i> , <i>Munst.</i>          | <i>insignis</i> , <i>Phil.</i>              |
| <i>linearis</i> , <i>Sow.</i>            | <i>linearis</i> , <i>Munst.</i>             |
| <i>plurisepta</i> , <i>Phil.</i>         | <i>mixolobus</i> , <i>Phil.</i>             |
| <i>sagittalis</i> , <i>Phil.</i>         | <i>serpentinus</i> , <i>Phil.</i>           |
| <i>striata</i> , <i>Munst.</i>           | <i>spiralis</i> , <i>Phil.</i>              |
| <i>valida</i> , <i>Phil.</i>             | <i>spirorbis</i> , <i>Phil.</i>             |
| <i>Cyrtoceras armatum</i> , <i>Phil.</i> | <i>transitorius</i> , <i>Phil.</i>          |
| <i>bdellatites</i> , <i>Phil.</i>        | <i>vinctum</i> , <i>Sow.</i>                |
| <i>fimbriatum</i> , <i>Phil.</i>         | <i>Nautilus germanus</i> , <i>Phil.</i>     |
| <i>marginale</i> , <i>Phil.</i>          | <i>megasipho</i> , <i>Phil.</i>             |
| <i>Nautiloideum</i> , <i>Phil.</i>       | <i>Orthoceras cinctum</i> , <i>Sow.</i>     |
| <i>nodosum</i> , <i>Phil.</i>            | <i>cylindraceum</i> , <i>Sow.</i>           |
| <i>obliquatum</i> , <i>Phil.</i>         | <i>cylindricum</i> , <i>Sow.</i>            |
| <i>ornatum</i> , <i>Goldf.</i>           | <i>ellipsoideum</i> , <i>Phil.</i>          |
| <i>quindecimale</i> , <i>Phil.</i>       | <i>Ibex</i> , <i>Sow.</i>                   |
| <i>reticulatum</i> , <i>Phil.</i>        | <i>imbricatum</i> , <i>Wahl.</i>            |
| <i>rusticum</i> , <i>Phil.</i>           | <i>lineolatum</i> , <i>Phil.</i>            |
| <i>tridecimale</i> , <i>Phil.</i>        | <i>Ludense</i> , <i>Sow.</i>                |
| <i>Goniatites biferus</i> , <i>Phil.</i> | <i>striatulum</i> , <i>Sow.</i>             |
| <i>carbonarius</i> , <i>Sow.</i>         | <i>tentaculare</i> , <i>Phil.</i>           |
| <i>crenistria</i> , <i>Phil.</i>         | <i>tubicinella</i> , <i>Sow.</i>            |
| <i>excavatus</i> , <i>Phil.</i>          | <i>uudulatum</i> , <i>Sow.</i>              |
| <i>globosus</i> , <i>Munst.</i>          | ( <i>laterale</i> , <i>Phil.</i> )          |

## PISCES.

*Placoides.*

- |                                          |                                           |
|------------------------------------------|-------------------------------------------|
| <i>Onchus arcuatus</i> , <i>Ag.</i>      | <i>Ptychacanthus dubius</i> , <i>Ag.</i>  |
| <i>semistriatus</i> , <i>Ag.</i>         | <i>Clemetius reticulatus</i> , <i>Ag.</i> |
| <i>Parexus recurvus</i> , <i>Ag.</i>     | <i>Ctenoptychius priscus</i> , <i>Ag.</i> |
| <i>Ctenacanthus ornatus</i> , <i>Ag.</i> |                                           |

*Ganoïdes.*

- |                                                |                                               |
|------------------------------------------------|-----------------------------------------------|
| <i>Dipterus macrolepidotus</i> , <i>Sedgw.</i> | <i>Osteolepis microlepidotus</i> , <i>Ag.</i> |
| <i>Osteolepis arenatus</i> , <i>Ag.</i>        | <i>major</i> , <i>Ag.</i>                     |

- Acanthodes pusillus, Ag.*  
*Diplocanthus crassispinus, Ag.*  
     *longispinus, Ag.*  
     *striatulus, Ag.*  
     *striatus, Ag.*  
*Cheiracanthus Murchisoni, Ag.*  
     *minor, Ag.*  
     *microlepidotus, Ag.*  
*Cheirolepis Traillii, Ag.*  
     *uragus, Ag.*  
     *Cummingiæ, Ag.*  
*Cephalaspis Lewisii, Ag.*  
     *Lloydii, Ag.*  
     *Lyellii, Ag.*  
     *rostratus, Ag.*  
*Pterichthys cancriformis, Ag.*  
     *coruutus, Ag.*  
     *hydrophilus, Ag.*  
     *latus, Ag.*  
     *major, Ag.*  
     *Milleri, Ag.*  
     *oblongus, Ag.*  
     *productus, Ag.*  
     *testudinarius, Ag.*  
*Cocosteus cuspidatus, Ag.*  
     *latus, Ag.*  
     *maximus, Ag.*  
     *oblongus, Ag.*  
*Chelonichthys Asmusii, Ag.*  
     (*Asterolepis, Ag.*) *Polyphractus platycephalus, Ag.*  
     *minor, Ag.*
- Chelonichthys Malcolmsoni, Ag.*  
*Actinolepis tuberculatus, Ag.*  
*Stagonolepis Robertsoni, Ag.*  
*Diplopterus affinis, Ag.*  
     *borealis, Ag.*  
     *macrocephalus, Ag.*  
*Platygnathus paucidens, Ag.*  
     *Jamesoni, Ag.*  
     *minor, Ag.*  
*Dendrodus latus, Owen.*  
     *strigatus, Owen.*  
     *sigmoideus, Owen.*  
*Lamnodus biporcatus, Ag.*  
     *Panderi, Ag.*  
     *sulcatus, Ag.*  
*Cricodus incurvus, Ag.*  
*Megalichthys priscus, Ag.*  
*Holoptychius giganteus, Ag.*  
     *Flemingii, Ag.*  
     *nobilissimus, Ag.*  
     *Andersoni, Ag.*  
     *Murchisoni, Ag.*  
*Glyptosteus favosus, Ag.*  
     *reticulatus, Ag.*  
*Phyllolepis concentricus, Ag.*  
*Pamphractus hydrophilus, Ag.*  
     *Andersoni, Ag.*  
*Homothorax Flemingii, Ag.*  
*Placothorax paradoxus, Ag.*







