Illustrations of the fossil conchology of Great Britain and Ireland, with the description. And localities of all the species / by Captain Thomas Brown.

Contributors

Brown, Thomas, 1785-1862.

Publication/Creation

London : Smith, Elder, 1849.

Persistent URL

https://wellcomecollection.org/works/g43c84ef

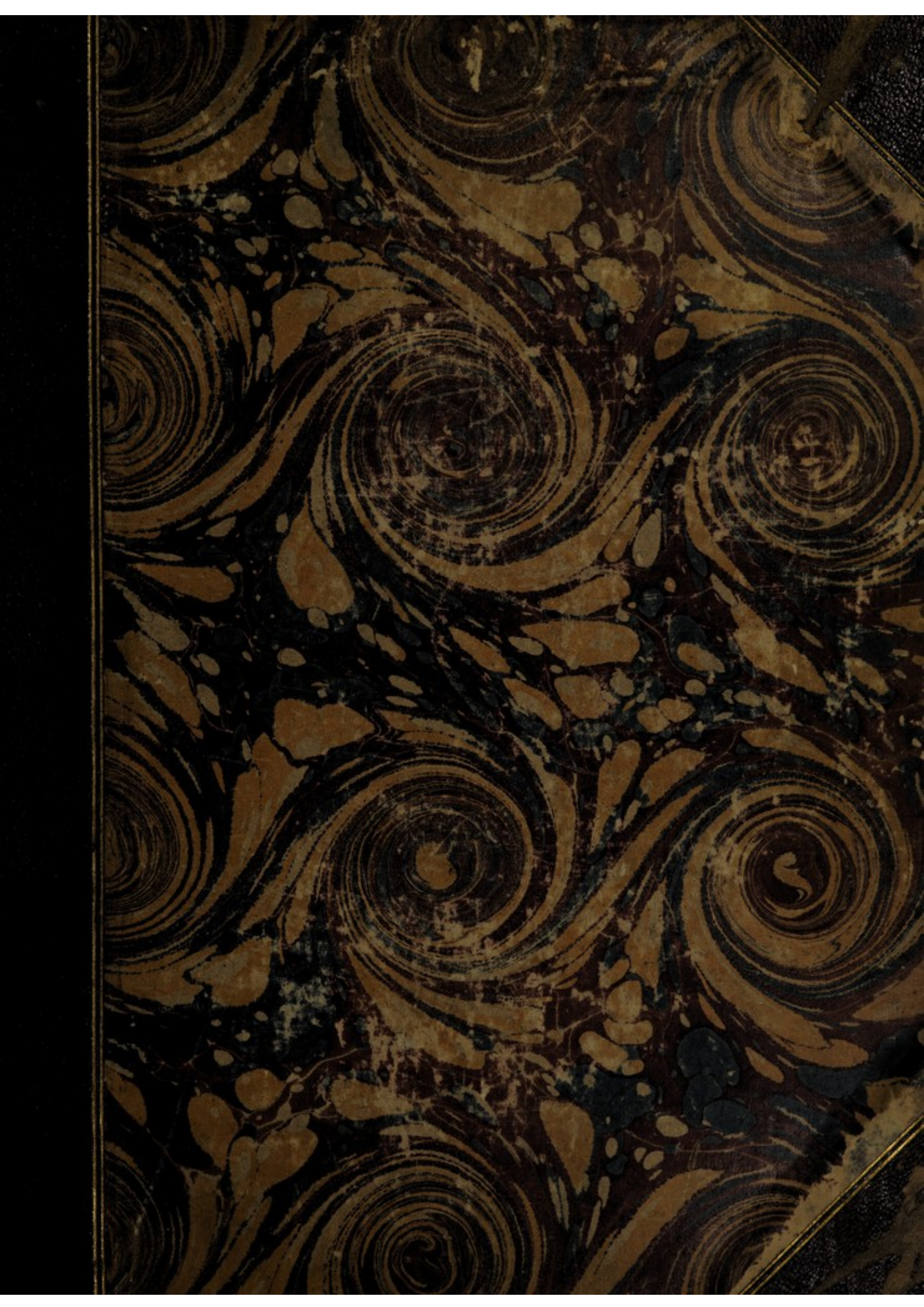
License and attribution

This work has been identified as being free of known restrictions under copyright law, including all related and neighbouring rights and is being made available under the Creative Commons, Public Domain Mark.

You can copy, modify, distribute and perform the work, even for commercial purposes, without asking permission.

wellcome collection

Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
https://wellcomecollection.org



15673/D

ILLUSTRATIONS

OF THE

FOSSIL CONCHOLOGY

OF

GREAT BRITAIN AND IRELAND,

WITH DESCRIPTIONS AND LOCALITIES OF ALL THE SPECIES.

BY CAPTAIN THOMAS BROWN, M.P.S.

MEMBER AND FORMERLY PRESIDENT OF THE ROYAL PHYSICAL SOCIETY; MEMBER OF THE WERNERIAN NATURAL HISTORY SOCIETY; CORRESPONDING MEMBER OF THE BRITISH ARCHÆOLOGICAL ASSOCIATION; LOCAL SECRETARY OF THE SYRIO-EGYPTIAN SOCIETY; HONORARY SECRETARY OF THE MANCHESTER GEOLOGICAL SOCIETY; MEMBER OF THE MANCHESTER NATURAL HISTORY SOCIETY, AND CURATOR OF ITS MUSEUM.

LONDON:
SMITH, ELDER, AND CO.
AND MACLACHLAN AND STEWART, EDINBURGH.
MDCCCXLIX.

WELLCOME
HISTORICAL
MEDICAL
LIBRARY

To

CHARLOTTE-ANNE,

Duchess of Buccleuch and Queensberry,

THE FOLLOWING WORK

IS

MOST RESPECTFULLY INSCRIBED

BY

HER GRACE'S MOST OBEDIENT
HUMBLE SERVANT,

The Author.

PREFACE.

THERE is no branch of Palæontology of so much importance to the Geologist, as the study of Fossil Shells. In this opinion the Author is supported by three of the greatest living authorities. Dr. Buckland says—"Concurrent with the rapid extension of our knowledge of the comparative anatomy of extinct families of the ancient inhabitants of the earth, has been the attention paid to Fossil Conchology; a subject of vast importance in investigating the records of the changes that have occurred upon the surface of the globe." Sir Charles Lyell remarks that "shells are by far the most important class of organic beings which have left their spoils in the sub-aqueous deposits, and they have been truly said to be the Models which Nature has chiefly selected to record the history of the former changes of the globe. There is scarcely any great series of strata that does not contain some marine or fresh water shells." And again, Buckland justly observes, in descanting on the indispensable utility of the study of Fossils to a thorough knowledge of Geology, that "to attempt an investigation of the structure and revolutions of the earth, without applying minute attention to the evidence afforded by organic remains, would be no less absurd than to undertake to write the history of any ancient people, without reference to the documents afforded by their medals and inscriptions, their monuments, and the ruins of their cities and their temples. The study of Zoology and Botany has therefore become as indispensable to the progress of Geology, as a knowledge of Mineralogy." And as Mantell truly observes, "the shells of Mollusca, from their durability, often escape obliteration under circumstances in which all traces of the higher orders of animals are lost, and they become, therefore, of the utmost importance in the speculations of the geologist. In loose sandy strata, they often occur in a high degree of perfection; in mud and clay, in a fragile state; in some instances, they are silicified; and many limestones are wholly composed of shells, cemented together by calcareous spar."

When the Author undertook the publication of the following work, it was with a view of supplying to Geologists a long-felt desideratum: namely, a work arranged either in systematic or in stratigraphic order, embracing all the species known up to that time, and which might be discovered during the progress of the publication. Mr. Sowerby's work, destitute of both these advantages, had been discontinued for upwards of *nine* years, and there was no prospect of its being resumed.

It was not without considerable hesitation that the systematic arrangement was chosen in preference to the stratigraphical. An attentive consideration led to the adoption of the former, as its advantage appeared two-fold. First, it seemed evident that it was more easy to identify individuals by comparison with the plates, where the species were placed in juxta-position, than when scattered through the various strata of which they were members. Secondly, as many of the species prevailed in different formations, had the stratigraphical distribution been adopted, a repetition of these would have been requisite, which would have considerably extended the number of the plates, and consequently increased the expense of the work, both of which the Author was most studious to avoid; his object being to produce a work, executed in a high style of art, at the lowest possible price, so that it might become more extensively useful.

It will be seen by comparing the first *four* plates, (which were the specimen of the work,) with most of the others which follow, that a very great additional quantity of work has been given, as well as improvement in the style of execution, without increase in the charge for the publication.

The classification followed is that of the celebrated Malacologist Lamarck, according to the descending scale, with the addition of such new genera, and slight deviations from his system, as time, and a more minute knowledge of families and species, has rendered necessary.

The Illustrations of "Fossil Conchology," with its sister work, "Illustrations of the Recent Conchology of Great Britain and Ireland," will be found to embrace pretty full representations, descriptions, and localities, of all the known species, both fossil and recent, which have hitherto been met with in the strata, seas, land, and fresh waters, of the British Islands. These have been engraved by artists of established reputation; the names of Lizars, Aikman, Miller, Turvey, &c., being well-known to the public as men of celebrity. The whole of the engravings have been executed from drawings made by the Author expressly for the work, and amount to 116 plates, comprehending 3,521 figures.

SYSTEMATIC INDEX.

CLASS FIRST.

UNIVALVE TESTACEOUS MOLLUSCA.

ORDER I.—CEPHALOPODA POLYTHALAMA.

Family I.—AMMONACEA.

Sub-Division I.—MONOTHALAMA.

PAGE.

Genus 1. Bellerophon, Montfort 37
2. Baculites, Lamarck ... 1
3. Hamites, Parkinson... 1
4. Turrilites, Lamarck... 3
5. Crioceras, Lévellé..... 250
6. Goniatites, Von Buch 28
7. Scaphites, Parkinson 31
8. Ammonites, Lamarck 5

Family II.—NAUTILACEA.

Genus 9. Clyminia, Munster ... 250
10. Nautilus, Linnæus ... 32
11. Nummulites, Lamarck 37

Family III.—ORTHOCERATA.

Genus 12. Lituites, Montfort ... 250
13. Cyrtoceras, Goldfuss 250
14. Conularia, Miller .. 43
15. Actinoceras, Bronn 250
16. Orthoceras, Lamarck 39
17. Gomphoceras, Sowerby 250
18. Phragmoceras, Broderip 250
19. Belemnites, Lamarck 41
20. Amplexus, Sowerby 43

ORDER II.—TRACHELIPODA.

Section I.—ZOOPHAGOUS TRACHELIPODA.

Family I.—INVOLUTE.

Genus 1. Conus, Linnæus 44

PAGE.

Genus 2. Oliva, Bruguière 46
3. Pseudoliva, Swainson 251
4. Ancillaria, Lamarck... 45
5. Terebellum, Lamarck 45
6. Cypræa, Linnæus..... 45
7. Ovula, Bruguière..... 46

Family II.—COLUMELLARIA.

8. Volvaria, Lamarck ... 46
9. Voluta, Linnæus 46
10. Mitra, Lamarck 48

Family III.—PURPURIFERA.

Genus 11. Terebra, Lamarck ... 40
12. Buccinum, Linnæus 48
13. Nassa, Lamarck 252
14. Dolium, Lamarck ... 51
15. Purpura, Bruguière 51
16. Caliendrum, Brown 52
17. Cassis, Bruguière ... 53
18. Cassidaria, Lamarck 53

Family IV.—ALATA.

Genus 19. Rostellaria, Lamarck 53

Family V.—CANALIFERA.

Genus 20. Triton, Lamarck..... 56
21. Murex, Linnæus..... 56
22. Typhis, Montfort ... 58
23. Ranella, Lamarck ... 58
24. Pyrula, Lamarck ... 59
25. Fusus, Lamarck..... 59
26. Cancellaria, Lamarck 250
27. Pleurotoma, Lamarck 64
28. Cerithium, Bruguière 66
29. Nerinæa, Defrance 67

PAGE.

Genus 30. Potamis, Brongniart 67

Section II.—PHYTIPHAGA.

Family I.—TURBINACEA.

Genus 31. Turritella, Lamarck 69
32. Phasianella, Lamarck 71
33. Turbo, Linnæus 72
34. Littorina, Ferussac... 74
35. Pyramis, Brown 254
36. Trochus, Linnæus ... 74
37. Solarium, Lamarck... 77

Family II.—SCALARIDES.

Genus 38. Rissoa, Freminville... 78
39. Cirrus, Sowerby..... 80
30. Euomphalus, Sowerby 81
41. Scalaria, Lamarck ... 82
42. Vermetus, Adanson . 84

Family III.—PLICACEA.

Genus 43. Tornatella, Lamarck. 84

Family IV.—MACROSTOMA.

Genus 44. Pleurotomaria, Defrance..... 85
45. Sigaretus, Lamarck 88
46. Velutina, Fleming ... 255

Family V.—NERITACEA.

Genus 45. Globulus, Brown ... 256
46. Natica, Adanson ... 88
47. Nerita, Linnæus..... 91
48. Pileolus, Cookson ... 92
49. Neritina, Lamarck... 92

Family VI.—PERISTOMIDA.

Genus 50. Ampullaria, Lamarck 93

PAGE.

Genus 51. Paludina, Lamarck... 93

Family VII.—MELANIDES.

Genus 52. Melanopsis, Ferussac 94
53. Melania, Lamarck... 95

Family VIII.—LYMNÆCEA.

Genus 54. Lymnæa, Lamarck... 97
55. Planorbis, Müller ... 97
56. Crassidorsa, Brown... 98

Family IX.—COLIMACEA.

Genus 57. Auricula, Lamarck... 98
58. Bulimus, Bruguière... 99
59. Cochlicarina, Brown. 99
60. Helix, Linnæus 100

ORDER III.—GASTEROPODA.

Grand Division I.—PNEUMOBRANCHIÆ.

Family I.—BULLACEA.

Genus 1. Bulla, Linnæus..... 100
2. Utriculus, Brown..... 101

Family II.—CALYPTRACÆ.

Genus 3. Ancylus, Müller 101
4. Calyptræa, Lamarck... 102
5. Pileopsis, Lamarck... 102
6. Fissurella, Bruguière.. 103
7. Sipho, Brown 103
8. Emarginula, Lamarck 103

Family III.—PHYLLIDIACEA.

Genus 9. Patella, Linnæus 104
10. Metoptoma, Phillips. 105

CLASS SECOND.

CONCHIFERA, OR BIVALVES.

GRAND DIVISION I.

ORDER I.—MONOMYARIA.

Family I.—BRACHIOPODA.

Genus 1. Lingula, Bruguière ... 106
2. Crania, Retzius 107
3. Sperifer, Sowerby ... 107
4. Gypidium, Sowerby .. 115
5. Magus, Sowerby 116
6. Trigonosemus, König. 116
7. Strigonocephalus..... 116
8. Orthis, Dalman 117
9. Leptæna, Dalman ... 121
10. Atrypa, König 127
11. Composita, Brown... 131
12. Terebratula, Bruguière 131
13. Orbicula, Cuvier..... 142

Tribe II.—RUDISTA.

Genus 14. Hipponyx, Defrance 143
15. Calceola, Lamarck... 144

Sub-Division II.

Family I.—OSTRACEA.

Genus 16. Anomia, Linnæus ... 144
17. Ostrea, Linnæus..... 145
18. Gryphæa, Lamarck 148

Family II.—Pectenides.

Page.

Genus 19. Plicatula, Lamarck 150
20. Plagiostoma, Lluyd 150
21. Dianchora, Sowerby 152
22. Hinnus, Defrance ... 153
23. Pecten, Bruguière ... 153
24. Lima, Bruguière ... 158
Sub-Genus. Limatula, S. Wood 159

Grand Division III.

Tribe I.—Mallacea.

Genus 25. Avicula, Lamarck ... 159
25. Pterinea, Goldfuss... 164
26. Monotis, Bronn 164
27. Gervillea, Defrance.. 164
28. Crenatula, Lamarck. 165
29. Catillus, Brongniarte 165
30. Posidonia, Bronn ... 168
31. Perna, Bruguière ... 168

Tribe II.—Mytilacea.

32. Pinna, Linnæus..... 169
33. Dreissina, Van Beneden..... 170
34. Mytilus, Linnæus. ... 170
35. Modiola, Lamarck ... 171
36. Lithodomus, Cuvier.. 257

Order II.—DIMYARIA.

Grand Division I.

Tribe 1.—Chamacea.

1. Chama, Braguière ... 176
2 Caprina, D'Orbigny ... 176

Grand Division II.—Lamellipedes.

Tribe 1.—Nayades.

3. Anodon, Bruguière... 176

Page.

Genus 4. Unio, Bruguière 176
5. Alasmodon, Say 181

Tribe II.—Trigonacea.

6. Trigonia, Bruguière ... 181
7. Nucula, Lamarck..... 184
8. Pleurodon, S. Wood... 188
9. Pectunculus, Lamarck 188
10. Macrodon, Lycett ... 190
11. Arca, Linnæus 190
12. Cucullæa, Lamarck .. 192
13. Axinus, Sowerby ... 104

Family IV.—Cardiacea.

14. Pachymya, Sowerby. 195
15. Hippopodium, Conybeare 195
16. Megalodon, Sowerby 196
17. Isocardia, Lamarck .. 196
18. Cardiomorpha, Koninck 197
19. Opis, Defrance 197
20. Sphæra, Sowerby ... 197
21. Edmondia, Koninck. 198
22. Cypricardia, Lamarck 198
23. Cardium, Linnæus... 199
24. Pleurorhynchus, Phillips..... 201
25. Cardiola, Broderip... 202
26. Myoconcha, Sowerby 202

Family V.—Conchacea.

Sub-Division I.—Marine.

27. Venericardia, Lamarck 202
28. Pullastra, Sowerby... 203
29. Venus, Linnæus..... 204
30. Cytherea, Lamarck.. 205

Page.

Genus 31. Artemis, Poli..... 207
32. Cyprina, Lamarck ... 207

Sub-Division II.—Fluviatile.

33. Cyrena, Lamarck ... 208
34. Cyclas, Bruguière ... 209
35. Piscidium, Pfeiffer... 109

Grand Division III.—Tenuipedes.

Tribe I.—Nymphacea.

Sub-Division I.

36. Astarte, Sowerby ... 210
37. Cardinia, Agassiz ... 218

Sub-Division, II.

38. Donax, Linnæus..... 214
39. Trigonellites, Parkinson 214
40. Lucina, Bruguière ... 215
41. Corbis, Cuvier 216
42. Tellina, Linnæus ... 216
43. Arcopagia, Leach ... 218

Sub-Division III.—Solenaires.

Genus 44. Psammobia, Lamarck 218
45. Sanguinolaria, ditto. 219

Tribe II.—Lithophagi.

Genus 46. Petricola, Lamarck... 220
47. Sphenia, Turton..... 222
48. Saxicava, Lamarck... 221
49. Agina, Turton 221

Tribe III.—Corbulacea.

Genus 50. Pandora, Bruguière.. 221
51. Corbula, Bruguière ... 221
52. Næra, Gray 223

Page.

Genus 53. Potomomya, J. Sowerby 223

Family IV.—Mactracea.

Genus 54. Amphidesma, Lamarck 225
55. Crassatella, Lamarck 225
56. Tellimya, Brown ... 225
57. Montacuta, Turton... 225
58. Thetis, Sowerby..... 225

Sub-Division III.

Genus 59. Mactra, Linnæus ... 226
60. Mactrina, Brown ... 226
61. Lutraria, Lamarck... 226

Grand Division IV.—Crassipedes.

Family I.—Myaria.

Genus 62. Mya, Linnæus..... 228
63. Thracia, Leach 229
64. Anatina, Lamarck... 229
65. Lysianassa, Münster. 229

Tribe II.—Solenides.

Genus 66. Solemya, Lamarck... 230
67. Panopæa, Menard ... 230
68. Solen, Linnæus 281
69. Pholadomya, J. Sowerby 231

Family III.—Pholadaria.

Genus 70. Pholas, Linnæus ... 233

Family II.—Tubicola.

Genus 71. Gastrochæna, Spengler 234
72. Teredina, Lamarck. . 234
73. Teredo, Linnæus ... 235
74. Fistulana, Bruguière 236

CLASS THIRD.

CIRREPEDA, OR BARNACLES.

Order I.—PEDUNCULATA.

Genus 1. Pollicipes, Leach ... 236

Order II.—SESSILIA.

Genus 1. Balanus, Lamarck ... 237
2. Adna, Leach 237
3. Clitia, Leach 238
4. Coronula, Lamarck. . 233

CLASS FOURTH.

ANNELIDA.

Order I.—SEDENTARIA.

Family I.—Serpulacea.

Genus 1. Serpula, Linnæus ... 238
2. Vermilia, Lamarck... 241
3. Spirorbis, Lamarck... 242
4. Cyclogyra, S. Wood. 242
5. Cornuoides, Brown... 242
6. Serpulites, Murchison 242

Family II.—Maldaniæ.

Genus 7. Dentatum, Linnæus. 243

ERRATA.

Page 4, col. 2, line 6, for fig. 6, read 10.
Page 18, line 23, for Parkensoni, read Parkinsoni.
Page 34, col. 2, line 21, for *N.*, read Bellerophon.
Page 38, lines 1st and 3rd, for tenufascia, read tenuifascia.
Page 64, col. 2, line 3 from bottom, for 8, 9, read 7.
Page 70, line 5, after fig. 9 add 22, and line 8, after 28 add 29.
Page 71, line 11, for *P.*, read Paludina, and line 11, for 34, read 29; ditto, 6th line from bottom, for 6, read 26.
Page 74, line 2, for XXXVII.* fig. 15, 16, read XXI.* 38, 39, and 71, and line 17, for XXXVII.* fig. 17, 18, read XXXI.* fig. 40 and 74.
Page 78, col. 2, line 33, for 39, read 23, 24.
Page 79, line 1, for pucilla, read pusilla, and lines 1, 14, 36, 48, for XXXVII.* read XXI.*
Page 80, col. 2, line 42, for 24, read 26.
Page 108, line 28, for 29, 30, read 27, 28.
Page 110, lines 39, 47, 51, for Cardoc, read Caradoc.
Page 111, lines 29, 30, for LI., 30, 31, read LII., fig. 2.
Page 112, line 1, and col. 2, lines 39 and 45, for Spirifer, read Atrypa.
Page 122, col. 2, line 14, after LIII. add *.
Page 124, line 33, for Leptæna, read Productus; col. 2, line 21, for 2, read 8.
Page 125, line 26, for 17, read 18; line 36, for 16, read 17.
Page 127, line 11, for LV.* read LIV.*
Page 128, line 5, add 3.
Page 129, line 40, for 3, 4, read 6, 7; line 48, for LVI.* read LIV.*; line 49, dele 3, 4; col. 2, line 47, for 9, read 8.
Page 131, line 2, for 6, 7, read 4, 5.
Page 132, line 41, dele *; for 5, read 19; col. 2, line 49, add, and 36.
Page 134, line 2, for 8, read 9; line 24, after LIV. add *; col. 2, lines 5, 16, 22, and 46, after LV. add *.
Page 136, line 14, dele *, and for 40, 41, read 26; line 50, after 80 add 81; line 58, dele 16 and add 18.
Page 138, col 2, line 55, for 13, read 14.
Page 139, col. 2, line 37, for 20, 21, read 26, 27.
Page 140, last line, for Skepey, read Shepey.
Page 142, line 25, add pl. LVI., fig. 91.
Page 144, for Loudon, read London; col. 2, line 49, dele *.
Page 145, line 4, dele * and add I.
Page 147, col. 2, line 17, dele 6, 7.
Page 158, line 52, for 30, 31, read 29 and 32.
Page 177, line 1, after f. 23, add 24.
Page 179, line 10, after LXXII. add *.
Page 180, line 10, for LXXIII., read LXXIV.; line 51, for Waltens, read Walters; line 16, for Austicci, read Ansticci.
Page 184, col. 2, line 39, for 55, read 52.
Page 185, line 27, for 19, read 29.
Page 187, line 58, after fig. add 78.
Page 191, col. 2, line 22, after f. add 31.
Page 193, line 35, add 38; lines 43, 44, for Radis, read Rudis.
Page 195, line 53, for pucillus, read pusillus.
Page 197, line 50, for 5, read 8.
Page 200, line 26, add 26; col. 2, line 3, for 16, read 18.
Page 201, line 46, after LXI.* add **.
Page 202, line 18, dele and 25; line 32, for 12, read 18.
Page 203, col. 2, line 48, dele 1.
Page 204, col. 2, line 11, for LXXIV., read LXXXIV.; line 12, add 3.
Page 208, line 33, for XXXV., read LXXXV.
Page 209, line 13, for LXXXIII., read LXXXIV.; line 43, for LXXVI., read LXXXVI.
Page 212, line 53, for 33, read 25.
Page 217, col. 2, line 37, for 47, read 43.
Page 221, col. 2, line 39, for XC., read XCI.
Page 222, line 14, for 89, read 8—9; line 30, add 20; last line, for 25, read 28.
Page 223, col. 2, line 37, for 8, read 21.
Page 224, col. 2, line 1, for Deltoide, read Deltoidea.
Page 226, col. 2, line 26, for 53, read 52.
Page 228, lines 36, 38, for Augustata, read Angustata.
Page 236, line 6, for fig. 5, read 34, 35, 36; line 14, for 36, read 38, and for 45, read 46; line 20, after fig. add 14, 15, 16.
Page 237, line 20, for 49, read 50.
Page 241, col. 2, line 17, for 28, read 16.
Page 243, col. 2, line 26, for 76, read 70; line 40, for 7, read 61.

CLASS FIRST.

UNIVALVE TESTACEOUS MOLLUSCA.

Order I.—CEPHALOPODA.

Head of the animal emanating from a bag-shaped mantle, and surrounded by inarticulated arms, provided with a sucker, and investing the mouth; two sessile eyes; mouth furnished with two horny mandibles; provided with three hearts; the sexes in different individuals.

Division I.—Cephalopoda Polythalama.

Shell multilocular, partly or entirely internal, and placed in the posterior part of the body.

In the arrangement of Lamarck, this is the third division of the Cephalopoda. The first embraces the *Sepia*, or Cuttle Fish, which does not properly rank with the Testaceous Mollusca, and the second the *Argonauta*, or Paper Nautilus, of which genus no fossil species have yet been discovered.

Family 1.—Nautilacea.

Shell discoid, spiral multilocular, with simple partitions; volutions contiguous, the last or the body one enveloping the rest; the septa transverse, and externally concave, perforated in the disk; margins entire.

Genus I.—BACULITIES.—*Lamarck*

Univalve, straight, lanceolate, part of which is internally divided by septa, or partitions, with sinuated edges; the septa are penetrated by a siphuncle near their anterior margins.

1. B. Faujasii.—Fauja's Baculite, pl. I. fig. 1.

Lamarck An-San Vert, VII. p. 647; Sowerby, Mineral Conchology, VI. p. 186, pl. 592, fig. 1; Fauja's Hist. Nat. de la Mont. de St. Pierre, p. 140, pl. 21. fig. 2, 3. Brown in Popular Encyclopædia, V. p. 335, pl. 65. fig. 1. Brown's Elements of Fossil Conchology, pl. II. fig. 1.

Smooth, both edges equally rounded, and the sides slightly compressed.

Found in the chalk at Norwich, by C. B. Rose, Esq. and has occurred also at Hamsey.

2. B. Obliquatus.—The Oblique Baculite, pl. I. fig. 6.

Sowerby, VI. p. 186, pl. 592. fig. 2, 3; *Hamites baculoides*, Mantell, Geology of Sussex, p. 123, pl. 23. fig. 6. 7. Do. Geology South East of England, pl. 160. fig. 1.

With a very obliquely undulated and annular surface; the annulations deepest at the margins, or at that place where the siphuncle is situate.

Fig. 7 represents a rare variety, wherein the aperture is placed obliquely; each side is provided with a large oval reflected lobe. The aperture is marked by *a*, and the situation of the siphuncle by S.

This species is very common in the Gray Chalk Marle of Lewes, and abundant at Hamsey. Mr. Mantell remarks that "this species may easily be recognized by its extraordinary length, by the smoothness of its surface, and the great obliquity of the few undulations with which it is ornamented. Fragments from 1 to 6 inches in length, and about 0.4 inch in diameter, marked with oblique undulations, and occasionally exhibiting foliaceous septa, are very abundant in every locality of the Gray Marl near Lewes."

All the species, whether Foreign or British, which have yet been discovered, occur in the lower beds of Chalk or Chalk Marle, and in the upper Green sand.

Genus II.—HAMITES.—*Parkinson.*

Shell fusiform; hooked or bent into two parallel limbs; chambered; septa undulated at their margins, with a siphuncle at their outer edge.

1. H. gigas.—The Giante Hamite, pl. I. fig. 13.

Sowerby, Min. Conch. VI. p. 188, pl. 593, fig. 2.

Abruptly curved, with large, transverse, nodulous, oblique ribs, the tubercles on each being generally six, which are laterally expanded; on both sides are three obtuse spines, united to form each rib, which becomes almost obsolete as it passes over the front; the larger spines are placed near the front: section, hexagonal, protruding in front, with the sides and back concave. Size, from aperture to the extreme edge of the curve, 6½ inches; greatest thickness, 2½ inches.

Found by G. E. Smith, Esq., in the second or lower bed of limestone, in its uppermost course of Rag and Clay near Seabrooke, between Sandgate and Hythe, and on the Roughs, west of Hythe.

2. H. grandis.—The Great Hamite, pl. I. fig. 9.

Sowerby, Min. Conch. VI. p. 187, pl. 593, fig. 1.

Surface, with numerous shallow oblique undulations in front; each side provided with a few short oblique ribs, which are largest at their extremities; between each rib are six somewhat produced, rounded furrows, reaching to the line beneath which the siphuncle is situate; posterior surface smooth; margins of the septa formed into six extremely acute, numerous, and complex sinuses, arranged into six very unequal lobes; section sub-rotund.

Found in the parish of Smeeth, near Hythe, on the estate of E. Hughes, Esq., in a quarry of Kentish Ragstone.

3. H. plicatilis.—The folded Hamite, pl. II. fig. 10.

Sowerby, Min. Conch. III. p. 59, pl. 234, fig 1. Mantell Geology of Sussex, p. 121, pl. 23, fig. 1, 2.

Shell somewhat compressed, with numerous, regular, annular, continuous, and undivided ridges; each side provided with two rows of depressed equal tubercles, which extend over those of the annular ridges; with two ridges between each tubercle; curvature gradual.

Found in the Chalk Marle at Bishopstrow, near Warminster.

4. H. undulatus.—The Waved Hamite, pl. II. fig 11.

Hamites armatus, Sowerby, Min. Conch. III. p. 59, pl. 234, fig. 2.

Depressed, with irregular transverse undulations; two

rows of large flattened tubercles, one of which is in the centre, and the other near the dorsal margin, producing a sort of undulous ridge on both sides, each separated by a slightly waved furrow ; curvature abrupt.

Found in the Isle of Wight, by G. B. Snow, Esq., and in the Chalk Marle, near Benson, Oxfordshire, by R. Wright, Esq.

Mr. Soweby considers this as the *H. Armatus;* but we conceive that the single waved ridge separating the tubercles, in place of two or three ridges, is sufficient to distinguish it.

5. H. ARMATUS.—The Armed Hamite, pl. II. fig. 6.

Sowerby, Min. Conch. II. p. 153, pl. 168 ; Buckland's Bridgewater Treatise, II. pl. 44, fig. 9, 10. Mantell, Geology of Sussex, p. 121, pl. 23, figs. 3 and 4.

Depressed ; provided with nearly regular continuous, transverse, simple ridges ; and a row of flattened tubercles, nearest to the interior margin ; and another close to the dorsal limb, connecting which are high broad ridges ; on each side near the front a series of these are armed with long, subulate spines, thicker at the base, and tapering abruptly ; the limb of the other side of the curvature with simple, somewhat elevated tubercles ; the ridges are very indistinct on the dorsal region ; section elliptical ; greatest diameter one inch and an eighth.

Found in the upper Green sand at Rook village, near Benson, Oxfordshire, and in the Chalk Marle of Sussex. *f* 5. *a* the section.

6. H. SPINIGER.—*The Spined Hamite*, pl. II. fig. 12.

Sowerby, Min. Conch. III. p. 29, pl. 216, fig. 12.

Compressed ; with numerous, curved, slightly transverse, irregularly formed ridges ; two rows of somewhat sharp tubercles on each side, placed near the dorsal limb, those nearest the front largest ; these embrace several of the ridges into each of their bases, where they terminate, but some of which ascend the sides of the tubercles ; aperture oval ; curvature gradual ; greatest diameter five-eighths of an inch.

Found in marle near Folkstone.

7. H. SPINULOSUS.—The Prickly Hamite, pl. III. fig. 5.

Soweby, Min. Conch. III. p. 29, pl. 216, fig. 1 ; Dentalium spinulosum, Miller's MS. Catalogue.

Compressed, with a gradual curvature, describing nearly the segment of a circle, and equally prominent regular undulations, which are nearly obsolete upon the narrow back, each alternate one provided with two sharp, slightly divergent spines, situate along each side near the front ; aperture elliptical.

Found at Blackdown, by Mr. Miller.

8. H. TUBERCULATUS.—The Tuberculated Hamite, pl. II. fig. 3.

Sowerby, Min. Conch. III. p. 30, pl. 216, figs. 4, 5.

Compressed, gradually curved, with unequal undulations, each third one larger than the others, and provided with two obtuse tubercles on both sides, the lateral ones somewhat obscure ; between each of the tuberculated rings are usually situate two smaller ones.

This has much the aspect of H. spiniger, but differs in the above particulars.

Discovered at Folkstone, by Mr. Gibbs.

9. H. TURGIDUS.—The Turgid Hamite, pl. II. fig. 8.

Sowerby, Min. Conch. III. p. 30, pl. 216, fig. 6.

Compressed, with an abrupt irregularly turgid front, and provided with two rows of small obscure tubercles on each side placed upon every alternate annulation, with regular annulations, which become obsolete over the back : Sufficiently distinguished by the single row of tubercles.

Found at Folkstone.

10. H. NODOSUS.—The Knotty Hamite, pl. II. fig. 5.

Sowerby, Min. Conch. III. p. 30, pl. 216, fig. 3.

Shell nearly round ; externally pearlaceous ; with regular annular undulations ; provided with two rows of obtuse tubercles placed upon the front, each tubercle seated upon two of the rings ; each pair of annulations with a simple one between them ; aperture somewhat ovate.

This shell is somewhat more inflated than its congeners, and the rings are not so numerous as in some other species.

Found at Folkstone.

11. H. TENUIS.—The Slender Hamite, pl. I. fig. 2.

Sowerby, Min. Conch. I. p. 136, pl. 61, fig. 1.

Straight, slender, compressed, tapering rather abruptly ; with obtuse, slightly waved, oblique, somewhat irregular annulations, which sometimes become obsolete on the back margin, while at others they reach only about half way.

Found in the Clay at Folkstone, by Mr. James Gibbs, and at Ringmer.

12. H. ROTUNDUS.—The Round Hamite, pl. II. fig. 7.

Sowerby, Min. Conch. I. p. 136, pl. 61, figs. 2, 3.

Shell round, slightly and gradually curved, with regular, somewhat obtuse numerous annulations ; aperture round.

Found in the Folkstone Clay, and at Ringmer.

13. H. ATTENUATUS.—The Attenuated Hamite, pl. I. fig. 5, and pl. II. fig. 15.

Sowerby, Min. Conch. I. p. 137, pl. 61, figs. 4, 5 ; Buckland's Geology and Mineralogy Considered, II. p. 65, pl. 44, fig. 11. Mantell, Geology of Sussex, p. 93, pl. 19, figs. 29, 30.

Cylindrically compressed ; larger limb abruptly attenuated immediately under the curve, from whence it is round ; with numerous obtuse annulations, which become obsolete towards the back.

Found in the Clay at Folkstone, Laughton, Ringmer, Norlington, and in the counties of Kent and Surrey.

14. H. COMPRESSUS.—Compressed Hamite, pl. 3. fig 7.

Sowerby, Min. Conch. I. p. 136, pl. 61, figs. 7, 8.

Compressed, with oblique, sharp, regular, slightly undulated annulations, thickest and most prominent behind, and bending towards the curve ; thicker end oval ; the breadth two-thirds its length.

Found in the Clay at Folkstone, and at Ringmer.

15. H. MAXIMUS.—The great Hamite, pl. I. fig. 14.

Mantell, Geology of Sussex, p. 93. Sowerby, Min. Conch. I. p. 138, pl. 62, fig. 1. Parkinson's Organic Remains, III. pl. 10, fig. 4.

Slightly compressed, with somewhat oblique annulations becoming nearly obsolete behind ; larger end semi-ovate smaller end nearly round.

Found in the Clay at Folkstone, and fragments of it have been gathered at Ringmer and Norlington.

16. H. INTERMEDIUS.—The Intermediate Hamite, pl. III. fig. 2.

Sowerby, Min. Conch. I. p. 139, pl. 62, fig. 4. Mantell, Geology of Sussex, p. 93, pl. 23, fig. 12. Do. in Geology South East of England, p. 160, fig. 3.

Compressed, with continuous, oblique, protruding annulations, somewhat flattened, and thickest on the outer surface, and descending from the internal side.

Found in the Folkstone Clay, and at Ringmer.

17. H. GIBBOSUS.—The Bulging Hamite, pl. III. fig. 1.

Sowerby, Min. Conch. I. p. 140, pl. 62, fig. 4, right hand figure.

Shell gibbous, with prominent, oblique, somewhat distant annulations; descending from the outer surface, where they are thickest; spreading out into a flattened continuous plate behind; back much depressed, front rounded, producing an oval termination, with the shortest diagonal from back to front; contrary to the character of all its congeners.

From the Clay at Folkstone.

18. H. ADPRESSUS.—The Adpressed Hamite, pl. II. fig. 4.

Sowerby, Min. Conch. I. p. 140, pl 61, fig. 6.

Flattened in front; destitute of annulations; lesser limb acute, and pressed close to the larger one; surface smooth, and provided with equidistant circles throughout the whole shell, which appear to indicate the septa.

From the Clay at Folkstone.

19. H. BUCKLANDI.—Buckland's Hamite, pl. II. fig 2.

Phillip's Geology of Yorkshire, pl.I. fig. ; Buckland's Geology and Mineralogy, II. p. 65, pl. 44, fig. 8.

Compressed; horn-shaped; much and gradually incurvated with somewhat remote, slightly developed, oblique annulations, which become nearly obsolete on the inner margin.

Found in the Galt or Folkstone Marle. Fig. 2 *a* represents the transverse section, exhibiting the lobes and saddles, and the siphuncle at *b*.

20. H. ARTICULATUS.—The Articulated Hamite, pl. II. fig. 14.

Buckland's Geology, and Mineralogy Considered, II. p. 65, pl. 44, fig. 13.

Compressed, curvature gentle, with remote undulous ribs; the sinuous terminations of the transverse plates are visible through the ribs, having their secondary lobes rounded towards *b*, and pointed inwards at *c*, somewhat resembling the secondary lobes of the genus Ammonites.

Found in the Green Sand at Earl Stoke.

21. H. LYELLI.—Lyell's Hamite, pl. I. fig. 3.

Buckland's Geology and Mineralogy Considered. II. p. 65, pl. 44, fig. 11.

Shell a little compressed, gently curved, with remote, slightly developed spiral ribs, which are almost lost on the interior side. The lobes and saddles of the transverse plates are exhibited on the upper extremity, or aperture.

From the Folkstone Clay.

22. H. COSTATUS.—The Ribbed Hamite, pl. I. fig. 8.

Hamites intermedius, Sowerby, Min Conch. I. p. 62, fig. 2.