SILURIAN GROUP.

- ~~~~~
- |        |   |                           |                         |
|--------|---|---------------------------|-------------------------|
| UPPER. | { | 1. Ludlow Formation. . .  | 2. Wenlock Formation.   |
| LOWER. | { | 1. Caradoc Formation. . . | 2. Llandeilo Formation. |
- ~~~~~

THIS Group, (which derives its name from the ancient kingdom of the Silures, a tract of country where these rocks are best developed,) extends over a considerable area in the border counties of England and Wales, as well as over a large portion of the principality itself. The sedimentary deposits comprise argillaceous, calcareous and arenaceous beds, varying both in colour and texture. Some of the sandstones are fine-grained or gritty. The limestones are argillaceous, concretionary and sometimes flaggy. The following summary and subjoined localities are abstracted from the 'Silurian System' of Sir R. I. Murchison, to whose large work the reader is referred for full details connected with the whole district of Siluria.

- |                      |   |                       |   |                                                                                         |
|----------------------|---|-----------------------|---|-----------------------------------------------------------------------------------------|
| 1. Ludlow Formation. | { | a. Upper Ludlow Rock. | } | a. Slightly micaceous, grey-coloured, thin-bedded sandstone.                            |
|                      | { | b. Aymestry limestone | } | b. Subcrystalline or grey and blue argillaceous limestone.                              |
|                      | { | c. Lower Ludlow rock. | } | c. Sandy, liver and dark-coloured shale and flag, with concretions of earthy limestone. |

|                                    |                                       |                                                                                                                                                                                                                                     |
|------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2. Wenlock and Dudley Formation.   | d. Wenlock and Dudley limestone.      | } d. Highly concretionary grey and blue subcrystalline limestone.<br>e. Argillaceous shale, liver and dark grey-coloured, rarely micaceous, with nodules of earthy limestone.                                                       |
|                                    | e. Wenlock and Dudley shale.          |                                                                                                                                                                                                                                     |
| 3. Caradoc Formation.              | Flags.                                | } f. Thin-bedded, impure, shelly limestone, and finely laminated, slightly micaceous, greenish sandstone.<br>g. Thick-bedded, red, purple, green, and whitefree-stones. Conglomeritic quartzose grits. Sandy and gritty limestones. |
|                                    | g. Sandstones, grits, and limestones. |                                                                                                                                                                                                                                     |
| 4. Builth and Llandeilo Formation. | h. Llandeilo flags.                   | } h. Dark-coloured flags, mostly calcareous, with some sandstone and schist.                                                                                                                                                        |

## LOCALITIES FOR FOSSILS, &amp;c.

- a.* Ludlow Castle, Whitcliffe, Munslow, Diddlebury, Larden, Shropshire; Croft Castle, Mortimer's Cross, Titley, Kington, Fownhope, Stoke Edith, Herefordshire; West flanks of Malvern and Abberley Hills, Worcestershire; West flank of May Hill, Tortworth, Gloucestershire; Presteigne, Pain's Castle, Radnorshire; Trewerne Hills, Corn-y-fan, Brecon, Llanbadock near Usk.
- b.* Aymestry, Croft Ambry, Gatley, Brindwood Chase, Downton-on





the-Rock, Herefordshire; Yeo Edge, Shelderton, Norton Camp, Dinchope, Caynham Camp, Shropshire; Sedgeley, Staffordshire.

- c.* Escarpments of Mocktree and Brindgwood Chase, Gatley, and Valley of Woolhope, Herefordshire; Mary Knoll Dingle, Westhorpe, Hopedale, and Long Mountain, Shropshire; West side of Abberley and Malvern Hills; escarpments in Montgomery, Radnor, Brecknock and Caermarthenshires.
- d.* Lincoln Hill, Benthall and Wenlock Edge, Shropshire; Burrington, Nether Lye, near Aymestry, Nash near Presteigne, Old Radnor; Pwll-Calch, Caermarthenshire; Valley of Woolhope, Ledbury, and west side of Malvern Hills; East side of Abberley Hills, Dudley, Worcestershire; Long Hope, near May Hill, Gloucestershire; Prescoed and Cil-na-Caya, near Usk.
- e.* Buildwas, Hughley, Wistanstow and Clungunford, Salop; escarpments in Montgomery, Radnor, Brecknock and Caermarthenshires: West flank of Malvern Hills, Alfrick, Worcestershire; centre of Wren's Nest, Dudley, &c. &c.
- f.* Banks of the Onny, near Horderley, Acton Burnell, Chatwall; the Hollies, near Hope Bowdler, Cheney Longville, Acton Scott; East flank of Wrekin and Caer Caradoc, Salop; Eastnor Park, Obelisk, and centre of Woolhope Valley, Herefordshire; May Hill, Gloucestershire.
- g.* Horderley, Hoar Edge, Long Lane, and Corston, Shropshire; Ankerdine Hill, Old Storridge, Howler Heath, S.W. of Malvern Hills, Worcestershire; May Hill, Gloucestershire; and the same localities as *f.* in Shropshire; Guilsfield and Alt-y-maen, Montgomeryshire; Castel Craig Gwyddon, Caermarthenshire.
- h.* Rorington, near Shelve, Shropshire; Llandrindod and Wellfield, near Builth, Radnorshire; Tan-yr-Alt to Llandeilo, Caermarthenshire.

In Yorkshire and Westmorland; in some parts of Scotland; in the South of Ireland, and other districts, rocks belonging to the Silurian Group also occur.

In the lake district, Professor Sedgwick has divided the fossiliferous slates extending from the Coniston Limestone to the Valley of the Lune, into five Formations.

5. Upper Slate of Kendal. {  
 c. Greenish grey and red flagstones.  
 b. Grits and slates with Upper Ludlow fossils.  
 a. Coarse slates passing downwards into 4 d.
4. Ireleth Slates. {  
 d. Coarse slates, flags and grits.—*Terebratula navicula*, and other Lower Ludlow fossils.  
 c. Upper Ireleth slates.  
 b. Calcareous slates and limestone.  
 a. Lower Ireleth slates.
3. Coniston Grit. {  
*Graptolithus Ludensis*, *Cardiola interrupta*,  
*Orthoceras Ibez*.
2. Coniston Brathay Flagstone. {  
*Graptolithus Ludensis*, and Upper Silurian species.
1. Coniston Limestone and Slate. . . Lower Silurian fossils.

The fossil organic remains of this period are very interesting, as they make us acquainted with some of the early forms of life on the surface of the globe. In the Lower Silurian, Trilobites and some species of Brachiopoda appear to have been abundant, associated with Mollusca, Corals, and Crinoidea; in the Upper beds, Corals become more abundant, as well as various orders of marine Mollusca, Brachiopoda, and Crinoidea, occurring with them, and a few remains of Sauroid fish.

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LIST OF PUBLICATIONS, &c.

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*Geol. Trans.* vol. vi.
- *Trans. Manchester Geol. Soc.* vol. i. p. 194.
- Lyell, C., '*Elements of Geology*,' vol. ii.
- 'On the Silurian Strata,' &c., *Geol. Proc.* vol. iii. p. 463.
- Mc'Coy, F., '*Synopsis of the Silurian Fossils of Ireland*.'







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 Sedgwick, Rev. A., '*On the older Stratified Rocks,*' &c., *Geol. Proc.*  
 vol. ii. p. 675. ; vol. iii. p. 545.  
 ————— '*On the Slate Rocks of Cumberland,*' *Geol. Journ.*  
 vol. ii. p. 106.  
 ————— '*On North Wales,*' *Geol. Proc.* vol. iv. p. 212.  
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 Yates, J., '*On the Border Country of Salop,*' &c., *Geol. Trans.* vol. ii.

## FOSSILS OF THE SILURIAN GROUP.

## AMORPHOZOA.

*Cnemidium tenue*, *Lons.*

## ZOOPHYTA.

- |                                                |                                              |
|------------------------------------------------|----------------------------------------------|
| <i>Acervularia Baltica</i> , <i>Schweig.</i>   | <i>Eschara scalpellum</i> , <i>Lons.</i>     |
| <i>Alveolites fibrosus</i> , <i>Lons.</i>      | <i>Escharina angularis</i> , <i>Lons.</i>    |
| <i>Astrea ananas</i> , <i>Lons.</i>            | <i>Favosites alveolaris</i> , <i>Blainv.</i> |
| <i>Aulopora conglomerata</i> , <i>Goldf.</i>   | <i>fibrosus</i> , <i>Lons.</i>               |
| <i>consimilis</i> , <i>Lons.</i>               | <i>Gothlandicus</i> , <i>Lam.</i>            |
| <i>serpens</i> , <i>Goldf.</i>                 | <i>spongites</i> , <i>Goldf.</i>             |
| <i>tubæformis</i> , <i>Goldf.</i>              | <i>Fenestella antiqua</i> , <i>Lons.</i>     |
| <i>Caryophyllia flexuosa</i> , <i>Lam.</i>     | <i>Milleri</i> , <i>Lons.</i>                |
| <i>Catenipora escharoides</i> , <i>Lam.</i>    | <i>reticulata</i> , <i>Lons.</i>             |
| <i>Cerriopora affinis</i> , <i>Goldf.</i>      | <i>Fungia lenticulata</i> , <i>Lons.</i>     |
| <i>granulosa</i> , <i>Goldf.</i>               | <i>præacuta</i> , <i>Lons.</i>               |
| <i>Cyathophyllum angustum</i> , <i>Lons.</i>   | <i>Glaucanome disticha</i> , <i>Goldf.</i>   |
| <i>dianthus</i> , <i>Goldf.</i>                | <i>Gorgonia assimilis</i> , <i>Lons.</i>     |
| <i>turbinatum</i> , <i>Goldf.</i>              | <i>Hornera crassa</i> , <i>Lons.</i>         |
| <i>Cystiphyllum cylindricum</i> , <i>Lons.</i> | <i>Limaria clathrata</i> , <i>Stein.</i>     |
| <i>Siluriense</i> , <i>Lons.</i>               | <i>fruticosa</i> , <i>Stein.</i>             |
| <i>Diastopora irregularis</i> , <i>Lons.</i>   | <i>Millepora repens</i> , <i>His.</i>        |
| <i>Discopora antiqua</i> , <i>Lam.</i>         | <i>Monticularia conferta</i> , <i>Lons.</i>  |
| <i>favosa</i> , <i>Lons.</i>                   | <i>Petraia bina</i> , <i>Lons.</i>           |
| <i>squamata</i> , <i>Lons.</i>                 | <i>elongata</i> , <i>Lons.</i>               |