Slightly compressed, with remote, strong, oblique, somewhat undulous ribs, or annulations, descending to their internal side, and most developed towards the outer side; lobes and saddles of the aperture well marked.

From the Folkstone Clay.

23. H. INCURVATUS.—The Incurved Hamite, pl. 1. fig. 4.

Parkinson's Organic Remains, III. pl. 10, fig. 2.

Slightly bent, gently tapering, and a little compressed; with well defined regular annulations, which are strongly elevated throughout.

24. H. RECTUS.—The Straight Hamite, pl. I. fig. 11.

Parkinson's Organic Remains, III. p. 144, pl. 10, fig. 1.

Straight, (so far as at present known) with the annulations numerous, oblique, descending to the right, and but slightly developed; aperture roundish oval.

25. H. ANNULATUS.—The Ringed Hamite, pl. I. fig. 10.

Parkinson's Organic Remains, III. p. 144, pl. 10, fig. 5.

Slightly compressed, considerably incurved, forming nearly the segment of a circle, with regular, equidistant, distinctly defined, but not much raised annulations, somewhat less elevated on the inner side.

Found in the Green Sand, Wiltshire.

26. H. INFLEXUS.—The Inflected Hamite, pl. I. fig. 12.

Parkinson's Organic Remains, p. 144, pl. 10, fig 3.

Hooked, with strong, remote, nearly equidistant, slightly waved annulations, interrupted only by a sub-carina on the internal side; between these are two short, pointed ribs, which extend about half over the surface on the external side; the whole exhibits the hooked form of this species nearly complete, and the bend rather gentle.

Found at Shotover Hill, near Oxford.

27. H. ELLIPTICUS.—The Oval Hamite, pl. II. fig. 1.

Mantell, Geology of Sussex, p. 122, pl. 23, fig. 9.

Compressed, surrounded by even undulating ribs, each ornamented with two small tubercles situate on the outer margin; curvature elliptical.

Found at Middleham by G. A. Mantell, Esq., who justly remarks, that "this Hamite appears to be identified by its even undulating ridges, each furnished with two tubercles, and the elliptical form of its curvature. It must, however, be acknowledged, that there is considerable difficulty in distinguishing the essential characters of a fossil, from the variations that are produced by age or accident, particularly when only a single specimen is known."

28. H. MULTICOSTATUS.—The many-ribbed Hamite, pl. II. fig. 9.

Mantell, Geology of Sussex, p. 123, pl. 23, fig. 5.

Subcylindrical, with numerous oblique, narrow ribs, without any appearance of tubercles.

Mr. Mantell considers this as nearly allied to *Hamites alternatus;* it is, however, much larger in its diameter, being nearly an inch and an eighth.

Found at Hamsey by Mrs. Mantell.

29. H. ALTERNATUS.—The Alternating Hamite, pl. II. fig. 13.

Mantell, Geology of Sussex, p. 122, pl. 23, figs. 10, 11.

Subcylindrical, with distinct, oblique, annular ribs, which become obsolete in the internal margin, and two rows of pretty large tubercles, which are marginal, and placed on each alternate rib; curvature gradual.

Found at Middleham.

Mr. Mantell says the specimen he described was elliptical from compression; and the tubercles being placed on each alternate rib, separates it from every other spiniferous Hamite.

GENUS III.—TURRILITES.—*Lamarck.*

Shell, spiral, multilocular, turreted, volutions contiguous and all conspicuous; partitions articulated by sinuous sutures; septa transverse, foliaceous, close, imperforate, lobed, and liciniate at the margin; siphuncle near the upper part of the volutions; aperture round; columella smooth; outer chamber large.

The species of this genus have only been found in the Chalk marle.

1. T. TUBERCULATA.—The Tuberculated Turrilite, pl. III. fig. 5.

Sowerby, Min. Conch. 1. p. 169, pl. 74. Mantell Geology, of Sussex. p. 124, pl. 24, figs. 2, 3, 6, 7. Do. Geology S.E. of England, p. 159, fig. 1. Brown in Popular Cyclopædia, pl. 66, fig. 2. *Turrilites costulata*, Lamarck. An. San Vert, VII. p. 646.

Heterostrophe; the centre of the volutions provided with a single row of large tubercles from fifteen to sixteen in number, being nearly equidistant to their diameter, and those on the body elongated, forming irregular tubercular costæ, which are reflected towards the aperture, with three bands of small ones at their base; volutions much inflated and deeply divided by an undulating suture, with their inferior surface provided with radiating ribs, that terminate in the lowermost row of tubercles; siphuncle situate intermediately between the larger tubercles and the upper edge of the volutions, which is impressed by the ribs of the preceding volution; base of the aperture contracted.

Fig. 7. pl. IV. is a perspective representation of a cast of *T. tuberculatus* in an inverted position, to exhibit the radited ribs on the base of the volutions.

This gigantic shell was discovered by G. A. Mantell, Esq. in the Marle stratum at Middleham, on the estate of the Rev. J. Constable, parish of Ringmer, Sussex, about two feet under the surface, while they generally occur at a depth of six or eight feet. It measures five inches at the base, and is supposed to have been upwards of two feet when perfect.

This magnificent British specimen, says Mantell, "is a cast of indurated marle of an ochraceous colour, retaining in one part a thin iridescent pellicle of the pearly coat of the shell. Six volutions remain, the largest of which is five inches and a half in diameter. Upon a moderate calculation, the original, when perfect, must have exceeded two feet in length."

M. Denis Montfort mentions a specimen found in the mountain of St. Catharine, near Rouen in Normandy, which measured eighteen inches in length. This fossil "appears to have been in such a state of perfection, as to allow of its form being made out completely. It is regularly formed into a spire, the whorls of which are projecting and articulated, the foliaceous sutures produced by the edge of the septa being apparent. The opening of the shell is nearly round; the columella flat, without any folds; and the septa perforated nearly in the centre by a syphon."

2. T. UNDULATA.—The Waved Turrilite, IV. fig. 1, and pl. III. figs. 4 and 9.

Mantell, Geology of Sussex, p. 124, pl. 23, figs. 14 and 16, and pl. 24, fig. 8. Sowerby, Min. Conch. I. p. 171, pl. 75, figs. 1, 2, 3. Mantell, Geology S. E. of England, p. 159, fig. 2.

Volutions heterostrophe, with numerous, prominent, equidistant, gently undulating, oblique, longitudinal ribs, generally covering the whole volution; those on the body usually more contiguous, and running into each other.

This species is frequently three inches in diameter. First noticed and described by G. A. Mantell, Esq., and is characterized by its produced, longitudinal series of ribs, which reach from one suture of the spire to another, but are undulated in some examples. In a number of specimens the ribs are oblique, and somewhat tubercular, which has led some Naturalists to consider them identical with the *Turrilites costatus*. In casts of the adult shell, the characters of the species are, however, distinctly marked, and leave no doubt of the propriety of their separation."

In Figs. 4 and 9, pl. III. the ribs are singularly depressed, and with little separation between them.

Found at Hamsey Marle Pit, Sussex.

There is a variety of *Turrilites undulatus* with the ribs somewhat concave, supposed to be a large shell.

3. T. COSTATA.—The Ribbed Turrilite, pl. III. fig. 6.

De Montfort, Journal de Physic, an. 7, p. 1, pl. 1, fig. 1. Sowerby, Min. Conch. I. p. 81, pl. 36. Parkinson's Organic Remains, III. p. 147. Mantell, Geology of Sussex, p. 133, pl. 23, fig. 15, and pl. 24, figs. 1, 4, 6.

Heterostrophe, upper half of the volutions provided with about twenty smooth, rounded, widely set, prominent, equidistant, subulate ribs, which reach to the centre of the volutions; with a zone of prominent, slightly elliptical tubercles beneath, towards the inferior margins of the volutions; the latter nearly obscured by the next volution; those on the body being all distinctly visible. In many instances the tubercles and ribs pass into each other. This species varies from three to six inches in length. The cast of the inside are compressed into a somewhat oval form.

First discovered at Hamsey Marle Pit, Sussex, and at Clayton, by G. A. Mantell, Esq., and has since been found in the Green Sand at Horningsham, Wiltshire. The Sussex specimens very rarely exceed three or four volutions, and are invariably in some degree compressed; they vary from one to seven inches in circumference, and from three to five inches in length; the body is but rarely preserved, and no remains of the shell are discoverable.

4. T. OBLIQUA.—The Oblique Turrilite, pl. III. fig. 6.

Sowerby, Min. Conch. I. p. 172, pl. 75, fig. 4.

Volutions dextral, very deeply divided, the upper portions being narrow and abruptly widening towards their base, and when taken individually resemble a truncated cone, the base of each furnished with a zone of oblique, elliptical tubercles, giving the volutions an angular appearance; suture line well marked.

Fragments only of this species have been obtained. First found in the Micaceous Sandstone near Devizes, by Mrs. Gent.

5. T. BERGERI.—Berger's Turrilite, pl. III. fig. 8.

Buckland's Bridgewater Treatise, II. p. 65, pl. 44, fig. 14.

Volutions of the spire turreted, deeply divided, and flattened above; each provided with longitudinal oblong ovate, continuous rows of tubercles, in the form of ribs, presenting a somewhat catinated appearance; the upper volution with three, and the next with five series: siphuncle apparent near the upper or dorsal margin of two volutions at *a a*; the sinuous edges of the transverse plates are visible in the central volution, and the entire surface of a transverse plate is laid open on the smaller end of the third volution, shewing its lobes and saddles to be analogous to the same part in *Ammonites*.

Found in the Green Sand.

A characteristic specimen of this species, so interesting to Geological inquirers, is in the cabinet of that excellent Geologist, G. B. Greenough, Esq., of London. We have introduced it to exhibit its peculiarity of structure.

The Turrilites do not appear until the commencement of cretaceous formations.

Mr. Mantell says, "there are probably no localities in England so rich in the various species of *Turrilites* as the Marle Pits in the vicinity of Lewes." And we may add, they are likewise rich in many other species.

GENUS IV.—AMMONITES.—*Lamarck.*

Shell discoid, multilocular; volutions contiguous, all visible; inner partitions articulated by sinuous sutures; septa transverse, lobed at the circumference and imperforated at the disc, but perforated by a single tube situate near the margin.

In the extensive genus *Ammonites* the situation of the siphuncle is always upon the ambit or dorsal margin of the transverse plates, as shewn in the perpendicular section of *Ammonites obtusus*, pl. IV. fig. 8. It is represented in black, and marked by the letters *c*, *d*, *e*, *f*, *g*, *h*. It is conducted through the plates by a ring, projecting outwards, and may be traced passing through the whole transverse plates of the above figure. The body of the animal has occupied that portion of the shell from *a* to *b*.

The Ammonites occur in all formations from the transition strata, and disappear with the termination of the Chalk.

1. A. STELLARIS.—The Star Ammonite, pl. IV. fig. 2.

Sowerby, Min. Conch. I. p. 211, pl. 93.

Involute, with four somewhat depressed volutions; obtusely carinated, on each side of which is a rounded furrow; inner volutions about two-thirds visible, with their sides flattened, producing a pentagonal or stellated appearance; with numerous straight, moderately raised radiating ribs; the whole surface of the shell covered with obscure, rather remote decussating striæ; sinuous margin of each septum crossed by two costæ; the septa situated at each fourth rib; siphuncle placed in the keel; aperture quadrangular, rather longer than wide, its length being two-fifths the diameter of the shell. Greatest diameter four and a half inches.

This species is common at Lyme Regis, Dorsetshire.

2. A. LEWESIENSIS.—The Lewes Ammonite, pl. IV. fig. 3.

Mantell, Geology of Sussex, p. 199, pl. 22, fig. 2.

Depressed; three or four wide, flattened volutions, almost entirely concealed, and with four or five obscure, radiating ridges; septa sinuous, very numerous, and the surface usually covered with thin, foliaceous impressions; external volution equal to four-sevenths of the diameter of the shell; umbilicus minute; carene very narrow, rounded; aperture sagittate. Largest diameter usually about fourteen inches; but specimens have been found eighteen inches in diameter. Width of the outer volution commonly nine inches; greatest thickness five inches, and at the external edge one and a half inch.

The greatest thickness of this shell is at the inner margin, from whence the volutions gradually taper to the keel. The outer volution increases abruptly, and is nearly equal to half the diameter of the shell. Mantell says, "This ammonite may be readily distinguished in a suit of specimens, although its characters are rather of a negative description. In its general form it resembles *Ammonites complanatus*, (*Gray Marle Fossils*, No. 34;) but the umbilicus is larger, the carene less acute, and the surface exhibits no traces of striæ or plicæ. In the larger specimens the volutions appear to be wholly inserted; but probably, in more perfect examples, their inner margin is exposed."

Found in the Lower chalk near Lewes.

3. A. BINUS.—The Coupled Ammonite, pl. VII. fig. 11.

Sowerby, Min. Conch. I. p. 208, pl. 92, fig. 3.

Involute, depressed; volutions four; the inner ones about two-thirds exposed; ribs radiating in pairs, emanating from round tubercles, which are situate near the inner margin of each volution, turgid, and then bent up towards the front, where they become obsolete; keel small, entire; aperture oblong, rectangular, one-third the diameter of the shell, and a little more than one-sixth wide, with somewhat rounded angles. In some specimens a single rib occurs between the pairs.

Found at Bramerton, Norfolk.

4. A. STRIATUS.—The Striated Ammonite, pl. IV. fig. 6.

Sowerby, Min. Conch. I. p. 115, pl. 53, fig. 1. *Goniatites striatus*, Phillip's Geology of Yorkshire, II. p. 233, pl. 19, figs. 1—3.

Discoidal, very gibbose, its thickness being more than half its diameter; inner volutions entirely concealed; outer surface obscurely undulated transversely, and covered with numerous fine, very regular, close, concentric striæ, the undulations traverse the surface in very regular semicircular incurvations with the acute terminations meeting in points upwards, and gradually passing into straighter lines on the sides; aperture semicircular, with nearly parallel margins; septa zigzag, rather remote, with four large, somewhat angular folds; siphuncle placed at the external margin of the septum, where it is provided with a slight notch; shell very thin. The zigzag divisions are well marked, without passing into foliated sutures as is usual in the genus *Ammonites*. Dorsal lobe bifid; dorsal sinus and first lateral lobe acute, and twice the length of the dorsal lobe; second lateral lobe obtusely rounded, shorter than the first; marginal sinus angular; siphuncle not continuous, but passing rectally from the septal plate for a short distance.

The ribs and striæ of the external shell are strengthened by the repeated intersections of the subjacent edges of the transverse plates.

Found in Pools-hole in the Peak of Derbyshire, and in the transition slate of Filiagh, near South-molton, Devonshire; Bolland, Flasby; and also in Coal shale of Lough Allen in Connaught, Ireland.

5. A. SPHÆRICUS.—The Spherical Ammonite, pl. IV. fig. 7.

Martin, Petrefactions of Derbyshire, pl. 7, figs. 3, 4, and 5. Sowerby, Min. Conch. I. p. 116, pl. 53, fig. 2. *Goniatites sphæricus*, Phillip's Geology of Yorkshire, II. p. 234, pl. 19, figs. 4, 5, 6.

Orbicular, diameter and thickness nearly equal; inner volutions entirely concealed; outer surface with very fine spiral striæ; internal ridges variable; septa with four broad, angular folds, as in the preceding species; but the lateral lobe is less acute, or even rounded; aperture a little contracted.

Found in the Limestone of Derbyshire, and at Bolland; Isle of Man; and in the county of Kildare, Ireland.

This grows to double the size of *A. striatus*.

6. A. MANTELLI.—Mantell's Ammonite, pl. IV. fig. 4, 9.

Sowerby, Min. Conch. I. p. 119, pl. 55. Mantell, Geology of Sussex, p. 113, pl. 21, fig. 9, and pl. 22, fig. 1.

Discoidal, depressed, subumbilicate; volutions three or four, subrotund, about two-thirds concealed, margin trigonal; with numerous transverse tuberculate ribs, which alternately reach entirely round the volutions, the shorter ones extending about two-thirds across the volutions; with from two to eight rows of tubercles; ambit flattish, provided with two rows of marginal tubercles; external edges of the septa with five

principal folds; aperture approaching to six-sided, equal to about two-fifths of the diameter, and one side embracing the adjoining volution; septa numerous and very foliaceous.

First discovered by G. A. Mantell, Esq. at Ringmer, east of Lewes, Sussex.

Mr Mantell says, "The number and disposition of the ribs and tubercles of this species are so various, that although it is one of the most abundant productions of the Gray Marle, its specific characters are not easily defined.

The general form of the shell is discoidal, the volutions (which, when perfect, are nearly cylindrical) being flattened by compression, as in the specimens figured by Mr Sowerby. The inner wreaths in those which are compressed are nearly two-thirds concealed, but in more perfect examples are less deeply inserted. The costæ are round, and extend alternately across the whorls, the intermediate ones embracing about two-thirds of the volutions. The tubercles constitute the following varieties: —

"Variety 1. *costata.*—With two rows of tubercles, tablet 21, fig. 9. Two tubercles are placed on every rib, and form a row on each margin of the ambit or back of the shell. This is a beautiful cast, from Middleham. The specimen, fig. 1, tablet 22, also belongs to this variety. It exhibits the foliaceous septa, and the situation of the siphunculus. It was collected by my friend, Thomas Woolgar, Esq. of Lewes."

We have represented this variety on pl. IV. figs. 4 and 9.

"Variety 2. *tuberculo-costata.*—With six rows of tubercles. This variety, in addition to the marginal tubercles, has four rows, which are placed on the lower costæ only, each side of the shell having one set on the margin of the umbilicus, and another at a short distance above it.

Variety 3. *tuberculata.* — With eight rows of tubercles. The two additional sets which distinguish this variety are placed on each side, midway between the margin of the ambit and the second row of tubercles from the umbilicus. These intermediate tubercles occur on every rib, each of the larger costæ being ornamented with eight, while the shorter ones have but four. From the numerous tubercular projections on this variety, the outer volution is somewhat pentagonal.

The septa of *Ammonites Mantelli* are numerous, and very foliaceous. The form of the aperture varies in different specimens, but its width is in general equal to about two-fifths of the diameter of the shell. The siphunculus is small, and extends along the centre of the ambit.

This species frequently attains a large size, exceeding one foot and a half in diameter, but in these the tubercles are nearly obliterated."

Mantell's Ammonite has been found in almost every spot in Sussex where an excavation has been made in the Gray Marle.

7. A. COSTATUS.—The Ribbed Ammonite, pl. V. fig. 2.

With four depressed volutions; margin three-sided, broad, and flattened; volutions about two-thirds concealed, with strong radiating ribs, some of which, in the inner volutions, do not reach entirely across; sides somewhat flattened; aperture six-sided; ambit trigonal.

From the Limestone at Ringmer, Sussex.

This species is nearly allied to *Ammonites Mantelli*, and is probably only a variety of that shell.

8. A. MINUTUS.—The Minute Ammonite, pl. IV. fig. 10.

Sowerby, Min. Conch. I. p. 116, pl. 53. fig. 3.

Orbicular, with a small umbilicus, thickness and diameter nearly equal; inner volutions concealed, with numerous concentric, wide striæ, about twenty-four in number; aperture semilunar; from two to three lines in diameter.

Found at Folkstone, Kent, by Mr Gibbs.

9. A. LAMBERTI.—Lambert's Ammonite, pl. V. fig. 1.

Sowerby, Min. Conch. III. p. 73, pl. 242, figs. 1, 2, and 3.

Discoid, depressed, numerously radiated, curved over the back; alternately long and short, but rarely furcated; the longer radii are strong, and emanate from the inner margin of each volution, curving forward when past the centre, at which place they sometimes branch, but generally from this situation the shorter ridges take their rise, and proceed to the edge, producing an imperfectly crenulated, sharp carina; aperture lanceolate. Diameter about four times its thickness; greatest diameter two inches and a half.

In some individuals the radii are considerably more produced than in others, especially in the last volution of the larger ones, where they become proportionally less numerous.

Found at Weymouth, Portland Island, and Sandfoot Castle.

10. A. ACUTUS.—The Acute Ammonite, pl. V. fig. 3.

Sowerby, Min. Conch. I. p. 51, pl. 17, fig. 1.

Somewhat depressed, with three or four volutions, the inner ones half exposed; surface provided with slightly bent ribs, which gradually thicken as they diverge from the inner margin, where they commence, and terminate a little way beyond the centre of the volutions; slightly carinated, with the margin crenulated and flattish; aperture somewhat cordiform, and two-fifths the diameter of the shell. Diameter an inch and three-eighths; thickness three-eighths.

Found in the Cliff, near Minster, Isle of Shepey, and in Portland Island, and the London Clay.

11. A. OMPHALOIDES.—The Umbilicated Ammonite, pl. V. fig. 4.

Sowerby, Min. Conch. III. p. 74, pl. 242, fig. 5.

Gibbous, inner volutions half concealed, the outer ones increasing rapidly; with produced, waved ribs, bending forward in the centre of the back, and several of which are furcated, but not always united to the larger ones; back broad and rounded; aperture transversely oblong, occupying more than half of the diameter of the shell.

Found near Weymouth, and in Portland Island.

Sowerby says the ribs sometimes unite to two alternate ones on opposite sides of the volutions, forming a zig-zag line upon the back.

12. A. QUADRATUS.— The Square-mouthed Ammonite, pl. V. fig. 5.

Sowerby, Min. Conch. I. p. 52, pl. 17, fig. 3.

Somewhat depressed, with four or five volutions, the inner ones half concealed; surface covered with produced, undulating, nearly uniformly thick, furcated ribs, extending into the carinated and crenated margin, which is not flattened, with irregular intermediate shorter ribs hardly reaching the centre; aperture somewhat quadrangular, extending to about a third of the diameter of the shell. Diameter an inch and five-eighths; thickness half an inch.

Found in a gravel pit at Brandstone, near Framlingham, Suffolk.

13. A. GIGANTEUS.—The Gigantic Ammonite, pl. V. fig. 6.

De Montfort, p. 92; Lister, pl. 1046; Sowerby, Min. Conch. II. p. 55, pl. 126.

Depressed, with usually six volutions; the surface covered with numerous, sometimes furcated well rounded ribs, and intermediate shorter ones extending to half the breadth of the volutions; inner volutions exposed; sides somewhat straitened; aperture obovate; septa numerous, with greatly sinuated margins. Thickness about equal to one-fourth of its diameter.

This species is the largest of the genus. There is a specimen in the Museum of the Jardin des Plantes, Paris, four feet in diameter. One was said to have been broken at Chicksgrove quarry, near Hindon, Wiltshire, in a compact sandy limestone, which was as large as the hinder-wheel of a carriage. Specimens two feet in diameter are not uncommon. It is found, besides the above locality, at Peerbeck Isle, Dorsetshire; Marleborough Downs, in the Chalk near Margate; and at Fonthill.

14. A. ELLIPTICUS.—The Oval Ammonite, pl. V. fig. 7.

Sowerby, Min. Conch. I. p 209, pl. 92, fig. 4.

Depressed, with a sharp keel; the interior volutions two-thirds exposed; ribs few, distant, broad, flat, agreeing in number with the septa, and slightly curved, somewhat obsolate near the margin; aperture oblongly elliptical.

Found in the Marley clay at Charmouth.

15. A. CORNUOIDES.—The Little-horn Ammonite, pl. V. fig. 8.

Involute, depressed, with a broad, flattened keel; the whole surface covered by rather prominent, gently bending, distinct ribs, extending from the internal margin to the carina, thickening outwards; inner volutions considerably exposed; aperture subcordate. Diameter an inch and a quarter; thickness three-eighths.

Found at Whitby.

16. A. TRIPLICATUS.—The Three Pleated Ammonite, pl. V. fig. 9.

Ammonites triplicatus.—Sowerby, Min. Conch. III. pl. 292, and 293, fig. 4.

Discoid, with six exposed volutions, the two external ones separated by a depression or flattened spiral groove; the whole external surface covered by strong, equidistant, regular, slightly bent ribs, extending from the interior side to nearly the external side, where they cease, the spaces between them being greater than the thickness of the ribs; aperture subcordate. Diameter eight inches, and equal to four times its thickness.

Found near Malton, Yorkshire, and in the Suffolk Clay.

17. A. BIPLEX.—The Two-Pleated Ammonite, pl. V. fig. 10.

Sowerby, Min. Conch. III. p. 167, pl. 293, fig. 1, 2.

Discoid with six exposed volutions, all separated by a depression or flattened groove; furnished with large equidistant, regular elevated ribs, extending in a straight line from the margin of the separating groove to two-thirds across the volutions, where they are furcated, and pass over the dorsal margin, which is rounded; aperture oblong, subcordate. Diameter eight inches; thickness a fourth of its diameter.

Found in the Suffolk Clay, and also in the London Clay.

18. A. BRONGNIARTI.—Brongniarte's Ammonite, pl. VI. fig. 1.

Sowerby, Min. Conch. II. p. 190, pl. A. fig. 2.

Gibbous; thickness about two-thirds its diameter; with a minute umbilicus; round within, but externally oblong, produced by the line of last volution, being straight for a little distance, from whence it makes a sudden turn towards the aperture; inner volutions concealed; whole surface covered with close, undulating, very regular, rather depressed, furcated radii; aperture placed transversely, provided with a thick inflected lip.

Found at Yeovil and in the Marley Limestone, Normandy.

19. A. CALLOVIENSIS.—The Kelloways Ammonite, pl. VI. fig. 2.

Sowerby, Min. Conch. II. p. 3, pl. 104, fig. 1.

Involute, subumbilicate, with five volutions, three-fourths concealed; front, or ambit, depressed; with very numerous, small, bent, radiating ribs, arranged in sets, with a stronger one reaching across the volution, and from two to five shorter ones, alternating with a longer rib over the whole surface; these are somewhat obscure in the external volutions of adult shells, in which the aperture is deltoidal, with truncated angles, but obicular in young specimens; siphuncle placed near the upper edge. Greatest diameter three inches.

Found in the Shell-Limestone at Kelloway's Bridge.

The form of the volutions in this species is much influenced by age. When young, they are somewhat rounded, with numerous sharp ribs arranged in sets; a series of produced ones, between every two of which are placed from two to five shorter and more depressed costæ, reaching about two-thirds across the volutions; the whole ribs passing over the flattened ambit. The outer volutions of adult specimens are triangular, the two inner angles being truncated, producing an umbilicated aspect; the surface with large undulations, wrinkled near the ambit, and provided with numerous irregular striæ in place of ribs; they differ also in the inner surface of the outer volutions being destitute of striæ, and in losing the ribs sooner. The shell is thick and is frequently well preserved.

20. A. GERVILII.—De Gerville's Ammonite, pl. VI. fig. 3.

Sowerby, Min. Conch. II. p. 189, pl. A, fig. 3.

Gibbous, largely umbilicate, exposing the ribbed margins of the volutions; thickness somewhat more than half the diameter; with sharp, numerous, close, very regular, bent, furcated ribs, continuing so to near the completion of the last volutions, when they are supplanted by two or three irregular undulations; inner volutions but slightly exposed; aperture transversely oblong, and excavated; lip sharp on the edge, and arched.

Found in Marley Limestone.

21. A. OBTUSUS.—The Obtuse Ammonite, pl. VI. fig. 4. and pl. IV. fig. 8.

Sowerby, Min. Conch. II. p. 151, pl. 167; Buckland's Bridgewater Treatise, I. p. 347, and II. p. 58, pl. 35, 36.

Discoidal, with an obtusely rounded, considerably elevated keel, with a slight furrow on each side; furnished with six volutions, the inner ones wholly exposed, covered with large, curved, remote, slightly elevated, strong ribs, equal in number to the septa; each crossing the inner lobes of a septum; somewhat sharp in the middle; aperture oblong, longer than wide, about equal to one-third the diameter of the shell. Largest diameter five inches and a half.

Found in the Lias at Lyme Regis, Dorsetshire.

Sowerby mentions a specimen from which he made his drawing, sent to him by Miss Philpot of Linley, "which, from the high polish and rich colour of the crystallized

carbonate of iron that has lined its chambers, is truly beautiful."

Our figure, pl. IV. fig. 8, is a representation of a longitudinal section of this species, to shew the internal structure of the shell, and particularly to exhibit the situation of the siphuncle, (preserved in a carbonaceous state,) which is seen passing along the whole dorsal margin, to the commencement of the outer chamber. The body of the animal occupied the space from *a* to *b*. The letters *c, d, e, f, g, h,* point out the situation of the siphuncle, which is always placed upon the exterior, or dorsal margin. It is represented in black, and passes from the external chamber *i* to the inner extremity of the volutions.

22. A. NUTFIELDENSIS.—The Nutfield Ammonite, pl. VI. fig. 5.

Sowerby, Min. Conch. II. p. 11, pl. 108.

Involute, with four or five volutions, much concealed; crossed by numerous, strong, prominent ribs, with intermediate shorter ones, which are more than three-fourths towards the internal side of the volutions; these are frequently arranged in pairs, but the whole pass over the rounded ambit, or back; the larger ones being most prominent in the centre; septa rather numerous, lobed and sinuated in the ordinary manner; aperture subcordiform, two-fifths of the diameter in length, nearly the same in width, and rounded behind. Diameter from three inches to one foot.

This species is found abundantly in the Green Sandstone at Hythe and other places, which rests above the thickest beds of Fuller's Earth. Most of the specimens are casts in dark iron clay, and their external hue generally ochreous.

23. A. TRIPLICATUS.—The Three-Pleated Ammonite, pl. VI. fig. 6.

Sowerby, Min. Conch. I. p. 208, pl. 92, fig. 2.

Involute, with four volutions, the inner ones exposed; surface covered with doubly curved, alternating, long and short ribs; between every two long ones are three short, which reach a little beyond the centre of the volutions; septa distant; aperture obovate, about half the diameter in length, and its width one-third.

In some instances there are only two intermediate ribs between the longer ones.

Discovered at Portland Island by Mr Bryer of Weymouth.

24. A. EXCAVATUS.—The Hollow Ammonite, pl. VI. fig. 7.

Sowerby, Min. Conch. II. p. 5, pl. 105.

Involute, lenticular, subumbilicate, with a sharp, crenulated carina; on each side of which a slightly concave groove intervenes between it and the sides of the shell, which are uniformly convex; volutions about six, entirely exposed in the young state, and the whole divided by a flattened groove, forming a rectangular margin along the interior sides of the volutions; the entire shell covered with obscure curved ribs, which are stronger in the inner volutions and in young shells; aperture sagittate, extending to about half the diameter of the shell; and its width at back being about a third. Greatest diameter four inches.

First discovered at Shotover, near Oxford, by Mr Sowerby.

25. A. JUGOSUS.—The Ridged Ammonite, pl. VI. fig. 8.

Sowerby, Min. Conch. p. 207, pl. 92, fig. 1.

Involute, with a small, distinct, sharp carina; four volutions half concealed; covered with large, obtuse, straight ribs, very regular, equal to the space between them, and becoming obsolete behind; septa not numerous, their margins slightly plaited; aperture ovate, narrower behind, and occupying about two-fifths the diameter of the shell, and its width one-fifth; shell delicate and very thin.

Discovered by Mr Strangeways, in Limestone, at White Lackington Park, near Ilminster.

26. A. COMMUNIS.—The Common Ammonite, pl. VI. fig. 9.

Sowerby, Min. Conch. II. p. 10. fig. 2, 3; Corne d'Ammon à raies doublees ver le haut du dos. Bourguet, pl. 42. fig. 276.

Involute, with six or eight rounded, wholly exposed volutions; crossed by numerous strong, prominent, straight ribs, which become furcated towards the dorsal margin, and are sometimes reunited on the ambit, and again divided on the opposite side of the shell; aperture three-fourths of a circle, and occupying about one-fifth the diameter of the shell; septum round.

This species is very common in the Alum Clay at Whitby; it is generally dark bluish-black, or brownish-black, with a metallic lustre produced by pyrites.

A superstitious belief prevails at Whitby, and all over the neighbouring country, that these Ammonites are petrified snakes which infested the precincts of the monastery of Whitby; and these were not only turned to stone, but also beheaded, by a prayer from the abbess St Hilda. Indeed, this miracle is much insisted upon by all ancient writers who have occasion to mention either Whitby or St Hilda. It is thus alluded to by Sir Walter Scott, in Marmion; the nuns are said to tell,

> And how, of thousand snakes, each one
> Was changed into a coil of stone,
> When holy Hilda pray'd;
> Themselves, within their holy bound,
> Their stony folds had often found.
>
> *The Convent*, Stanza 13.

There are individuals in Whitby who sell this Ammonite, and not unfrequently form a head upon the outer volution, in imitation of that of a snake, and impose upon those who are unacquainted with their being the remains of testaceous shells.

27. A. ANGULATUS.—The Angulated Ammonite, pl. VI. fig. 10.

Sowerby, Min. Conch. II. p. 9. pl. 107. fig. 1.

Involute, with seven or eight well rounded and wholly exposed volutions, which are angular along their inner sides, and divided by a narrow, concave, flattened space, from whence proceed numerous prominent ribs, which are furcated as they pass over the back or ambit,—which is slightly flattened; aperture somewhat longer than wide, the width being equal to about one-fifth the diameter of the shell; the sinuated margins of the septa are rather close, and considerably more so than in the *A. communis*.

Discovered by J. M. Sowerby, Esq. in the White alum clay at Whitby, and has much the appearance of *A. communis*, but is at once distinguished from that species by the groove which separates the volutions.

28. A. BUCKLANDI.—Buckland's Ammonite, pl. VII. fig. 1 and 2.

Sowerby, Min. Conch. II. p. 69, pl. 130. Buckland's Geology and Mineralogy Considered, II. p. 59, pl. 37, fig. 6.

Depressed, consisting of five volutions, the inner ones entirely exposed, furnished with large obtuse ribs, which become more produced as they approach the back, round

which they are abruptly reflected, and imperceptibly disappear; back provided with an obtusely rounded carina, on each side of which is a furrow. Diameter varying from a foot to twenty-one inches.

First discovered by that zealous geologist, Professor Buckland, in the Blue Lias at Bath and its vicinity.

29. A. VARIANS.—The Variable Ammonite, pl. VII. figs. 3, 5, and 8.

Sowerby, Min. Conch. II. p. 169, pl. 176. Mantell, Geology of Sussex, p. 115, pl. 21, figs. 2, 5, and 7.

Discoidal, compressed, rather thick, subumbilicate, carinated; with three or four half inserted volutions; furnished with transverse, bifurcated, undulated ribs, studded with from six to eight rows of somewhat obtuse tubercles; carina acute, entire; aperture sagittate; siphuncle supposed to be external.

The umbilicus is shallow, and the sides smooth, bordered by a row of small tubercles, from which the ribs emanate, and proceeding obliquely across one-fourth of the volutions, rise in the form of tubercles, and then diverge into two branches, all of which terminate in a tubercle on the exterior margin; the keel is smooth, prominent, and acute; each margin furnished with a series of opposite tubercles.

This species is one of the most proteiform of the Ammonites, and subject to great variety in the form, disposition, and number of the tubercles and costæ; but its acute, entire carina, in connection with the tubercular, bifurcated ribs, at once distinguish it.

In size this fossil varies from an inch to six inches in diameter, and is not unfrequently compressed into an ellipsis or cordiform shape. No specimen has been yet found with more than four volutions.

Mr. Mantell says, "In a suite of fifty specimens in which every individual presented some peculiarity, three principal varieties were observable, each passing insensibly into the other."

Variety 1. *subplana*, pl. VII. fig. 8.

Mantell, Geology of Sussex, pl. 21, fig. 2.

"The volutions depressed, radii linear, inner row of tubercles obscure, external margin crenated, keel but slightly elevated, aperture sagittate.

Some specimens of this variety are nearly smooth, and the keel so much compressed, that without the aid of numerous examples, their relation to the tubercular variety could not have been ascertained.

Variety 2. *intermedia*.

Mantell, Geology of Sussex, pl. 21, fig. 7, 8.

The volutions in this variety are rather depressed, the ribs broad and well defined, the tubercles small, and distinctly marked, the external margin tuberculated, the keel prominent, and the aperture sagittate.

This is the prevailing form of the species, and holds an intermediate rank between the smooth and tubercular varieties.

Variety 3. *tuberculata*.

Sowerby, Min. Conch. pl. 176, figs. 1, 2, 3, 4, 6.

Volutions subrotund; ribs short, thick, nodulous; tubercles elongated, very prominent; carina acute; aperture somewhat rounded in form.

"A very beautiful variety, distinguished by its projecting tubercles, of which Mr. Sowerby's fig. 1, affords an excellent example. The inner rows of tubercles are almost effaced, but the marginal and intermediate sets are strongly relieved, and in some examples become spinous. From the thickness of the volutions, the aperture is obovate."

This fossil is plentiful at Middleham, Hamsey, and Stoneham, in Sussex, and also in the upper Green-sand of Wiltshire. The Gray Chalk Marl is well marked by this shell, as it prevails abundantly through it. Mr. Mantell mentions that a few examples have been found in the lower or flinty Chalks.

30. A. DUNCANI.—Duncan's Ammonite, pl. VII. fig. 4.

Sowerby, Min. Conch. II. p. 129, pl. 157.

Compressed, inner volutions exposed about a third, with a few tubercles upon their sides, the whole shell beset with numerous, undulating, narrow, oblique ribs, many of which are irregularly furcated, somewhat obscure on the middle of the sides, and terminated on their outer extremities by elongated tubercles on the terminal half of the exterior volution, but button-shaped on the other half, these last, in many instances, extend over two of the costæ; there is also a row of tubercles on the sides of the latter half, towards the centre of the volution; ambit depressed, bounded by two rows of fibuliform tubercles, which are a continuation of the ribs; aperture ovato-sagittate, and equal to about half of the greatest diameter of the shell.

The sinuated edges of the septa are sharp and distinctly marked.

Discovered in the Fen Clay at St. Neotts, Huntingdonshire, by John and Philip Duncan, Esqrs. in honour of whom it was named by Sowerby.

31. A. CONYBEARI.—Conybear's Ammonite, pl. VII. fig. 6.

A. Conybeari. Sowerby, Min. Conch. II. p. 70, pl. 131; Phillip's Geology of Yorkshire, II. p. 164, pl. 13, fig. 5.

Compressed, with a large, greatly produced, entire keel, on each side of which is a concave groove; volutions eight or nine, usually continuing very perfect to the centre, crossed by numerous rather obtuse ribs, which are most prominent in the centre of the volutions, and are much depressed at the inner sides, a little stronger next the ambit; inner sides of the volutions somewhat flattened, and slightly angular; aperture oblong-ovate. Varying in size from two to eighteen inches.

Found in the Lias at Bath, and in the middle of England, where it is not uncommon, and in the western islands of Scotland.

32. A. PLANICOSTATUS.—The Flat-ribbed Ammonite, pl. VII. fig. 7.

A. planicosta. Sowerby, Min. Conch. I. p. 167, pl. 73.

Compressed, with six or eight exposed volutions, crossed by numerous obtuse, nearly straight ribs, which widen as they approach the back, and are depressed near the ambit, inclining towards the aperture; aperture circular, slightly indented by the volutions.

Found in the indurated marly limestone, called Marston Stone, which occurs at Marston Magna, near Ilchester, at Yeovil and Evershot, Somersetshire. This stone is frequently cut into large slabs for table tops, &c. and when polished has a beautiful effect from the irregular order in which these numerous specimens of *Ammonites planicostatus* present themselves. The limestone is of a dark gray colour, and the Ammonites are dark brown, or different shades of buff, and sometimes exhibiting a splendid iridescent lustre. The divisions of the chambers being filled with crystallized carbonate of iron, adds a beautiful variety to the tints. This

species also occurs in granular marly limestone, particularly at Craymouth, but seldom associated with the remains of any other species of shell.