|                                       |                                        |
|---------------------------------------|----------------------------------------|
| Petraia pluriradialis, <i>Phil.</i>   | Stromatopora concentrica, <i>Lons.</i> |
| rugosa, <i>Phil.</i>                  | Strombodes plicatus, <i>Lons.</i>      |
| Porites discoidea, <i>Lons.</i>       | Syringopora cæspitosa, <i>Lons.</i>    |
| expatiata, <i>Lons.</i>               | furcata, <i>Goldf.</i>                 |
| inordinata, <i>Lons.</i>              | catenata.                              |
| pyriformis, <i>Lons.</i>              | filiformis, <i>Goldf.</i>              |
| tubulata, <i>Lons.</i>                | Turbinolia fibrosa, <i>Portl.</i>      |
| Ptilodictya lanceolata, <i>Goldf.</i> | mitrata, <i>His.</i>                   |

## ECHINODERMATA.

|                                        |                                           |
|----------------------------------------|-------------------------------------------|
| Actinocrinus arthriticus, <i>Phil.</i> | Dimerocrinus decadactylus, <i>Phil.</i>   |
| moniliformis, <i>Mill.</i>             | icosidaetylus, <i>Phil.</i>               |
| retarius, <i>Phil.</i>                 | Echinosphærites granulatus,               |
| simplex, <i>Phil.</i>                  | <i>Mc' Coy.</i>                           |
| Cyathocrinus capillaris, <i>Phil.</i>  | Rhodocrinus quinquangularis, <i>Mill.</i> |
| rugosus, <i>Mill.</i>                  | Sagenocrinus expansus, <i>Aust.</i>       |
| goniodactylus, <i>Phil.</i>            | Taxocrinus tuberculatus, <i>Phil.</i>     |
| pyriformis, <i>Phil.</i>               | Trochocrinus lævis, <i>Portl.</i>         |

## ANNELIDA.

|                                      |                                       |
|--------------------------------------|---------------------------------------|
| Entobia antiqua, <i>Portl.</i>       | Nereites Cambrensis.                  |
| Lumbricaria antiqua, <i>Portl.</i>   | Sedgwickii.                           |
| Myrianites Macleayii, <i>Murch.</i>  | Serpulites longissimus, <i>Murch.</i> |
| Nemertites Ollivantii, <i>Murch.</i> | Spirorbis Lewisii, <i>Sow.</i>        |

## CRUSTACEA.

|                                    |                               |
|------------------------------------|-------------------------------|
| Acidaspis Brightii, <i>Murch.</i>  | Asaphus Buchii, <i>Brong.</i> |
| bispinosus, <i>Mc' Coy.</i>        | caudatus, <i>Brong.</i>       |
| Agnostus pisiformis, <i>Brong.</i> | Cawdori, <i>Murch.</i>        |
| tuberculatus, <i>Murch.</i>        | Corndensis.                   |
| Amphiou frontilobus, <i>Pand.</i>  | cornigerus, <i>Brong.</i>     |
| pseudo-articulatus, <i>Portl.</i>  | duplicatus, <i>Murch.</i>     |
| Ampyx Austinii, <i>Portl.</i>      | latifrons, <i>Portl.</i>      |
| baccatus, <i>Portl.</i>            | longicaudatus, <i>Murch.</i>  |
| rostratus, <i>Sars.</i>            | marginatus, <i>Portl.</i>     |
| Sarsii, <i>Portl.</i>              | Stokesii, <i>Murch.</i>       |
| Arges plano-spinosus.              | subcaudatus.                  |