33. A. AURITUS.—The Eared Ammonite, pl. VII. fig. 9.

A. auritus. Sowerby, Min. Conch. II. p. 79, pl. 134; Mantell, Geology of Sussex, p. 90.

Compressed, with four or five exposed volutions, the last one large, occupying about half the diameter of the shell; surface covered with depressed, slightly developed, distant radiating ribs, every alternate one being furnished with a large obtuse tubercle, towards the inner margin of the volutions; exterior margin deeply grooved, and provided with a series of large, obtuse, alternating, compressed tubercles, projecting in the form of ears; aperture oblong-ovate, slightly sagittate.

Discovered in the Micaceous Sand, in the bed of the canal at Devizes, Wiltshire, by Mr. Gent; and it has subsequently been found at Ringmer in Sussex.

34. A. SPLENDENS.—The Splendid Ammonite, pl. VII fig. 10.

Corne d' Ammon fort plate, unié et ornée de fleurs. Bourquet Traité des Petrifactions, pl. 48, fig. 312.—*Ammonites splendens.* Sowerby, Min. Conch. II. p. 1, pl. 103, figs. 1, 2 3; Mantell, Geology of Sussex, p. 89, pl. 21, figs. 13, and 17.

Involute, compressed, provided with three or four volutions, the inner ones deeply inserted, being about three-fourths concealed, and the outer ones rapidly increasing in dimensions; sides flattened, with transversely radiating, depressed, close ribs, slightly curved towards the aperture; a row of distant, greatly elongated tubercles towards the inner margin, from each of which two or three ribs emanate, and make an elegant curve from the inner to the outer margin, where they terminate in angular eminences, forming crenulated margins on the sides of the carina, the middle of which is nearly plain; dissepiments sinuated and very foliaceous siphunculus situate near the inner margin; aperture oblong, almost equal in length to half the diameter of the shell, and deeply indented by the inner volutions. Size varying from half an inch to two inches in diameter.

This truly splendid Ammonite exhibits, on its external surface, the most beautiful iridescent play of colours, sometimes equally vivid in lustre to the finest species of *Haliotis*, or Ear-shell. It is found in the Pyritaceous Marle at Folkstone, Kent, and is common in the Blue Chalk Marle at Ringmer and Laughton, in Sussex.

This species is often found with the shell remaining, which is extremly thin, and of a cream white colour. The foliaceous sutures are very conspicuous in pyritaceous casts of this shell; these differ but little from the fossil itself, except in the continuous structure, under the more prominent parts of the ribs, which are somewhat more depressed. Small specimens are sometimes found with the keel rounded, and the volutions nearly destitute of ribs, as exhibited in plate 103, fig. 1, of Sowerby's Mineral Conchology; in this condition they might be mistaken for a distinct species.

Mantell has figured a cast in Pyritous Marle, which shews the sinuous septa; small crystals of lime are contained in cavities on the opposite side of this specimen, and pseudomorphous iron pyrites is disseminated through the mass.

35. A. LAUTUS.—The Laurel Ammonite, pl. VIII. fig. 1.

Ammonites lautus. Parkinson, Geological Transactions, V. p. 58; Sowerby, Min. Conch. IV. p. 3, pl. 309, figs. 1, 2, 3, 4, 5, and 6; Mantell, Geology of Sussex, p. 9, pl. 21, fig. 11.

Discoidal, involute, compressed, with three or four two-thirds inserted volutions; back narrow and deeply channeled; sides furnished with numerous, strongly arcuated slender ribs, arising in pairs from a row of oblique, elongated tubercles near their inner margin, and being joined by alternating, intermediate shorter ones, proceed with an elegant curve to the outer margin, where they terminate, in somewhat depressed, large, alternating tubercles, usually three or four to each tubercle; these are disposed alternately, so that the edges may be characterized as serrato-tuberculate; dissepiments very foliaceous; aperture obscurely sagittate, and equal in length to half the diameter of the shell. The situation of the siphunculus is unknown.

Found at Laughton, Ringmer, and Norlington, Suffolk.

Sowerby describes the following varieties of this fossil:—

1*st*, Ribs long, considerably arcuated and regular. Mineral Conch. pl. 319, figs. 1, 2.

2*d*, Having short irregular ribs provided with large tubercles near their inner ends. Min. Conch. pl. 319, fig. 6. It is this variety which we have figured; the other varieties, if such they be, have not come under our observation.

This species somewhat resembles the *Ammonite dentatus*, pl. 14, fig. 4, but the volutions are more exposed than in that fossil. It is also allied to *Ammonites auritus*, pl. 7, fig. 9, but it is distinguished by its prominent and curved ribs, by the ridges on the inner volutions being less, two-thirds concealed, and by the centre one not being so tuberculous.

36. A. ARMATUS.—The Armed Ammonite, pl. VIII. fig. 2.

Ammonites armatus. Sowerby, Min. Conch. I. p. 215, pl. 95.

Involute, with six or seven entirely exposed volutions, which are pressed against each other, and crossed by numerous annular ribs, each of which is provided with two series of large, short, furrowed spines, to the number of five on each; the costæ, after meeting on the point of the spines, are continued on the other side; aperture obscurely four-sided; siphuncle situate near the dorsal margin of the aperture.

Found in the Alum Clay formation at Whitby, Yorkshire; the Oxford Clay, middle and south of England, and the Lias at Bath.

In the young state, this shell is quite plain, without the slightest appearance of ribs or spines. In a more advanced condition, the ribs appear, and, when it has acquired another convolution, the disk is flattened.

This Ammonite is subject to considerable variety.

37. A. PLANUS.—The Flat Ammonite, pl. VIII. fig. 3.

Ammonites planus. Mantell, Geology of Sussex, p. 90, pl. 21, fig. 3.

Involute, carinated, compressed, deeply inserted, almost smooth; volutions crossed by nearly obsolete striæ; keel flat, with its margin crenulated; aperture sagittate; dissepiments sinuate; situation of the siphuncle is unknown.

The inner volutions are three-fourths concealed, and the outer one consequently appears to increase very rapidly in dimensions, and is greatly larger than the others.

This species is somewhat allied to *Ammonites splendens* pl. VII. fig. 10, but may at once be distinguished in being destitute of tubercles on the inner margin of the volutions, and is also devoid of the radiations, which ornament the

surface of the former species. It is, however, like that shell, frequently iridescent on the surface.

Found at Ringmer, by G. Mantell, Esq.

38. A. CORDATUS. — The Cordate Ammonite, pl. VIII. fig. 4.

Ammonites cordatus. Sowerby, Min. Couch. I. p. 51, pl. 17, figs. 2 and 4.

Involute, carinated; volutions four or five, somewhat compressed, inner ones half inserted; sides ornamented with undulating ribs, extending over the inner half of each volution; the remaining half provided with about five divergent undulations to every two ribs, all of which terminate in the exterior crenated margin; aperture cordiform, two thirds of the diameter of the shell in length. Diameter varying from one to two inches; thickness about a third of its diameter.

Found in the Limestone of Shotover, Oxfordshire, and also at Somersetshire.

39. A. BROWNI.—Brown's Ammonite, pl. VIII. fig. 5.

Ammonites Browni. Sowerby, Min. Couch. III. p. 114, pl. 163, figs. 4, 5.

Discoidal, carinated; five half inserted volutions, with a zone of large distant tubercles placed towards the centre of the volutions, but rather nearest the inner sides; these assume the form of ribs on the outer volutions; from the tubercles, the other half of the volutions are provided with numerous equidistant, somewhat curving ribs, which extend over the rounded ambit; aperture cordiform.

Found at Dandry, by. G. W. Braikenridge, Esq. and named in honour of Robert Brown, Esq. the celebrated botanist.

This species has much the appearance of *Ammonites Kœnigi*, pl. IX. fig. 2.; but the keel and tubercles upon the inner volutions sufficiently distinguish it from that shell.

40. A. ANNULATUS.—The Ringed Ammonite, pl. VIII. fig. 6.

Ammonites annulatus. Sowerby, Min. Conch. III. p. 41, pl. 222.

Discoidal, with from five to seven exposed volutions, crossed by numerous, close, very prominent ribs, which are frequently bifurcated as they pass over the rounded ambit; aperture subrotund.

Found at Whitby, Yorkshire; in the lower sand beds of the inferior Oolite at Cropredy, near Bunbury, Oxfordshire, and also near Ilminster.

This species at first appearance, has somewhat the aspect of *Ammonites communis*, pl. VI. fig. 9.; but its numerous ribs sufficiently distinguish it, and besides, it has more volutions. The ribs are placed very near each other, and a deep furrow is formed between them; some being bifurcate as they pass over the ambit. Sowerby says, "When the outer surface of the shell,—which adheres strongly to the stone,—is broken off, the ridges are much diminished; and, instead of convex surfaces, like wire wound about the shell, they are flat, as if they were formed of square wire. The cast, when all the shell is removed from it, is also marked by slightly elevated radii."

In some specimens, the sides of the volutions are somewhat compressed: in others, they are a little inflated; in these separate conditions, they look considerably different, but may be at once recognized by the numerous strong annulations.

41. A. CURVATUS.—The Bending Ammonite, pl. VIII. fig. 7, and pl. X. fig. 12.

Ammonites curvatus. Mantell, Geology of Sussex, p. 118, pl. 21, fig. 8.; Sowerby, Min. Couch. VI. p. 154, pl. 179, fig. 2.

Discoidal, carinated, compressed, subumbilicate, with three deeply inserted volutions, which are ornamented by transverse, falciform, numerous ribs; these are bifurcated at their commencement, and terminate in broad, curved, tubercular costæ; keel with a longitudinal sulcus, situate between two marginal series of tubercles; ambit flat and narrow; umbilicus large, aperture obtusely sagittate; siphuncle situate in the dorsal furrow.

This species is nearly allied to the following, but appears quite distinct. Mantell says, "The curvatures are more numerous in the *Ammonites falcatus* than the oblique radii; but, in the present species, the proportions are reversed, two or three radii uniting to form one curved rib. The terminations of the ribs in the latter are tubercular, and separated from each other by a sulcus; in the former, they are gently curved, and appear as if folded or plaited over each other."

The umbilicus is somewhat deeper than in *Ammonites falcatus*, and is provided with a row of oblique tubercular processes, from each of which two or three ribs emanate, and continue to the centre of the volutions, where they unite, to form a broad curved rib, that terminates in an oblong-ovate tubercle on the margins of the ambits. Another tubercle is situate on the middle of the curved parts. The keel is grooved, and has two belts of prominent, distinct opposite tubercles formed by the terminations of the ribs.

Discovered at Hamsey by Mr. Mantell.

42. A. FALCATUS. — The Hooked-ribbed Ammonite, pl. VIII. fig. 8.

Ammonites falcatus. Mantell, Geology of Sussex, p. 117, pl. 21, figs. 6 and 12; Sowerby, Min. Couch. VI. p. 153, pl. 579, fig. 1.

Discoidal, carinated, greatly compressed, subumbilicate; with three deeply inserted volutions, flat on both edges; sides furnished with numerous close, plicated, falciform ribs, extending a little way down the sides of the umbilicus, which is small, and with crenulated margins: ambit flat, narrow, and provided with a longitudinal sulcus; margin plicated; aperture sagittate; siphuncle placed in the furrow, which is in the centre of the dorsum.

This handsome species is nearly flat, its longest diameter exceeding its greatest thickness almost four-fifths; the sides are slightly inflated in the centre, but are contracted at the ambit into a narrow flattened carina, with a sulcus in its centre, and with the edges slightly plicated; the ribs are extremely slender at their origin in the umbilicus, but gradually increase in breadth as they approach the centre of the volutions, where they become suddenly curved, and sweep elegantly towards the dorsal margin, where they terminate in obtuse folds.

Found at Middleham and Stonehaven, Sussex, in the Gray Chalk Marle.

43. A. BROCCHII.—Brocchi's Ammonite, pl. VIII. fig. 9.

Ammonites Brocchii. Sowerby, Min. Couch. II. p. 233, pl. 232.

Compressed, with three or four greatly rounded volutions; the inner ones half concealed; sides hollow; ambit circular; a row of oblong-ovate ribs commence near the inner margin

of the volutions, and extend to nearly the centre, where they are met by numerous obtuse, arcuated ribs, passing over the round ambit; aperture semilunar, inclining to a transverse ellipsis; thickness half the diameter of the shell; septa very numerous, and beautifully sinuated. Greatest diameter upwards of five inches.

Found in the inferior Oolite, and also at Dundry.

Named to commemorate that zealous naturalist, the late M. Brocchi of Nice, author of the beautiful work, entitled, "Conchiologis Fossilis Subappenina."

44. A. SERRATUS.—The Serrated Ammonite, pl. VIII. fig. 10.

Ammonites serratus.—Sowerby, Min. Conch. I. p. 65, pl. 24.

Discoidal, involute, compressed, carinated, having five volutions two-thirds inserted; with distant, strong arcuated ribs extending from the ambit to nearly the middle of the volutions; numerous curved costæ emanate from the inner margin of the volutions, and nearly meet the others in the centre; sides of the volutions somewhat concave contiguous to the keel, which is nearly cylindrical, ornamented with sharp crenulations, and containing the siphuncle; aperture narrow, pentangular, and extending to half the diameter of the shell; septa close, with numerous deep undulations. Largest diameter four inches, thickness one inch.

Found in the Marle, parish of Worlingham, near Beccles, Suffolk.

The central volutions of this species are very thin, and specimens are frequently found without them.

45. A. SOWERBII.—Sowerby's Ammonite, pl. IX. fig. 1.

Ammonites Sowerbii.—Miller, MS. Catalogue; Sowerby, Min. Conch. III. p. 23, pl. 213, figs. 1, 2, 3.

Discoidal, carinated; with four volutions, the inner ones about half inserted, or, to the base of the tubercles, having a series of about nine or ten spiriform tubercles in the centre of each, placed upon obtuse ridges; the inner half of the volution smooth, the outer half with numerous, slightly bending ribs, terminating at the keel, which is defined and entire, projecting greatly, rounded externally, and almost separated from the volutions, with the siphuncle placed in its outer extremity; aperture elliptical.

Found in the inferior Oolite at Dundry.

There is a variety of this species with a circular aperture, and the keel sometimes impressed. In this variety the ridges on which the tubercles are seated are more prominent, and the cariana so far sunk as to have a furrow on each side. The inner volutions in this variety are less inflated than in the former.

46. A. KOENIGI.—Koenig's Ammonite, pl. IX. fig. 2.

Ammonites Koenigi.—Sowerby, Min. Conch. III. p. 113, pl. 263, figs. 1, 2, 3.

Discoidal, convex, with six volutions, the inner ones about half inserted; sides with distant, strong ribs, which assume the form of oblong tubercles, commencing at the inner margins of the volutions, and extending to about the centre, where they are met by numerous, slightly arcuated, gently raised ribs, which extend over the rounded ambit; aperture cordiform, elongated; septa few, with slightly sinuated lobes.

Found at Kelloways and Charmouth.

In the immature condition this species is more gibbose than in the adult, consequently the aperture is nearly orbicular. In the perfect shell, the last or body volution occupies about half the diameter of the disk.

This fossil is named in honour of Dr. Koenig, of the British Museum, an excellent geologist.

47. A. LISTERI.—Lister's Ammonite, pl. IX. figs. 3 and 6.

Ammonites Listeri. Martin's Petrifactions of Derbyshire, pl. 35, fig. 3. Sowerby, Min. Conch. V. p. 163, pl. 501, fig. 1.

Subdiscoidal, thickness nearly equal to its diameter, with five or six narrow volutions, the inner ones partly inserted, and deeply sunk; back or ambit very convex, broad: sides inversely conical, with numerous strong sharp ribs, which extend over the ambit, and meet on the opposite side, terminating in a series of strong, elevated, pointed tubercles on the inner margin of the volutions; general size about an inch and a half in diameter, and sometimes reaching two inches.

Found in the Limestone of Eyem and Middleton, Derbyshire, in a Shale stratum belonging to the coal formation. It occurs in nodules of iron-pyrites or limestone; also in shale on the Bradford road, about two and a half miles from Halifax, Yorkshire. This stratum extends to Idle near Calverly, and to Farsley in the neighbourhood of Horseforth, and stretching in various undulations so far as Leeds.

This is one of those remarkably thickened species which belong to the same tribe as *Ammonites Blagdeni*, pl. 12, fig 9.

Remote annular depressions are observable upon the inside of the casts of this sheil, from which it would appear that the margin of the aperture was thickened at particular stages of its growth.

48. A. DISCUS.—The Quoit Ammonite, pl. IX. fig. 4.

Ammonites discus.—Sowerby, Min. Conch. I. p. 37, pl. 12, figs. 1 and 2.

Discoidal, umbilicate, much compressed, volutions smooth, much concealed; outer margin acuminated; aperture sagittate, occupying half the diameter of the disk, and one-sixth in breadth; septa irregularly undulated; aperture sagittate. Greatest diameter four inches; thickness half an inch.

Discovered in a stone quarry near the House of Industry at Bedford.

49. A. STRANGEWAYSI.—Strangeway's Ammonite, pl. IX. figs 5 and 10.

Ammonites Strangewaysii.—Sowerby, Min. Conch. III. p. 99, pl. 254, figs. 1 and 3.

Discoidal, carinated; five volutions, with their sides nearly flat; with an obscure concentric furrow, the margin of the outer one flattened, slanting from the centre, and the inner edges of the others obliquely depressed; the whole crossed by numerous slightly raised, twice curved, undulating ribs, which are frequently obscure on the inner side and centre of the volutions, but larger and more determined on the dorsal edge; each of these ribs forms two semicircles, reversed to one another; aperture oblong; occupying nearly one-third of the diameter of the disk. Greatest diameter about six inches. Discovered at Ilminster.

50. A. GREENOVII.—Greenough's Ammonite, pl. IX. figs. 7, and 8.

Ammonites Greenovii.—Sowerby, Min. Conch. II. p. 71, pl. 132, figs. 1, 2.

Discoidal, compressed; volutions four or five, two-thirds inserted, the outer one being nearly half the diameter of the shell; with obscure ribs, which are most apparent towards the rounded back, over which they pass; those on the inner volutions quite distinct; aperture elliptical, with a deep indentation from the insertion of the volution; siphuncle placed near the centre of the back margin of the aperture; septa close, greatly and beautifully sinuated, and locked into

each other at their margins. Greatest diameter varying from twelve to eighteen and even twenty inches.

Found in the Lias, in the middle and south of England, and also in the Lias at Lyme Regis.

In the larger specimens there is no appearance of ribs, but sometimes with a few very remote, slightly indented, divergent furrows, such as we have represented. This beautiful species is frequently formed of pyrites, and exhibits on its surface the most splendid iridescent play of colours.

This species was named by Sowerby in honour of the celebrated and munificent geologist, J. B. Greenough, Esq. of London.

51. A. VERTEBRALIS.—The Jointed Ammonite, pl. IX. fig. 9.

Ammonites vertebralis, Sowerby, Min. Conch. II. p. 147, pl. 165, figs. 1, 2.

Discoidal, carinated, five volutions, the inner ones partly inserted; sides furnished with numerous prominent, slightly undulating ribs, which are tuberculate in the centre, from whence they are regularly bifurcate, each branch being provided with a somewhat acute, compressed tubercle near its middle, from whence the branches curve towards the keel, where, at their termination, another slightly reflected tubercle is produced, and the branches reunite on the opposite side; keel serrato-tuberculate, resembling in some measure the vertebral column in mammalia; aperture ten-sided.

Found in the beds of Siliceous sand at Dry Sandford and Marsham, near Abingdon, Berkshire.

52. A. CONCAVUS.—The Concave Ammonite, pl. IX. fig. 11.

Ammonites concavus, Sowerby, Min. Conch. I. p. 214, pl. 94, lower figure.

Discoidal, involute, compressed, carinated, umbilicate; with four exposed volutions, concave near the centre, crossed by numerous, curved, unequally long ribs, which are less distinct towards their centre; keel sharp, entire; aperture half the diameter of the disk, acutely triangular; external angle subrotund, with the interior angles obliquely truncated.

Found at Ilminster.

53. A. BECHEI.—De La Beche's Ammonite, pl. IX. fig. 12.

Ammonites Bechei, Sowerby, Min. Conch. III. p. 143, pl. 280, figs. 1, 2.

Gibbous, umbilicate; inner volutions entirely concealed; sides very prominent, with numerous nearly straight transverse ribs, about two to each tubercle, which are less developed towards the centre, but increase in strength as they approach the much rounded ambit, over which they pass continuously; these are crossed by many close, elevated, concentric striæ; each side provided with two rows of numerous, small, slightly depressed tubercles, those of the inner row most prominent; between these rows the sides are a little flattened; aperture large, as wide as it is long, occupying half the diameter of the shell.

Found in the Blue Lias at Lyme Regis, Dorsetshire.

54. A. ELEGANS.—The Elegant Ammonite, pl. IX. fig. 13.

Ammonites elegans, Sowerby, Min. Conch. I. p. 213, pl. 94, upper figure.

Discoidal, involute, with a very acute entire keel, within which the small siphuncle is placed; three to four volutions, much compressed on the sides, the inner ones about two-thirds inserted; furnished with numerous, equal, doubly curved ribs; aperture acutely triangular, occupying about two-thirds of the disk; internal angles truncate; thickness of the shell about one-third its diameter; septa rather close, with their margins sinuous and greatly plaited.

Discovered between Ilminster and Yeovil by Mr. Strangeways.

55. A. PLANULATUS.—The Flattened Ammonite, pl. X. fig. 1.

Ammonites planulatus. Sowerby, Min. Conch. VI. p. 136, pl. 570, fig. 5.

Discoidal, compressed; volutions four, inner ones about one-third inserted, and flat as far as is exposed, flattened on the sides, and contracted by four or five varices, the whole with their inner half plain, the other having numerous, broad, slightly bent, regular, equidistant ribs, passing over the back, which is much rounded; aperture oblong-oval.

Found by G. Mantell, Esq. in a Marle pit at Hamsey, near Lewes.

56. A. SUTHERLANDIÆ.—Sutherland's Ammonite, pl. X. fig. 2.

Ammonites Sutherlandiæ. Marchison, Geological Transactions, 2d Series, II. pt. 2, p. 323; Sowerby, Min. Conch. VI. p. 121, pl. 563, figs. 1, 2.

Discoidal, gibbous, umbilicate; two or three volutions, inner ones much inserted; and only partly seen within the large and deep umbilicus; sides smooth and plain; back very thick, and regularly rounded; length of the aperture about equal to half the diameter of the shell, which is nearly ten inches.

Discovered by R. I. Murchison, Esq. in the White sandstone at Braambury Hill, Brora, Sutherlandshire, and in the Coral Oolite and Calcareous grit of Yorkshire.

Named in honour of the Duchess Countess of Sutherland.

There is a remarkable specimen in the Collection of the Geological Society, which was found by the quarrymen, and presented to the late Duke of Sutherland. It was supposed to have been a fossil human skull; it is compressed, and somewhat resembles a Scaphite.

57. A. SELLIGUINOUS.—The Selliguinous Ammonite, pl. X. fig. 3.

Ammonites lævigatus. Sowerby, Min. Conch. VII. p. 93, pl. 540, fig. 1.

Discoidal, smooth; inner volutions few, almost wholly inserted, the outer one enlarging rapidly; external margin or ambit obtuse; aperture very narrow, forming an elongated ellipsis, which is rendered sagittate by the indentation of the volution.

Discovered in the Folkstone Marle, near Warminster, by Miss Bennet, and found at Cheriton, near Sandgate, Kent, in the Tile clay, by Dr. Fittom.

58. A. CINCTUS.—The Girdled Ammonite, pl. X. fig. 4.

Ammonites cinctus. Mantell, Geology of Sussex, p. 116; Sowerby, Min. Conch. VI. p. 122, pl. 564, fig. 1.

Discoidal, subumbilicate; volutions three, depressed, three-fourths inserted, with transverse, annular, bifurcate, undulated ribs; umbilicus expanded, with a marginal zone of oblique tubercles; ambit convex, embraced by the ribs; aperture ovato-sagittate.

Mantell says of his specimen, "The volutions, although compressed, have a slight degree of convexity, and are ornamented by transverse radiations that arise from a row of small tubercles on the inner margin. Each radius (rib) divides into two branches, which pass with a gentle sweep across the ambit, and unite with the corresponding undulations of the

opposite side; small oblique tubercles are placed on each radius at the point of bifurcation." The ambit is slightly undulated by the ribs. Greatest diameter three inches and six-eighths; thickness of the outer volution one inch and a half; of the aperture one and an eighth of an inch.

This species somewhat approaches in appearance to *Ammonites varians*, in having bifurcated ribs, and a row of tubercles on the inner margin, but is widely different by the rounded form of its back, and other obvious distinctions.

Found in the Gray Chalk Marle at Middleham, Sussex, by G. Mantell, Esq.

59. A. CATILLUS.—The Porringer Ammonite, pl. X. fig. 5.

Ammonites catillus. Sowerby, Min. Conch. VI. p. 123, pl. 564, fig. 2.

Discoidal, much compressed; three or four volutions, two-thirds concealed, their inner margins narrow and obtuse; sides even, with a row of short tubercles on each side of the margin, which are transposed into obscure undulations on the outer volution; aperture lanceolate-sagittate, with obtuse angles. Greatest diameter six inches; thickness not quite an inch.

Discovered in the upper Green-sand in a quarry at Nursted, near Petersfield, by Mrs. Murchison.

60. A. MURCHISONÆ.—Murchison's Ammonite, pl. X. fig. 6.

Ammonites Murchisonæ. Sowerby, Min. Conch. VI. p. 95, pl. 550.

Discoidal, carinated; six or seven compressed volutions, with obtusely truncated inner edges, producing a concave surface, the inner ones about two-thirds concealed; sides provided with obtuse undulations or lines of growth, which are usually bifurcate as they approach towards the rounded ambit; aperture semi-elliptical, its sides are slightly produced lobes; keel but slightly protruding, and containing the siphuncle.

In the young condition the sides of this Ammonite are furnished with transverse ribs, which are irregular in their development, and exist until the fossil is about two inches in diameter, when they become suddenly smooth, exhibiting only lines of growth.

Discovered by Mrs. Murchison in a calcareous nodule, at the base of a micaceous Sandstone rock, east of Holme, near Portree, Isle of Skye, and in the inferior Oolite at Allington near Bridport.

Named in honour of that scientific lady.

61. A. SPINOSUS.—The Spined Ammonite, pl. X. figs. 7, 8, 9.

Ammonites spinosus. Sowerby, Min. Conch. VI. p. 18, pl. 540, fig. 2.

Discoidal; four volutions, inner ones exposed; with numerous sharp, forked ribs, which become nearly lost as they pass towards the ambit; aperture subrotund.

When young, the ribs of this shell are furnished with four rows of spines, about twenty on each, which are connected at their base by two or three ribs on each; these gradually disappear by age; when the shell has reached an inch in diameter, they are almost entirely extinct, leaving only sharp, irregular ribs.

Found in Clay near Weymouth, and also at Braunston.

62. A. DENARIUS.—The Denier Ammonite, pl. X. figs. 10, 11.

Ammonites denarius. Sowerby, Min. Conch. VI. p. 78, pl. 540, fig. 1.

Discoidal, compressed; four partly exposed volutions, flattened on the edge, and provided with a row of ten or twelve conical obtuse tubercles on each side, all of which are united to two ribs, with usually a third rib between each, and there are in all about thirty arcuated ribs, which terminate abruptly near the back, but none of these extend beyond the tubercles on the interior sides of the volutions; aperture oblong, which in the young state is longer than wide, with the tubercles but slightly elevated.

Discovered on Blackdown Common by H.H. Goodhall, Esq.

This species may be distinguished from the *Ammonites tuberculatus*, pl. XIV. fig. 1, and the *A. lautus*, pl. VIII. fig. 1, by the blunt and depressed termination of the ribs upon the back.

63. A. BRODIÆI.—Brodie's Ammonite, pl. X. fig. 13.

Ammonites Brodiæi. Sowerby, Min. Conch. IV. p. 71, pl. 351.

Discoidal, gibbous, very largely umbilicate; seven nearly half concealed volutions, provided with distant transverse strong ribs, the intervening sulci being about equal in breadth; these emanate from near the edges of the volutions, and extend to the centre, where they become very broad, and are each ornamented by an obtuse, nearly round tubercle, from whence proceed numerous lesser, slightly curved ribs, which pass over the rounded ambit, to the number of about four to each of the larger ribs, and meet the strong tubercular ribs on the opposite side; aperture curved and transversely oblong; greatest diameter nearly four and a half inches.

Found on Portland Island by James Brodie, Esq.

64. A. HUMPHRIESIANUS.—Humphries' Ammonite, pl. X. figs. 14, 15.

Ammonites Humphriesianus. Sowerby, Min. Conch. V. p. 161, pl. 500, fig. 1.

Discoidal, very thick; with five volutions, the inner ones exposed; sides ornamented with large, numerous, distant ribs, extending to nearly the centre of the volutions, where they are provided with large oblong-ovate, somewhat conical tubercles, from whence they branch into three arcuated smaller ribs, and passing over the greatly rounded ambit, meet at the tubercles on the opposite side; in the inner volutions the tubercles are placed close to the suture, or line of separation; these inner volutions are much flatter on the back than the others, consequently producing quadrangular sections; aperture in the young shell arcuated, oblong, and in the older shell semilunar.

Found in the inferior Oolite of Sherborne.

65. A. PERAMPLUS.—The Very Large Ammonite, pl. XI. fig. 1.

Ammonites peramplus. Mantell, Fossils of the South Downs, p. 200; Sowerby, Min. Conch. IV. p. 79, pl. 357.

Discoidal, four or five ventricose volutions, the inner ones nearly half inserted, the outer one increasing rapidly in dimensions, and occupying one-third the diameter of the disk; sides provided with a few, distant, obtuse ribs, which are most conspicuous on the inner sides of the volutions, and become obsolete before reaching the rounded and plain ambit; aperture transversely obovate; septa crisped and deeply sinuated.

Discovered by G. Mantell, Esq. near Lewes. From the great dimensions of some fragments found by that gentleman, he supposes the diameter of the shell must have been about three feet in its perfect condition.

66. A. PERARMATUS.—The Well-armed Ammonite, pl. XI. fig. 2.

Ammonites perarmatus. Sowerby, Min. Conch. p. 72, pl. 352.

Discoidal, compressed; four exposed volutions, armed with two concentric series of acute tubercles; these are transversely united by eighteen or twenty pairs of obtuse ribs upon each volution; the remaining portion of the shell is plain and flat; ambit rounded; aperture longer than wide, almost orbicular, and occupying in length about one-third of the diameter of the disk. Greatest diameter eight and a half inches.

Found in the Coral Rag at Malton, in the Coral Oolite, Calcareous Grit, and Kelloway's Rock, Yorkshire.

67. A. SMITHI.—Smith's Ammonite, pl. XI. figs. 4, 5.

Ammonites Smithi. Sowerby, Min. Conch. IV. p. 148, pl. 406, figs. 1, 2, 3, 4.

Discoidal, compressed, carinated; five nearly wholly exposed volutions, crossed by many slightly curved distant ribs; sides flattened; keel obtuse; aperture oblong-ovate. Greatest diameter two inches.

The surface of this species exhibits a beautiful pearlaceous lustre. It is subject to great variety in its aspect from the young to the adult state. In its very young stages, it is nearly globose, entirely plain, and umbilicate, as in fig. 3; as it increases in growth, its ribs are gradually developed, first in the form of somewhat elongated tubercles, near the margin of the umbilicus; soon after this, the keel appears, and it then approaches its mature state, with the flattened shape and fully formed ribs, as in fig. 4.

Found associated with *Ammonites planicosta*, pl. VII. fig. 7, in the dark Marly Limestone, called Marston Stone, at Marston Magna, near Ilchester, and also at Evershot, Somersetshire. It bears some resemblance to that species, but is at once distinguished by the ribs being destitute of the tuberculated sharpness of that shell.

Named in honour of W. Smith, Esq. an excellent geologist, and author of a Geological Map of England, &c.

68. A. FIBULATUS. — The Button and Loop Ammonite, pl. XI. fig. 5.

Ammonites armatus. Young and Bird, Geology of Yorkshire, p. 250, pl. 13, fig. 9. *A. fibulatus.* Sowerby, Min. Conch. IV. p. 147, pl. 407, fig. 2.

Discoidal, much compressed; six volutions, the inner ones almost entirely exposed, flattened on their sides, with their inner margins plain; traversed by numerous transverse ribs, which are joined in pairs by smooth spines; these increase the uncommon flatness of this species, by filling up at intervals the suture which separates the volutions; there are placed at unequal distances ribs which pass over the dorsal margin without uniting with the spines; these are more numerous in the external volutions, and in some instances, alternate with the spines; each rib, when disengaged from the spine, is distinctly separated into two, consequently a greater number of costæ pass over the back than are found upon the sides of the shell; aperture oblong. It is distinguished from *Ammonites armatus*, pl. VIII. fig. 2, by its smooth spines.

Found in the Lias, at Whitby, &c. Yorkshire.

69. A. SUBARMATUS.—The Subarmed Ammonite, pl. XI. fig. 1.

Ammonites subarmatus. Young and Bird, Geology of Yorkshire, p. 250, pl. 13, fig. 3; Sowerby, Min. Conch. IV. p. 146, pl. 407, fig. 1.

Discoidal, compressed, concave; six volutions, the inner ones almost entirely exposed; sides crossed by slightly curved ribs, which are frequently united in pairs by smooth spines at their exterior extremities, continuing to nearly the central volution, but on the outer volutions these gradually disappear; and the ribs, which, in the earlier volutions, are usually divided before they pass over the back, are but seldom split.

The spines are hollow, the sides of the volutions are convex and increase rather rapidly in size, but are, like the *Ammonites mutabiles*, pl. XIII. fig. 7, a little constricted in some places.

Found in the Lias, at Whitby, Yorkshire.

70. A. DAVÆI.—Davy's Ammonite, pl. XI. fig. 7.

Ammonites Davæi. Sowerby, Min. Conch. IV. p. 70, pl. 350.

Discoidal, compressed; about five entirely exposed volutions, their sides almost flat, with very numerous transverse, slightly arcuated ribs, the interstices between them being nearly equal to their breadth, with a series of remote obtuse tubercles in the centre of the volutions, each covering about four of the sulci; aperture nearly orbicular. Found in the Blue Lias at Lyme Regis, Dorsetshire.

Named in honour of the distinguished Sir Humphrey Davy.

71. A. LÆVIGATUS.—The Smooth Ammonite, pl. XI. fig. 8.

Ammonites lævigatus. Sowerby, Min. Conch. VI. p. 135, pl. 570, fig. 3.

Discoidal, compressed, smooth; three convex volutions, the inner ones exposed; aperture transversely oblong-ovate, with a thickened margin, somewhat produced in front.

Found in the Lias, Lyme Regis.

72. A. PARVUS.—The Small Ammonite, pl. XI. fig. 9.

Ammonites parvus. Sowerby, Min. Conch. V. p. 70, pl, 449, fig. 2.

Discoidal; four or five gradually enlarging volutions, the inner ones exposed; sides furnished with numerous, elevated, obtuse, divergent, undulating striæ; ambit considerably rounded; aperture ovate, occupying one-third of the diameter of the disk.

Discovered in the shaft, while sinking a well at Tunbridge, eighty feet below the surface.

73. A. CRISTATUS.—The Cristed Ammonite, pl. XI. fig. 10.

Ammonites cristatus. Defrance, MSS; Sowerby, Min. Conch. V. p. 24, pl. 421, fig. 3.

Lenticular, compressed, carinated; inner volutions concealed, the outer one increasing rapidly; keel thin, largely and deeply notched.

Found at Weymouth by Mr. Bryer.

74. A. BAKERIÆ.—Baker's Ammonite, pl. XI. fig. 11, and 14.

Ammonites Bakeriæ. Sowerby, Min. Conch. VI. p. 134, pl. 570, figs. 1, 2.

Discoidal, compressed; four volutions, inner ones exposed; sides with transverse, numerous, furcated, armed ribs, and about ten or eleven sinuous lines,—which are its distinguishing characteristic,—extending over the back; aperture oblong-ovate.

Discovered by Miss Baker in an indurated nodule of Marle amongst Alluvium, parish of Braunston, Northamptonshire, and named in honour of that lady.

75. A. HERVEYI.—Hervey's Ammonite, pl. XI. fig. 12.

Ammonites Herveyi. Sowerby, Min. Conch. II. p. 215, pl. 195.

Discoidal, gibbous, umbilicate; four volutions, the inner ones nearly concealed; sides with numerous, arcuated, sharp, bifurcate, or trifurcate ribs, commencing within the margin of the umbilicus, extending to the dorsal margin, and passing over the ambit, unite with the ribs of the opposite side; umbilicus very deep, with the sides smooth, and a little quadrangular; aperture semilunar, with obtuse angles; thickness of the shell nearly equal to half its diameter. Greatest diameter five and a half inches.

In some instances, the branches of the ribs, after having passed over the back, do not reunite with those immediately opposite; and sometimes the third branches are left free at their terminations.

Discovered on the property of the Earl of Bristol, near Spalden, Lincolnshire; and found at Bradford, Wiltshire; Knowle's Hill, Somersetshire; in the Kelloway's Rock, and Cornbrash, Yorkshire; and in the inferior Oolite, middle and south of England.

Named in honour of the Earl of Bristol.

76. A. BROOKI.—Brooke's Ammonite, pl. XI. fig. 12.

Ammonites Brooki. Sowerby, Min. Conch. II. p. 203, p. 190.

Discoidal, compressed, carinated; four or five volutions, the inner ones not quite half concealed; sides with numerous strong, simple, arcuated ribs, and also marked by fine lines of growth, the sulci and ribs being of equal breadth; keel round, entire, with a deep furrow on each side; aperture oblong-ovate, about a third of the diameter of the shell. Greatest diameter about six and a half inches.

Found in the Blue Lias of Lyme Regis, and named in honour of H. J. Brooke, Esq.

77. A. VARICOSUS.—The Warted Ammonite, pl. XII. fig. 1.

Ammonites varicosus. Sowerby, Min. Conch. V. p. 74, pl. 451, figs. 4, 5.

Discoidal, compressed; six or seven exposed volutions; both sides provided with an irregular row of tubercles upon their inner margin, and with large semilunar, curved, obtuse ribs, extending from the inside of the volutions to the sides of the keel, which is distinct; aperture oblong, about one-third of the diameter of the disk.

When young, this species is distinctly carinated; the inner edges of the volutions are provided with a series of small tubercles, which are united to the ribs, where they are developed, and as they increase in size, they become large, broad, and obtuse, eventually extending over the keel, and entirely conceal it in the full grown shell. This great change has frequently led to their being taken for different species, in those separate conditions of growth, but on a careful examination of the inner volutions, the form of the young shell may frequently be traced.

Found in the Green-sand of Blackdown.

78. A. RHOTOMAGENSIS.—The Rouen Ammonite, pl. XII. fig. 2.

Ammonites rhotomagensis. Cuvier and Brongniart, Env de Paris, p. 83, pl. 6, fig. 2; Sowerby, Min. Conch. VI. p. 25, pl. 515. *Ammonites Sussexensis.* Mantell, Geology of Sussex, p. 114, pl. 20, fig. 2, and pl. 21, fig. 10.

Discoidal, thick, subumbilicate; four subquadrangular volutions, the inner ones partly inserted; sides flattish, with many transverse, nearly straight, strong prominent ribs, having three short, blunted tubercles upon the back, and two, more or less obtuse, on each side; aperture oblong, and nearly quadrangular; septa foliaceous. Greatest diameter twelve inches.

This species is nearly allied to *Ammonites Mantelli*, pl. 4, figs. 3 and 9, but is distinguished by the ribs almost invariably reaching across the volutions, as well as by its flattened sides, its wide umbilicus, and the central row of tubercles on the ambit. In the adult shell, the ribs are prominent and somewhat angular, the ambit broad and flat, and the central row of tubercles nearly obsolete.