|                                      |                                          |
|--------------------------------------|------------------------------------------|
| Asaphus Tyrannus.                    | Isotelus ovatus.                         |
| Vulcani.                             | rectifrons.                              |
| Beyrichia Klodeni, <i>Mc' Coy.</i>   | Nuttainia Hibernica, <i>Portl.</i>       |
| Brontes signatus, <i>Phil.</i>       | Ogygia Murchisoniæ, <i>Murch.</i>        |
| Bumastes Barriensis, <i>Murch.</i>   | Odontopleura bimucronatus, <i>Murch.</i> |
| Calymene Blumenbachii, <i>Brong.</i> | quadrimucronatus,                        |
| brevicapitatus, <i>Portl.</i>        | <i>Murch.</i>                            |
| Downingiæ, <i>Murch.</i>             | Otarion obtusum, <i>Mc' Coy.</i>         |
| multisegmatus, <i>Portl.</i>         | Phacops Dalmanni, <i>Portl.</i>          |
| tuberculatus, <i>Murch.</i>          | Jamesii.                                 |
| Ceraurus globiceps, <i>Portl.</i>    | Murchisoni.                              |
| Encrinurus Stokesii, <i>Mc' Coy.</i> | macrophthalma, <i>Brong.</i>             |
| Harpes Doranni.                      | Remopleurides Colbii, <i>Portl.</i>      |
| Flanagani.                           | dorso-spinifer.                          |
| Homalonotus delphinocephalus,        | lateri-spinifer.                         |
| <i>Murch.</i>                        | lougi-capitatus.                         |
| Ludensis, <i>Murch.</i>              | longi-costatus.                          |
| Illænus centrotus, <i>Dalm.</i>      | Sphærexochus calvus, <i>Mc' Coy.</i>     |
| crassicauda, <i>Dalm.</i>            | Trinuclens Caractaci, <i>Murch.</i>      |
| quadrato-caudatus, <i>Portl.</i>     | fimbriatus.                              |
| Isotelus arcuatus, <i>Portl.</i>     | Lloydii.                                 |
| gigas.                               | nudus.                                   |
| intermedius.                         | radiatus.                                |
| læviceps.                            |                                          |

## CONCHIFERA DIMYARIA.

|                                |                                     |
|--------------------------------|-------------------------------------|
| Arca cylindrica, <i>Portl.</i> | Cucullæa antiqua, <i>Sow.</i>       |
| dissimilis, <i>Portl.</i>      | Cawdori, <i>Sow.</i>                |
| Eastnori, <i>Sow.</i>          | ovata, <i>Sow.</i>                  |
| obliqua, <i>Portl.</i>         | Cypricardia amygdalina, <i>Sow.</i> |
| quadratus, <i>Mc' Coy.</i>     | cymbæformis, <i>Sow.</i>            |
| regularis, <i>Portl.</i>       | impressa, <i>Sow.</i>               |
| scitula, <i>Mc' Coy.</i>       | retusa, <i>Sow.</i>                 |
| subtruncata, <i>Portl.</i>     | simplex, <i>Portl.</i>              |
| transversa, <i>Portl.</i>      | sinuata, <i>Mc' Coy.</i>            |
| Cardiola fibrosa, <i>Sow.</i>  | undata, <i>Sow.</i>                 |
| interrupta, <i>Sow.</i>        | Lucina bulla, <i>Mc' Coy.</i>       |
| Cardium pectunculides,         | Modiola antiqua, <i>Sow.</i>        |
| <i>L' Ar. and D' Vern.</i>     | Brycei, <i>Portl.</i>               |

- |                                        |                                                |
|----------------------------------------|------------------------------------------------|
| <i>Modiola expansa</i> , <i>Portl.</i> | <i>Nucula subcylindrica</i> , <i>Mc' Coy.</i>  |
| <i>Nerei</i> , <i>Munst.</i>           | <i>Pectunculus ambiguus</i> , <i>Portl.</i>    |
| <i>securiformis</i> , <i>Portl.</i>    | <i>Apjohni</i> , <i>Portl.</i>                 |
| <i>Mytilus cinctus</i> , <i>Portl.</i> | <i>semitruncatus</i> , <i>Portl.</i>           |
| <i>semirugatus</i> , <i>Portl.</i>     | <i>Psammobia rigida</i> , <i>Sow.</i>          |
| <i>Nucula lævis</i> , <i>Sow.</i>      | <i>Plenrorhynchus pristis</i> , <i>Salter.</i> |
| <i>cingulata</i> , <i>His.</i>         | <i>Pullastra complanata</i> , <i>Sow.</i>      |
| <i>ovalis</i> , <i>Sow.</i>            | <i>speciosa</i> , <i>Mc' Coy.</i>              |
| <i>grandæva</i> , <i>Goldf.</i>        | <i>lævis</i> , <i>Sow.</i>                     |
| <i>radiata</i> , <i>Portl.</i>         | <i>Sanguinolaria compressa</i> , <i>Goldf.</i> |
| <i>Protei</i> , <i>Munst.</i>          | <i>obovata</i> , <i>Munst.</i>                 |
| <i>subacuta</i> , <i>Mc' Coy.</i>      |                                                |