Found at Hamsey, Sussex, in the Gray Chalk Marle, and in the Chalk of Wiltshire.

78. A. SUBRADIATUS.—The Subradiated Ammonite, pl. XII. fig. 3.

Ammonites subradiatus. Sowerby, Min. Conch. V. p. 23, pl. 421, fig. 2.

Lenticular, umbilicate, carinate; inner volutions entirely concealed; sides covered with numerous doubly curved ribs, obscure in the middle of the disk, but stronger on the outer margin, where they are furcated; ambit rather obtuse; keel small and entire, but not much developed; umbilicus small; aperture sagittate; thickness of the shell about a fifth of its diameter.

Found betwixt Bath and Bristol, in a mass of Ironshot Oolite.

79. A. TAYLORI.—Taylor's Ammonite, pl. XII. fig. 4.

Ammonites Taylori. Sowerby, Min. Conch. VI. p. 23, pl. 514, fig. 1.

Discoidal, with three entirely exposed volutions,—the inner ones small,—the whole crossed by about twelve remote, strong, prominent ribs, all of them provided with a large spiniform tubercle on each side of the ambit, and one or two sligh protuberances on the rounded sides of the volutions; aperture somewhat transverse and nearly round, its length not quite one-third of the diameter of the shell.

Discovered in a mass of indurated Clay, somewhat like Ironstone, in Happisbury Cliff.

Named in honour of its discoverer, R. Taylor, Esq. of Norwich.

80 A. HIPPOCOSTANUM.—The Horse chestnut Ammonite, pl. XII. fig. 5.

Ammonites hippocastanum. Sowerby, Min. Conch. VI. pl. 24, pl. 514, fig. 2.

Gibbose; thickness equal to two-thirds its diameter; umbilicated; four convex, deeply inserted, nearly concealed volutions; crossed by ten or twelve distant, almost straight, unequal, considerably elevated ribs, each provided with three tubercles upon the back or ambit, and having obtuse, oblong, somewhat tubercular elevations on their sides; aperture transverse, obovate.

This species may at first sight be mistaken for the *Ammonites rhotomagensis*, but differs in the convexity of the sides of the volutions, in the ribs being thicker and less numerous, and in the tubercles being larger, as well as in its greater comparative thickness.

Discovered by H. T. De La Beche, Esq. in the Chalk at Dowlands, which abounds in grains of Green-sand and Quartz, and is found also at Lyme Regis.

81. A. BREVISPINA.—The Short-spined Ammonite, pl. XII. fig. 6.

Ammonites brevispina. Sowerby, Min. Conch. VI. p. 106, pl. 556; Phillips, Geology of Yorkshire, I. p. 75.

Discoidal, with five or six entirely exposed, compressed

volutions, with numerous, somewhat obtuse, slightly curved ribs, emanating from the suture, and passing over the back, where they become more elevated, and each rib is furnished with two small short spines on both sides, situate near the inner and outer edges of the volutions; aperture obovate.

Discovered in the Lias at Pabba, Western Islands of Scotland, by R. J. Murchison, Esq.; and also in the Lias of Yorkshire.

82. A. PLANORBIS.—The Planorbis-shaped Ammonite, pl. XII. fig. 7. Fleming, Brit. An. p. 248.

Ammonites planorbis. Sowerby, Min. Conch. V. p. 69. pl. 448. Fleming, Brit. An. p. 248.

Discoidal, with three or four smooth, rapidly increasing volutions, two-thirds exposed, much compressed, and crossed by numerous very fine lines of growth.

This Ammonite, for the most part, exhibits, on its external surface, the most beautiful iridescent reflections.

Found in the slaty clay, connected with the Lias, at Watchet, Somersetshire, and also in Lincolnshire. It is by no means scarce.

83. A. GULIELMII.—Williams's Ammonite, pl. XII. fig. 8. Fleming, Brit. An. p. 246.

Ammonites Gulielmii. Sowerby, Min. Conch. IV. p. 5. pl. 311.

Lenticular, much compressed, with a narrow and flat ambit; five or six exposed volutions, crossed by numerous dissimilar, arcuated, acute ribs; each of the longer ones provided with a tubercle at their inner ends, and another at about a third of their length. Here they divide and alternate with shorter and more numerous ribs, which terminate in a border of round, prominent, distinct tubercles, on each side of the ambit; aperture elliptical, somewhat more than one-third as wide as long.

Found in the Oxford clay, south-west of England.

It is named to commemorate Dr George Williams, Professor of Botany, Oxford.

84. A. BLAGDENI.—Blagden's Ammonite, pl. XII. fig. 9. Fleming, Brit. An. p. 245.

Ammonites Blagdeni. Sowerby, Min. Conch. II. p. 231. pl. 201. Phillip's Geology of Yorkshire, I. p. 151.; De la Beche, Geo. Manuel, p. 371.

Sub-cylindrical, very deeply umbilicate, occupying the entire disk; five or six volutions, almost wholly exposed, crossed by numerous strong radiating ribs, which gradually thicken as they diverge from the centre, each terminating upon the outer edge, by a large spiniform tubercle. The inner volutions are deeply sunk, and not above an eighth of the thickness of the ambit, which is very broad, slightly convex, and fluted, to the extent of four or five furrows to each of the marginal tubercles; aperture transverse, quadrangular, and three times as wide as long; greatest diameter, about six inches and three quarters; thickness, four and a half inches.

Found in the Great or Bath Oolite of Yorkshire, and in the Inferior Oolite at Dundry and also in Normandy.

Named in memory of Sir Thomas Blagden.

85. A. LEACHII.—Leach's Ammonite, pl. XII. fig. 10.

Ammonites Leachii. Sowerby, Min. Conch. III. p. 73, pl. 242, fig. 4. Fleming, Brit. An. p. 243.

Compressed, with four volutions; the inner ones half inserted; crossed by numerous, undulating, pretty prominent, frequently furcated ribs, which are arcuated as they pass over the front, inclining to the aperture; ambit sharp, crenated; aperture ovate.

Found in the Lias at Weymouth; and named in honour of Dr William Elford Leach, the late distinguished zoologist of the British Museum.

This species is nearly allied to *Ammonites Lamberti*, pl. V. fig. 1; but differs from it in being more gibbous, and in the ribs being more prominent and less numerous.

86. A. CORRUGATUS.—The Wrinkled Ammonite, pl. 12, fig. 11. Fleming, Brit. An. p. 244.

Ammonites corrugatus. Sowerby, Min. Conch. V. p. 74, pl. 451. fig. 3; De la Beche, Geo. Manual, p. 375.

Discoidal, carinated; having four volutions, crossed by numerous, elevated, slightly curved, and furcated ribs, the furcations near the centre; the minor ones three-fourths concealed; with a broad umbilicus, which exposes part of the inner volutions; back obtuse, with a distinct carina in its centre; aperture obovate.

Found at Dundry, in the Iron-shot Oolite.

This shell somewhat resembles the *Ammonites læviusculus*, pl. XVII. fig. 7, but is considerably thicker, the back broader, and the ribs more prominent.

87. A. FUNIFERUS.—The Corded Ammonite, pl. XIII. fig. 1.

Ammonites funiferus. Phillips, Geology of Yorkshire, I. p. 142, pl. 6. fig. 23.

Lenticular, deeply umbilicate, carinated, thick in the centre, and thin at the external margins; slightly and obscurely ribbed transversely, with stronger grooves passing over the thinly carinated back; inner volutions concealed; aperture acutely sagittate, much compressed, and nearly equal in length to half the diameter of the shell; greatest diameter about four inches.

Found in the Kelloways Rock at Scarborough.

This species is nearly allied to *Ammonites excavatus*, pl. VI. fig. 7.

88. A. PTYCHOMPHALUS.—The Plaited-umbilicus Ammonite, pl. XIII. figs. 2 and 11.

Ammonites plicomphalus. Sowerby, Min. Conch. IV. p. 82 and 145, pl. 359 and 404. Fleming, Brit. An. p. 244. De la Beche, Geo. Man. p. 370.

Discoidal, largely umbilicate, around which are from eight to ten divergent, wide, somewhat acute protuberances; ambit rounded and plain; aperture ovate, about three-sevenths of the last volution in size; a little straitened towards the back; greatest diameter about five inches and a half.

Figure 2 represents the adult fossil, and figure 11 the young, in which condition it is very different from the old state, being provided with numerous, close, slightly bent, transverse furrows.

Found in the sandstone at Bolingbroke, Lincolnshire, by Mr Weir; the Kimmeridge clay, Yorkshire; and in the Oxford clay, Normandy.

89. A. LENTICULARIS.—The Lens-shaped Ammonite, pl. XIII. fig. 3.

Ammonites lenticularis, Phillips, Geology of Yorkshire, I. p. 142, pl. 6, fig. 25.

Lenticular, smooth, inner volutions concealed, umbilicate, with a plain, slightly rounded keel; aperture sagittate, equal to nearly the half of the diameter of the shell; considerably thickened in the centre, and sloping off towards the thin smoothly carinated ambit.

Found by Professor Phillips, in the Kelloways Rock at Scarborough.

90. A. CATINUS.—The Chain Ammonite, pl. XIII. fig. 4.

Ammonites Catina, Sowerby, Min. Conch. V. p. 21. pl. 420. Mantell, Geology of Sussex, p. 198, pl. 22, fig. 10. Buckland, Geology and Mineralogy Considered, II. p. 59, pl. 37, fig. 8.

Depressed, with from six to eight smooth volutions, with flattened sides, the inner ones exposed; provided with two series of short, blunt, moderately sized, conical, round pointed tubercles on each side of the interior and exterior angles of the volutions; ambit a little convex; aperture quadrangular; margins of the septa sharp and deeply sinuated. Largest diameter about thirteen inches.

Little is known of the perfect condition of this fossil, as little else has hitherto been found of it but casts of the chambers; these have usually suffered so much by the destroying hand of time, that they are but slightly attached, and appear like the concatenations of a chain. From the small portions of the shell which have been seen, it appears to be quite smooth, divested of ribs or undulations, excepting in its young condition.

Found embedded in sand, in Marsham Field, near Abingdon, Berkshire.

91. A. PARKENSONI.—Parkinson's Ammonite, pl. XIII. fig. 5.

Ammonites Parkinsoni, Sowerby, Min. Conch. IV. p. 1, pl. 307. De la Beche, Geo. Manuel, p. 375. Fleming, Brit. An. p. 244.

Discoidal, with from seven to nine slightly convex volutions, the inner ones exposed; crossed by numerous, considerably elevated and arcuated ribs, which are bent forward at their exterior ends; they are furcated near the ambit, which is narrow and plain, upon which they nearly meet; aperture oblong, narrowed towards the back. Greatest diameter eighteen inches.

Found in the Lias at Yeovil, and Holienstein, Saxony, and in the inferior Oolite, Bayeux.

92. A. SOLARIS.—The Sun Ammonite, pl. XIII. fig. 6.

Ammonites Solaris, Phillips, Geology of Yorkshire, I. p. 135, pl. 4. fig. 29. De la Beche, Geo. Manuel, p. 370.

Discoidal, carinated, with four nearly flat volutions, the inner ones exposed; provided with numerous elevated smooth ribs, reaching entirely across the volutions, and slightly bent forward at their exterior ends, where they are terminated by the acutely triangular keel; aperture spatuliform, acute next the ambit.

Found in the Calcareous Grit at Scarborough, by Mr Williamson.

93. A. MUTABILIS.—The Mutable Ammonite, pl. XIII. figs. 7 and 9.

Ammonites mutabilis, Sowerby, Min. Conch. IV. p. 145, figs. 1 and 2. Fleming, Brit. An. p. 246.

Shell compressed, with from four to five smooth volutions, the inner ones two-thirds exposed, exhibiting tuberculated, wide set ribs; ambit rounded; aperture ovato-sagittate. Largest diameter ten inches; thickness of external volutions an inch and a half.

Fig. 9 represents the shell in its young state, when there is a narrow flattened zone in the centre of the ambit, from whence emanate numerous close-set, somewhat curved ribs, which extend to about the centre of the volutions, where they meet a series of compressed, oblong-ovate tubercles, which reach to the inner margin of the volutions; the whole interior sides of the volutions are smooth. It is only in the very immature state that the tubercles are formed, as they are no longer met with in specimens of two inches diameter; but the external ribs are visible in specimens of six inches diameter, after which they imperceptibly disappear; and the ambit becomes more rounded, the sides quite smooth, and are somewhat obliquely compressed towards the back, which produces the obtuse sagittate form of the aperture. The external surface is nacred; and at remote, but unequal intervals, there are slight contractions in the volutions.

Discovered in the Clunch Clay near Horncastle, by George Weir, Esq.

94. A. OCULATUS.—The Eyed Ammonite. pl. XIII. fig. 8.

Ammonites oculatus, Phillips, Geology of Yorkshire, I. p. 138, pl. 5, fig. 16.

Shell compressed, and slightly depressed; umbilicate; interior volutions hidden; numerous depressed undulating ribs emanate from the margin of the umbilicus, and extend to near the ambit, where they meet a series of very remote, nearly circular, depressed tubercles, between which and the back is smooth; a series of close-set oblong tubercles invest both sides of the ambit, which is smooth.

Found in the Oxford Clay at Scarborough.

95. A. ATHLETA.—The Champion Ammonite, pl. XIII. fig. 8.

Ammonites athleta. Phillips, Geology of Yorkshire, I. p. 141, pl. 6, fig. 19.

Shell strong, with six volutions, the inner ones almost wholly exposed; sides crossed by numerous, strong, elevated ribs, with an oblong produced tubercle at each end, those on the outer margin considerably larger than the others; each of these divide into three narrow exserted smooth ribs, on the flattened and square ambit, uniting with the tubercles on the opposite side; the interior volutions gradually diminish in thickness as they approach the centre, the whole side forming a widely reversed cone; aperture nearly quadrangular.

Found in the Kelloways Rock at Hackness, and in the Oxford Clay, Yorkshire.

96. A. TUBERCULATUS.—The Tuberculated Ammonite, pl. XIV. fig. 1.

Ammonites tuberculatus. Sowerby, Min. Conch. IV. p. 4, pl. 310, fig. 1, 2, 3; Mantell, Geology of Sussex, p. 92; Fleming, Brit. An. p. 246; De la Beche, Geo. Manuel, p. 294.

Compressed umbilicate, with five convex volutions, the inner ones two-thirds exposed; ambit flat; transversely ribbed, the costæ oblong, arising in threes from large circular tubercles, uniting in pairs towards the back, and forming large compressed tubercles on each side of the ambit, which is broad, with a deep narrow sulcus or groove in its centre; aperture suborbicular; septa very foliaceous.

In immature shells, the sides of the volutions are very convex, with a transverse aperture; the tubercles are situate near the centre of the volutions. Length of the aperture about two-fifths of the diameter of the outer volution, and its width varying according to age.

Found in a stratum of Marle, under the Chalk at Folkstone, and in the Blue Chalk Marl at Ringmer, Sussex; also in the the same kind of strata at Cambridge, and other parts of England.

This is a strongly marked species, and has somewhat the

appearance of *Ammonites biplicatus*, figs. 8. of this plate, but differs from it in the situation and size of its tubercles, and in their being united by single ribs, which are not curved; in the volutions being less inserted; in the ambit being sulcated; and in the marginal tubercles being opposed to each other in place of alternating, which character also separates it from *A. auritus*, pl. VII. fig. 9.

97. A. STOKESII.—Stoke's Ammonite, pl. XIV. fig. 2.

Ammonites Stokesii. Sowerby, Min. Conch. II. p. 205, pl. 191; De la Beche, Geo. Manuel, p. 374; Fleming, Brit. An. p. 242.

Lenticular, depressed; inner edge of volutions strongly defined; crossed by numerous slightly elevated ribs, which are narrow at their interior side, and gradually thicken as they approach the ambit, where they have a slight curvature towards the aperture, and become obsolete near the back of the shell; inner volutions half concealed; ambit thin and crenulated; the whole shell exhibits marks of concentric striæ; aperture sagittate.

Found by Professor Buckland in a Marl bed, in the inferior Oolite series, near Bridport, Dorsetshire, and named in honour of Charles Stokes, Esq. a zealous and accomplished naturalist. It also occurs in the middle of England.

98. A. PROBOSCIDEUS.—The Proboscis Ammonite, pl. XIV. fig. 3.

Ammonites proboscideus. Sowerby, Min. Conch. IV. p. 4. pl. 310, fig. 4, 5; Fleming, Brit. An. p. 246.

Depressed, with four or five ventricose partly concealed volutions; outer one provided with two rows of large, remote, blunted, almost cylindrical tubercles; the inner series continuing along the exposed portion of the central volutions, and marking their line of separation; ambit concave, with the outer series of large tubercles on both its edges; aperture orbicular, its width being about a third of the diameter of the shell.

Sowerby mentions two varieties of this species.

1. With the tubercles connected by very irregular and short ribs.

2. Destitute of ribs.

This species is distinguished from the *A. tuberculatus*, fig. 1. of this plate, by having only eight tubercles on each volution, in place of twelve, which marks that species; it has also a broader and ill defined back, with a very large siphuncle.

Found in the Marl, under the Chalk at Folkstone, Cambridge, and other places.

99. A. DENTATUS.—The Toothed Ammonite, pl. XIV. fig. 4.

Ammonites dentatus. Sowerby, Min. Conch. IV. p. 3. pl. 308; Fleming, Brit. An. p. 244. *A. serratus;* Parkinson, Geolo. Trans. V. p. 57.

Discoidal, umbilicated; with numerous, prominent, slightly curved ribs, furcated near their origin, and terminating upon the margin of the ambit, where they are a little thickened and bent forward; producing on each side of the back a serrated margin, with a plain, flat, intermediate space; aperture, two-fifths of the diameter of the shell, long, and one-fourth wide.

Found in the Marle below the Chalk at Folkstone.

100. A. HYSTRIX.—The Hedgehog Ammonite, pl. XIV. fig. 5.

Ammonites Hystrix. Phillips, Geology of Yorkshire, I. p. 123, pl. 2, fig. 44; De la Beche, Geo. Manuel, p. 294.

Discoidal, volutions moderately inflated, furnished with transverse elevated ribs, emanating from the inner margin,—which is well defined, and terminating on the ambit, where they have a gentle curve forward; each rib provided with three series of tubercles, all of which appear to have been elevated, subulate, and sharp pointed; those on the inner margin, a quarter of an inch in length, and pointing backwards; the central series are obtuse, as if worn down; while the dorsal ones, which are entire, are nearly half an inch in length, and are curved forward.

Found in the Speeton Clay at Speeton, Yorkshire.

Professor Phillips says, this species is "allied to *Ammonites Mantelli*, of which it may prove to be one of the many varieties which, in Sussex, lie in the gray Marle." We, however, cannot agree with the professor in this opinion.

101. A. WOOLGARI.—Woolgar's Ammonite, pl. XIV. fig. 6, 7.

Ammonites Woolgari. Mantell, Geology of Sussex, p. 197, pl. 21, fig. 16, and pl. 22, fig. 7; Fleming, Brit. An. p. 242; De la Beche, Geo. Man. p. 372 and 383; Sowerby, Min. Conch. VI. p. 165, pl. 587, fig. 1.

Discoidal, depressed, carinated; with three or four volutions, the central ones one-third inserted; sides of the central volutions compressed, and ornamented with remote, slightly curved ribs, inclining towards the aperture, terminating on the outer margin in compressed, carinated tubercles, or spinous projections; keel acute and deeply serrated. In some specimens, there are two tubercles on the outer extremity of each rib, and one on the inner margin.

Found in the Lower Chalk, near Lewes, Sussex.

So different are the central volutions of this fossil from the external one, that they might easily be mistaken as belonging to distinct species, if separated from each other. They are considerably compressed, and provided with elevated, curved ribs; while the outer one is inflated, and provided with ten large, conical, spinous, parallel tubercles, on each side of the keel, one tooth of which is in the centre of each pair. In the central volutions, every rib is furnished with a depressed tubercle, placed near to, and parallel with, the carina. Within this is placed a smaller tubercle, which increases considerably in size with the volutions as they progress, and becomes united with a third tuberculous eminence, which gradually diverges from the inner edge of the volution, until it becomes obsolete; the depressed tubercles being still, however, visible.

This species was named by Mr Mantell in honour of the late Thomas Woolgar, Esq. a zealous and acute topographer and naturalist.

102. A. BIPLICATUS.—The Two Plaited Ammonite, pl. XIV. fig. 8.

Ammonites biplicatus. Mantell, Geology of Sussex, p. 91, pl. 22, fig. 6; Fleming, Brit. An. p. 248.

Compressed, carinated, and slightly umbilicate; with three or four volutions, the central ones two-thirds concealed; crossed by transverse, prominent, curved, bifurcated ribs, which emanate from a series of oblong, tubercular prominences, situate on the inner margin of the volutions, and terminating in distinct tubercles on the outer margin; keel depressed, bordered by alternating and compressed tubercles; aperture obtusely sagittate, its length being somewhat less than the diameter of the shell.

Found in the Blue Chalk Marle.

This species has some affinity to the *Ammonites lautus*,

pl. VIII. fig. 1. but differs from it in the flatness of the keel, and in being provided with two ribs only to each tubercle; and is distinguished from *A. auritus*, pl. VII. fig. 9, by the volutions being inserted.

103. A. BIRCHII.—Birch's Ammonite, pl. XIV. fig. 7.

Ammonites Birchii. Sowerby, Min. Conch. III. p. 121, pl. 267. Fleming, Brit. An. p. 246; De la Beche, Geo. Man. p. 374.

Discoidal, with from six to eight wholly exposed, gradually increasing volutions; sides concave, each volution ornamented with about thirty pairs of thin, obtuse tubercles, each pair united by a slightly elevated rib; back rounded with obscure sulci, which traverse the sides, on which, however, they are nearly obsolete; aperture transverse, its length being very little more than its breadth; greatest diameter seven inches and a half.

Found at Lyme Regis, Dorsetshire, by Colonel Birch, and named in honour of him: it also occurs at Charmouth and Cragmouth, and in the Lias in the middle and south of England.

104. A. GOODHALLI. — Goodhall's Ammonite, pl. XIV. fig. 10.

Ammonites Goodhalli. Sowerby, Min. Conch. III. p. 100, pl. 255; Fleming, Brit. An. p. 243; De la Beche, Geo. Man. p. 296.

Discoidal, carinated; with five ribbed, somewhat rapidly increasing volutions, the inner ones one-third inserted; both edges of the volutions gradually rounded; sides nearly flat, and provided with large, broad, undulated, irregular, rather flat ribs, obscurely tuberculate at both ends; between the principal ribs, sometimes shorter ones intervene, these have tubercles at the outer ends only; keel thin and very prominent; aperture oblong, slightly compressed in the centre.

Found at Blackdown, Devonshire, in the Lower Greensand, by H. H. Goodhall, and named in honour of him. Mantell also records it as a fossil of the Lower Greensand of Sussex; and in the same at Lyme Regis, according to De la Beche.

105. A. BENNETIANUS. — Bennet's Ammonite, pl. XV. fig. 1.

Ammonites Bennetianus. Sowerby, Min. Conch. VI. p. 77, pl. 539. Fleming, Brit. An. p. 248. De la Beche, Geo. Manuel, p. 295.

Sub-globose, with from four to six rapidly increasing volutions, the inner ones partly concealed, having a row of nine or ten large conical, blunted tubercles on each side, and a series of twenty very large obtuse tubercles invest each side of the back or ambit; these are connected by prominent, obtusely rounded ribs, which are stronger and more numerous between the series of tubercles than upon the inner sides of the volutions, and become quite obsolete upon the narrow space over the siphuncle; aperture transversely oblong.

In the very young state, the aperture is nearly circular, without any appearance of tubercles; but as it increases in dimensions, the aperture gradually becomes wider, and the tubercles begin to emanate from the ribs, and soon assume a produced aspect, those upon the sides being always the largest and most prominent.

Found among the Tile Greensand Clay at Cockerton, near Warminster.

106. A. TETRAMMATUS.—The Four-Tubercled Ammonite. pl. XV. fig. 2.

Ammonites tetrammatus, Sowerby, Min. Conch. VI. p. 166, pl. 587, fig. 2. De la Beche, p. 294.

Discoidal, carinated, with four or five convex volutions crossed by numerous obscure furcated ribs, each furnished with four round, blunt tubercles, the external ones compressed, and two on the shorter branches; carina sharp and entire.

This species bears a considerable resemblance to some of the varieties of *Ammonites varians*, pl. VIII. more especially to that of fig. 5, in which there are some of the sets of tubercles in fours, but these are only towards the aperture, all the others being in pairs; the *A. titrammatus* is, besides, always a larger shell than the *A. varians*, and has invariably four rows of tubercles.

107. A. VERNONI.—Vernon's Ammonite, pl. XV. fig. 3.

Ammonites Vernoni, Phillips, Geo. Yorkshire, I. p. 138. pl. 5, fig. 19. De la Beche, Geological Manuel, p. 370.

Discoidal, with three or four rounded volutions, the inner ones nearly half inserted; the sides furnished with numerous elevated furcated ribs, which emanate from the inner sides of the volutions, and when they reach the centre, split into two branches of nearly equal thickness, and passing over the rounded back, meet and join those of the opposite side; aperture oblong.

Discovered in the Oxford Clay at Scarborough, by Mr Bean, and is also found in the same kind of strata at Ebberston, Lincolnshire.

108. A. WILLIAMSONI. — Williamson's Ammonite, pl. XV. fig. 4.

Ammonites Williamsoni. Phillips, Geology of Yorkshire, I. p. 131, pl. 4, fig. 19. De la Beche, Geo. Manuel, p. 370.

Shell, with five or six thick, slightly raised volutions, the inner ones wholly exposed; sides crossed by numerous straight, elevated, parallel ribs, which rise from the inner margin of the volutions, and pass continuously over the broad, flat, and thick ambit, and end on the inner margin of the volutions on the opposite side; aperture oblong, nearly quadrangular.

Found in the Coralline Oolite at Ayton, Yorkshire, by Mr Williamson, and named in honour of him by Professor Phillips.

109. A. VITTATUS.—The Filleted Ammonite, pl. XV. fig. 5.

Ammonites vittatus. Phillips, Geology of Yorkshire, I. p. 164, pl. 13, fig. 1. De la Beche, Geo. Manuel, p. 372.

Discoidal, carinated; with four or five slightly raised volutions, the inner ones a third inserted; the sides crossed by numerous straight, slightly elevated ribs, which have a slight curvature forward at their outer extremity, and terminate on the side of the sharp, thin, and elevated carina, every rib provided with two tubercles, one at each extremity; those on the inner side but slightly raised, and the outer ones round and well defined.

Found in Calcareous Nodules in the Lias of Yorkshire, according to Young and Bird, and Professor Phillips.

110. A. GOWERIANUS.—Gower's Ammonite, pl. XV. fig. 6.

Ammonites Gowerianus. Sowerby, Min. Conch. VI. p. 94, pl. 549, fig. 2. Phillips, Geology of Yorkshire, I. p. 141, pl. 6, fig. 21, a variety. De la Beche, Geo. Manuel, p. 370.

Compressed, deeply umbilicate; with six or seven convex volutions, the inner ones half inserted, deeply sunk below the level of the outer one; sides crossed by numerous elevated and sharp ribs, which take their rise from the inner edge of the volutions, and extending over half of the sides,

where they are each provided with a large, sharp, elevated spine, at the outer extremity of which, the ribs separate into three or more obtuse annulate ridges, that pass over the rounded back or ambit; aperture oblong, equal to nearly one-third of the diameter of the shell; its edge is thin and slightly sinuated near the inner termination.

Discovered by Mr Murchison in the roof of the Coal at Brora, Sutherlandshire; and named in honour of the noble family of Gower. It has also been found at Hackness and Scarborough, Yorkshire, in the Kelloways Rock. Professor Phillips mentions a variety of this species, which he has represented in plate 6, fig. 21, from the same localities.

111. A. NAVICULARIS.—The Little Ship Ammonite, pl. XV. fig. 7.

Ammonites navicularis. Mantell, Geology of Sussex, p. 198, pl. 22, fig. 5. Sowerby, Min. Conch. VI. p. 105, pl. 155, fig. 2. De la Beche, Geo. Manuel, p. 293.

Umbilicate; with from three to four narrow compressed, deeply inserted, rapidly enlarging, ventricose volutions; a numerous series of strong, smooth, elevated, annulose transverse ribs, emanate from the inner margin of the volutions, and pass continuously over the large, rounded ambit, and terminate on the inner margins on the opposite side of the volutions; the ribs and intervening furrows are nearly of equal breadth; aperture transversely oblong. Greatest diameter seven inches.

Found by Gideon Mantell, Esq. in the upper Chalk at Offham, Sussex; and in the lower Chalk at Guildford, according to Sowerby.

112. A. CRENULARIS.—The Crenulated Ammonite, pl. XV. fig. 8.

Ammonites crenularis. Phillips, Geology of Yorkshire, I. p. 164, pl. 12, fig. 22. De la Beche, Geological Manuel, p. 372.

Lenticular, umbilicate; with five moderately inflated volutions, the inner ones three-fourths inserted, the central three deeply sunk; sides crossed by strong, elevated, remote, somewhat curved ribs, which, on reaching the centre, are met by numerous smaller ribs, which pass over the sharp ambit, producing a crenulated subcarinated back; aperture large, somewhat cordiform.

Found in the upper Shale of the Lias formation, Yorkshire.

113. A. COMPLANATUS.—The Levelled Ammonite, pl. XV. fig. 9.

Ammonites complanatus. Mantell, Geology of Sussex, p. 118. Sowerby, Min. Conch. VI. p. 133, pl. 569, fig. 1. De la Beche, Geo. Manuel, p. 294.

Lenticular, very flat, umbilicate; volutions entirely concealed, thickest in the centre of the shell, and gradually contracting towards the ambit, which is protruded into a narrow, slightly convex, crenated carina, produced by the angular terminations of the plicæ; inner half of the disk, with transverse undulating striæ, and the outer portion plicated, extending from the back over one-third of the disk, but the intermediate ones only reaching about half that distance; aperture, slightly sagittate, not more than four-tenths of an inch in width; keel with an elevation or ridge down its centre; greatest thickness about an eighth of an inch; umbilicus very small; septa numerous, and very foliaceous. Greatest diameter eight inches.

An easily distinguished species, from its great flatness, extent of the outer volution, narrow keel, small umbilicus, and its angular plicæ.

Found in the Gray Chalk Marle, at Hamsey, Sussex, by Gideon Mantell, Esq.

114. A. UNDATUS.—The Waved Ammonite, pl. XV. fig. 10

Ammonites undatus. Sowerby, Min. Conch. VI. p. 134, pl. 569, fig. 2. De la Beche, Geological Manuel, p. 293.

Discoidal, much compressed, and smooth; with three flat volutions, the central ones partly visible, and the inner margins of the whole, square; ambit, slightly rounded; sides with remote undulations, which pass over the back; aperture, sagittate, greatly elongated, with obtuse angles.

Discovered by Gideon Mantell, Esq. in the upper Chalk of Sussex.

115. A. SUBCARINATUS.—The Subcarinated Ammonite, pl XVI. fig. 1.

Ammonites subcarinatus. Phillips, Geology of Yorkshire, I. p. 163, pl. 13, fig. 3. De la Beche, Geo. Manuel, p. 371.

Discoidal, lenticular, umbilicate, and subcarinate; inner volutions concealed; sides slightly inflated, thick in the centre, and gradually sloping to the subcarinated back, or ambit; and crossed by numerous slightly developed ribs or undulations, which rise in the umbilicus, and extend to the ambit, crossing it, and uniting with those on the opposite side; aperture nearly cordate, and equal to one-half of the diameter of the disk.

The subcarina is more obvious in the inner circumference of the volution, and becomes gradually less distinct as it approaches the aperture.

Found in the upper Shale, Yorkshire.

116. A. LATÆCOSTATA.—The Broad-Ribbed Ammonite, pl. XIV. fig. 2.

Ammonites latæcosta. Sowerby, Min. Conch. VI. p. 106, pl. 556, fig. 1. De la Beche, Geological Manuel, p. 375.

Discoidal, compressed; with five exposed flat-sided volutions, crossed by large, sharp, nearly parallel ribs, which become wider and flatter as they pass over the rounded ambit, where they meet and join with the ribs of the opposite side; all of the ribs have very indistinct indications of tubercles on each end; aperture oblong. Greatest diameter three inches and a half.

Found in the Lias at Lyme Regis, usually met with in the Alluvium.

117. A. HETEROPHYLLUS.—The Reversely-foliated Ammonite, pl. XVI. fig. 3, and pl. XX. fig. 11.

Ammonites heterophyllus. Sowerby, Min. Conch. III. p. 119, pl. 266. Phillips, Geology of Yorkshire, I. p. 163, pl. 13, fig. 2. Buckland, Geology and Mineralogy Considered, I. p. 347, and II. p. 59, pl. 38 and 39. De la Beche, Geo. Manuel, p. 371.

Lenticular, umbilicate; with the volutions entirely concealed; sides convex, wholly covered by numerous divergent, elevated, slightly undulating striæ; umbilicus small and deep; back or ambit rounded; aperture large, occupying nearly two-thirds of the diameter of the disk, elliptical, with a slight notch for the reception of the preceding volution; septa of two kinds, small, and acutely angular; and large and ovate; they resemble two forms of pinnated foliage; the one presenting the appearance of large and oval terminal leaflets; while the other is small and acutely pointed; siphuncle placed near the back. Greatest diameter six inches and three quarters.

In the young shell, the septa are much less sinuated than in the adult, which is finely exemplified by a specimen in the possession of the Marchioness of Bath.

Found in the Lias at Whitby, Yorkshire.

Professor Buckland makes the following observations on this interesting and curious species; referring to its foliage, he says, "Its laws of dentation are the same as in other Ammonites, but the ascending secondary saddles, which in all Ammonites are round, are in this species larger than ordinary, and catch attention more than the descending points of the lobes."

The figures of the edge of one transverse plate are repeated in each successive plate. The animal, as it enlarged its shell, thus leaving behind it a new chamber, more capacious than the last, so that the edges of the plates never interfere or become entangled.

Although the pattern on this Ammonite is apparently so complicated, the number of transverse plates is but sixteen in one revolution of the shell; in this, as in almost all other cases, the extreme beauty and elegance of the foliations result from the repetition, at regular intervals, of one symmetrical system of forms, namely, those presented by the external margin of a single transverse plate. No trace of these foliations is visible on the outer surface of the external shell, as will be seen by our representation, pl. XVI. fig. 3.

The elevations and depressions on the ambit of this species, strongly illustrate the theory of Von Buch, respecting the use of the lobes and saddles, formed by the undulations of its outer margin.*

118. A. FISSICOSTATUS. — The Cleft-Ribbed Ammonite, pl. XVI. fig. 4.

Ammonites fissicostatus. Phillips, Geology of Yorkshire, I. p. 123, pl. 2, fig. 49. De la Beche, Geo. Manuel, p. 294.

Discoidal, with five or six two-thirds exposed, somewhat depressed volutions, crossed by numerous strong, slightly undulated ribs, which become furcate about the centre, and passing over the rounded ambit, meet and join with the cleft ribs of the opposite side; aperture subovate, its width being about five-sixths of its length.

Found in the Speeton Clay, Yorkshire.

119. A. GEMMATUS. — The Gemmed Ammonite, pl. XVI. fig. 5.

Ammonites gemmatus. Phillips, Geology of Yorkshire, I. p. 141, pl. 6, fig. 17. De la Beche, Geo. Manuel, p. 371.

Discoidal, with four or five ventricose volutions, the inner ones half exposed, and much thinner as they approach the centre; inner margin of the volutions slightly flattened, from which emanate numerous, somewhat distant, strong, elevated, nearly straight ribs, which, on reaching the centre of the sides, are united to large, rounded, obtuse tubercles; from which the ribs are continued diagonally, and terminate in large, slightly conical tubercles, on both sides of the broad and flattened ambit; between each of the exterior half of these ribs and the back, are two or three smaller costæ, which also terminate on the ambit. Greatest diameter six inches.

Discovered in the Kelloways Rock, Yorkshire.

120. A. SUBLÆVIS.—The Half Smooth Ammonite, pl. XVI. fig. 6.

Ammonites sublævis. Sowerby, Min. Conch. I. p. 117, pl. 54. Phillips, Geology of Yorkshire, I. p. 141, pl. 6, fig. 22. De la Beche, Geo. Manuel, p. 370. *Orbulites lævis,* Lamarck, 54. *Orbulita modiolaris,* Fleming, Brit. An. p. 248. *Nautilus,* &c. *Luidii Lithoph.* Brit. Tab. 6, fig. 292.

Orbicular, umbilicate; inner volutions all enveloped in the exterior one, and their crenated edges visible only within the deep conical umbilicus, which is undulated internally, and provided with a sharp angular edge; aperture semicircular, very wide, and truncated at the sides; whole outer surface smooth, and devoid of inequalities; septa numerous, with fine prominent undulations, which are divided into many lesser and rounded foliations, their margins resembling pinnate leaves; siphunculus close to the outer margin of the ambit; diameter, five inches, umbilicus, an inch and a quarter in width.

This species varies much in its young and adult state. When young, it is considerably compressed, and its surface provided with slight furcate undulations. In the infant state, its width is only half its length, and exhibits, on its surface, transverse ribs; these become less acute, and assume a more rounded and depressed form, as the shell progresses, and consist of longer and shorter ones, some of which are bifurcate. When the shell has reached three inches, these become less conspicuous, and when it has grown to four or five inches in diameter, they are entirely obsolete.*

Found in the Coral, Oolite, and Kelloways Rock, Yorkshire, and Middle and South of England; the Fuller's Earth of Bath; also in the Oxford Clay of Begginger, Schafenhausen, according to Von Buch; and De la Beche says it is found in the same kind of strata, Normandy.

121. A. FLEXICOSTATUS.—The Bent-Ribbed Ammonite, pl. XVI. fig. 7.

Ammonites flexicostatus. Phillips, Geology of Yorkshire, I. p. 142, pl. 6, fig. 20. De la Beche, Geo. Manuel, p. 371.

Discoidal, compressed; with four or five two-thirds exposed volutions, slightly raised in the centre of the sides, and slanting off to the margins, crossed by numerous, elevated, bent ribs, which become furcate in the middle, and passing over the somewhat thin and flattened ambit, meet with and join the furcations on the opposite side; the outer volutions increase rather rapidly; aperture oblong-ovate.

Found in the Kelloways Rock at Hackness, Yorkshire.

122. A. CRASSUS.—The Thick Ammonite, pl. XVI. fig. 8.

Ammonites crassus. Phillips, Geology of Yorkshire, I. p. 163, pl. 12, fig. 15. De la Beche, Geo. Manuel, p. 371. Young and Bird, Geo. Yorkshire, p.

Discoidal, with five thick half inserted volutions, somewhat flattened on their sides, crossed by numerous, straight, prominent, rounded ribs, which, on reaching the centre, are provided with a round, elevated tubercle, from which the ribs split into two or three divergent smaller costæ, and passing over the thick rounded ambit, unite with those of the opposite side; aperture, subcordiform.

This species has some affinity to *Ammonites Brodiæi,* pl. X. fig. 13, but may at once be distinguished from it by its inferior size, its greater proportional thickness, in having fewer volutions, and the central ones being thicker in all stages of growth, and in the external minor ribs being fewer and less elevated.

Found in the upper Shale, Lias formation, of Yorkshire.

123. A. PLICATILIS. — The Plaited Ammonite, pl. XVI. fig. 9.

* See our Elements of Fossil Conchology, where this theory is fully explained.

* See our Elements of Fossil Conchology.

Ammonites plicatilis. Sowerby, Min. Conch. II. p. 149, pl. 166. Fleming, Brit. An. p. 242. De la Beche, Geo. Manuel, p. 370.