## MONOMYARIA.

- |                                        |                                             |
|----------------------------------------|---------------------------------------------|
| <i>Avicula antiqua</i> , <i>Goldf.</i> | <i>Inoceramus contortus</i> , <i>Portl.</i> |
| <i>bullata</i> , <i>Mc' Coy.</i>       | <i>priscus</i> , <i>Portl.</i>              |
| <i>lineata</i> , <i>Sow.</i>           | <i>transversus</i> , <i>Portl.</i>          |
| <i>Neptuni</i> , <i>Goldf.</i>         | <i>trigonus</i> , <i>Portl.</i>             |
| <i>obliqua</i> , <i>Sow.</i>           | <i>Posidonomya venusta</i> , <i>Munst.</i>  |
| <i>orbicularis</i> , <i>Sow.</i>       | <i>Pterinea lamellosa</i> , <i>Goldf.</i>   |
| <i>planulata</i> , <i>Conrad. sp.</i>  | <i>lineata</i> , <i>Goldf.</i>              |
| <i>rectangularis</i> , <i>Sow.</i>     | <i>ventricosa</i> , <i>Goldf.</i>           |
| <i>reticularis</i> , <i>His.</i>       | <i>fimbriata</i> , <i>Mc' Coy.</i>          |
| <i>retroflexa</i> , <i>Sow.</i>        | <i>orbicularis</i> , <i>Mc' Coy.</i>        |

## BRACHIOPODA.

- |                                       |                                          |
|---------------------------------------|------------------------------------------|
| <i>Atrypa compressa</i> , <i>Sow.</i> | <i>Atrypa tenuistriata</i> , <i>Sow.</i> |
| <i>crassa</i> , <i>Sow.</i>           | <i>transversa</i> , <i>Portl.</i>        |
| <i>depressa</i> , <i>Sow.</i>         | <i>undata</i> , <i>Sow.</i>              |
| <i>didyma</i> , <i>His.</i>           | <i>Leptaena depressa</i> , <i>Dalm.</i>  |
| <i>globosa</i> , <i>Sow.</i>          | ( <i>rugosa</i> , <i>Dalm.</i> )         |
| <i>hemisphærica</i> , <i>Sow.</i>     | <i>euglypha</i> , <i>Dalm.</i>           |
| <i>lens</i> , <i>Sow.</i>             | ( <i>complanata</i> , <i>Sow.</i> )      |
| <i>linguifera</i> , <i>Sow.</i>       | <i>imbrex</i> , <i>Pander.</i>           |
| <i>obovata</i> , <i>Sow.</i>          | <i>lævigata</i> , <i>Sow.</i>            |
| <i>orbicularis</i> , <i>Sow.</i>      | <i>lævissima</i> , <i>Mc' Coy.</i>       |
| <i>plana</i> , <i>Sow.</i>            | <i>minima</i> , <i>Sow.</i>              |
| <i>rotunda</i> , <i>Sow.</i>          | <i>plicotis</i> , <i>Mc' Coy.</i>        |







- Leptæna sarcinulata*, *Hupsch.*  
 (*chonetes*, Fischer.)  
*sericea*, *Sow.*  
*semiovalis*, *Mc' Coy.*  
*tenuistriata*, *Sow.*  
*transversalis*, *Dalm.*  
 (*duplicata*, *Sow.*)
- Lingula attenuata*, *Sow.*  
*brevis*, *Portl.*  
*cornea*, *Sow.*  
*lata*, *Sow.*  
*Lewisii*, *Sow.*  
*minima*, *Sow.*  
*striata*, *Sow.*
- Orbicula lævigata*, *Munst.*  
*oblongata*, *Portl.*  
*perrugata*, *Mc' Coy.*  
*rugata*, *Sow.*  
*striata*, *Sow.*  
*subrotunda*, *Sow.*
- Orthis Actoniæ*, *Sow.*  
*alata*, *Sow.*  
 ? *applanata*, *Salter.*  
*alternata*, *Sow.*  
 (*compressa*, *Sow.*)  
*anomala*, *Schlot.*  
*antiquata*, *Sow.*  
*basalis*, *His.*  
*bilobata*, *Sow.*  
*callactis*, *Dalm.*  
*calligramma*, *Dalm.*  
*cancellata*, *Portl.*  
*concentrica*, *Portl.*  
*costata*, *Sow.*  
*elegantula*, *Dalm.*  
*expansa*, *Sow.*  
*fallax*, *Salter.*  
*filosa*, *Sow.*  
*fiabellulum*, *Sow.*
- Orthis grandis*, *Sow.*  
*hybrida*, *Sow.*  
*imbrex*, *Buch.*  
*intercostata*, *Portl.*  
*lata*, *Sow.*  
*lunata*, *Sow.*  
*orbicularis*, *Sow.*  
*parva*, *Pander.*  
*pecten*, *Dalm.*  
*protensa*, *Sow.*  
*radians*, *Sond.*  
*reversa*, *Salter.*  
*rustica*, *Sow.*  
*semicircularis*, *Sow.*  
*testudinaria*, *Dalm.*  
*triangularis*, *Sow.*  
*vespertilio*, *Sow.*  
*virgata*, *Sow.*  
*undulata*, *Mc' Coy.*
- Pentamerus galeatus*, *Dalm. sp.*  
*Knightsii*, *Sow.*  
*lævis*, *Sow.*  
*oblongus*, *Sow.*
- Spirifer biloba*, *Linn. sp.*  
*crispus*, *Sow.*  
*decemplicatus*, *Hall.*  
 (*octoplicatus*, *Sow. Sil.*  
 Syst. not *Mc' Coy.*)  
*interlineatus*, *Sow.*  
*lævis*, *Sow.*  
*liratus*, *Sow.*  
*ovatus*, *Mc' Coy.*  
*pisum*, *Sow.*  
*plicatus*, *Sow.*  
*ptychodes*, *Dalm.*  
*radiatus*, *Sow.*  
*striatulus*, *Schlot. sp.*  
*trapezoidalis*, *Dalm.*
- Terebratula bidentata*, *His.*