Discoidal, with six exposed volutions; sides flat, crossed by numerous, equal, straight ribs, which become bifurcate or trifurcate towards the rounded ambit, which is smooth in the centre; aperture quadrangular, with rounded angles, a little longer than wide; septa acutely sinuated. Thickness of the shell about one-fourth its diameter.

So straight, close, and uniform are the ribs of this species, that they have more the appearance of art than of nature; in some cases, they are simple; in others, bifid or trifid.

Found in the Sandy Limestone of Dry Sandford and Marsham, north west of Abingdon; in the Kelloways Rock, Coral and Oolite, Yorkshire; the Coral Rag, middle and south of England; and in the same kinds of strata in various places on the Continent.

124. A. JAMESONI.—Jameson's Ammonite, pl. XVI. fig. 10.

Ammonites Jamesoni. Sowerby Min. Conch. VI. p. 105. pl. 555, fig. 1. Phillips, Geology of Yorkshire, I. p. 163. De la Beche, Geo. Manuel, p. 372.

Discoidal; with five or six volutions, the inner ones exposed; crossed by large, simple, obtuse, slightly bent ribs, which curve forward as they pass over the rounded ambit, meeting those on the opposite side, and are nearly equal to the intermediate spaces; aperture oblong-ovate, its length being equal to twice its breadth.

Discovered in the Lias, Island of Mull, by R. I. Murchison, Esq. and named by him in honour of Professor Jameson of Edinburgh; it has also been found in the Lias of Yorkshire, at Robin Hood's Bay.

125. A. JOHNSTONI. — Johnston's Ammonite, pl. XVII. fig. 1.

Ammonites Johnstoni. Sowerby, Min. Conch. V. p. 70. pl. 449, fig. 1. Fleming, Brit. An. p. 247. De la Beche, Geo. Manuel, p. 375.

Discoidal, with from six to nine greatly compressed, one-third inserted volutions; crossed by a central series of numerous, short, straight, elevated ribs, or perhaps more properly, elongated tubercles; inside of the volutions and ambit plain; central volutions destitute of ribs, and of nearly equal thickness.

When its outer coating is removed, this species exhibits the most brilliant play of iridescent colouration.

Discovered in the Lias Clay at Watchet, Somersetshire, by Mr Johnstone, and named by Sowerby in honour of him; and has since been met with in the Lias at Bath.

126. A ROTIFORMIS. — The Wheel-Shaped Ammonite, pl. XVII. fig. 2.

Ammonites rotiformis. Sowerby, Min. Conch. V. p. 76, pl. 453. Fleming, Brit. An. p. 247. De la Beche, Geo. Manuel, p. 375.

Depressed, carinated; sides somewhat concave, with from six to eight entirely exposed volutions; crossed by numerous, distant, strong, slightly bent elevated ribs, each provided with an oblong, obtuse tubercle at its outer extremity; ambit flat; keel slightly sunk, and with a furrow on both sides; aperture almost square, a little longer than wide, and only one-sixth the diameter of the shell. Greatest diameter seven inches.

Found at Yeovil in the Lias, and also in the Lias at Bath.

127. A. BIFRONS.—The Two-Fronted Ammonite, pl. XVII. fig. 3.

Ammonites bifrons. Phillips, Geology of Yorkshire, I. p. 141, pl. 6, fig. 18. De la Beche, Geo. Manuel, p. 371.

Discoidal, subumbilicate; with three or four moderately convex, rapidly increasing volutions, the inner ones one-third concealed; a series of remote, rounded, prominent, and nearly straight ribs, emanate from the inner margin of the volutions; and after reaching two-thirds across the sides, terminate, and are met by numerous smaller ribs, which pass over the rounded ambit, producing a crenulated profile.

Found in the Kelloways Rock at Hackness, in Yorkshire.

128. A. LONGISPINUS.—The Long-Spined Ammonite, pl. XVII. fig. 4.

Ammonites longispinus. Sowerby, Min. Conch. V. p. 164, pl. 501, fig. 2. Fleming, Brit. An. p. 247.

Discoidal, thick; with three or four plain, half inserted volutions; sides furnished with two concentric series of spiniform tubercles; ambit thick, smooth, and gently rounded; aperture orbicular, deeply indented by the contiguous volution; its greatest diameter somewhat more than three-fifths of the diameter of the disk; external surface pearlaceous.

Found near Weymouth, Dorsetshire.

129. A. CONTRACTUS. — The Contracted Ammonite, pl. XVII. fig. 5.

Ammonites contractus.—Sowerby, Min. Conch. V. p. 162, pl. 500, fig. 2. De la Beche, Geo. Manuel, p. 373.

Subglobose, deeply umbilicate; inner volutions nearly concealed; sides contracted, appearing as if drawn into the umbilicus, around which are a series of large rather acute tubercles, from which emanate numerous smooth rounded ribs, these branch into sets of three or four, and pass over the greatly rounded back or ambit, and join those on the opposite side; aperture oblong, arcuated.

Found in the Inferior Oolite at Dundry; and in the same strata, Normandy.

130. A. TURNERI.—Turner's Ammonite, pl. XVII. fig. 6.

Ammonites Turneri. Sowerby, Min. Conch. V. p. 75, pl. 452. Fleming, Brit. An. p. 244. De la Beche, Geo. Manuel, p. 372. Phillips, Geology of Yorkshire, I. p. 164, pl. 14, fig. 14?

Depressed, carinated; with five volutions, the inner ones almost entirely exposed; sides flattened, with numerous equal ribs, which continue almost straight until reaching nearly the back, where they are suddenly curved forward; carina but moderately elevated, with a furrow on each side; aperture oblong, quadrangular, its length being about one-third the diameter of the disk.

This shell is not unlike *Ammonites Brookie*, pl. XI. fig. 13, but is distinguished by its more exposed volutions, in the somewhat square aperture, and in the different curvature of the ribs.

Found in the Lias at Watchet, Wymondham Abbey, and in the lower Shale of the Lias formation, Robin Hood's Bay, Yorkshire.

131. A. LÆVIUSCULUS. — The Smoothish Ammonite, pl. XVII. fig. 7.

Ammonites læviusculus. Sowerby, Min. Conch. V. p. 73, pl. 451, fig. 1, 2. Fleming, Brit. An. p. 244. De la Beche, Geo. Manuel, p. 373.

Discoidal, carinated, umbilicate; with four or five rapidly increasing volutions, the inner ones being partly exposed

within the circumference of the small, shallow umbilicus; outer volution very large, its sides rather convex, ornamented with slightly elevated, smooth, waved, alternately long and short ribs, or undulations; ambit obtuse, the carina large and prominent; aperture sagittate, occupying a half of the diameter of the disk; the size of the umbilicus being a third of the remaining half.

In young shells, the inner volutions are exposed, the umbilicus larger, the ribs more conspicuous, and the aperture square and oblong, less in proportion to the size of the disk; as the shell enlarges, it becomes longer, more deeply indented by the preceding volution, and more narrowed towards the front.

Discovered in the Inferior Oolite at Dundry, by G. W. Braikenridge, Esq. and occurs in the same strata, Normandy.

132. A STRIATULUS. — The Minutely-Striated Ammonite, pl. XVII. fig. 8.

Ammonites striatulus. Sowerby, Min. Conch. V. p. 23, pl. 421, fig. 1. Fleming, Brit. An. p. 244. De la Beche, Geo. Manuel, p. 371.

Discoidal, carinated; with six convex, entirely exposed volutions; sides with numerous slender, doubly undulated ribs; the whole surface covered with minute striæ, which lie parallel to the ribs; carina but slightly produced; aperture elliptical, its length being about a fourth the diameter of the disk.

Discovered in a Marly Limestone nodule, in Robin Hood's Bay, Yorkshire, by Mr Crawford of Scarborough; and occurs not unfrequently in the Inferior Oolite and Lias of Yorkshire.

133. A. BANKSII.—Banks's Ammonite, pl. XVII. fig. 9.

Ammonites Banksii. Sowerby, Min. Conch. II. p. 229, pl. 200. Fleming, Brit. An. p. 245. De la Beche, Geo. Manuel, p. 373.

Discoidal; umbilicate very thick, with five or six rounded volutions, with their margins well relieved; sides concave, provided with a row of ten or eleven large, round, obtuse tubercles; back slightly convex, and with a series of oblique fluted grooves, towards the aperture; inner volutions narrow, the outer one very thick, and equal to the remainder of the disk; aperture transverse, its length thrice its width.

Found in the Inferior Oolite, Dundry.

Named in honour of the late distinguished friend of science, Sir Joseph Banks.

134. A. RUSTICUS.—The Rude Ammonite, pl. XVII. fig. 10.

Ammonites rusticus. Sowerby, Min. Conch. II. p. 171, pl. 177. Fleming, Brit. An. p. 245. De la Beche, Geo. Manuel, p. 293. Mantell, Geology of Sussex, p. 199.

Depressed; with about three gibbous exposed volutions, each provided on both sides with a row of conical obtuse tubercles, and two rows of slightly elevated ones around the broad and flattened ambit, the bases of the larger ones spreading widely, and nearly connected; aperture wider than long, its inner side concave, and considerably shorter than the other angles.

This is a ponderous clumsy species, and is of frequent occurrence in the Lower Chalk at Southerham, but the specimens are very imperfect. Sowerby says it occurs at Comb Payne, near Lyme Regis, Dorsetshire. It is also met with in the Lower Chalk of Lewes, according to Mantell.

This Ammonite has some affinity to *A. catinus*, pl. XIII. fig. 4, but is distinguished by the two dorsal rows of tubercles, and the gibbous form of the volutions.

135. A. MARGINATUS. — The Bordered Ammonite, pl. XVIII. fig. 1.

Ammonites marginatus. Phillips, Geo. Yorkshire, I. p. 123, pl. 2, fig. 41 and 43. De la Beche, Geo. Manuel, p. 294.

Subglobose; umbilicate; carinate; the edges of the inner volutions only visible in the large deep and conical umbilicus; which has a subcarinated margin, and a series of round, prominent tubercles along its edge; outer volution very large, thick, and slightly wrinkled transversely; carina prominent and sharp.

The young shell is destitute of tubercles on the margin of the umbilicus.

Found in the Speeton Clay, Yorkshire.

136. A. MACULATUS.—The Spotted Ammonite, pl. XVIII. fig. 2.

Ammonites maculatus. Phillips, Geology of Yorkshire, I. p. 163, pl. 13, fig. 11. De la Beche, Geo. Manuel, p. 371.

Discoidal thick; with five or six exposed volutions, with flattened sides, crossed by numerous, straight, elevated ribs, which emanate from the inner margins, and pass over the broad, flat ambit, proceeding continuously to the inner margins of the volutions on the opposite side; aperture nearly orbicular.

Found in the Lias of Yorkshire.

137. A. SIGMIFER.—The S. Ribbed Ammonite, pl. XVIII. fig. 3.

Ammonites sigmifer. Phillips, Geology of Yorkshire, I. p. 164, pl. 13, fig. 4. De la Beche, Geo. Manuel, p. 372.

Discoidal, carinated; with four somewhat compressed volutions, crossed by rather distant curved ribs, which emanate from the inner edges of the volutions, and after passing the centre, bend elegantly forward; inner volutions half concealed and increasing rapidly; carina sharp and broad for the size of the shell.

Found in Calcareous nodules, in the Lias formation of Yorkshire.

138. A. DISCUS.—The Quoit Ammonite, pl. XVIII. fig. 4.

Ammonites discus. Sowerby, Min. Conch. I. p. 37, pl. 12. De la Beche, Geo. Manuel, p. 373.

(See description, page 12, No. 48.)

Found in the Inferior Oolite, Dundry, Yorkshire; and in the Cornbrash, middle and south of England.

139. A. COMPRESSUS. — The Compressed Ammonite, pl. XVIII. fig. 5.

Ellipsolites compressus. Sowerby, Min. Conch. I. p. 84, pl. 38.

Elliptical, compressed, smooth; with four or five flat volutions, almost entirely exposed; internal margin of the volutions flat, perpendicular to the sides; ambit broad and flat; aperture oblong and rectangular. Greatest diameter seven inches and a quarter.

Found in the Limestone at the Black Rock, Ireland.

140. A. MULTICOSTATUS.—The Many-Ribbed Ammonite, pl. XVIII. fig. 6.

Ammonites multicostata. Sowerby, Min. Conch. V. p. 76, pl. 454. Fleming, Brit. An. p. 247. De la Beche, Geo. Manuel, p. 375.

Discoidal, much depressed; carinated, with three or four entirely exposed volutions; crossed by numerous, strong, sharp, slightly bent ribs, which are suddenly curved forward, with a depressed, blunted, oblong tubercle on the outer extremity of each, and extending over the ambit almost to

the dorsal furrow; the carina but slightly raised, with a furrow on both sides; aperture oblong, its length being more than a fourth the diameter of the last volution. Greatest diameter fourteen inches; thickness from three to four inches.

Found in the Lias near Bath.

141. A. MONILE.—The Necklace Ammonite, pl. XVIII. fig. 7.

Ammonites monile. Sowerby, Min. Conch. II. p. 35, pl. 117, fig. 1 and 2. Fleming, Brit. An. p. 245.

Discoidal, thick, subumbilicate; with four wholly exposed volutions; crossed by numerous, curved, tubercular ribs; the tubercles hollow, deep in the interior, and externally obsolete in the margin; these become gradually more produced and somewhat elongated as they approach the ambit, where the last one is cleft; the whole surface crossed by very fine divergent striæ; ambit somewhat concave, with close, transverse striæ; aperture transversely ovate, about a third the diameter of the shell in length, and almost twice as wide.

Discovered at Sandgate, near Folkstone, Kent.

The surface of this species is frequently highly irridescent.

142. A. CRENULARIS.—The Crenulated Ammonite, pl. XVIII. fig. 8.

Ammonites crenularis. Phillips, Geology of Yorkshire, I. p. 164, pl. 12, fig. 22. De la Beche, Geo. Manuel, p. 372.

Lenticular, umbilicate; with five two-thirds inserted volutions, the inner ones decreasing in thinness as they approach towards the central one, and forming a deep umbilicus; external volution thick in the centre, rounded and somewhat slanting towards the inner side, and on its outer side, obliquing to a thin sharp ambit; the sides with a series of strong, elevated, somewhat remote ribs, which, after reaching the centre, are met by numerous smaller oblique ones, which pass over the back, and returning rapidly and continuously on the opposite side produce a sharply crenulated ambit; aperture nearly cordiform, its length being almost equal to half the diameter of the disk; width about half its length.

Discovered in the upper Shale of the Yorkshire Lias formation.

143. A. INFLATUS.—The Inflated Ammonite, pl. XVIII. fig. 9.

Ammonites inflatus. Sowerby, Min. Conch. II. p. 170, pl. 178. Fleming, Brit. An. p. 245. De la Beche, Geo. Manuel, p. 294.

Depressed, carinated; inner volutions wholly exposed, the external one increasing rapidly in dimensions and inflated towards the aperture; sides somewhat flattened, crossed by large, elevated, and strong ribs, each commencing with a large compressed tubercle on its inner end, and furcated towards the ambit, the branches, in some instances, being divided from each other, all of them ending in elongated compressed tubercles on the margin of the flattened ambit; carina distinct, entire, and obtuse; aperture somewhat quadrangular.

Discovered in the Greensand, Isle of Wight, by Dr Buckland.

144. A. BRAIKENRIDGII.—Braikenridge's Ammonite, pl. XVIII. fig. 10.

Ammonites Braikenridgii. Sowerby, Min. Conch. II. p. 187, pl. 184. Fleming, Brit An. p. 242. De la Beche, Geo. Manuel, p. 373.

Discoidal, compressed; three or four volutions, the inner ones exposed, the outer one somewhat less than a third the diameter of the disk in breadth; crossed by numerous, narrow, acute ribs, which emanate from the internal margin of the volutions, and almost immediately become furcate; at the base of each furcation, the ribs are furnished with a small blunted tubercle; aperture orbicular; lip expanded into two oblong lobes.

The lip is a remarkable feature in this shell, its base is square, and after continuing a short distance from the last rib, suddenly expands on the sides into two oblong lobes, which exhibit clearly the lines of growth; its edges are acute, and a little inflected.

Discovered in the Inferior Oolite, at Dundry, near Bristol, by G. W. Braikenridge, Esq. and named in honour of him.

145. A. CLEVLANDICUS.—The Clevland Ammonite, pl. XVIII. fig. 11.

Ammonites Clevlandicus.—Phillips, Geology of Yorkshire, I. p. 164, pl. 14, fig. 6. De la Beche, Geo. Manuel, p. 372.

Discoidal; with five volutions, the inner ones nearly half inserted; from the interior margin a series of straight sharp ribs emanate, these terminate about the centre of the volution, in an oblong, somewhat blunted tubercle; towards the aperture, the ribs are longer, thickened externally, and take a gentle sweep towards the aperture; the whole are met by numerous smaller nearly obsolete ribs, which pass over the thin ambit, producing a crenulated subcarinated centre; aperture nearly cordiform.

Found at Staithes, Yorkshire, in the Lias.

146. A. HETEROGENUS.—The Heterogenus Ammonite, pl. XVIII. fig. 12.

Ammonites heterogenus. Phillips, Geology of Yorkshire, I. p. 163, pl. 12, fig. 19. De la Beche, Geo. Manuel, p. 371.

Discoidal, somewhat compressed; volutions few, the outer one crossed by fourteen thick, depressed, rounded ribs, which pass over the back, and produce a scolloped ambit; these ribs occupy about five-sixths of the internal portion of the volutions, and are met by narrow straight ribs, which rise on the inner margin, and terminate after extending three-fourths across the shell; these are continued to the aperture.

Found in the upper Lias Shale of Yorkshire.

147. A. ERUGATUS.—The Wrinkled Ammonite, pl. XVIII. fig. 13.

Ammonites erugatus. Phillips, Geology of Yorkshire, I. p. 163, pl. 13, fig. 13. De la Beche, Geo. Manuel, p. 372.

Discoidal; thick, with five volutions almost entirely exposed; crossed by obsolete ribs; ambit rounded; aperture oblong-ovate, slightly indented by the preceding volution, its length about a third the diameter of the disk.

Found in the upper Lias Shale of Yorkshire.

148. A. FUNATUS.—The Ropey Ammonite, pl. XVIII. fig. 14.

Ellipsolithes funatus. Sowerby, Min. Conch. I. p. 81, pl. 32. *Natilus funatus.* Fleming, Brit. An. p. 231.

Elliptical; with three or four half concealed volutions, crossed by numerous, simple, round, rope-like ribs, separated by somewhat wide grooves, and having constrictions at intervals, which are marked by small projections on the ribs; aperture semilunar. Greatest diameter three inches; thickness one and a half inch.

Discovered in the Black Rock series, south east of Cork, Ireland, by Samuel Wight, Esq.

149. A. ANGUILIFERUS.—The Hook-Ribbed Ammonite, pl. XVIII. fig. 15.

Ammonites anguiliferus. Phillips, Geology of Yorkshire, I. p. 163, pl. 13, fig. 19. De la Beche, Geo. Manuel, p. 372.

Discoidal, with five almost wholly exposed volutions, crossed by numerous elevated ribs, which pass over the rather thin ambit, in a somewhat hooked form; aperture a little cordiform.

Found in the Marlestone and Ironstone series of Yorkshire.

150. A. LOSCOMBI.—Loscombe's Ammonite, pl. XIX. fig. 1.

Ammonites Loscombi. Sowerby, Min. Conch. II. p. 185, pl. 183. De la Beche, Geo. Manuel, p. 374.

Discoidal, compressed, umbilicate; inner volutions concealed; surface smooth, sides crossed by numerous waved flat ribs, with shallow interstices; back rounded; aperture oblong, about two-fifths the diameter of the disk in length; the thickness of the shell a third of the length of the aperture.

Discovered in the Blue Lias at Lyme Regis, Dorsetshire, by C. W. Loscombe, Esq.; found also in the Lias in the middle and south of England.

151. A. GEOMETRICUS. — The Geometrical Ammonite, pl. XIX. fig. 2.

Ammonites geometricus. Phillips, Geology of Yorkshire, I. p. 164, pl. 14, fig. 9. De la Beche, Geo. Manuel, p. 372.

Discoidal, carinated, compressed; with five flat, almost wholly exposed volutions; crossed by numerous, sharp, straight ribs, which gradually thicken as they approach the ambit, where they suddenly curve forward, over the edge of the flattened back, producing a crenulated appearance when viewed in profile; ambit, with a very small, narrow, undulating carina in its centre; aperture narrow, oblong oval.

152. A. CONSTRICTUS.—The Constrained Ammonite, pl. XIX. fig. 3.

Ammonites constrictus. Sowerby, Min. Conch. II. p. 189, pl. A. fig. 1. Fleming, Brit. An. p. 247. De la Beche, Geo. Manuel, p. 295.

Discoidal, compressed, umbilicate; inner volutions concealed, sides crossed by many undulating long and short ribs; with a row of acute tubercles on each side of the margin of the somewhat rounded ambit; these tubercles are usually larger near the centre of the volutions, and gradually diminish towards the inner volutions and aperture, which is oblong and contracted, by an obtusely edged lip; septa numerous, and greatly sinuated.

There is a variety of this species with few tubercles near the centre, and those next the front large.

Found at Dundry; also in the Baculite Limestone of Normandy, and in the Chalk at Lublin, Poland.

153. A. HENSLOWI.—Henslow's Ammonite, pl. XIX. fig. 4.

Ammonites Henslowi. Sowerby, Min. Conch. III. p. 111, fig. 1, 2, pl. 262. De la Beche, Geo. Manuel, p. 466. Buckland, Geology and Mineralogy Considered, I. p. 360, note, and II. p. 60, pl. 40, fig. 1.

Discoidal; having about four exposed volutions, with flattened sides; ambit rounded, with three simple slipper-shaped lobes on each side, destitute of foliations; the lobes are *pointed* inwards, and the intermediate saddles are *rounded* outwards; the siphuncle is placed on the front edge, in an acute lobe; aperture about four-fifths the diameter of the shell, and double that in thickness.

Discovered in the Transition Limestone at Scarlet, Isle of Man, by J. S. Henslow, Esq.

This species belongs to the genus *Goniatites* of Von Buch; as well as the *Ammonites striatus*, pl. IV. fig. 6, *sphæricus*, fig. 7, and *minutus*, fig. 10.

154. A. ARTIGYRUS.—The Perfectly Round-Ribbed Ammonite, pl. XIX. fig. 5.

Ammonites artigerus. Phillips, Geology of Yorkshire, I. p. 163, pl. 13, fig. 9. De la Beche, Geo. Manuel, p. 372.

Discoidal; with five wholly exposed, slightly rounded volutions, their sides crossed by numerous, remote ribs, which emanate from the inner margins of the volutions, and crossing the sides, proceed continuously over the rounded ambit to the opposite side; aperture suborbicular.

Found in the upper Lias Shale of Yorkshire.

155. A. HAWSKERENSIS. — The Hawsker Ammonite, pl. XIX. fig. 6.

Ammonites Hawskerensis. Phillips, Geology of Yorkshire, I. p. 164, pl. 13, fig. 8. De la Beche, Geo. Manuel, p. 372.

Discoidal, umbilicate, carinate, thick; with six somewhat flattened, wholly exposed volutions, the inner ones becoming gradually thinner as they descend to the centre, forming a deep umbilicus; the whole are crossed by strong, thick ribs, which project boldly over the margin of the flattened ambit, and terminate on each side of the carina, which is narrow, rounded, and but slightly elevated above the surface; aperture nearly quadrangular, with its corners slightly rounded, and equal to about a fourth the diameter of the disk.

Found in the hard Shale and Calcareous nodules, at Hawsker, Yorkshire.

156. A. WALCOTII.—Walcot's Ammonite, pl. XIX. fig. 7.

Ammonites Walcotii. Sowerby, Min. Conch. II. p. 7, pl. 106. Phillips, Geology of Yorkshire, I. p. 164. Fleming, Brit. An. p. 242. De la Beche, Geo. Manuel, p. 372, and 384.

Discoidal, compressed, carinate; with four one-fourth inserted volutions; on the inner side of each is a smooth concentric furrow; external half of the sides crossed by numerous semilunar ribs, which are about equal in breadth to the intermediate furrows; on each side of the carina is a moderately deep groove; aperture oblong, its length equal to one-third of the diameter of the disk: varying in size from two to four inches.

Found in the Lias of Yorkshire, and in the middle and south of England; in the Alum Clay, Whitby; the Clay Ironstone at Colbrook Dale; the Marly Limestone near Bath; and at White Lackington Park.

157. A. EXARATUS. — The Ploughed Ammonite, pl. XIX. fig. 8.

Ammonites exaratus. Phillips, Geology of Yorkshire, I. p. 164, pl. 13, fig. 7. De la Beche, Geo. Manuel, p. 373.

Discoidal, lenticular, umbilicate, carinate; with four volutions, the inner ones almost entirely enveloped in the outer one, and visible only in the small umbilicus; sides somewhat flattened, and crossed by broad, flat, undulating ribs, which suddenly curve forward towards the ambit, and terminate on the edge of the small and narrow carina.

Found at Boulby, Yorkshire, in the upper Lias Shale.

158. A. LYTHENSIS.—The Lyth Ammonite, pl. XIX. fig. 9.

Ammonites Lythensis. Phillips, Geology of Yorkshire, I. p. 164, pl. 13, fig. 6. De la Beche, Geo. Manuel, p. 373.

Discoidal, lenticular, umbilicate; with four volutions, the inner ones being entirely enveloped in the outer volution, and their edges only seen in the shallow umbilicus; sides

flat, crossed by many broad, flat, waved ribs; which, after passing the centre, sweep elegantly forward; ambit thin; aperture somewhat sagittate.

Found in the upper Shale at Boulby, Yorkshire.

159. A. ROSTRATUS. — The Beaked Ammonite, pl. XIX. fig. 10.

Ammonites rostratus. Sowerby, Min. Conch. II. p. 163, pl. 172; Fleming, Brit. An. p. 245; De la Beche, Geo. Manuel, p. 294.

Compressed, carinated, with about four wholly exposed, flattened volutions; their sides crossed by large, strong, remote, slightly bent ribs, each of which is provided with three or four oblong tubercles; larger on the extremity of the ribs next the ambit, over which they project; aperture, elliptical, somewhat less than one-third the diameter of the disk, and, at the ambit, terminating in a slightly reflected and compressed beak, which is almost closed. The tubercles are somewhat confluent on the outer volutions, but are more distinctly divided, and developed on the inner volutions. Greatest diameter seven inches and a quarter.

Found in Chalk Marle, Rock's Village, near Benson, Oxfordshire, and in the Sussex Chalk.

160. A. HENLEYII. — Henley's Ammonite, pl. XIX. fig. 11.

Ammonites Henleyii. Sowerby, Min. Conch. II. p. 161, pl. 172.; Fleming's Brit. An. p. 245; De la Beche, Geo. Manuel, p. 371.

Discoidal, with three or four wholly exposed, rapidly increasing volutions; sides crossed by many flattened ribs, which emanate from the inner sides of the volutions, curving slightly from the aperture, and after reaching the centre one, provided with large compressed tubercles, from whence they become bifurcate, the branches gently curving backwards, and, after passing over the ambit, unite on the opposite side, producing a crenulated margin to the back, when viewed in profile; the ribs are also furnished with a tubercle, a little way from their origin; between this and the central row, the volutions are a little concave; aperture nearly orbicular, being two-fifths the diameter of the disk, with a small sinus, produced by the preceding volution; greatest diameter six inches.

Found in the Lias at Lyme Regis, Dorsetshire; and also that of Yorkshire, and the middle and south of England.

161. A. BALTIATUS. — The Belted Ammonite, pl. XX. fig. 1.

Ammonites baltiatus. Phillips, Geology of Yorkshire, I. p. 163, pl. 12, fig. 17; De la Beche, Geo. Manuel, p. 372.

Discoidal; volutions entirely exposed; crossed by numerous, strong, elevated ribs, which emanate on the inner margins of the volutions, and pass over the rounded ambit, every alternate rib being somewhat less elevated on the back.

Found in the Lias, Yorkshire.

162. A. DECIPIENS. — The Deceitful Ammonite, pl. XX. figs. 2 and 9.

Ammonites decipiens. Sowerby, Min. Conch. III. p. 169, pl. 294, fig. 1 and 2; Fleming, Brit. An. p. 243; De la Beche, Geo. Manuel, p. 374.

Discoidal, thick; with five or six exposed volutions, crossed by large, elevated ribs, which rise a little way from the inner margin, and, crossing the sides, become obscure towards the ambit, which is rounded; aperture oblong.

This shell presents a very different appearance in the adult and young conditions. In the latter state, when the large ribs have passed the centre of the sides, they are met by numerous small ribs, which are entirely wanting in the adult shell.

Found in Clay at Highgate Hill, and at Pakefield, near Lowestoft, Suffolk.

163. A. OVATUS.—The Ovate Ammonite, pl. XX. fig. 3.

Ammonites ovatus. Phillips, Geology of Yorkshire, I. p. 164, pl. 13, fig. 10; De la Beche, Geo. Manuel, p. 373.

Lenticular, umbilicate; the inner volutions entirely concealed, their margins alone being visible within the small and deep umbilicus; sides thick internally, and sloping towards the back, which is thin and slightly flattened, crossed by numerous, undulating, depressed ribs, which emanate at the internal margin, and after passing the centre, bend sweepingly forward.

Found in the Hard Bands, in the Lias formation at Hawsker, Yorkshire.

164. A. VENUSTUS. — The Graceful Ammonite, pl. XX. fig. 4.

Ammonites venustus. Phillips, Geology of Yorkshire, I. p. 122, pl. 2, fig. 48; De la Beche, Geo. Manuel, p. 294.

Discoidal, thick, with three or four rapidly increasing volutions, the inner ones half concealed; sides crossed by many straight, elevated ribs, equal to the interstices between them; which, on reaching the centre, are met by numerous, strong, rounded, gently curved ribs, which pass over the ambit, and meet with those on the opposite side, producing a crenated margin at the back; aperture oblong.

Found in the Speeton Clay, at Speeton, Yorkshire.

165. A. CONCINNUS. — The Comely Ammonite, pl. XX. fig. 5.

Ammonites concinnus. Phillips, Geology of Yorkshire, I. p. 123. pl. 2. fig. 47. De la Beche, Geo. Manuel, p. 294.

Discoidal, thick, with four rapidly increasing volutions, the inner ones half inserted; a series of strong remote ribs emanate from the inner margins of the volutions, bending slightly forward, and are met in the centre by numerous, acute, elevated ribs, which pass over the rounded ambit, and meet with those on the opposite side; aperture roundish.

Found in the Speeton Clay, at Speeton, Yorkshire.

166. A. MINIMUS. — The Smallest Ammonite, pl. XX. fig. 6.

Ammonites, "like *A. parvus.*" Phillips, Geology of Yorkshire, I. p. 187, pl. 2, fig. 46.

Discoidal, thick, with three volutions, the inner ones two-thirds inserted, and the outer ones increasing rapidly; sides crossed by numerous, curved ribs which rise on the inner margins, and pass over the rounded ambit, meeting those of the opposite side; aperture oblong.

Found in the Speeton Clay, Yorkshire.

167. A. CURVINOIDES. — The Curved-Ribbed Ammonite, pl. XX. fig. 7.

Ammonites curvinoides. Phillips, Geology of Yorkshire, I. p. 123, pl. 2. fig. 50; De la Beche, Geo. Manuel, p. 294.

Volutions, flattened with remote, elevated, waved ribs, which emanate from the inner edges of the volutions, and as they approach the ambit are suddenly and acutely curved towards the aperture; between these are several depressed and nearly obsolete ribs; ambit rather thin.

Found in the Speeton Clay, Yorkshire.

168. A. VARICOSTATUS.—The Variously-Ribbed Ammonite, pl. XX. fig. 8.

Ammonites varicostatus. Buckland, Geology and Mineralogy considered, II. p. 62, pl. 42, fig. 7.

Discoidal, with six two-thirds exposed rounded volutions; the inner ones crossed by numerous, narrow, greatly elevated close set ribs, which are bifurcated on the rounded ambit; near to the termination of the outer volution the ribs become large, broad, distant, and slightly curved, and are destitute of the dorsal bifurcation; aperture oblong-ovate. Greatest diameter nine inches.

Found in the Oxford Clay at Hawnes, four miles south of Bedford.

169. A. ROTUNDUS.—The Round Ammonite, pl. XX. fig. 10.

Ammonites rotundus. Sowerby, Min. Conch. III. p. 169, pl. 293, fig. 3. Fleming, Brit. An. p. 243. De la Beche, Geo. Manuel, p. 374.

Discoidal; volutions exposed; sides crossed by numerous thick ribs, which become bifurcate as they pass over the back; aperture orbicular, interrupted only by a small sinus, from the insertion of the preceding volution.

This species is nearly allied to *Ammonites biplex*, pl. V. fig. 10, but distinguished from it, by the ribs being less numerous, thicker, shorter, and not so regularly bifurcate in passing over the ambit; some are trifurcate; the sides are less compressed.

Found in the Kimmeridge Clay, at Purbecks, and occurs in the Inferior Oolite of Normandy.

170. A. FIMBRIATUS.—The Fringed Ammonite, pl. XX. fig. 12.

Ammonites fimbriatus. Sowerby, Min. Conch. II. p. 145, pl. 161. Fleming, Brit. An. p. 242. De la Beche, Geo. Manuel, p. 372.

Discoidal; with cylindrical volutions, the inner ones entirely exposed, crossed by numerous lines of growth, which have fimbriated margins; aperture orbicular, provided with an undulating frill.

Found at Lyme Regis, Dorsetshire, in the Blue Lias; and in the Lias of Yorkshire, and middle and south of England.

GENUS V.—GONIATITES.—*Von Buch.*

Shell discoidal, generally very convex or nearly globose, most of the species deeply umbilicate; the inner volutions much, or wholly concealed; with internal, strengthening, transverse ridges.

1. G. LOONEYI.—Looney's Goniatite, pl. XXI. fig. 1, 2, and 3.

Goniatites Looneyi. Phillips, Geology of Yorkshire, II. p. 236, pl. 20, fig. 33, and 35.

Depressed, glabrous, sides covered with sigmoidal striæ; umbilicus very small; aperture elliptical; provided with numerous septa; the dorsal and lateral sinuses double and widely set; but merely waved in immature shells.

Discovered in High-Green Wood, near Todmorden, Huddersfield, Lancashire.

2. G. GILBERTSONI.—Gilbertson's Goniatite, pl. XXI. fig. 4, 5.

Goniatites Gilbertsoni. Phillips, Geology of Yorkshire, II. p. 236, pl. 20, fig. 27, 28, and 31.

Depressed; elliptical, glabrous; sides covered with greatly bent, minute striæ; umbilicus small; aperture oblong; septa numerous, with round lobes and sinuses; the dorsal sinus double and wide, the lateral sinus simple.

Locality unknown. Named in honour of Mr Gilbertson, of Preston, a zealous and acute naturalist.

3. G. PAUCILOBUS.—The Few-Lobed Goniatite, pl. XXI. fig. 67.

Goniatites paucilobus. Phillips, Geology of Yorkshire, II. p. 236, pl. 20, fig. 36 to 38.

Depressed; sides with waved striæ, and shallow undulations; umbilicus minute; aperture elliptical; the lobes and sinuses of all the septa are round; the first lateral one very large. Distinguished from the *Goniatites implicatus*, fig. 58. by the form of its lateral sinus.

4. G. DISCREPANS.—The Discrepant Goniatite, pl. XXI. fig. 8 and 15.

Goniatites Looneyi. Phillips, Geology of Yorkshire, II. p. 236, pl. 20, fig. 32 and 34.

Discoidal, smooth, with a minute umbilicus; striæ doubly undulating; slightly compressed towards the ambit; aperture oblong ovate; septa numerous, with double, wide dorsal and lateral sinuses.

This species differs from the *Goniatites Looneyi*, fig. 1, 2, and 3, in not being depressed, in the more rounded contour of the disk, in the aperture being more ovate, and sharper next the back, and in the indentation from the volution being more acute.

Locality unknown.

5. G. STRIOLATUS.—The Grooved Goniatite, pl. XXI. fig. 9, 10.

Goniatites striolatus. Phillips, Geology of Yorkshire, II. p. 234, pl. 19, fig. 14 to 19.

Nearly globular, sides somewhat flattened, ambit broad; with spiral and transverse, very delicate striæ; umbilicus very small; aperture ovate; septa having very wide, acute, dorsal sinuses, and the lateral lobes much widened and rounded.

This species differs much in its infant and adult conditions. When very young it is nearly globular, the umbilicus much larger, in proportion to the size of the disk, and more acute at the edge than in the adult; the constrictions are more parallel, and the striæ more straight and simple. As it advances in age, the sides become more compressed, the constrictions a little undulous, as in fig. 9; and when the shell is mature the constrictions become obsolete, and the angularity of the umbilicus is entirely lost; and the septa and striæ hardly vary; as seen in the more elliptical and beautiful contour of fig. 10.

This species may easily be confounded with the *G. obtusus*, fig. 11 and 12, but may be distinguished by its sides, being less parallel than those of that shell.

Found in the Shale, at High-Green Wood, near Huddersfield; and in Shale, at Kulkeagh, near Enniskillen, Ireland.

6. G. OBTUSUS.—The Obtuse Goniatite, pl. XXI. fig. 11, 12.

Goniatites obtusus. Phillips, Geology of Yorkshire, II. p. 234, pl. 19, fig. 10 to 13.

Subglobose, the sides flattened, slightly striate transversely, with a few longitudinal striæ, and internal slightly bent obscure ridges; umbilicus minute; the septa delicately marked and undulous; edge of the dorsal lobe very short; the dorsal sinuses sharp, and the first lateral lobe rounded.

Distinguished from the *G. striolatus*, by its more parallel sides.

Discovered at Black Hall, Bolland, Queen's County, Ireland.

7. G. NITIDUS.—The Clear Goniatite, pl. XXI. fig. 13, 14.

Goniatites nitidus. Phillips, Geology of Yorkshire, II. p. 235, pl. 20, fig. 10 to 12.

Subglobose; sides crossed, with slightly bent, prominent, furcate striæ, and with obsolete spiral striæ; umbilicus wide and angular; aperture semilunar, and transversely elongate; septa irregular in form, with dorsal lobes simple, small, and large, acute lateral lobes.

Discovered at Ribble River.

8. G. SERPENTINUS.—The Serpentine Goniatite, pl. XXI. fig. 16, 17.

Goniatites serpentinus. Phillips, Geology of Yorkshire, II. p. 237, pl. 20, fig. 48 to 50.

Discoidal, with three rapidly increasing, wholly exposed volutions; sides covered with transverse, delicate, bent striæ; aperture almost circular, very slightly indented by the preceding volutions; with three approximating, round-lobed septa; two round lateral sinuses, and a central acute dorsal sinus.

Found at Bolland, Queen's County, Ireland.

9. G. DISCORS.—The Discordant Goniatite, pl. XXI. fig. 18 and 18.*

Goniatites Gilbertsoni. Phillips, Geology of Yorkshire, II. p. 238, pl. 20. fig. 29, 30.

Discoidal, smooth, sides with falcate, very minute striæ; aperture oblong ovate; septa numerous, with rounded lobes and sinuses; dorsal sinus wide and double, with a simple lateral sinus.

This species differs from *G. Gilbertsoni*, fig. 2, in not being depressed, in the disk being more orbicular, and in the aperture being less indented by the volution.

Found at Bolland, Queen's County, Ireland.

10. G. CYCLOLOBUS.—The Round Lobed Goniatite, pl. XXI. fig. 19, 20.

Goniatites cyclolobus. Phillips, Geology of Yorkshire, II. p. 237, pl. 20, fig. 40 to 42.