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><i>Terebratula borealis</i>, <i>Schlot.</i><br/> <i>brevirostrum</i>, <i>Sow.</i><br/> <i>canalis</i>, <i>Sow.</i><br/> <i>crebricosta</i>, <i>Sow.</i><br/> <i>crispata</i>, <i>Sow.</i><br/> <i>cuneata</i>, <i>Dalm.</i><br/> <i>decemplicata</i>, <i>Sow.</i><br/> <i>deflexa</i>, <i>Sow.</i><br/> <i>furcata</i>, <i>Sow.</i><br/> <i>interplicata</i>, <i>Sow.</i><br/> <i>læviuscula</i>, <i>Sow.</i><br/> <i>marginalis</i>, <i>Dalm.</i></p> | <p><i>Terebratula navicula</i>, <i>Sow.</i><br/> <i>nucula</i>, <i>Sow.</i><br/> <i>pentagona</i>, <i>Sow.</i><br/> <i>pulchra</i>, <i>Sow.</i><br/> <i>pusilla</i>, <i>Sow.</i><br/> <i>reticularis</i>, <i>Linn. sp.</i><br/> <i>sphærica</i>, <i>Sow.</i><br/> <i>Stricklandi</i>, <i>Sow.</i><br/> <i>tenuistriata</i>, <i>Sow.</i><br/> <i>tripartita</i>, <i>Sow.</i><br/> <i>unguis</i>, <i>Sow.</i><br/> <i>Wilsoni</i>, <i>Sow.</i></p> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## GASTEROPODA.

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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| <p><i>Acroculia Haliotis</i>, <i>Sow. sp.</i><br/> <i>Ecculiomphalus Bucklandi</i>, <i>Portl.</i><br/> <i>lævis</i>, <i>Sow. sp.</i><br/> <i>minor</i>, <i>Portl.</i><br/> <i>Euomphalus alatus</i>, <i>His.</i><br/> <i>carinatus</i>, <i>Sow.</i><br/> <i>Corndensis</i>, <i>Sow.</i><br/> <i>discors</i>, <i>Sow.</i><br/> <i>funatus</i>, <i>Sow.</i><br/> <i>lautus</i>, <i>Mc' Coy.</i><br/> <i>perturbatus</i>, <i>Sow.</i><br/> <i>rugosus</i>, <i>Sow.</i><br/> <i>sculptus</i>, <i>Sow.</i><br/> <i>tenuistriatus</i>, <i>Sow.</i><br/> <i>tricinctus</i>, <i>Mc' Coy.</i><br/> <i>Helminthochiton Griffithii</i>, <i>Salter.</i><br/> <i>Littorina striatella</i>, <i>Sow.</i><br/> <i>Loxonema sinuosa</i>, <i>Sow. sp.</i><br/> <i>Macrocheilus fusiformis</i>, <i>Sow. sp.</i><br/> <i>Murchisonia articulata</i>, <i>Sow. sp.</i><br/> <i>biciueta</i>, <i>Mc' Coy.</i><br/> <i>corallii</i>, <i>Sow. sp.</i><br/> <i>Lloydii</i>, <i>Sow. sp.</i><br/> <i>pulchra</i>, <i>Mc' Coy.</i></p> | <p><i>Natica parva</i>, <i>Sow.</i><br/> <i>Nerita? glaucinoides</i>, <i>Sow.</i><br/> <i>spirata</i>, <i>Sow.</i><br/> <i>Patella implicata</i>, <i>Sow.</i><br/> <i>Pleurotomaria angulata</i>, <i>Sow.</i><br/> <i>inflata</i>, <i>Mc' Coy.</i><br/> <i>subrotunda</i>, <i>Portl.</i><br/> <i>latifasciata</i>, <i>Mc' Coy.</i><br/> <i>turrita</i>, <i>Portl.</i><br/> <i>undata</i>, <i>Sow.</i><br/> <i>Schizostoma latifasciatum</i>, <i>Portl.</i><br/> <i>Trochus helcites</i>, <i>Sow.</i><br/> <i>lenticularis</i>, <i>Sow.</i><br/> <i>multitorquatus</i>, <i>Mc' Coy.</i><br/> <i>Turbo carinatus</i>, <i>Sow.</i><br/> <i>cirrhosus</i>, <i>Sow.</i><br/> <i>concinus</i>, <i>Mc' Coy.</i><br/> <i>Corallii</i>, <i>Sow.</i><br/> <i>Pryceæ</i>, <i>Sow.</i><br/> <i>Williamsi</i>, <i>Sow.</i><br/> <i>tritorquatus</i>, <i>Mc' Coy.</i><br/> <i>trochleatus</i>, <i>Mc' Coy.</i><br/> <i>Turritella cancellata</i>, <i>Sow.</i><br/> <i>conica</i>, <i>Sow.</i></p> |
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- |                                          |                                           |
|------------------------------------------|-------------------------------------------|
| <i>Turritella gregaria</i> , <i>Sow.</i> | <i>Turritella plana</i> , <i>Mc' Coy.</i> |
| <i>obsoleta</i> , <i>Sow.</i>            |                                           |

## PTEROPODA.

- |                                            |                                         |
|--------------------------------------------|-----------------------------------------|
| <i>Conularia elongata</i> , <i>Portl.</i>  | <i>Creseis primæva</i> , <i>Forbes.</i> |
| <i>Sowerbii</i> , <i>Def.</i>              | <i>Sedgwickii</i> , <i>Forbes.</i>      |
| <i>Creseis gracillima</i> , <i>Sharpe.</i> | <i>ventricosa</i> , <i>Sharpe.</i>      |
| <i>obtusa</i> , <i>Sharpe.</i>             | <i>Theca Forbesii</i> , <i>Sharpe.</i>  |

## HETEROPODA.

- |                                         |                                            |
|-----------------------------------------|--------------------------------------------|
| <i>Bellerophon acutus</i> , <i>Sow.</i> | <i>Bellerophon elongatus</i> , <i>Sow.</i> |
| <i>alatus</i> , <i>Portl.</i>           | <i>gibbus</i> , <i>Portl.</i>              |
| <i>bilobatus</i> , <i>Sow.</i>          | <i>globatus</i> , <i>Sow.</i>              |
| <i>carinatus</i> , <i>Sow.</i>          | <i>Murchisoni</i> , <i>D'Orb.</i>          |
| <i>dilatus</i> , <i>Sow.</i>            | <i>trilobatus</i> , <i>Sow.</i>            |
| ( <i>Aymestriensis</i> , <i>Sow.</i> )  | <i>Wenlockensis</i> , <i>Sow.</i>          |

## CEPHALOPODA.

- |                                            |                                                 |
|--------------------------------------------|-------------------------------------------------|
| <i>Gomphoceras pyriforme</i> , <i>Sow.</i> | <i>Orthoceras Brongniartii</i> , <i>Troost.</i> |
| <i>subfusiforme</i> , <i>Munst.</i>        | <i>bullatum</i> , <i>Sow.</i>                   |
| <i>subpyriforme</i> , <i>Munst.</i>        | <i>calamiteum</i> , <i>Munst.</i>               |
| <i>Lituites articulatus</i> , <i>Sow.</i>  | <i>canaliculatum</i> , <i>Sow.</i>              |
| <i>Biddulphii</i> , <i>Sow.</i>            | <i>centrale</i> , <i>His.</i>                   |
| <i>cornu-arietis</i> , <i>Sow.</i>         | <i>circularre</i> , <i>Sow.</i>                 |
| <i>giganteus</i> , <i>Sow.</i>             | <i>coralliformis</i> , <i>Mc' Coy.</i>          |
| <i>Ibex</i> , <i>Sow.</i>                  | <i>conicum</i> , <i>His.</i>                    |
| <i>tortuosus</i> , <i>Sow.</i>             | <i>dimidiatum</i> , <i>Sow.</i>                 |
| <i>Nantilus undosus</i> , <i>Sow.</i>      | <i>distans</i> , <i>Sow.</i>                    |
| <i>Orthoceras acuarium</i> , <i>Munst.</i> | <i>excentricum</i> , <i>Sow.</i>                |
| <i>annulatum</i> , <i>Sow.</i>             | <i>filosum</i> , <i>Sow.</i>                    |
| <i>approximatum</i> , <i>Sow.</i>          | <i>fimbriatum</i> , <i>Sow.</i>                 |
| <i>articulatum</i> , <i>Sow.</i>           | <i>Ibex</i> , <i>Sow.</i>                       |
| <i>attenuatum</i> , <i>Sow.</i>            | <i>imbricatum</i> , <i>Wahl.</i>                |
| <i>bisiphonatum</i> , <i>Sow.</i>          | <i>inæquiseptum</i> , <i>Sow.</i>               |
| <i>breviconicum</i> , <i>Portl.</i>        | ( <i>gregarium</i> , <i>Sow.</i> )              |
| <i>Brightii</i> , <i>Sow.</i>              | <i>Ludense</i> , <i>Sow.</i>                    |

|                                     |                                    |
|-------------------------------------|------------------------------------|
| Orthoceras Mocktreense, <i>Sow.</i> | Orthoceras tracheale, <i>Sow.</i>  |
| nummularius, <i>Sow.</i>            | virgatum, <i>Sow.</i>              |
| regulare, <i>Schlot.</i>            | Phraymoceras arcuatum, <i>Sow.</i> |
| semipartitum, <i>Sow.</i>           | compressum, <i>Sow.</i>            |
| subgregarium, <i>Mc Coy.</i>        | nautileum, <i>Sow.</i>             |
| striato-punctatum,<br><i>Munst.</i> | ventricosum, <i>Sow.</i>           |

## PISCES.

*Placoides.*

|                                    |                                      |
|------------------------------------|--------------------------------------|
| Onchus Murchisoni, <i>Ag.</i>      | Plectrodus mirabilis, <i>Ag.</i>     |
| tenuistriatis, <i>Ag.</i>          | pleiopristus, <i>Ag.</i>             |
| Thelodus parvidens, <i>Ag.</i>     | Sphagodus pristodontus, <i>Ag.</i>   |
| Sclerodus pustuliferus, <i>Ag.</i> | Pterygotus problematicus, <i>Ag.</i> |

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