Discoidal; with three or four half exposed volutions, with their sides flattened; ambit broad and round; aperture oblong, its sides flat and rounded, its breadth two-thirds its length; septa having four rounded lateral lobes, a small double dorsal lobe, and small pointed dorsal sinuses; first lateral sinus double, the next simple, and all of them rounded.

Found at Glassington, Yorkshire.

11. G. MIXOLOBUS.—The Mingling Lobed Goniatite, pl. XXI. fig. 21, 22.

Goniatites mixolobus. Phillips, Geology of Yorkshire, II. p. 237, pl. 20. fig. 43 to 47.

Discoidal; with five rapidly enlarging volutions, the inner ones slightly concealed; septa with four rounded lateral lobes; the first lateral sinus double and acute; the second single and pointed; and the dorsal lobes and sinuses acute.

Discovered at Bolland, Queen's County, Ireland.

12. G. GIBSONI.—Gibson's Goniatite, pl. XXI. fig. 23, 24, 25.

Goniatites Gibsoni. Phillips, Geology of Yorkshire, II. p. 236, pl. 20, fig. 13 to 18.

Discoidal, with five two-thirds concealed volutions, which are provided with bent, acute ribs; these are prominent on the margin, and become furcate on the sides as they approach the ambit; and passing over the back meet with the furcations on the opposite side; destitute of spiral striæ, but the sides provided with a few curved constrictions. In the young state this species is somewhat flattened, with apparent volutions, but in older shells the volutions gradually become more involute and gibbous. Diameter, a quarter of an inch.

Found at High-Green Wood.

This curious fossil is not unlike some Ammonites of the Oolite formation.

13. G. VESICA.—The Bladder Goniatite, pl. XXI. fig. 26, 27.

Goniatites vesica. Phillips, Geology of Yorkshire, II. p. 236, pl. 20, fig. 19, 20, 21.

Subglobular, umbilicate, with two volutions, the central one extremely small, the outer one very large; umbilicus much rounded; sides transversely and delicately striate; undulations of the septa low and rounded; dorsal sinuses very shallow; aperture semilunar; thickness equal to two-thirds of the diameter.

Found at Black Hall, in the Kulkeagh Shale, at Bolland.

This species differs but little in its young and adult state.

14. G. INTERCOSTALIS.—The Interribbed Goniatite, pl. XXI. fig. 28, 29.

Goniatites intercostalis. Phillips, Geology of Yorkshire, II. pl. 237, p. 20, fig. 61, 62.

Discoidal, with three rapidly increasing volutions; sides crossed by claviform ribs, which emanate from the inner margin of the volutions, and extend about three-fourths across the sides; the whole shell with spiral intercostal striæ; ambit round, slightly produced in the centre; aperture transversely elongated; narrowed internally.

Found at Bolland.

15. G. ROTIFORMIS.—The Wheel Shaped Goniatite, pl. XXI. fig. 30, 31.

Goniatites rotiformis. Phillips, Geology of Yorkshire, II. p. 237, pl. 20, fig. 56, 57, 58.

Discoidal, carinated, with six half concealed angular volutions; ambit provided with a truncated carina; sides with transverse furrows, which are placed only on the centre of the volutions, and do not reach the sides.

16. G. EVOLUTUS.—The Unfolded Goniatite, pl. XXI. fig. 32, 33.

Goniatites evolutus. Phillips, Geology of Yorkshire, II. p. 237, pl. 20, fig. 65 to 68.

Discoidal, umbilicate; with three apparent rapidly increasing volutions; aperture oblong, with rounded angles; septa with a deep and acute dorsal sinus; the first lateral lobe obtuse and angulated.

In the young condition, the section of the volutions is round, and oblong in the adult state.

Found at Flasby.

17. G. LISTERI.—Lister's Goniatite, pl. XXI. fig. 34.

Goniatites Listeri. Phillips, Geology of Yorkshire, II. p. 235, pl. 20, fig. 1.

Spheroidal, umbilicate; the inner volutions concealed by the outer one, and their edges only being visible within the

umbilicus; outer volution obsoletely striated transversely; constrictions nearly direct; umbilicus very wide, deep, and acute, with the edges plaited, crenated, or dentated; provided with a double dorsal lobe, an angular deep dorsal sinus; first lateral lobe ample; an extremely round, angular, deep lateral sinus.

In the young state the transverse striæ are very distinct, but become nearly invisible; when old, the septa vary but slightly; in the young and old shells, only, the angles are blunted.

This handsome Goniatite is by no means rare, for it is found near Sheffield, Halifax, Colne, and Holmsfrith, Saddleworth.

18. G. TRUNCATUS.—The Truncated Goniatite, pl. XXI. fig. 35, 36.

Goniatites truncatus. Phillips, Geology of Yorkshire, II. p. 234, pl. 19, fig. 20, 21.

Discoidal, umbilicate, much compressed; inner volutions entirely concealed; sides covered with transverse, strong, bent striæ, which do not all extend from the margins to the back, but have from two to three intermediate ones, betwixt the longer striæ; ambit in adult shells flattened; aperture elongated, narrowed next the ambit; and the contiguous volution intruding about one-third its length.

Found at Bolland.

19. G. CARINA. — The Keeled Goniatite, pl. XXI. fig. 37, 38.

Goniatites carina. Phillips, Geology of Yorkshire, II. p. 237, pl. 20, fig. 63, 64.

Lenticular; smooth, ambit provided with a sharp keel; aperture subcordate.

Found at Bolland, Queen's County, Ireland.

20. G. VITTIGER. — The Filleted Goniatite, pl. XXI. fig. 39, 40.

Goniatites vittiger. Phillips, Geology of Yorkshire, II. p. 237, pl. 20, fig. 59, 60.

Lenticular; carinated; with five smooth two-thirds concealed volutions; ambit provided with a flattened carina.

Found at Bolland, Queen's County, Ireland.

21. G. RETICULATUS.—The Reticulated Goniatite, pl. XXI. fig. 41, 42.

Goniatites reticulatus. Phillips, Geology of Yorkshire, II. p. 235, pl. 19, fig. 26 to 32.

Discoidal, compressed, in the adult state, umbilicate; inner volutions entirely concealed; sides of outer volution crossed by numerous strong, bent striæ, which emanate from the inner margin of the volutions and before reaching the ambit bend suddenly backwards; these are crossed by rather wide spiral striæ which produces a somewhat reticulated appearance; umbilicus, large, deep, and angular; ambit angulated; septa with a short dorsal lobe, the first laterals rounded, large, with their dorsal edges parallel; constrictions greatly bent.

The young shell is subglobose, with a rounded umbilicus, and the outside with radiating furcate striæ crossed by fine spiral striæ; the constrictions much bent, in adult specimens the cast of the inside is considerably undulated.

Found at Flasby, Marsden, Wyersdale, Holmfrith and High-Green Wood.

22. G. CRENISTRIÆ.—The Crenulated-Striate Goniatite, pl. XXI. fig. 44 and 49.

Goniatites crenistriæ. Phillips, Geology of Yorkshire, II. p. 234, pl. 19. fig. 7, 8, 9.

Subglobose, umbilicate; inner volutions entirely concealed; sides with fine crenulated, reticulated, elegantly curved striæ; the longer ones emanating from the inner margins, and passing over the ambit, proceed continuously to the margins of the opposite side; these have from one to three intermediate shorter striæ betwixt them; umbilicus very small and rounded; septa with the dorsal lobe bifid; dorsal sinus acute; first lateral lobe sub-acute, double the length of the dorsal lobe; second lateral lobe obtusely rounded, shorter than the first; marginal sinus angular.

Some varieties are more globose than our figure.

Found in the Isle of Man, Bolland, Queen's County, and Fermanagh, Ireland.

23. G. SPIRORBIS. — The Winding Goniatite, pl. XXI. fig. 45, 46.

Goniatites spirorbis. Phillips, Geology of Yorkshire, II. p. 237, pl. 20, fig. 51 to 55.

Discoidal; with seven or eight, rounded or oval, half exposed, compressed volutions; coiled in the manner of a watch spring, crossed by extremely fine slightly oblique striæ, and divided by a deep angulated suture; aperture longitudinal, oblong-ovate, slightly indented by the last volution; septa with two rounded lateral sinuses, and an acute central dorsal sinus.

In the young state this species is nearly globular, with a semilunar, transverse aperture.

Found at Black Hall, Bolland, Queen's County, Ireland.

24. G. STENOLOBUS.—The Narrow Lobed Goniatite, pl. XXI. fig. 47, 48.

Goniatites stenolobus. Phillips, Geology of Yorkshire, II. p. 235, pl. 20, fig. 7, 8, 9.

Subglobular, umbilicate; inner volutions entirely concealed, outside covered with minute rugosities, and direct constrictions; umbilicus of moderate size; lobes and sinuses of the suture rounded; dorsal lobe narrow.

Found at Bolland, Queen's County, Ireland.

25. G. EXCAVATUS.—The Excavated Goniatite, pl. XXI. fig. 49, 50.

Goniatites excavatus. Phillips, Geology of Yorkshire, II. p. 235, pl. 19, fig. 33, 34, 35.

Depressed, umbilicate; inner volutions entirely concealed; ambit angulated; sides with somewhat crenulate transverse, undulating slightly furcated striæ, which curve suddenly as they pass over the ambit; constrictions considerably waved; umbilicus large and acute; lateral sinuses as in *G. reticulatus*, No. 21, but more acute.

The young shells are destitute of spiral striæ.

Found at Bowes, Bolland, Queen's County, Ireland, and also at Flasby.

Professor Phillips thinks it possible that this may be only a variety of *Goniatites reticulatus.*

26. G. OBTUSUS.—The Obtuse Goniatite, pl. XXI. fig. 51, 52, and 57.

Goniatites obtusus. Phillips, Geology of Yorkshire, II. p. 234, pl. 19, fig. 10, 11, 12, 13.

Subglobose, umbilicate; inner volutions wholly concealed; sides flattened, covered with delicate, transverse, elegantly bent and furcate striæ which sweep backwards as they pass over the broad and rounded ambit; there are also a few faint longitudinal striæ, and some internal slightly bent ridges; aperture oblong-ovate; narrowed behind the body, volution intruding upon it about one-third, and the internal

sides bending somewhat abruptly towards the body; septa delicately marked and waved on the edge; with a short dorsal lobe, and the dorsal sinuses acute; first lateral lobe considerably rounded.

Found at Black Hall, Bolland, Queen's County, Ireland.

27. G. BIDORSALIS. — The Double Backed Goniatite, pl. XXI. fig. 53, 54.

Goniatites bidorsalis. Phillips, Geology of Yorkshire, II. p. 235, pl. 20, fig. 2, 3, 4.

Subglobose, umbilicate; inner volutions entirely concealed; sides rounded, with transverse, sigmoidal, sharp ribs, which curve elegantly backwards before passing over the rounded ambit, and having fine spiral, distant striæ; umbilicus large, the lateral lobes and sinus rounded, with a double dorsal lobe, each part divided.

This species may be confounded with the young of *Goniatites variabiles*, but the different form of its septa distinguishes it from that species.

Found in Shale, at Woodford.

28. G. MUTABILIS. — The Mutable Goniatite, pl. XXI. fig. 55, 56.

Goniatites mutabilis. Phillips, Geology of Yorkshire, II. p. 236, pl. 20, fig. 24, 25, 26.

Subglobose, umbilicate; inner volutions entirely concealed; sides and ambit much rounded, and smooth with direct constrictions; aperture transverse, semilunar; umbilicus large, with an acute margin; first lateral lobe narrow.

The young shell is discoideo-cylindrical, very smooth and shining; umbilicus wide and acute, exhibiting the sides of all the inner volutions, four in number; aperture transverse, widest and pointed next the ambit, and the constrictions direct.

Locality unknown.

29. G. IMPLICATUS.—The Involved Goniatite, pl. XXI. fig. 58.

Goniatites implicatus. Phillips, Geology of Yorkshire, II. p. 235, pl. 19, fig. 24, 25.

Subglobose, umbilicate; inner volutions entirely concealed; sides a little flattened, with delicate transverse striæ; umbilicus rather small, septa numerous, with their edges but moderately waved; first lateral lobes widely rounded, with their dorsal margins parallel; and having a very small dorsal lobe, with rounded dorsal sinuses.

Found at Black Hall, Bolland, Queen's County, Ireland.

30. G. PLATYLOBUS.—The Wide Lobed Goniatite, pl. XXI. fig. 59.

Goniatites platylobus. Phillips, Geology of Yorkshire, II. p. 235, pl. XX. fig. 5, 6.

Subglobose, umbilicate; inner volutions wholly concealed; sides and ambit rounded, with obsolete spiral striæ, and crossed by direct constrictions; umbilicus of moderate size, crenate at its margin; having rounded sutural lobes and sinuses, and a wide dorsal lobe.

Found at Bolland, Queen's County, Ireland.

31. G. CALYX.—The Calyx Goniatite, pl. XXI. fig. 60, 61.

Goniatites calyx. Phillips, Geology of Yorkshire, II. p. 236, pl. 20, fig. 22, 23.

Discoideo-cylindrical, umbilicate; with about five volutions, which are entirely enveloped in the body or outer one; ambit nearly flattened, glabrous, with delicate transverse striæ; umbilicus very wide and acute, and deep, exposing within it the margins of the volutions; and frequently crenate at the edges; aperture subluniform, flat, transverse, and acute at the outer angles; constrictions direct, having round septal undulations; the dorsal lobe and sinuses forming a waved transverse line.

This is the young condition of the fossil; the adult is not known.

Found at High-Green Wood, Black Hall, and Kulkeagh.

GENUS VI.—SCAPHITES.—*Parkinson.*

Shell chambered, involute; its first volutions small, and increasing very gradually, its last elongated and dilated or expanded, and then diminishing and inflated; the divisions of the chambers lobed and sinuous. It appears to be almost, if not wholly, internal.

1. S. STRIATUS.—The Striated Scaphite, pl. XXII. fig. 1, 2, 3.

Scaphites striatus. Mantell, Geology of Sussex, p. 119, pl. 22, fig. 3, 4, 9, 11, 13, 14, 15 and 16. De la Beche, Geo. Manuel, p. 293. Fleming, Brit. An. p. 249.

Inner volutions umbilicate, deeply inserted, and wholly concealed by the outer volution; ambit or back tumid, suddenly enlarged, and the reflected turn terminating before reaching the centre; aperture entire, of an irregular transversely ovate form and marginate; margin prominent, and upper part produced, extending a little over the spire; whole surface covered with numerous oblique, annular, bifurcate striæ, which arise singly from the inner margin, divide into two or three before passing over the ambit, and unite with those which correspond on the opposite side; inner half of the outer volution somewhat depressed, and from thence the striæ extend obliquely in a radiating manner, and become bifurcate at the edge of the depression; towards the aperture the striæ are larger and more distinct, septa slightly concave, with three principal indentations on their edges, and with several minute sinuosities. Situation of the siphuncle unknown, but it seems to have been on the internal margin. Length about an inch, greatest thickness one-fourth, and its width an eighth of an inch.

Found in the Gray Chalk Marle at Hamsey, Ranscombe, Rodmill, and Brighton.

2. S. COSTATUS. — The Ribbed Scaphite, pl. XXII. fig. 4, 5.

Scaphites costatus. Mantell, Geology of Sussex, p. 120, pl. 20, fig. 8 and 12. Fleming, Brit. An. p. 241. De la Beche, Geo. Manuel, p. 293.

Volutions convex, laterally compressed; inner volutions wholly inserted and concealed; sides with numerous transverse furcate striæ, which embrace the ambit; sides of the outer volutions smooth, and provided with eight or ten distant oblique nodular projections; ambit broad, convex. Length one inch; width an eighth of an inch; thickness of the ambit a sixth of an inch.

This species is not so delicate as *S. striatus*, and is distinguished from it by the nodular projections on the sides of the outer volutions; these proceed from the centre, and diverge into numerous striæ and encircle the ambit, which is broad, and the projecting terminations of the striæ pro-

duce an undulated appearance in its edges; the aperture is long, and faces the spiral part.

Found in the Gray Chalk Marle at Hamsey, and is very rare.

3. S. EQUALIS.—The Equal Scaphite, pl. XXII. fig. 7, 8, 9, and 15.

Scaphites equalis. Sowerby, Min. Conch. I. p. 53, pl. 18, fig. 1, 2, 3. Fleming, Brit. An. p. 249. Buckland, Geology and Mineralogy Considered, II. p. 66, pl. 44, fig. 15, 16.

Involute, umbilicate; inner volutions concealed; inner parts of the sides with projecting distant ribs; these extend to nearly the centre, where they are rounded; smaller ribs equal to two to each of the larger ribs; these pass over the greatly enlarged ventricose, and thickened ambit; aperture incurved; the outer coating preserves part of the pearlaceous lustre of the original shell. Length about an inch.

Fig. 7, side view; 9, a transverse section of the chambered portion, exhibiting the arrangement of the lobes and saddles; from which it will be observed they are the same as in the genus *Ammonites*, the siphuncle also is seen on the dorsal margin at *a*; 8 exhibits the front, with the volution central; 15 is a section through one of the concamerations, exhibiting part of the undulations.

Found in the Green Sand, at Yeovil, by Dr Leach.

4. S. OBLIQUUS.—The Oblique Scaphite, pl. XXII. fig. 10, 11, 12, 13.

Scaphites obliquus. Sowerby, Min. Conch. I. p. 54, pl. 18, fig. 4, 5, 6, 7. Fleming, Brit. An. p. 249.

Obliquely involute; umbilicate; inner volutions concealed; sides transversely striate, which, after reaching the centre, become doubly or triply furcate, and pass over the rounded ambit, and meet with those on the opposite side. Length nearly an inch; width about three quarters, thickest part half an inch.

Miss Bennet possesses a specimen from the Hard Chalk, Warminster, which measures an inch and a quarter in length.

This shell will readily be distinguished by the obliquity of its curve, the fineness of its striæ, and the great incurvation of the last volution.

Found in the Marle Pit, Lewis, Hamsey, by Dr Mantell, and is not met with in the Chalk at Brighton.

Fig. 12 exhibits the obliquity of the spire in a front view of the shell; fig. 13 is a segment shewing the concamerations.

5. S. TUBERCULATUS.—The Tuberculated Scaphite, pl. XXII. fig. 6 and 14.

Scaphites tuberculatus. Parkinson, Organic Remains, III. p. 145, pl. 10, fig. 10, 11.

Involute, umbilicate; inner volutions concealed; from the inner margin a series of wide set ribs emanate, the six outer ones, on reaching the centre, terminate in a large and produced tubercle, and are met by numerous small rounded ribs, which pass over the ambit; in the remaining portion of the volution, the large ribs cross the sides entirely, and passing over the somewhat rounded ambit, proceed continuously to the inner margins on the opposite side; numerous small round ribs intervene between these, and terminate about the centre of the sides; at the termination of the reflected part at the mouth, a border is formed by the edge of a regularly rounded groove. Length an inch.

Found in Dorsetshire, as also in the Chalk Pit, Brighton, by Mr Herbert.

FAMILY II.—NAUTILACEA.

Shell discoidal, with a central spire, and short cells, which do not extend from the centre to the circumference.

GENUS VII.—NAUTILUS.—*Linnæus.*

Shell suborbicular, multilocular; convolute, with contiguous volutions, and simple partitions; septa transverse; and externally concave, perforated in the disk; margins entire; aperture ample.

1. N. TETRAGONIS.—The Quadrangular Nautilus, pl. XXII. fig. 16.

Nautilus tetragonis. Phillips, Geology of Yorkshire, II. p. 233, pl. 22, figs. 32, 33, 34, and pl. 17, fig. 24.

Discoidal, flattened, with tetragonal volutions; ambit slightly concave, and provided with a small spiral ridge within the angles, sides crossed by sharp bent striæ, which rise into ridges, or plaits on the edges; septa outwardly concave.

Found at Kulkeagh and Bolland, Queen's County, Ireland; and also in Northumberland.

2. N. INEQUALIS.—The Unequal Nautilus, pl. XXII. fig. 17.

Nautilus inequalis. Sowerby, Min. Conch. I. p. 88, pl. 40, lower figures. Fleming, Brit. An. p. 229.

Spheroidal, umbilicate; aperture nearly round, and obscurely trilobate, embracing the volutions, and nearly equal to one-half the diameter of the shell in length, and about the same in width; septa but slightly curved, remote in the inner volutions, and in the outer ones rather contiguous; siphunculus situate near the inner margin of the septum.

It is rather singular that the septa should be closer in the outer volutions than in the inner ones, where the distance is equal to their own length.

Found at Folkstone by Mr Gibbs.

3. N. MULTICARINATUS.—The Many-Keeled Nautilus, pl. XXII. fig. 18.

Nautilus multicarinatus. Sowerby, Min. Conch. V. p. 129, pl. 482, fig. 1, 2. Phillips, Geology of Yorkshire, II. p. 232.

Discoidal, subglobose, umbilicate; umbilicus large, deep, and angular, with an angular edge, in which the sides of the inner volutions are half exposed; ambit compressed, very broad, and flattened, with its centre plain, and provided on each side with four sharp carinæ, exclusive of the one which invests the margins of the umbilicus.

Found in the Black Rock, at Cork, Ireland, where it is very rare.

4. N. CARINIFERUS.—The Keeled Ammonite, pl. XXII. fig. 19.

Nautilus cariniferus. Sowerby, Min. Conch. V. p. 130, pl. 182, fig. 3. 4. Phillips, Geology of Yorkshire, II. p. 232, pl. 17, fig. 19.

Discoidal, subglobose, umbilicate; inner volutions half exposed within the very large, deep, and sharp margined

umbilicus; ambit very broad, with its centre plain, flat, and provided with two carinæ on each side, and a rounded broader one outside of these, with a considerable smooth space intervening betwixt them and the edge of the umbilicus; lip provided with a deep sinus.

This species has some affinity to *Nautilus multicarinatus*, but it is provided with a narrow concave space in place of the keel upon each side;

In its general contour it somewhat resembles also *Nautilus biangulatus* pl. 23, fig. 9; but in addition to the angles which distinguish that shell, it is provided on each side of its broad and flattened front with two minor keels.

Found in the Black-Rock, Cork, Ireland.

6. N. CYCLOSTOMUS. — The Circle Nautilus, pl. XXII. fig. 20.

Nautilus cyclostomus. Phillips, Geology of Yorkshire, II. p. 232, pl. 22, fig. 26, pl. 17, fig. 29, and pl. 18, fig. 3.

Shell partly spiral; inner volutions exposed, and the outer ones rapidly increasing in size, to a nearly straight line; sides crossed by fine flexous striæ; sutures outwardly concave, and slightly retroflected on the back; aperture almost circular; siphunculus placed near the outer edge; number of volutions variable.

Found at Castleton and Bolland, Queen's County, Ireland; and also at High-Green-Wood.

7. N. PENTAGONUS.—The Pentagonal Nautilus, pl. xxii. fig. 21.

Nautilus pentagonus. Sowerby, Min. Conch. III. p. 89, pl. 249, fig. 1. Fleming, Brit. An. p. 230.

Discoidal, with five volutions; the inner ones concealed to the extent of one-third, and increasing rapidly in size; ambit subcarinated; aperture orbicular, obscurely five angled, and considerably indented by the preceding volution, and extending to nearly half the diameter of the shell; sides somewhat flattened, with a few oblique, slight wrinkles; septa rather numerous, and slightly concave; the siphuncle central. Greatest diameter eight and a-half inches.

In the young condition, the aperture is less pentangular than in the adult.

Discovered in the Black Limestone at Bathgate, Linlithgowshire, and has since been found in the Red Limestone, at Closeburn, Dumfriesshire.

8. N. SINUATUS. — The Sinuous Nautilus, pl. XXII. fig. 22.

Nautilus sinuatus. Sowerby, Min. Conch. II. p. 213, pl. 194. Fleming, Brit. An. p. 231. De la Beche, Geo. Manual, p. 369.

Very thick, umbilicate; inner volutions few, and entirely concealed; sides depressed, conical, with close, moderately fine, and elevated concentric striæ, which gradually become obsolete towards the aperture; ambit convex; aperture obtusely sagittate and truncated; septum greatly elevated towards the front, with a large marginal sinus on each side; umbilicus very shallow; siphunculus placed a third the length of the aperture from the ambit. Greatest diameter five inches; and its thickness two and a-half inches.

Found in the Inferior Oolite at Yeovil.

9. N. ASTACOIDES. — The Little Lobster Nautilius, pl. XXIII. fig. 1.

Nautilus astacoides. Phillips, Geology of Yorkshire, I. p. 163, pl. 12, fig. 16. De la Beche, Geo. Manuel, p. 369.

Shell discoidal subumbilicate; inner volutions entirely concealed; ambit narrow towards the inner side next the aperture, but greatly thickened as it approaches the aperture behind; sides smooth, concentrically lineated, with transverse lines of growth; aperture very expansive, occupying nearly two-thirds the diameter of the shell, and rounded towards the back; siphuncle nearly central.

Found in the Upper Shale of the Lias formation of Yorkshire.

10. N. UNDULATUS. — The Waved Nautilus, pl. XXIII. fig. 2.

Nautilus undulatus. Sowerby, Min. Conch. I. p. 87, pl. 40. Fleming, Brit. An. p. 229. De la Beche, Geo. Manuel, p. 293.

Gibbous; inner volutions concealed; sides considerably produced, with large undulations, which are more deeply defined as they approach towards the back, and reaching to more than half the diameter; edge of the back, when viewed in profile, deeply scalloped; aperture somewhat obcordate; siphuncle nearly central; septa rather numerous, each crossed on the surface by an undulation; thickness half the diameter of the disk. Greatest diameter twelve inches.

Found in the Greensand at Nutfield, Surrey.

11. N. OXYSTOMUS. — The Sharp-Mouthed Nautilus, pl. XXIII. fig. 3.

Nautilus oxystomus. Phillips, Geology of Yorkshire, II. p. 233, pl. 22, fig. 35, 36.

Lenticular, greatly depressed; consisting of four volutions, the inner ones half exposed; sides smooth; ambit acute; septa outwardly concave, as exhibited in the figure.

Found in Limestone, at Enniskillen and Florence Court, Ireland, and in the Isle of Man.

12. N. TRUNCATUS.—The Truncated Nautilus, pl. XXIII. fig. 4.

Nautilus truncatus. Sowerby, Min. Conch. II. p. 49, pl. 123. Fleming, Brit. An. p. 229. De la Beche, Geo. Manuel, p. 369. Lister's Conchology, No. 1048.

Thick, inner volutions entirely concealed, umbilicate; sides flattened; ambit flat; aperture elongated and quadrangular, extending to nearly half the diameter of the disk, narrowest towards the ambit; siphuncle oval, placed nearest the inner end of the aperture, or inner margin of the septum; septa very numerous, but not recurved towards the umbilical region; thickness not quite half the diameter.

13. N. SIMPLEX.—The Simple Nautilus, pl. XXIII. fig. 5.

Nautilus simplex. Sowerby, Min. Conch. II. p. 47, pl. 122. Fleming, Brit. An. p. 229. De la Beche, Geo. Manuel, p. 293.

Spheroidal depressed; inner volutions entirely concealed; sides plain, umbilicate; aperture lunate, with truncated angles, which embrace the sides of the volutions; septa numerous and somewhat flattened; siphuncle situated near the inner edge of the septum; thickness nearly four-fifths, the greatest diameter of the disk, which varies from an inch to thirteen inches.

Found plentifully in the Greensand, near Boreham, in the vicinity of Warminster.

This shell bears a considerable similitude to *N. imperialis*, pl. 24, fig. 5, but is more rounded in its curvature, and somewhat narrower and flatter in the middle.

14. N. EXCAVATUS. — The Excavated Nautilus, pl. XXIII. fig. 6.

Nautilus excavatus. Sowerby, Min. Conch. VI. p. 55, pl.

29, fig. 1. Fleming, Brit. An. p. 231. De la Beche, Geo. Manuel, p. 429.

Almost globose, very largely umbilicate; umbilicus the shape of a reversed cone, occupying nearly half the diameter of the shell, and producing an excavated appearance in the sides; sides smooth, straight, slightly convergent towards that part where the volution enters the aperture; aperture subquadrangular, considerably produced at the sides by the convex extremity of the umbilicus, arcuated in front; siphuncle nearly central, or rather a little towards the ambit.

Found in the Inferior Oolite, Dorsetshire.

15. N. SULCATUS.—The Furrowed Nautilus, pl. XXIII. fig. 7.

Nautilus sulcatus. Sowerby, Min. Conch. VI. p. 137, pl. 571, fig. 1, 2. De la Beche, Geo. Manuel, p. 429.

Discoidal; with four almost wholly exposed volutions; sides ventricose, with two large spiral furrows, and two or three shallow, broad, smaller ones on each side, upon the most elevated part of the gibbose side; one of the furrows being concealed in the inner volutions, and with a sharp carinated elevation between the two larger furrows; ambit concave, and bounded by sharp margins; aperture one-half longer than it is wide, and with its sides indented; siphuncle situate immediately opposite the inner indentation; septa numerous, with straight margins.

Found in the Mountain Limestone at Castleton.

16. N. POLYGONALIS. — The Many-cornered Nautilus, pl. XXIII. fig. 8.

Nautilus polygonalis. Sowerby, Min. Conch. VI. p. 56, pl. 530.

Spheroidal umbilicate; inner volutions entirely concealed; sides compressed, smooth; umbilicus very small; aperture large, arcuated, occupying about half the diameter of the disk, its reflected extremities nearly concealing the umbilicus; siphuncle situate near the outer edge of the septum, and composed of many straight tubes, each protruding a little beyond the septum which it penetrates, to join the preceding tube; septa distant, considerably concave, with only a slight curvature at their edges; thickness equal to about two-thirds its diameter.

Found in the Inferior Oolite, Dorsetshire.

The whole series of septa have a disjointed aspect.

17. N. BIANGULATUS. — The Two-angled Nautilus, pl. XXIII. fig. 9.

Nautilus biangulatus. Sowerby, Min. Conch. V. p. 84, pl. 458, fig. 2. De la Beche, Geo. Manuel, p. 428.

Discoidal subglobose, umbilicate; inner volutions half exposed; ambit rounded; umbilicus very large and deep, in the form of a reversed cone, with its margins acutely carinated; aperture transversely elliptical, and obtuse at its extremities, its width being equal to about two-thirds the diameter of the disk.

In the young condition, the extremities of the aperture are angular.

Found in the Mountain Limestone near Bristol.

18. N. HEXAGONUS.—The Six-angled Nautilus, pl. XXIII. fig. 10.

Nautilus hexagonus. Sowerby, Min. Conch. VI. p. 55, pl. 529, fig. 2.

Somewhat cylindrical, and short; umbilicate; inner volutions entirely concealed; sides depressed, with a conical angle near the centre; ambit broad, straight; umbilicus small; aperture sagittate, and truncated on the outer extremity; siphuncle situate near the inner edge of the septum; septa numerous, and but slightly curved.

Found in the Calcareous Grit at Shotover Hill, and also at Abingdon.

19. N. GLOBATUS.—The Globular Nautilus, pl. XXIII. fig. 11, pl. 25, fig. 5, 9.

Nautilus globatus. Sowerby, Min. Conch. V. p. 129, pl. 481. De la Beche, Geo. Manuel, p. 428. Phillips, Geology of Yorkshire, II. p. 248, pl. 17, fig. 20, 28.

Subglobose umbilicate; inner volutions few, rapidly increasing, and almost wholly concealed; sides smooth; ambit flattened; umbilicus rather small, deep, and provided with a subcarinated margin; aperture large, very wide, arcuated, and furnished with a deep and wide sinus on the back, which divides it into two equal lobes; thickness and diameter nearly equal; septa numerous; there is a small sinus formed in the inner end of the aperture by the intrusion of the preceding volution; greatest diameter, six inches.

Found in the Black Rock at Cork.

20. N. WOODWARDII. —Woodward's Nautilus, pl. XXIII. fig. 12.

Nautilus Woodwardii. Sowerby, Min. Conch. VI. p. 138, pl. 571, fig. 3. *Ammonites Woodwardii*, Martin, Petrifactions of Derbyshire, pl. 35, fig. 4, 5. De la Beche, Geo. Manuel, p. 429.

Discoidal, with four or five wholly exposed, rapidly increasing volutions; sides of the volutions angular; the whole surface provided with many concentric series of granulated lines; ambit rounded, and provided with a linear sulcus in its centre; aperture obovate, with angulated sides.

Found at Winster, Derbyshire.

21. N. CENTRALIS.—The Central Siphuncled Nautilus, pl. XXIV. fig. 1.

Nautilus centralis. Sowerby, Min. Conch. I. p. 11, pl. 1. fig. 1. Fleming, Brit. An. p. 229.

Involute umbilicate; inner volutions wholly concealed; aperture transversely elongate, and bluntly lunate; siphuncle placed quite central; umbilicus large, but not deep, placed behind the projecting sides of the aperture; sides smooth; septa entire, gently bending, concave, but not recurved at their extremities.

First discovered in Clay, from a well one hundred and seventy-five feet deep, in Richmond Park.

22. N. COSTALIS.—The Ribbed Nautilus, pl. XXIV. fig. 2.

Nautilus costalis. Phillips, Geology of Yorkshire, II. p. 233, pl. 22, fig. 30.

Spheroidal, umbilicate; inner volutions wholly concealed; sides covered with transverse flutings, or ribs; ridges rising from obscure undulations on the margin of the deep umbilicus, and terminating in acute projections on the ambit, which are very conspicuous when viewed in profile, with slight contractions at intervals, which are parallel to the ridges, and also with pretty strong elevated striæ, which lie in the same direction as the ridges; aperture lunate.

This species attains a very large size, sometimes measuring fourteen inches.

Found at Kildare and Queen's County, Ireland.

23. N. ZICZAC. The Zigzag Nautilus. Pl. XXIV. fig. 3.

Nautilus Ziczac. Sowerby, Min. Conch. I. p. 12, pl. 1. Lowest figures. Fleming, Brit. An. p. 231; Buckland,

Geology and Mineralogy Considered, I. p. 359, and II. p. 63, pl. 43, figs. 3 and 4.

Involute; sides somewhat flattened; inner volutions entirely concealed; aperture bluntly triangular; siphuncle placed nearest to the inside; septa concave, greatly recurved at their extremities, and with a deep indentation in the edge on each side, producing a zigzag appearance; thickness about a third of its diameter.

Found in the Clay at Highgate, in London.

24. N. STRIATUS. — The Striated Nautilus, pl. XXIV. fig. 4.

Nautilus striatus. Sowerby, Min. Conch. II. p. 183, pl. 182. Fleming, Brit. An. p. 230. De la Beche, Geo. Manuel, p. 369.

Discoidal, somewhat gibbose, the inner volutions few, entirely concealed, and increasing rapidly; sides covered with extremely strong, elevated, numerous, irregular, concentric striæ, and having almost the appearance of ridges; umbilicus large, but not deep, in which the edges of the inner volutions are slightly indicated; ambit compressed; aperture almost orbicular, a little flattened on the back, and equal to about half the diameter of the disk; greatest diameter about eight inches.

Found not unfrequently in the Lias at Lyme Regis, Dorsetshire.

25. N. IMPERIALIS. — The Imperial Nautilus, pl. XXIV. fig. 5.

Nautilus imperialis. Sowerby, Min. Conch. I. p. 9. Fleming, Brit. An. p. 229.

Discoidal, umbilicate; inner volutions wholly concealed; sides gibbose and smooth, but striated concentrically in the young state; aperture lunate, with blunted sides; siphuncle placed nearest in the inside; septa entire, concave, broadest in the centre, truncated and a little recurved at their ends; umbilicus pretty large, but not deep.

This is a widely diffused species, and is found in the Clay at Highgate, near Munster, Island of Sheppey, Brentford, Suffolk, Middlesex, Essex, Berkshire, Hampshire, Wiltshire, Surrey, and Kent.

In some specimens the outer coating is of a light, chestnut-brown colour, especially in young shells, beneath which the shell is of a fine pearlaceous lustre; it is also nacred within.

26. N. BILOBATUS.—The Two-lobed Nautilus, pl. XXIV. fig. 6.

Nautilus bilobatus. Sowerby, Min. Conch. III. p. 89, pl. 249, fig. 2, 3. Fleming, Brit. An. p. 230.

Subglobose, umbilicate; inner volutions entirely concealed; sides smooth; back slightly flattened; umbilicus very small, and nearly cylindrical in form; aperture transversely elongated, its width being nearly four times its length; siphuncle almost central, on each side of which the septa are very concave, forming two elliptical lobes; thickness and width about equal.

Found at Closeburn, Dumfriesshire, in the Red Limestone, on the property of C. G. S. Menteith, Esq.

27. N. INTERMEDIUS. — The Intermediate Nautilus, pl. XXIV. fig. 7.

Nautilus intermedius. Sowerby, Min. Conch. II. p. 53, pl. 125. Fleming, Brit. An. p. 230. De la Beche, Geo. Manuel, p. 369.

Globose, umbilicate; inner volutions about half exposed, and increasing rapidly; sides somewhat depressed, concentrically striated; ambit broad flattened; aperture a little quadrangular; siphuncle round, placed nearest the external margin; septa numerous.

Found at Keynsham, in Ferruginous Limestone, and at Castle Hedingham, Essex. This species is nearly allied to the following, but is distinguished by not being so thick as the *obesus*, and the septa are not so numerous. The striæ mentioned are not, however, discernible, except when the outer coating is removed. But the circular form of the siphuncle at once distinguishes it from that of the *obesus*, which is transversely oval.

28. N. OBESUS. — The Swollen Nautilus, pl. XXIV. fig. 8.

Nautilus obesus. Sowerby, Min. Conch. II. p. 51, pl. 124. Fleming, Brit. An. p. 230. De la Beche, Geo. Manuel, p. 369.

Gibbose, umbilicate; inner volutions entirely concealed; sides plain; ambit broad and flat; aperture very large, somewhat quadrangular, its length being two-thirds the diameter of the disk; siphuncle oblong-ovate, transverse, and almost central; septa very numerous, but not recurved, which produces an open form to the umbilicus, which is pretty large, but not deep; greatest diameter thirteen inches.

Discovered in Ferruginous Limestone at Norton-Underham by Mr Strangeways.

Distinguished from *N. intermedius* by its transversely oval siphuncle, which inclines inwards, and in the umbilicus exhibiting no indications of the inner volutions.

29. N. COMPLANATUS.—The Flattened Nautilus, pl. XXIV. fig. 9.

Nautilus complanatus. Sowerby, Min. Conch. III. p. 109, pl. 261. Fleming, Brit. An. p. 231. De la Beche, Geo. Manuel, p. 464.

Discoidal compressed, with four or five volutions; the inner ones completely exposed; their inner edges flattened, leaving a concave surface; half of the last volution is destitute of septa; sides flat and smooth; aperture lanceolate, its length being nearly equal to six times its width; near the inner angle, the edge of each septum is provided with a reversed sinus; ambit rounded.

Discovered at Scarlet, Isle of Man, by J. S. Henslow, Esq. in the Slaty Limestone.

30. N. TUBERCULATUS. — The Tuberculated Nautilus, pl. XXIV. fig. 10.

Nautilus tuberculatus. Sowerby, Min. Conch. III. p. 90, pl. 249, fig. 4. Fleming, Brit. An. p. 230.

Discoidal, thick, very largely umbilicate; the inner volutions almost wholly exposed; outer volutions thick, the inner ones progressively descending to a deep umbilicus, the shape of a reversed cone; at about a third of the breadth of the volutions, is situated a series of large round tubercles, which are prolonged to the inner margins by a flattened rib; the inner volutions are inserted as far as the row of tubercles; ambit rounded; aperture transversely elongated, and a little biangular, its width being twice its length; septa but slightly concave, with their edges a little waved.

Found in the Red Limestone at Closeburn, Dumfriesshire, by C. G. S. Menteith, Esq.

31. N. DORSALIS. — The Back-siphuncled Nautilus, pl. XXV. fig. 1.

Nautilus dorsalis. Phillips, Geology of Yorkshire, II. p. 231, pl. 17, fig. 17, and pl. 18, figs. 1 and 2.

Discoidal, umbilicate; inner volutions entirely concealed, and rapidly increasing; sides rounded, smooth; aperture sub-rotund; siphuncle placed close to the back; septa distinct; umbilicus large and deep.

Professor Phillips says, there are three varieties of this species: A, has a circular umbilicus, with the inner volutions partly concealed; B, umbilicus somewhat angular, with the volutions more involute; C, umbilicus open and rounded, and the shell somewhat less involute. The two former are found at Bolland, Queen's County, and the latter are from Kildare, Ireland.

32. N. BISTRIALIS. — The Doubly Striate Nautilus, Pl. XXV. fig. 2.

Nautilus bistrialis. Phillips, Geology of Yorkshire, II. p. 232, pl. 17, fig 2.

Discoidal, umbilicate; inner volutions entirely concealed; sides slightly rounded; umbilicus very large, but not deep, with several spiral striæ on its margin.

Found at Bolland, Queen's County, Ireland.

33. N. GONIOLOBATUS.— The Corner-Lobed Nautilus, pl. XXV. fig. 3.

Nautilus goniolobus. Phillips, Geology of Yorkshire, II. p. 232, pl. 17, fig. 23.

Involute, subglobose, umbilicate; inner volutions wholly concealed; sides smooth, inflated; ambit rounded; umbilicus small; sutures retroflexed in a small dorsal sinus; first lateral lobe angular; the second cannot be traced

Found at Bolland, Queen's County, Ireland.

34. N. INGENS.—The Huge Nautilus, pl. XXV. fig. 4.

Nautilus ingens. Phillips, Geology of Yorkshire, II. p. 232, pl. 18, fig. 4. De la Beche, Geo. Manuel, p. 428.

Discoidal; inner volutions slightly concealed, and increasing rapidly; sides smooth; ambit round; aperture orbicular, obscurely angular towards the inner edges; siphuncle round, placed at about a third the length of the aperture from the ambit; septa numerous. It is a very large species.

Found at Coniston, near Gargrave; and at Clattering-dykes, in the Mountain Limestone.

It is nearly allied to *N. pentagonus*, pl. 22, fig. 21, but may be distinguished from it by the rounded ambit.

35. N. LINEATUS.—The Lineated Nautilus, pl. XXV. fig. 7.

Nautilus lineatus. Sowerby, Min. Conch. I. p. 89, pl. 41. Fleming, Brit. An. p. 229. De la Beche, Geo. Manuel, p. 369.

Spheroidal, compressed, umbilicate; inner volutions entirely concealed; sides slightly flattened, and obscurely striated transversely; umbilicus small and well defined; ambit flat, broad, with a spiral concave groove in its centre; aperture somewhat quadrangular, with a deep indentation from the preceding volution; siphuncle placed near the middle; septa very numerous and concave, with three slight marginal undulations; diameter about a third longer than its thickness.

Found in the Inferior Oolite at Combdown, near Bath.

36. N. SULCATULUS. — The Sulcated Nautilus, pl. XXV. fig. 8.

Nautilus sulcatulus. Phillips, Geology of Yorkshire, II. p. 233, pl. 17, figs. 18 and 25.

Discoidal; inner volutions quadrangular, partly exposed; sides smooth, concave towards the outer edge, and convex towards the marginal slope, which terminates abruptly, with many acute sigmoidal, transverse, and a few spiral striæ; volutions quadrangular; ambit concave along its centre, and somewhat bevelled to the sides; aperture oblong, somewhat ten-sided; siphuncle situate near the outer edge.

Found at High-Green-Wood, and Kildare, Bolland, and Coalbrookdale.

37. N. ELEGANS.—The Elegant Nautilus, pl. XXV. fig. 10.

Nautilus elegans. Sowerby, Min. Conch. II. p. 33, pl. 116. Fleming, Brit. An. p. 229. Mantell, Geology of Sussex, p. 112 and 197, pl. 20, fig. 1. pl. 21, figs. 1, 4, 8. De la Beche, Geo. Manuel, p. 293.

Subglobose, umbilicate; inner volutions one-third concealed; sides with numerous transverse, linear, curved, reflexed sulci, which divide the surface into broad flat ribs, which, after forming an elegant curve on the ambit, proceed laterally, and are then reflected towards the umbilicus; aperture obtusely sagittate; the siphuncle large, placed central; septa concavo-convex, entire, undulating in a gentle manner, with their convex surface placed in an opposite direction to that of the grooves, and decussating them; umbilicus very small. Greatest diameter twelve inches; its greatest thickness is equal to about twice its width.

This species is pretty widely diffused, and is met with in the Gray Chalk Marle of Stoneham, Hamsey, Offham, Ranscombe, Middleham, and Firle, in Sussex.

In a young condition, the furrows are wide, and separated by sharp transverse ribs, and the whole surface is ornamented with numerous well defined striæ.

38. N. ANNULARIS. — The Ringed Nautilus, pl. XXV. fig. 11.

Nautilus annularis. Phillips, Geology of Yorkshire, I. pl. 12, fig. 18.

Discoidal, with a large circular annulation; sides gently raised; aperture very large; septa remote, and but slightly curved.

Found in the upper Lias Shale of Yorkshire.

39. N. REGALIS.—The Royal Nautilus, pl. XXV. fig. 12.

Nautilus regalis. Sowerby, Min. Conch. IV. p. 77, pl. 355. Fleming, Brit. An. p. 230.

Gibbose, destitute of an umbilicus; inner volutions entirely concealed; sides plain and convex; ambit flattened; aperture somewhat wider than long; sides expanded, with a considerable indentation by the volution, and a little straight next the back. Largest diameter about nine inches, and its thickness about five.

This species somewhat resembles *N. imperialis*, pl. 24, fig. 5, but differs in its volutions, increasing more rapidly than in that shell, and its solid axis. In the young state, it may also be distinguished by the convex sides of the aperture.

Found in the London Clay, at a depth of sixty feet, Regent's Canal, Hyde Park, and Island of Sheppey.

40. N. EXPANSUS. — The Expanded Nautilus, pl. XXV. figs. 13 and 14.

Nautilus expansus. Sowerby, Min. Conch. V. p. 83, pl. 458. fig. 1. De la Beche, Geo. Manuel, p. 293.

Subglobose, umbilicate; inner volutions wholly concealed; sides with fine, sharp, transverse striæ, which following the lines of growth, pass from the umbilicus in an elegant sweep over the rounded back, and proceed continuously to the umbilicus on the opposite side; umbilicus small, and nearly circular; aperture transverse, very greatly exposed, laterally, so much so as to make the axis considerably longer than the diameter of the shell; the septa intersect the striæ, and in front their edges are nearly straight.

Discovered in the Chalk Marl at Hamsey, by Dr Mantell.

The young of *N. elegans*, pl. 25, fig. 10, bears a considerable likeness to this shell, but the striæ are stronger in the *N. expansus*, and the aperture is much more expanded.

41. N. RADIATUS. — The Rayed Nautilus, pl. XXV. fig. 15.

Nautilus radiatus. Sowerby, Min. Conch. IV. p. 78, pl. 356. Fleming, Brit. An. p. 230.

Gibbose, umbilicate; inner volutions one-third inserted, the outer one increasing very rapidly; sides rounded and ornamented with curved, radiating undulations, which meet upon the back at an obtuse angle; back or ambit rounded, umbilicus of moderate dimensions, and exposing the inner volutions and the edges of the septa; aperture nearly circular, its length and breadth being about equal, exceeding in dimensions half the diameter of the disk, and deeply indented by the intrusion of the volutions; greatest diameter six inches and a half.

Found in the Greensand Formation, near Maltor.

In its aspect, this shell appears to resemble *N. elegans*, pl. 25, fig. 10, and also the *N. undulatus*, pl. 23, fig. 2. The undulations are more numerous than in the latter, there being at least five or six to each septum, and it is more regularly convex; besides, the deeply indented ambit of the *N. undulatus*, when viewed in profile, will at once distinguish it.

42. N. DISCUS.—The Quoit Nautilus, pl. IX. fig. 4.

Nautilus discus. Sowerby, Min. Conch. I. p. 39, pl. 13. Fleming, Brit. An. p. 230.

Discoidal, much compressed; margins flat, consisting of five entirely exposed volutions; aperture oblong, its greatest width not exceeding half an inch; its exterior margin narrower than the inner one, and furnished with a notch, resulting from a small groove, which encompasses the margin of the ambit; chambers numerous; septa about an eighth of an inch apart; siphuncle situate nearest the inner edge of the septa.

Discovered in the dark coloured Limestone, near Kendal, Westmoreland.

This species was, by mistake, engraved among the Ammonites.

GENUS VIII.—NUMMULITES.—*Lamarck.*

Shell lenticular, disciform, or thick in the middle, and attenuated towards the margins; spire internal, multilocular, covered over by several tables; volutions generally numerous, sometimes to the number of twenty; outer partitions complicated, produced, extending and uniting on each side of the centre; cells very numerous, small, alternate, and formed by transverse, imperforate septa, which are convex near the fronts, leaving a fissure between each of them and the preceding volutions; their sides narrow, variously curved, and extending to the axis.

1. N. COMPTONI. — Compton's Nummulite, pl. XXVI. figs. 1, 2.

Nautilus Comptoni. Sowerby, Min. Conch. II. p. 45, pl. 121. Fleming, Brit. An. p. 229.

Lenticular, obtusely carinated; surface smooth, with about ten distinctly marked septa; aperture acutely triangular, formed of two arcuated lips; diameter not a line.

Discovered by Earl Compton, at Earl Stoke, near Warminster, Wiltshire, and named in honour of that scientific nobleman.

2. N. VARIOLARIA.—The Variable Nummulite, pl. XXVI. figs. 3, 4, 5.

Nummularia variolaria. Sowerby, Min. Conch. VI. p. 76, pl. 538, fig. 3. *Lenticulites variolaria*, Lamarck, Env. de Paris, p. 168. An. San. Vert, VII. p. 619.

Shell very convex and smooth, with four or five volutions; margin obtuse; septa about twenty, forming rays near the margin.

This species is not above a line in diameter, is subject to considerable variety in thickness, according to its dimensions; the septa are more or less visible on its surface, as it is more or less opaque.

Discovered at Stubbington, by J. Holloway, Esq. in Pyrites, in the lower part of the London Clay.

3. N. LÆVIGATA. — The Smooth Nummulite, pl. XXVI. figs. 5, 6, 7.

Nummulites lævigata. Lamarck, Env. de Paris, p. 172. An. San. Vert. VII. p. 629. Parkinson, Org. Rem. III. p. 152 and 158, pl. 10, figs. 13, 14. Mantell, Geo. Sussex, p. 269. Sowerby, Min. Conch. VI. p. 75, pl. 538, fig. 1. *Nummulita lævigata*, Fleming, Brit. An. p. 233.

Lenticular, smooth, consisting of about twelve greatly compressed volutions; sides convex, a little plain, except having a few elevated dots, and in the centre being slightly undulated; margin narrow, somewhat obtuse, and very finely striated; aperture narrow.

This shell is composed of perpendicular fibres, with an external and internal semitransparent coating.

Discovered at Stubbington Cliff, by J. Holloway, Esq. It has since been found in Bricklesom Bay, Sussex.

GENUS IX.—BELLEROPHON.—*Montfort.*

Shell thick, univalve, unilocular, involute, umbilicate on both sides, nearly symmetrical, bicarinated, and almost spherical, the last volution enveloping the others; aperture very large, semilunate, arched, and terminated by the extremities of the columella or axis, which is transverse, and provided with a sinus or notch in the outer edge of the lip, between the keels.

SECTION I.— SHELLS WITH A MESIAL CARINA.

1. B. TANGENTIALIS.—The Tangent-Ridged Bellerophon, pl. XXVI. figs. 12 and 22.

Bellerophon tangentialis. Phillips, Geo. of Yorkshire, II. p. 230, pl. 17, figs. 6, 7, and 14.

Cylindrico-globose; umbilicus largely rounded; aperture much expanded; ambit broad, and provided with an acute, narrow carina, from which emanate straight ridges and furrows, which rise perpendicular to the keel, forming tangents to the inner margin.

Found at Bolland, Queen's County, Ireland.

2. B. TENUFASCIA. — The Thin-banded Bellerophon, pl. XXVI. figs. 16 and 30.

B. tenufascia. Sowerby, Min. Conch. V. p. 109, pl. 170, figs. 2 and 3. Phillips, Geo. of Yorkshire, II. p. 230, pl. 17, figs. 9, 10. *Nautilus hiulcus* Var. c. Martin, Petrefactions of Derbyshire Systematically Arranged, p. 15.

Nearly globular; aperture widely expanded; mesial keel thin, elevated, and acute, with fine, close, transverse striæ; umbilicus small; greatest diameter three inches.

Found at Scalebar, Derbyshire; at Settle, Yorkshire; also near Kendal, and at Bolland, Queen's County, Ireland.

3. B. WOODWARDII.—Woodward's Bellerophon, pl. XXVI. figs. 14, 20, and pl. XXIII. fig. 12, p. 34, No. 20.

Bellerophon Woodwardii. Phillips, Geology of Yorkshire, II. p. 231, pl. 17, figs. 1, 2, 3.

Discoidal, lenticular, subrhomboidal, with four or five rapidly increasing volutions; sides angular; whole surface covered with many concentric series of granulated lines; back rounded, and furnished with a linear sulcus in its centre; aperture obovate, with angulated sides.

In old shells, the series of beaded lines assume the appearance of ordinary striæ, and the inner volutions become somewhat concealed.

Found at Bolland, Queen's County, and Kulkeah, Ireland.

4. B. HIULCUS. — The Gaping Bellerophon, pl. XXVI. figs. 17, 19.

Bellerophon hiulcus. Sowerby, Min. Conch. V. p. 109, pl. 470, fig. 1. Deshayes, Des. de Coq. Car. des Terr. p. 133, pl. 8, fig. 1, 2. Ency. Method. II. p. 133, No. 1. Brown's Elements of Fossil Conchology, pl. II. fig. 15. Fleming, Brit. An. p. 338. Conchyliolithus Nautilus hiulcus, Martin, Pet. Derb. pl. 40, fig. 1. Syst. Arrangements, pl. 1. fig. 6.

Globose, expanding widely from the central volutions; mesial keel broad and flat; axis perforated; the sides covered with close-set, elevated striæ, which emanate from the axis, and pass obliquely to the keel; the front sinus is deep, and producing arcuated striæ upon the carina, whose sides are well defined by sharp, depressed lines; aperture much expanding.

Found in the Carboniferous Limestone of Derbyshire; and at Bolland, Queen's County, Ireland.

5. B. COSTATUS. — The Ribbed Bellerophon, pl. XXVI. fig. 24.

Bellerophon costatus. Sowerby, Min. Conch. V. p. 110, pl. 470, fig. 4. Parkinson, Organic Remains, III. p. 141, pl. 10, fig. 6. Fleming, Brit. An. p. 338. Phillips, Geo. of Yorkshire, II. p. 230, pl. 17, fig. 15. Conch. Nautilus hiulcus, Martin, Pet. Derby. p. 15, pl. 11, fig. 1.

Subglobose, with a small rounded umbilicus; mesial keel broad, somewhat depressed; striæ sharp, emanating from the umbilicus in an arcuated form, and terminating in a deep V-shaped dorsal sinus; aperture large and expanding.

Found in the Limestone of Craven; and Bolland, Queen's County, Ireland.

6. B. SULCATUS.—The Furrowed Bellerophon, pl. XXVI. figs. 23, 26.

Discoidal, with a large and shallow umbilicus; sides somewhat inflated, and crossed by numerous, narrow, curved sulci; mesial keel elevated, with arcuated sulci, which are continuous with those of the sides; aperture considerably expanded and arcuated, and much elevated behind.

Found at Bolland, Queen's County, Ireland.

7. B. EXPANSA. — The Expanded Bellerophon, pl. XXVI. fig. 29.

Subdiscoidal; umbilicus concealed; sides greatly produced, and crossed by wide-set sulci, which are carried over the somewhat elevated mesial keel, in an arcuated form; aperture very wide and gaping.

This species is nearly allied to *B. apertus* in form, but is at once distinguished by its having a dorsal keel.

Found at Bolland, Queen's County, Ireland.

8. B. DECUSSATUS. — The Decussated Bellerophon, pl. XXVI. fig. 21.

Bellerophon decussatus. Fleming, Brit. An. p. 338. Phillips, Geo. of Yorkshire, II. p. 231, pl. 17, fig. 13.

Subglobose, or somewhat longitudinally ovate, covered by small spiral ridges and furrows, which are crossed by finer thread-like, arcuated lines, producing a beautifully decussated appearance, which, at their point of junction, are somewhat acute, giving the surface a subtuberculated aspect; aperture very much expanded; axis solid; mesial keel tumid and rounded, and covered by the striæ.

Found in the Clay Slate of the Coal Formation, Linlithgowshire, and at Kulkeagh, Ireland.

SECTION II.— SHELLS DESTITUTE OF A MESIAL CARINA.

9. B. URII.—Ures Bellerophon, pl. XXVI. figs. 13, 15.

Bellerophon Urii. Fleming, Brit. An. p. 338. Phillips, Geo. of Yorkshire, II. p. 231, pl. 17, figs. 11, 12. *Nautilus*, Ure's Rutherglen, &c. p. 308, pl. 14, fig. 9.

Globular; sides of the aperture much expanded; axis solid; shell smooth, with many regular, spiral, shallow furrows, and rounded, narrow ridges; destitute of a keel.

The cast of the interior of this fossil is smooth.

Found in the Carboniferous Limestone of Rutherglen, Renfrewshire; Bowes; Bolland; Harelaw, and Linlithgowshire.

10. B. SPIRALIS. — The Spirally-Furrowed Bellerophon, pl. XXVI. fig. 18.

Bellerophon spiralis. Phillips, Geo. of Yorkshire, II. p. 231, pl. 17, fig. 8.

Ovate, largely umbilicate; the back and edges of the umbilicus obtusely angled, with numerous spiral ridges and sulci; the whole surface being very minutely granular, and only visible by the aid of a strong lens; lip of the aperture somewhat triangularly pointed behind.

Found at Bowes; Otterburn, and Harelaw.

11. B. APERTUS.—The Open Bellerophon, pl. XXVI. figs. 25, 27.

Bellerophon apertus. Sowerby, Min. Conch. V. p. 108, pl. 469, fig. 1. Fleming, Brit. An. p. 338. Phillips, Geo. of Yorkshire, II. p. 231, pl. 27, fig. 4.

Nearly spherical; inner volutions concealed; axis solid and very thick; sides smooth; sides of the aperture considerably expanded, and its extremities rather square; destitute of a mesial keel; back rather rounded.

Found in the Limestone at Carlingford, county of Lowth, and met with in the same formation at Harelaw and Otterburn; at Kirby Lonsdale; Bristol; and Settle, Yorkshire; from which last locality, they are sometimes met with nearly four inches in diameter.

12. B. CORNU-ARIETUS.—The Ram's Horn Bellerophon, pl. XXVI. figs. 31, 32, 33.

Bellerophon Cornu-Arietus. Sowerby, Min. Conch. V. p. 108, pl. 469, figs. 2, 2. Fleming, Brit. An. p. 338. Phillips, Geo. of Yorkshire, II. p. 231, pl. 17, fig. 16. *Nautilus,* Ure's History of Rutherglen, &c. p. 308, pl. 14, fig. 8.

Shell very thick, smooth, and somewhat compressed; volutions few, the inner ones very small, rapidly enlarging and much expanding towards the aperture; near which, on the back, it is provided with a longitudinal, carinated, regular, dorsal sinus, which divides the aperture into two lobes; aperture large and greatly dilated; axis solid and very thick.

The inner volutions are apparent in the cast, fig. 32.

Found in the Limestone of Kendal; Northumberland; Renfrewshire, and in the Carboniferous Limestone of Linlithgowshire.

13. B. OVATUS.—The Oval Bellerophon, pl. XXVI. fig. 28.

Ellipsolites ovatus. Sowerby, Min. Conch. I. p. 83, pl. 37. *Nautilus ovatus.* Fleming, Brit. An. p. 231.

Ovate, gibbose, with a shallow, nearly central umbilicus; inner volutions concealed; sides of the shell rounded; surface smooth; aperture obtusely sagittate, with its sides narrow; greatest diameter thrice the thickness of the shell.

Found in the Limestone of Black Rock, near Cork, by Samuel Wright, Esq.

FAMILY III.—ORTHOCERATA.

Shell straight, or nearly so, and destitute of any spiral volutions.

GENUS X.—ORTHOCERA.—*Lamarck.*

Shell elongated, subconic, straight, or slightly arcuated, with numerous external, longitudinal grooves; cells formed by transverse septa, perforated by a tube, which is either central or marginal.

SECTION I.—SHELLS STRAIGHT.

1. O. CORDIFORMIS.—The Heart-Shaped Orthocera, pl. XXVII. fig 3.

Orthocera cordiformis. Sowerby, Min. Conch. III. p. 85, pl. 247. Fleming, Brit. An. p. 238. Ure, Hist. Rutherglen, &c. p. 306, pl. 17, fig. 1.

Shell obconical, heart-shaped; sides convex; aperture round; surface smooth and plain; septa numerous, extending directly across the shell; siphuncle not quite central; the tube of which is inflated into a globular form between each septum, the last chamber more contracted at its opening than at its base.

This large species measures nine inches and a quarter in length, and seven inches at the broadest part.

Found in the Limestone of the Old Red Sandstone, at Closeburn, Dumfries-shire by C. S. Menteith, Esq.

2. O. GIGANTEA.—The Gigantic Orthocera, pl. XXVII. fig. 6.

Orthocera gigantea. Sowerby, Min. Conch. III. p. 81, pl. 246. Fleming, Brit. An. p. 239. Phillips, Geo. of Yorkshire, II. p. 237, pl. 21, fig. 3.

Shell straight, gradually tapering; finely striated; aperture oval, somewhat more than eight inches in diameter; septa direct, deep, and numerous; siphuncle situate at a little distance from the centre.

This gigantic species is supposed to grow to the extent of eight feet, and is, consequently, the largest of all the known testaceæ. The shell is about a quarter of an inch in thickness. This magnificent fossil was discovered by Charles Stewart Menteith, Esq. in the Limestone on his estate of Closeburn, Dumfries-shire, and has since been met with at Flasby, and at Bolland, Queen's County, Ireland.

3. O. ANGULARUS.—The Angular Orthocera, pl. XXVII. fig. 5.

Orthoceras angulare. Phillips, Geo. of Yorkshire, II. p. 238, pl. 21, fig. 4.

Shell subcylindrical, with a few longitudinal furrows; septa placed very distant.

Found at Bolland, Queen's County, and at High-Green-Wood.

4. O. INEQUISEPTUS.—The Inequally-Partitioned Orthocera, pl. XXVII. fig. 7.

Orthoceras inequiseptum. Phillips, Geo. of Yorkshire, II. p. 238, pl. 21. fig. 7.

Shell straight, gradually tapering; septa unequal, very distant in the young shell; section circular.

Found at Bolland, Queen's County.

5. O. RETICULATUS.—The Reticulated Orthocera, pl. XXVII. fig. 8.

Orthoceras reticulatum. Phillips, Geo. of Yorkshire, II. p. 238, pl. 21, fig. 11.

Shell elongated; septa distant; surface annulated, and reticulated with moniliform lines; sections circular.

This figure is taken from a cast.

Found at Bolland, Queen's County.

6. O. CIRCULARIS.—The Circular Orthocera, pl. XXVIII. fig. 2, 3.

Orthocera circularis. Sowerby, Min. Conch. I. p. 133, pl. 60. fig. 6, 7. *O. convexa.* Fleming, An. Phil. V. p. 202, pl. 31, fig. 4. *Ib.* Brit. An. p. 238.

Shell nearly cylindrical, or slightly tapering; partitions thin and concave, approximate, being about the sixteenth of an inch distant from each other, with their edges even; siphuncle situate about midway between the centre and the margin; diameter of the large end about an inch.

Found in the Carboniferous Limestone at Dudley.

7. O. CINCTA.—The Girdled Orthocera, pl. XXVIII. fig. 4.

Orthocera cincta. Sowerby, Min. Conch. VI. p. 168, pl. 588, fig. 3. Phillips, Geo. of Yorkshire, II. p. 237, pl. 21, fig. 1.

Shell elongate, almost cylindrical; surface covered with numerous sharp, somewhat undulous, annular striæ; siphunculas central; septa rather concave and distant; section very slightly ovate.

Found at Preston; Flasby; Closeburn, Dumfries-shire, and Bolland, Ireland.

8. O. BREYNII.—Breyn's Orthocera, pl. XXVIII. fig. 5.

Orthocera Breynii. Martin, Pet. Derby. pl. 39, fig. 2.

Sowerby, Min. Conch. I. p. 132, pl. 60, fig. 5. Phillips, Geo. of York. II. p. 238.

Shell cylindrical, elongated, tapering gradually; septa numerous, ovate, very oblique and slightly concave, approximate and shallow; siphuncle placed in one focus between the centre and the margin; outer shell very thin and plain; section of an elongated oval form.

Found in the Derbyshire Limestone; Kulkeagh; and Bowes.

9. O. CONICA.—The Conical Orthocera, pl. XXVIII. fig. 6, 7.

Orthocera conica. Sowerby, Min. Conch. I. p. 131, pl. 60. fig. 1, 2, 3. Fleming, Brit. An. p. 238.

Shell elongated, conical, smooth; aperture ovate; chambers numerous, increasing in depth with the size of the shell; septa with even margins, and regularly concave surfaces, and doubly distant from each other at the broad than at the narrow extremity; siphuncle small, oval, and almost close to the margin.

Fig. 7. represents the convex side of one of the septa.

Found in the Alum Clay at Whitby, by the Dowager Marchioness of Bath.

§ 10. O. UNDULATA.—The Waved Orthocera, pl. XXVIII. fig. 9. 10.

Orthocera undulata. Sowerby, Min. Conch. I. p. 130, pl. 59. Fleming, Brit. An. p. 238. Phillips, Geo. of Yorkshire, II. p. 238, pl. 21, fig. 8.

Shell oval, tapering considerably; thin, smooth; partitions numerous, nearly parallel, only slightly oblique, and a little concave; their edges ascending, oval, with a wave on each side, and all equidistant, five or six to an inch; siphuncle situate near the thicker end, at about a sixth part of the diameter from the side of the shell, its size being about the tenth of an inch; section of a broad oval form as in fig. 10.

Found in the Carboniferous Limestone at Scaleber, near Settle, Yorkshire; Castleton, and Cumberland.

11. O. ANNULATA.—The Ringed Orthocera, pl. XXVIII. fig. 11, 12.

Orthocera annulata. Sowerby, Min. Conch. II. p. 77. Fleming, Brit. An. p. 239. Phillips, Geo. of Yorkshire, p. 239.

Shell tapering, subcompressed, with strong, slightly oblique, equidistant annulations, and minute, transverse, undulating striæ; a space equal to about four rings is plain near the aperture, which is situate in the thicker end, within which the siphuncle is placed, a little way from the side of the shell; section a little oval, (fig. 12.)

Found in the Carboniferous Limestone of Colebrookdale, Shropshire; Bowes; Kulkeagh; High-Green-Wood, and Northumberland.

12. O. LATERALE.—The Lateral Orthocera, pl. XXVIII. fig. 14.

Orthocera laterale. Phillips, Geo. of Yorkshire, pl. 21. fig. 8.

Shell tapering, smooth, slightly compressed, with equidistant, wide-set, somewhat oblique septa, their sides slightly arcuated; section a little ovate.

Found at Bolland, Queen's County.

13. O. STEINHAUERI. — Steinhauer's Orthocera, pl. XXVIII. fig. 15.

Orthocera Steinhaueri. Sowerby, Min. Conch. I. p. 132, pl. 60. fig. 4. Fleming, Brit. An. p. 239. Phillips, Geo. of Yorkshire, II. p. 238, pl. 21, fig. 5.

Shell circular, very concave, with thin margins, even edged, wide, elongated, tapering very gradually; with very parallel and regular transverse striæ; septa distant; chambers very deep; siphuncle rather large, situate close to one side; section circular.

Discovered, by the Rev. H. Steinhauer, in Limestone on the Broadford Road, and has been met with at Bolland, and in Coal Shale at Halifax.

14. O. STRIATA. — The Striated Orthocera, pl. XXVIII. fig. 17.

Orthocera striata, Sowerby, Min. Conch. I. p. 129, pl. 58. Fleming, Brit. An. p. 239. Ib. Wernerian Mem. III. p. 96.

Shell nearly cylindrical, and tapering very gradually; the whole surface longitudinally striated; aperture oval, about a third broader than wide; septa very thin, numerous, but widely set; chambers deep; siphuncle large and nearly central; greatest known length eleven inches.

Discovered in the Black Rock Transition Limestone, near Cork, and in the Clay Slate of the same formation, at the Cove of Cork.

SECTION II.—SHELLS ARCUATED.

§ 15. O. PYRIFORMIS. — The Pear-shaped Orthocera, pl. XXVII. fig. 1, 2.

Orthoceras pyriforme. Phillips, Geo. of Yorkshire, II. p. 238. pl. 21, fig. 14, 15.

Shell pyriform, tumid towards the aperture, and arched towards the smaller end; smooth; section oval, siphuncle situate at one-third of the diameter from the edge.

Professor Phillips says, "In the specimen figured the large projecting plate, with its plane parallel to the axis, (as in our fig. 2. pl. XXVII.) and to the longer diameter of the shell, is covered on the convex side by a white, laminated, friable inner shell, very analogous to the "bone" of Sepia Officinalis, and to the lower laminæ of Belemnites quadratus.

Found at Bolland and Kildare, Ireland.

16. O. FUSIFORMIS. — The Spindle-Shaped Orthocera, pl. XXVIII. fig. 1.

Orthocera fusiformis. Sowerby, Min. Conch. VI. p. 167, pl. 588, fig. 1, 2.

Shell arcuated, fusiform, smooth, round, and tapering rapidly towards the smaller end, and slightly towards the broader one; siphuncle almost central; outer chamber large.

Found in the Limestone at Bolland, Queen's County, Ireland, and in similar Limestone near Preston, Lancashire.

This shell is somewhat allied to the preceding.

17. O. PARADOXICA. — The Paradoxical Orthocera, pl. XXVII. fig. 4.

Orthocera paradoxica, Sowerby, Min Conch. V. p. 81, pl. 457.

Shell lanceolate, triangular, flattened in front, with the edges projecting a little, and producing a gentle concavity; sides convex, and somewhat dissimilar; aperture forming an almost equilateral triangle, with sides somewhat rounded, and slightly hollowed in front; the siphuncle almost central, but placed a little nearer the front.

Found in the Mountain Limestone of Ireland.

18. O. GESNERI.—Gesner's Orthocera, pl. XXVII. fig. 9.

O. Gesneri. Martin, Pet. Derby, pl. 38, fig. 1, 2. Fleming, Brit. An. p. 239. Phillips, Geo. of Yorkshire, II. p. 239, pl. 21, fig. 6.

Shell curved, conical, with about thirty longitudinal, close, acute, regular ridges and rounded furrows; siphuncle placed nearly marginal; section slightly ovate.

Found in the Carboniferous Limestone of Derbyshire, Middleton Tyas, Northumberland; Cumberland; Isle of Man; and Bolland, Queen's County.

19. O. RUGOSA.—The Rugged Orthocera, pl. XXVIII. fig. 8.

Orthocera rugosa. Fleming, Brit. An. p. 239, ib. Ann. Phil. V. p. 203. Phillips, Geo. of Yorkshire, p. 239, pl. 21, fig. 16.

Shell subcylindrical, slightly arcuated with annular, undulating, somewhat distant ridges, crossed at intervals by strong striæ producing a knotty appearance, the intervening spaces with longitudinal, tuberculated, subechinated lines; siphunculus minute, and situate close to the edge; between each of the transverse annulations are two chambers.

Found in the Carboniferous Limestone of Northumberland.

20. O. CORNU-IBEX.—The Ibex-Horn Orthocera, pl. XXVIII, fig. 13.

Orthoceras annulatum. Phillips, Geo. of Yorkshire, II. pl. 21, fig. 10.

Shell a little arcuated, cylindrical, with many slightly undulous smooth annulations; intervening spaces smooth.

This shell differs from the *O. annulata* in being more bent, in being greatly thicker in proportion to its length, and in the rings being closer.

Found at High-Green-Wood.

21. O. UNGUIS.—The Claw Orthecera, pl. XXVIII. fig. 16.

Orthoceras unguis. Phillips, Geo. of Yorkshire, II. p. 238, fig. 2.

Shell smooth, abruptly arcuated towards the thicker end; septa numerous; section orbicular.

Found at Bolland, Queen's County, Ireland.

22. O. DENTALOIDEUM.—The Tooth Orthocera, pl. XXVIII. fig. 18.

Orthoceras dentaloideum. Phillips, Geo. of Yorkshire, II. p. 239, pl. 21, fig. 12.

Shell greatly curved, and tapering gradually, with numerous small longitudinal ridges and furrows.

Found at Bolland, Queen's County.

GENUS XI.—BELEMNITES.—*Lamarck.*

Shell straight, conical, elongated, capable of being separated into two parts, the outer one a solid sheath, produced above, and excavated, with a conical cell beneath; the inner nucleus conical, and multilocular, divided by numerous transverse septa, perforated by a central tube.

SECTION I.—SHELLS LANCEOLATE.

1. B. LANCEOLATUS.—The Spear-Shaped Belemnite, pl. XXIX. fig. 1.

Belemnites lanceolatus. Sowerby, Min. Conch. VI. p. 208, pl. 600, fig. 8, 9.

Shell smooth, subfusiform, greatly elongated, one-half narrow, the other thickened, and gradually tapering to a point; each side with a double obsolete furrow; base obscurely triangular, base convex, or conical.

Found in the Chalk at Hamsey.

2. B. GRACILIS.—The Slender Bolemnite, pl. XXIX. fig. 13.

Belemnites gracilis. Phillips, Geo. of Yorkshire, I. p. 138, pl. 5, fig. 15.

Shell smooth, fusiform, thick at one end, and gradually tapering to a somewhat obtuse point, and extremely slender at the other; section orbicular.

Found in the Oxford Clay at Scarborough.

3. B. ATTENUATUS.—The Attenuated Belemnite, pl. XXIX. fig. 3.

Belemnites attenuatus. Sowerby, Min. Conch. VI. p. 176, pl. 589, fig. 2.

Shell subfusiform, somewhat quandrangular, tapering slightly towards the base, contracting abruptly a little above the centre, from which to the somewhat obtuse apex, it is nearly cylindrical, and frequently striated; each side is provided with an almost obsolete, double, longitudinal furrow, and a sulcus in front extending a short way from the base.

Found at Folkstone.

4. B. ALLANI.—Allan's Belemnite, pl. XXIX. fig. 8.

Belemnites Allani. Fleming, Brit. An. II. p. 240. Belemnite, Allan, Trans. Royal Soc. Edin. IX. p. 407, pl. 25, Mantell, Geo. of Sussex, p. 201, pl. 16, fig. 1.

Shell smooth, cylindrical; apex conical, with a slender produced point; alveolus conical, acute, with a sublateral point; a longitudinal section exhibits a small tub extending from the alveolus to the apex of the spathose part.

Found in Chalk at Brighton and Lewes.

5. B. PENICILLATUS.—The Pencil-shaped Belemnite, pl. XXIX. fig. 5.

Belemnites penicillatus. De Blainville, Mem. sur les Belem. p. 89, pl. 3, fig. 7. Knorr, Part II. pl. 1,* fig. 1 to 4. Sowerby, Min. Conch. VI. p. 181, pl. 590, fig. 5, 6.

Shell compressed, short, tapering in a very gradual manner towards the superior extremity, near which it is abruptly contracted to an almost central, longitudinally striated or sulcated obtuse point; cavity of the opposite extremity rather deep.

Found in the Chalk in Shorne Cliff.

6. B. GRANULATUS.—The Granulated Belemnite, pl. XXIX. fig. 6, 7.

Bolemnites granulatus. De Blainville, Mem. sur les Belem. p. 63, pl. 1, fig. 10. Sowerby, Min. Conch. VI. p. 207, pl. 600, fig. 3, 5.

Shell subcylindrical; surface covered with small granulations, and the impressions of veins; tapering rather abruptly to an obtuse mucronated apex; sides with a double longitudinal obsolete furrow.

Found in the Chalk at Andover and Bridgewick Pit, near Lewes. It is said to occur in St. Peter's Mountain, near Maestricht.

7. B. FUSIFORMIS.—The Spindle-Shaped Belemnite, pl. XXIX. fig. 14.

Belemnites fusiformis. Parkinson, Org. Rem. III. p. 127, pl. 8, fig. 13. Fleming, Brit. An. p. 240. Phillips, Geo. of Yorkshire, I. p. 123, pl. 3, fig. 1.

Fusiform, somewhat compressed in the fore part; abruptly

tapering towards the apex, and gradually towards the other extremity; a receptacle for the alveolus is situate towards the base in a conical form, with a longitudinal sulcus upwards of an inch in length.

Found in the Lower Oolite, Stonesfield, Oxfordshire; in the Speeton Clay at Speeton: and also in the Blue Marle of Bedfordshire and Kent.

8. B. LISTERI.—Lister's Belemnite, pl. XXIX. fig. 9.

Belemnites Listeri. Mantell, Geo. of Sussex, p. 88, pl. 19, fig. 17, 18, and 23. *B. minima.* Lister, Anim. Ang. p. 228, fig. 32. Fleming, Brit. An. p. 240. Phillips, Geo. of York. I. p. 120, pl. 1, fig. 18.

Subfusiform, cylindrical, with a single, slight, longitudinal sulcus, and terminating in an acute apex; siphuncle central, extending through the alveolus to the apex of the spathose part.

Dr. Mantell says, "The form of this beautiful little Belemnite varies considerably—some of the specimens are fusiform, others gently taper towards the apex; some are perfectly cylindrical, and others contract suddenly. The longest example in my collection, is 0.2 in diameter, and 1.3 inch in length. These fossils occur in profusion in every locality of the Blue Marle of Sussex, and also in Surrey, Kent, and Cambridgeshire." They also occur in the Red Chalk of Sussex, according to Professor Phillips.

9. B. VOLUMINUS.—The Scroll Belemnite, pl. XXIX. fig. 10.

Belemnites mucronatus. Sowerby, Min. Conch. VI. p. 207, pl. 600, fig. 7, young shell.

Shell smooth, fusiform, thickest in the centre, gradually tapering to each extremity, and terminating in blunt points; section circular.

Found in the Chalk at Norwich.

We cannot agree with Sowerby in considering this the young of *B. mucronatus.*

10. B. PISTILLIFORMIS.—The Pestle-shaped Belemnite, pl. XXIX, fig. 22.

Belemnites pistilliformis. De Blainville, Mem. sur les Belem. p. 89, pl. 5, fig. 14 to 17. Sowerby, Min. Conch. VI. p. 177, pl. 589, fig. 3.

Shell fusiform, much thickened towards the apex, suddenly and greatly attenuated and elongated towards the base; surface bearing slight impressions of veins.

Found in the Lias at Shorne Cliff, to the east of Charmouth.

11. B. MINIMUS.—The Least Belemnite, pl. XXIX. fig. 20, 21.

Belemnites minimus. Miller, Geo. Trans. 2d Series, II. p. 62, pl. 9, fig. 6. De Blainville, Mem. sur les Belem. p. 75, pl. 4, fig. 1, and p. 119, pl. 5, fig. 5. Sowerby, Min. Conch. VI. p. 175, pl. 589, fig. 1.

Shell fusiform, slightly quadrangular, spreading towards the apex, and cylindrical as it approaches the base, but not expanded; apex obsoletely papillose; each side with an obscure double furrow.

Found in Blue Chalk Marle of Bedfordshire, Folkstone Maulden, and Cophill.

12. B. MUCRONATUS.—The Sharp-Pointed Belemnite, pl. XXIX. fig. 15, 16.

Belemnites mucronatus. Brongniart and Cuvier, Geo. des Env. de Paris, p. 382, pl. 3, fig. 1. De Blainville, Mem. sur les Belem. p. 64, pl. 1, fig. 12. Sowerby, Min. Conch. VI. p. 205, pl. 600, fig. 1, 2, 4, 6, 7. *B. electrinus,* Miller, Geo. Trans. 2d Series, II. p. 61, pl. 8, fig. 18 to 21, and pl. 9, fig. 1 and 3. Belemnite, Faujas, Maestricht, p. 178, pl. 32, fig. 3. *Actinocamax verus.* Miller, Geo. Trans. 2d Ser. II. p. 64, pl. 9, fig. 17, 18.

Shell subcylindrical; apex terminating abruptly in an obtuse point, with a central mucro; base expanded, near to which is a slight contraction; aperture almost circular; a sulcus extends along the expanded portion, which communicates with the internal cavity; a flattened space stretches nearly the whole length of the shell on each side of the back, from whence numerous vein-like channels emanate, and diverging round the sides, meet upon the front of the shell, or enter the sulcus.

Fig. 16 represents a section of the shell.

Found in the Upper Chalk of Norwich, and is to be met with in the same stratum of almost every country.

13. B. ELONGATUS.—The Elongated Belemnite, pl. XXIX. fig. 11.

Belemnites elongatus. Miller, Geo. Trans. 2d Series, II. p. 60, pl. 7, fig. 6, 7, 8. De Blainville, Mem. sur les Belemnites, p. 75. Sowerby, Min. Conch. VI. p. 178, pl. 590, fig. 1. A Belemnite, Plott, Phil. Trans. LIV. p. 38, with a figure.

Shell elongated, slender, and cylindrical in the centre, gradually tapering to an obtuse apex, which is round and plain; gradually expanding in the other direction to a broad base, and encompassed by numerous obtuse annulations; chambered portion equal to two-thirds the length of the shell; diameter of the base equal to about a fourth of its length.

Found in the Lias Clay at Lyme Regis, Dorsetshire; Daventry, Northamptonshire; Charmouth, and vicinity of Bath.

14. B. ABBREVIATUS.—The Shortened Belemnite, pl. XXIX. fig. 18, 19.

Belemnites abbreviatus. Miller, Geo. Trans. 2d Series, p. 59, pl. 7, fig. 9 and 10. De Blainville, Mem. sur les Belem. p. 91. Sowerby, Min. Conch. VI. p. 179, pl. 590, fig. 2, 3, and 9.

Shell short, subcylindrical; fore part abruptly tapering to a slightly recurved eccentric apex, being considerably off the centre; base expanded; sides somewhat flattened; cavity equal to half the length of the shell.

The considerable thickness in proportion to the length, the contraction and curvature of the point, are distinguishing characteristics of this species.

Found in the Lias and Inferior Oolite at Weymouth.

SECTION II.—SHELLS STRAIGHT AND CONICAL.

15. B. ACUTUS.—The Acute Belemnite, pl. XXIX. fig. 2.

Belemnites acutus. Miller, Geo. Trans. 2d Series, II. p. 60, pl. VIII. fig. 9. Sowerby, Min. Conch. VI. p. 180, fig. 7, 8, and 10.

Shell conical, round, smooth, sides very slightly compressed, and destitute of a furrow, terminating in an acute apex; base broad; cavity deep and central.

Found at Shorne Cliff, Charmouth; and at Weston, near Bath.

16. B. COMPRESSUS.—The Compressed Belemnite, pl. XXIX. fig. 4 and 12.

Belemnites compressus. De Blainville, Mem. sur les Belem. p. 84, pl. 2, fig. 9. Sowerby, Min. Conch. VI. p 182, pl. 590, fig. 4.

Shell thick, straight, slightly compressed ; base wide, oval, not expanded, and gradually tapering to the apex, which is surrounded by longitudinal, unequally long, deep furrows, two of which extend farther down the flattened sides than the others; cavity deep, with a central apex; septa very numerous

Found in the Inferior Oolite, near Scarborough.

17. B. TUBULARIA.—The Tubular Belemnite, pl. XXIX. fig. 17.

Belemnites tubularia. Phillips, Geo. of Yorkshire, I. p. 163, pl. 12, fig. 20.

Shell tubular, much elongated, smooth, tapering very gently towards the point, where it again bulges out into a compressed three furrowed point ; thickening gradually towards the base, which is double the diameter of the higher part of the tube.

Found in the Upper Shale of the Lias at Saltwick.

GENUS XII.—BELOPTERA.—*Deshayes.*

Shell internal, oblong, expanding, concave, thin ; with a chambered cone attached to its inner surface and placed longitudinally ; from the apex to the cone the shell is considerably thickened.

1. B. ANOMALA.—The Anomalous Beloptera, pl. XXIX. fig. 23, 24.

Beloptera anomala. Sowerby, Min. Conch. p. 184, pl. 591, fig. 2.

Shell oblong, smooth, very thin, somewhat curved ; sides but little expanded ; apex very obtuse, with a small circular perforation in front, or on the concave side ; cone increasing in thickness, at the sides and back, to its termination ; at the base of the cone the shell is thin ; the section is trigonal.

Found at Highgate Hill in the London Clay.

GENUS XIII.—AMPLEXUS.—*Sowerby.*

Shell nearly cylindrical, multilocular, with numerous transverse septa embracing each other with their reflexed margins.

1. A. CORALLOÏDES.—The Coral-Amplexus, pl. XXIX. fig. 25, 26.

Amplexus coralloides. Sowerby, Min. Conch. I. p. 165, pl. 72. Fleming, Brit. An. p. 251.

Shell tubular, unequal in diameter, and irregularly bent ; surface undulous, and longitudinally striated ; margins of the septa deeply reflexed, the folds corresponding in width to the longitudinal striæ, and owing to their depth forming elongated cells, which terminate in the septa ; lines of growth close, well defined, and somewhat unequal in depth ; septa equal to a fourth or fifth part of the diameter of the tube, remote, with their margins reflexed to the adjoining septum. Diameter varying from half an inch to an inch and a half.

Found in the Transition Limestone, in the Black Rock at Limerick.

GENUS XIV.—CONULARIA.—*Miller.*

Shell conical, hollow, multilocular. divided by transverse, imperforate septa ; aperture half closed by an inflection of the lip.

1. C. QUADRISULCATA.—The Four-Furrowed Conularia, pl. XXIX, fig. 27.

Conularia quadrisulcata. A curious fossil, Ure's History of Rutherglen and Kilbride, p. 330, pl. 20, fig. 7. Sowerby, Min. Conch. III. p. 107, pl. 260, fig. 3, 4, 5, 6. Fleming Brit. An. p. 240.

Shell straight, four sided, two of the angles opposite each other being more elongated than the rest, and all of them equally excavated ; each of which is covered with bent, oblique, transverse sulci, which run close together towards the base ; the intervening spaces forming narrow ridges : also longitudinally striated, which are most conspicuous within the hollows ; labia of the two longer sides, inflected over somewhat more than half of the base, and meet opposite the shorter edge, and are sulcated, as in the other parts of the shell ; septa with delicate transverse, irregular striæ.

Found in the Carboniferous Limestone, at Keswick Westmoreland, and in Shale at Tronlie Bank, near Glasgow.

2. C. TERES.—The Taper Conularia, pl. XXIX. fig. 28.

Conularia teres. Sowerby, Min. Conch. III. p. 108, pl. 260, fig. 1, 2. Fleming, Brit. An. p. 240.

Shell conical, gradually tapering, round, subcylindrical, and slightly and irregularly arcuated, with transverse, irregular striæ ; having a smooth space near the apex, which terminates in a blunted cone.

Found in the Shale, at Tronlie Bank, near Glasgow.

ORDER III.—TRACHELIPODA.

Body of the animal spirally convolute in its posterior part, separated from the foot, and always enveloped in a shell ; the foot free, flattened, attached to the inferior base of the neck, or the anterior part of the body forming a member of locomotion. Shell spiral and enveloping.

SECTION I.—ZOOPHAGOUS TRACHELIPODA.

FAMILY I.—INVOLUTE.

Shell destitute of a canal, but having the base of its aperture notched or effuse, and its spiral convolutions broad, compressed, and rolled up in such a manner that the external one nearly envelopes the others.

GENUS I.—CONUS.—*Linnæus.*

Shell inversely conical, turbinate; spire generally short; aperture longitudinal, linear, entire, narrow, and effuse at the base; pillar smooth; shape of a reversed cone; most of the species with a notch in the upper extremity of the outer lip, which, for the most part, is very straight, and sometimes, although seldom, slightly arcuated; always destitute of teeth; usually, if not always, covered with an epidermis, in a recent state.

1. C. CONCINNUS.—The Neat Cone, pl. XXX. fig. 1 and 10.

Conus concinnus. Sowerby, Min. Conch. III. p. 180, pl. 302, fig. 2. Fleming, Brit. An. p. 330.

Subfusiform, somewhat angular in the centre; spire one-third the length of the shell, with small knobs, and fine granulated spiral striæ; base a little produced, and provided with furrows, which are deepest towards the point; breadth equal to about a third its length.

Found at Barton and Highgate Hill, London.

2. C. DORMITOR.—The Long-sleep Cone, pl. XXX. fig. 6, 7.

Conus dormitor. Brander, Foss. Hant. Coll. fig. 24. Sowerby, Min. Conch. III. p. 179, pl. 301, fig. 2, 3, 4. Fleming, Brit. An. p. 330.

Subfusiform short, tapering to both extremities; with numerous, transverse, elevated striæ, and the intermediate spaces finely crenulated; sometimes placed in pairs; length of the spire about equal to the greatest diameter of the base; aperture extending more than half the length of the shell; acute above; outer lip rising gradually from the body, and considerably inflated in the centre, and narrowing the aperture.

Found at Muddiford and Barton.

3. C. CINGILLUS.—The Zoned Cone, pl. XXX. fig. 8.

Conus dormitor. Variety, Sowerby, Min. Conch. III. pl. 179, fig. 1.

Subfusiform, tapering to both extremities, with transverse close striæ, and the intervening spaces crenulated; a smooth, broad band ornaments the upper part of the body; aperture equal to half the length of the shell; and the spire a third its length.

This differs from the *C. dormitor*, in being less acute at the apex and base; in the outer lip being more inflated, the body swelling more in the centre; in the transverse band; and in being only half the size of the former.

Found at Barton.

4. C. SCABRIUSCULUS.—The Rough Cone, pl. XXX. fig. 2, 3.

Conus scabriusculus. Fleming, Brit. An. p. 330.

C. scabriculus. Brander, Foss. Hant. Coll. fig. 21. Sowerby, Min. Conch. III. p. 180, pl. 303, fig. 1.

Subfusiform, somewhat short, bulging in the centre, tapering towards both extremities, terminating in an acute apex, and in an obtuse base; with transverse, elevated, serrated, wide-set, compressed striæ, which feel rough to the touch; aperture more than half the length of the shell, straitened above, and effuse at the base; outer lip rising gently from the body; arcuated and inflated in the middle.

Sowerby says the right lip is sometimes plaited in the edge, but this we have not observed.

Found in the London Clay at Barton.

5. C. HIGHGATENSIS.—The Highgate Cone, pl. XXX. fig. 4, 5.

C. concinnus? Sowerby, Min. Conch. III. pl. 302, fig. 1.

Shell conical, rather smooth; spire consisting of about six volutions, with indications of obsolete tubercles, and the centre of each volution furnished with a spiral canal; aperture narrow, two-thirds the length of the shell.

Found in the London Clay at Highgate Hill.

6. C. BARTONENSIS.—The Barton Cone, pl. XXX. fig. 9 and 11.

C. scabriculus. Variety β, Sowerby, Min. Conch. III. p. 180, pl. 303, fig. 2.

Shell conical, elongated; spire and body abruptly tapering to a short point; spire not a third the length of the shell; surface covered with numerous close-set, minutely toothed, transverse striæ; aperture contracted, and equal to two-thirds the length of the shell.

Found in the Clay at Barton.

GENUS II.—OLIVA.—*Bruguiere.*

Shell subcylindrical, convolute, smooth, and glabrous; spire short, with canaliculated sutures; above which the volutions are coated with a fine enamel; aperture elongated, rather narrow, emarginate at the base; columella obliquely striated, or plaited, having a varix-like appendage.

1. O. BRANDERI.—Brander's Oliva, pl. XXX. fig. 18, 19.

Oliva Branderi. Sowerby, Min. Conch. III. p. 159, pl. 288, upper figure. Fleming, Brit. An. p. 335. *Voluta Ispidula*, Brander, Foss. Hant. Coll. fig. 72.

Shell oblong-ovate, smooth; spire produced, with four volutions terminating in a somewhat pointed apex; body ventricose; aperture oblong; outer lip thickened, inner lip plaited, and a little varicose near the base; diameter of body equal to half the length of the shell.

Found in the London Clay, Hampshire.

2. O. SALISBURIANA.—Salisbury's Oliva, pl. XXX. fig. 16, 17.

Oliva Salisburiana. Sowerby, Min. Conch. III. p. 160, pl. 288, lower figures.

Shell ovate, smooth, short, ventricose; its diameter equal to two-thirds its length, the thickest part being near the upper margin of the body, from whence it is the shape of a reversed cone; aperture oblong, somewhat contracted above, widened in the centre, and again becoming narrower at the base; both lips tumid above, separating the body from the spire, which is short, conical, consisting of four volutions, and ending in a pointed apex.

Found in the London Clay.

GENUS III.—ANCILLARIA.—*Lamarck.*

Shell oblong, subcylindrical; spire short, seldom more than a third of the length of the shell, the suture being generally obscured by an enamel, which frequently covers the whole spire, which is not canaliculate at the sutures; aperture narrow, effuse above, and notched at the base; lower portion of the columella smooth, with an oblique, tumid, usually striated varix at the base; whole outer surface smooth and glossy; supposed to be devoid of both epidermis and operculum.

1. A. AVENIFORMIS.—The Oat-shaped Ancillaria, pl. XXX. fig. 12.

Ancillaria aveniformis. Fleming, Brit. An. p 336. *Ancilla aveniformis.* Sowerby, Min. Conch. I. p. 225, pl. 99, middle right figure.

Oblong-ovate, elongated, smooth, shining; spire long; consisting of four or five volutions, and terminating in a sharp apex; base two plaited; inner lip with a short extension; aperture somewhat more than half the length of the shell, slightly contracted, and angular above, and expanded below; enamel of the pillar lip extended over a third of the volutions in front.

Found in the London Clay at Barton.

2. A. ANGLICA.— The English Ancillaria, pl. XXX. fig. 15.

Ancillaria Anglica. Pilkinton, Linn. Trans. VII. p. 116, pl. 11, fig. 1. *A. aveniformis,* Sowerby, Min. Conch. I. p. 225, pl. 99, middle left figure.

Oblong-ovate, smooth, shining; spire with four or five volutions, terminating in an acute apex; aperture somewhat more than half the length of the shell, contracted above, widening in the centre, and expanding at the base; varix with two plaits; outer lip slightly inflected, and extending considerably below the base of the pillar lip.

Found at Barton, in the London Clay.

3. A. TURRITELLA.—The Turreted Ancillaria, pl. XXX. fig. 13, 14.

Ancillaria turritella. Fleming, Brit. An. p. 376. *Ancilla turritella.* Sowerby, Min. Conch. I. p. 226, pl. 99, larger figures.

Subcylindrical; spire short, consisting of five subturreted volutions, terminating in an acute apex, and covered with minute, transverse striæ, which are only visible by the aid of a lens; upper portion of the volutions glossy, the middle parts with minute decussated striæ; varix furnished with a nearly obsolete spiral sulcus, a little above the varix; columella three plaited, and with a deep sulcus; aperture exceeding half the length of the shell, acutely contracted above; outer lip greatly expanded below, and extending somewhat lower than the base of the columella.

Found at Barton Cliff.

4. A. SUBULATA.—The Awl-shaped Ancillaria, pl. XXX. fig. 20, 21.

Ancillaria subulata. Fleming, Brit An. p. 336. *Anacilla subulata.* Lamarck, Foss. Env. de Paris, p. 24. Sowerby, Min. Conch. IV. p. 37, pl. 333.

Shell subulate, elongated, smooth, glossy; spire lengthened, and abruptly acute, consisting of five volutions; varix at the base of the columella, finely striated; aperture not quite half the length of the shell, contracted above and expanded beneath.

Found in the Upper Marine Formation, Isle of Wight; also near Christchurch, and Hampshire.

GENUS IV.—TEREBELLUM.—*Lamarck.*

Shell convolute, subcylindrical, rolled round its longitudinal axis in the form of an elongated cone, and nearly pointed at the summit; aperture contracted above and expanded below; base notched; columella smooth; truncated at the base; outer lip entire and not thickened.

1. T. FUSIFORME.—The Spindle-formed Terebellum, pl. XXX. fig. 26, 27.

Terebellum fusiforme. Lamarck, Env. de Paris, p. 22. Sowerby, Min. Conch. III. p. 157, pl. 287. Fleming, Brit. An. p. 330.

Subfusiform, subcylindrical, tapering somewhat abruptly towards the apex, and gradually towards the base; spire short, consisting of two volutions and terminating in an obtuse apex; aperture about three-fifths the length of the shell, with an adpressed straight canal, emanating from its upper angle, and terminating in the apex of the spire; pillar lip reflected on the columella, which descends considerably lower than the outer lip, which is somewhat inflected and rounded at its base.

Found in the London Clay, at Hordwell.

2. T. CONVOLUTUM.—The Convoluted Terebellum, pl. XXX. fig. 24, 25.

Terebellum convolutum. Lamarck, Env. de Paris, p. 21. *Seraphs convolutus.* Montfort, Conch. Syst. II. p. 375. Sowerby, Min. Conch. III. p. 155, pl. 286. Fleming, Brit. An. p. 330. *Bulla sopita.* Ib. *Bulla volutata.* Brander, Foss. Hant. Collect. fig. 29. *a.*

Shell smooth, extremely fragile, subcylindrical, elongated, tapering gradually to both extremities, superior end terminating in an obtuse, hollow, pointed apex; base obliquely truncated; spire internal, concealed; aperture longitudinal, extending to the tip of the spire; columella smooth; outer lip sharp, and slightly inflected; diameter about a third of its length.

Found in the Clay upon the Coast of Hampshire.

GENUS V.—CYPRÆA.—*Linnæus.*

Shell ovate, or oblong-ovate, convex; margins involute; aperture longitudinal, narrow, extending the whole length of the shell, dentate on both sides, and effuse at the extremities; spire very small, generally hidden in the adult, or perfect shells.

1. C. OVIFORMIS.—The Egg-shaped Cypræa, pl. XXX. fig. 34, 35.

Cypræa oviformis. Sowerby, Min. Conch. I. p. 17, pl. 4. Fleming, Brit. An. p. 331.

Shell oviform, tumid, smooth, shining, and slightly marginate; most inflated at about a third of its length from the apical end, and afterwards tapering slightly to a short, rather broad, canaliculate beak; spire small, concealed; aperture longitudinal, narrow at the broadest extremity, widening considerably towards the beak, and dentated on both of the inflected lips.

Found in the London Clay at Highgate Hill.

2. B. AVELLANA. — The Filbert Cypræa, pl. XXX. fig. 36, 37.

Cypræa avellana. Sowerby, Min. Conch. IV. p. 107, pl. 378, fig. 3. Fleming, Brit. An. p. 331.

Shell obovate, or nearly spheroidal, with strong, numerous, wide-set, elevated transverse striæ, extending from the inflected margin of one lip to that of the other, and only partially interrupted by a shallow longitudinal groove; aperture contracted and somewhat curved at both extemities.

The striæ are sometimes longer and shorter, terminating before they reach the inner margins of the lips, and the intervening spaces are flattened.

Found in the Suffolk Crag, by the Rev. G. R. Leathes.

3. C. COCCINELLOIDES.—The Coccinella Cypræa, pl. XXX. fig. 28, 29.

Cypræa coccinelloides. Sowerby, Min. Conch. IV. p. 107, pl. 378, fig. 1. Fleming, Brit. An. p. 331.

Shell ovate, somewhat spheroidal, with numerous acute transverse striæ; aperture slightly arcuated, and not contracted in the centre; outer lip convex.

Found in the Suffolk Crag.

4. C. RETUSA. The Blunted Cypræa, pl. XXX. fig. 38, 39.

Cypræa retusa. Sowerby, Min. Conch. IV. p. 107, pl. 378, fig. 2. Fleming, Brit. An. p. 331.

Shell obovate, subsphæroidal, with somewhat distant, elevated striæ; aperture slightly curved at its narrow extremity.

This species will at once be distinguished from the *C. coccinelloides* by its few and remote striæ, and its nearly spherical form.

Found in the Suffolk Crag.

GENUS VI.—OVULA.—*Bruguière.*

Shell turgid, attenuated at both extremities; margins convolute; aperture longitudinal, narrow at its upper part, and generally more widened below; effuse at both ends: the left margin destitute of teeth.

1. O. LEATHESI.—Leathes's Ovula, pl. XXX. fig. 32, 33.

Ovula Leathesi. Sowerby, Min. Conch. V. p. 124, pl. 478. *Calpurna Leathesi.* Fleming, Brit. An. p. 331.

Shell smooth, eliptical, elongated, ventricose in the centre, and tapering and contracted to each extremity; columella with a large plait, and with a thick testaceous glazing; outer lip very thick and smooth; opposed to the lower part of the lip the body is somewhat flattened.

Found in the Crag at Walton, by the Rev. G. R. Leathes.

FAMILY II.—COLUMELLARIA.

Destitute of a canal at the base of the aperture, but having a subdorsal more or less distinct notch, with folds or plaits on the columella.

GENUS VII.—VOLVARIA.—*Lamarck.*

Shell cylindrical, convolute; the spire hardly protruding above the body, and appearing as if forced into the superior part of the shell, where it terminates in an obtuse salient point; aperture narrow, extending nearly the whole length of the shell, somewhat wider below than above, and truncate at the base; columella with three or four oblique folds at the base.

1. V. ACUTIUSCULA. — The Acute Volvaria, pl. XXX. fig. 30, 31.

Volvaria acutiuscula. Sowerby, Gen. of Shell, Gen. Volvaria, fig. 3. Min. Conch. V. p. 142, pl. 487. Fleming, Brit. An. p. 333.

Shell almost cylindrical, slightly contracted towards both ends; spire concealed, crossed by numerous, transverse, square-punctured striæ; plaits upon the columella variable in number and dimensions, generally four or five; aperture widened at both extremities, and somewhat straitened in the centre; outer lip a little thickened, and projecting above the apex, and giving the spire the appearance of being concealed within a small pit.

Found in the London Clay at Barton Cliff.

GENUS VIII.—VOLUTA.—*Linnæus.*

Shell ovate, more or less ventricose; apex papillose; destitute of a canal; emarginate or notched at the base; columella plicated, the lower folds larger and more oblique than the others; destitute of a columellar laminæ.

SECTION I.—PAPILLA LARGE, SMOOTH, AND CORONATED.

1. V. LUCTATOR.—The Wrestler Volute, pl. XXXI. fig. 9. 10.

Voluta Luctator. Sowerby, Min. Conch. II. p. 29, pl. 115, fig. 1. Fleming, Brit. An. p. 332. *Voluta musicalis.* Lamarck, Env. de Paris, p. 26. *Strombus luctator.* Brander, Hant. fig. 64.

Shell acutely ovate: spire short, conical, with the volutions concealed above; crowned with tubercular spines, which diminish rapidly as they ascend; body with longitudinal ribs, corresponding in number to the tubercles; these terminate at the base, where they become indistinct; the whole are crossed by numerous transverse, somewhat undulous, linear, sulci; deepest towards the base; the whole body and spire covered

with fine longitudinal striæ; spire about a third of the length of the body, which is angular and slightly ventricose above; its upper edge crowned with obtuse tubercles, and an angular depression in some instances; aperture oblong, somewhat straitened; outer lip slightly undulous, and plain within; columella provided with three or four plaits.

Found in the London Clay at Barton Cliff, and in the Blue Clay in Richmond Park.

2. V. ATHLETA.—The Champion Volute, pl. XXXI. fig. 14, 15.

Voluta Athleta. Sowerby, Min. Conch. IV. p. 133, pl. 396, fig. 1, 2, 3. Fleming, Brit. An. p. 332. *Strombus Athleta.* Brander, Hant. fig. 66.

Shell ovate, ventricose; spire short, conical, consisting of five or six volutions, abruptly tapering to an acute apex, and crowned with large, spreading, remote, hollow, inflated spines; body smooth, somewhat ventricose, with longitudinal, irregular ribs, corresponding in number to the spines on the lower volution of the spire; base obscurely sulcated; spire somewhat more than a fourth the length of the body; aperture oblong, narrowed above, expanding in the middle, and somewhat contracted towards the base; columella considerably reflected on the front with three unequal plaits; outer lip plain within.

Distinguished from *V. luctator* by being shorter, smoother, and by its larger and spreading spines; it is also thicker, but never attains the same size. In the young state, the edges of the volutions have a few ill defined spines in addition to those on the upper parts.

Found in the London Clay at Barton.

3. V. DUBIA.—The Dubious Volute, pl. XXXI. fig. 12, 13.

Voluta Luctator, jun. Sowerby, Min. Conch. IV. p. 134, pl. 397. *Strombus dubius.* Brander, Hant. fig. 68.

Oblong-ovate; spire acute, subturreted, with seven volutions, which are concave above, crowned with one row of large and another of small, short, spinous tubercles, terminating in an acute apex; the whole shell covered with rather broad, flat, transverse sulci, and longitudinal ribs, corresponding to the tubercles, which prevail from the apex to the base, stronger on the spire, and more obscure as they approach the base, on the body taking the direction of the lines of growth; whole shell covered with minute, longitudinal striæ; the spire about half the length of the body; aperture oblong, narrowed above, wider in the centre, and more straitened towards the base; columella with three or more slightly developed plaits; outer lip plaited within, and crenulated at the margin.

Sowerby considers this as the young of *V. luctator*, but its more lengthened, acute, and subturreted spire, the breadth of the furrows, the more cylindrical form of the body; and the plaits inside the outer lip, are sufficient specific differences.

Found in the London Clay at Barton Cliff.

4. V. SPINOSA.—The Spined Volute, pl. XXXI. fig. 18, 19.

Voluta spinosa. Lamarck, Env. de Paris, p. 26. Sowerby, Min. Conch. II. p. 30, pl. 115, fig. 2, 3, 4. Fleming, Brit. An. p. 332. *Strombus Luctator.* Brander, Hant. fig. 65.

Shell acutely ovate; spire conical, consisting of about ten abruptly diminishing volutions, concave above, spirally striated below, and crowned with large tubercular spines, with a series of smaller ones near their upper edge, and terminating in an acute apex; body ventricose above, and tapering suddenly from the centre to the base, with a series of thick, longitudinal ribs, corresponding in number and continuous with the tubercles in the last volution of the spire; crossed by transverse, obsolete, distant sulci; aperture oblong-ovate; columella three plaited; outer lip plain within.

Found in the London Clay at Barton.

5. V. SUSPENSA.—The Uncertain Volute, pl. XXXI. fig. 3.

Voluta ambigua. Variety *Monstrosa.* Sowerby, Min. Conch. II. p. 31, pl. 115, fig. 5. *V. suspensa.* Ib. IV. p. 135. Fleming, Brit. An. p. 332. *Murex suspensus.* Brander, Hant. fig. 70.

Shell ovate; spire consisting of six or seven volutions, with a broad canal around it, crowned with sharp spinous tubercles, and terminating in an acute apex; each of the volutions with three or four strong, undulous striæ at their base, and all of them flattened above; body ventricose above, and abruptly tapering beneath, with pretty strong ribs, corresponding to the tubercles, slightly curved and becoming obsolete at the base, which is considerably produced; aperture elongated, narrow; columella three plaited; outer lip plain.

Found in the London Clay at Barton.

6. V. DEPAUPERATA.—The Depauperated Volute, pl. XXXI. fig. 2.

Voluta depauperata. Sowerby, Min. Conch. IV. p. 133, pl. 396, fig. 4. Fleming, Brit. An. p. 332. *Strombus luctator.* Brander, Hant. fig. 67.

Shell oblong ovate; spire short, subturreted, consisting of five abruptly diminishing volutions, somewhat flattened above, and crowned with a series of erect subacute spines; body longitudinally and unequally ribbed; base acute, with numerous transverse sulci, extending nearly half way up the body; aperture oblong-ovate, somewhat straitened; columella with one plait; outer lip smooth within.

This shell has much the aspect of *V. spinosa*, but differs from it in having but one row of spines around the volutions.

Found at Barton in the London Clay.

7. V. GEMINATA.—The Doubled spined Volute, pl. XXXI. fig. 4.

Voluta geminata. Sowerby, Min. Conch. IV. p. 136, pl. 398, fig. 1. Fleming, Brit. An. p. 333.

Ovate, ventricose above, and acuminated below from the centre; spire short, subturreted, consisting of five rapidly diminishing volutions, and terminating in a pointed apex; the whole shell provided with longitudinal prominent ribs, which are terminated above, with two obtuse connected spines; the ribs become nearly obsolete after descending below the middle part of the body, where they are met by numerous, transverse, oblique, strong striæ, which continue to the base; aperture elongated; columella with one large and several small curved plaits; outer lip smooth.

Found in the London Clay at Lyndhurst, Hampshire.

8. V. LIMA.—The Rasp Volute, pl. XXXI. fig. 6, 7.

Voluta Lima. Sowerby, Min. Conch. IV. p. 136, pl. 398, fig. 2. Fleming, Brit. An. p. 333. *Buccinum scabriusculum.* Brander, Hant. fig. 71.

Oblong-ovate; spire short, consisting of five subturreted, rapidly diminishing volutions, separated by a pretty broad and deep spiral canal, which with the body are covered with numerous longitudinal dentato-crenated ribs, crossed by wide-set, transverse striæ; upper margin of the volutions provided with a series of tooth-like spines, between each of which is a flattened concave space; aperture elongated, somewhat widened in the middle; columella with three unequal plaits; outer lip smooth within, and its margin crenulated.

** Shells smooth and unarmed.*

9. V. LAMBERTI.—Lambert's Volute, pl. XXX. fig. 22, 23.

Voluta Lamberti. Sowerby, Min. Conch. II. p. 65, pl. 129. *Voluta* of Harwich. Parkinson, Org. Rem. III. p. 26, pl. 5, fig. 13. A Cast. Hist. Lap. Fig. p. 112, pl. 33, fig. 3. Appendix to Dale's Hist. of Harwich, p. 289, pl. 10, fig. 14. *Mitra Lamberti.* Fleming, Brit. An. p. 333.

Shell fusiform, elongated, smooth, tapering to both extremities; spire short, consisting of five gradually tapering volutions, which terminate in a blunted papillose apex; aperture about two-thirds the length of the shell, elongated, straitened and acute above, widening gradually to the centre, and contracting beneath, terminating in an oblique, subtruncated base; columella provided with three or four plaits; outer lip sharp in the edge, and with a slight sinus where it unites with the body above.

Found in the Crag Marl at Holywell, Bawdsey Cliff, and Aldborough, Suffolk.

SECTION II.—SHELLS MEDIUM SIZED, WITH SMOOTH PAPILLA.

** Musicalis.*

10. V. NODOSA.—The Nodulous Volute, pl. XXXI. fig. 1 and 5.

Voluta nodosa. Sowerby, Min. Conch. IV. p. 135, pl. 399, fig. 2. Fleming, Brit. An. p. 333.

Shell ovate; spire conical, produced, nearly equal in length to the body, consisting of five tumid volutions, tapering to an acute apex, the lower one broad and hollow; volutions well defined, and crowned with two rows of nodulous spines; body with irregular, obtuse, longitudinal ribs; the whole shell crossed by numerous and deep sulci; aperture oblong, wide in the centre, and narrowed to each extremity; columella with three plaits; outer lip striated within.

Found in the London Clay at Barton Cliff.

11. V. AMBIGUA.—The Ambiguous Volute, pl. XXXI. fig. 8 and 11.

Voluta ambigua. Sowerby, Min. Conch. IV. p. 135, pl. 399, fig. 1. Fleming, Brit. An. p. 332. *Strombus ambiguus.* Brander, Hant. fig. 69.

Shell ovate-oblong; spire short, rough to the touch, consisting of five volutions, which are hollowed above, and ending in a pointed apex; the whole shell covered with irregular, longitudinal ribs, which are angular above, crossed by numerous, transverse, undulous furrows; aperture elongated, nearly the entire length of the body, wide in the centre, and narrowed towards each extremity; columella with three plaits; outer lip rising from the body above, plaited within, and granulated on the edge.

Found in the London Clay at Barton Cliff.

SECTION III.—MITRE-SHAPED, PAPILLA ACUTE.

12. V. MAGORUM.—The Magicians' Volute, pl. XXXI. fig. 16, 17.

Voluta Magorum. Brocchi, Conch. Foss. Sub. II. p. 307, pl. 4, fig. 2.? Sowerby, Min. Conch. III. p. 164, pl. 290, fig. 3. Fleming, Brit. An. p. 332.

Ovate, fusiform; spire conical, two-thirds the length of the body, consisting of five volutions, terminating in a somewhat obtuse apex, with about twelve narrow ribs; the whole shell covered with fine, obscure, transverse striæ, which become more conspicuous towards the base; aperture oblong ovate, rounded above; columella provided with numerous plaits, which extend to the top of the pillar lip, the lower ones large, with an obtuse termination, while the upper ones are small, and irregularly interrupted; outer lip smooth; beak short, slightly curved.

Found in the London Clay at Barton Cliff.

13. V. COSTATA.—The Ribbed Volute, pl. XXXI. fig. 21, 22.

Voluta costata. Brander, Hant. fig. 45. Sowerby, Min. Conch. III. p. 163, pl. 290, fig. 1, 2, and 4. Fleming, Brit. An. p. 332.

Shell ovate, fusiform; spire conical, consisting of six or seven volutions, which terminate in an acute apex; with about nine longitudinal, broad, obtuse ribs, which are most prominent at their upper ends; crossed by numerous, wide, indistinct striæ, which are nearly obsolete about the middle of the body; columella with three plaits, the lower one larger than the others; pillar lip strongly reflected on the body; outer lip smooth, slightly thickened by a rib; aperture oblong-ovate, rounded above.

Found in the London Clay at Barton Cliff.

GENUS IX.—MITRA.—*Lamarck.*

Shell turreted or subfusiform, with an acute spire, which, for the most part, is longer than the aperture, which is elongated, longitudinal, and notched at the base, and terminating in a very short canal; columella plaited, the plaits are sharp at the edge, generally parallel and transverse, with the lower ones smaller than the others; outer lip usually somewhat acute at the edge, but in some instances a little thickened, crenulated, and even provided with a blunt tooth at the upper part within; external surface in the recent state generally covered by a thin, horny epidermis.

1. M. SCABRA.—The Rough Mitre, pl. XXXI. fig. 20 and 25.

Mitra Scabra. Sowerby, Min. Conch. IV. p. 142. Fleming, Brit. An. p. 334. *Buccinum scabriculum.* Brander, Hant. fig. 20.

Ovate, fusiform; spire nearly equal to the body in length, and consisting of five or six volutions, the two upper ones smooth; the whole surface crossed by numerous, close, sharp, elevated, transverse, rough striæ, and intersected by many longitudinal, irregularly elevated, undulating lines of growth; aperture fusiform; columella with four nearly uniform plaits, with two more slender, and nearly obsolete ones above them, which, however, are frequently wanting; outer lip irregularly thickened, with a blunt tooth-like process on the margin near its centre.

Found plentifully in the London Clay at Barton Cliff.

2. M. PARVA.—The Small Mitre, pl. XXXI. fig. 24 and 27.

Mitra parva. Sowerby, Min. Conch. V. p. 37, pl. 430, fig. 1. Fleming, Brit. An. p. 334.

Shell ovate, fusiform, short; spire consisting of four rather tumid volutions, with their upper edges well defined by the suture; the whole shell covered by equal transverse furrows, the upper one on each volution being wider than the others produces a marginated appearance; between the sulci the surface is smooth and shining; aperture elongated, somewhat straitened above; columella with four plaits; outer lip plaited within. Length, a quarter of an inch; diameter, an eighth.

Found plentifully in the London Clay at Barton Cliff.

3. M. PUMILA.—The Dwarf Mitre, pl. XXXI. fig. 23 and 26.

Mitra pumila. Sowerby, Min. Conch. V. p. 37, pl. 430, fig. 2. Fleming, Brit. An. p. 334.

Shell ovate, fusiform, short; spire consisting of five somewhat inflated volutions well defined by the suture, crenated above, and terminating in a sharp apex; the whole shell covered with pretty deep transverse sulci, which are decussated by numerous, slightly elevated, longitudinal, equidistant ribs, dividing the sulci into regular square meshes, and producing a rough appearance; aperture elongated, acute above; columella with four plaits; outer lip plaited within.

Found in the London Clay at Barton Cliff.

FAMILY III.—PURPURIFERA.

Shell with a short canal, ascending posteriorly, or with an oblique notch at the base of its aperture, directed backwards.

SUBDIVISION I.—SHELLS HAVING AN OBLIQUE NOTCH DIRECTED BACKWARDS.

GENUS X.—TEREBRA.—*Lamarck.*

Shell greatly elongated, subulate, turreted, acuminated, usually with many volutions, which decrease gradually in dimensions from the base to the apex; aperture longitudinal, generally a third shorter than the spire, frequently much shorter, and notched at its posterior base; base of the columella contorted and oblique, provided with a short canal; operculum corneous, but not spiral.

1. T. VETUSTA.—The Ancient Terebra, pl. XXXII. fig. 44.

Terebra vetusta. Phillips, Geo. of Yorkshire, I. p. 152, pl. 9, fig. 27.

Shell consisting of eleven or twelve gradually tapering volutions, terminating in an acute apex, and divided by a pretty deep suture; whole shell with longitudinal, straight, and moderately strong ribs; aperture elongated.

Found in the Bath Oolite at Cloughton, Yorkshire.

2. T. MELANOIDES.—The Blackish Terebra, pl. XXXII. fig. 45.

Terebra melanoides. Phillips, Geo. of Yorkshire, I. p. 130, pl. 4, fig. 13.

Shell consisting of thirteen or fourteen abruptly tapering volutions, terminating in an acute apex, with wide-set longitudinal ribs, which reach from the upper margin to the centre of each volution; aperture straitened above and below.

Found in the Coralline Oolite at Pickering, Yorkshire.

3. T. GRANULATA.—The Granulated Terebra, pl. XXXII. fig. 43.

Terebra granulata. Phillips, Geo. of Yorkshire, I. p. 130, pl. 7, fig. 16.

Shell with thirteen or fourteen gradually tapering volutions, the whole shell with strong spiral granulated striæ; aperture somewhat rounded above and narrowed below; pillar lip a little reflected on the columella, and widened at the base; outer lip plain.

Discovered in the Coralline Oolite at Pickering, Yorkshire.

GENUS XI.—BUCCINUM.—*Linnæus.*

Shell subovate, or ovato-conical, seldom elongated; subturreted; apex a little obtuse; spire of medium length, somewhat abruptly acuminate, but seldom of greater length than the aperture, which is suborbicular, or a little longer than wide; notched at the base, and hardly acute at its upper termination, where there is sometimes a small tooth-like process, formed by the thickening of the inside of the outer lip, with frequently a similar tooth opposed to it at the superior part of outer lip, these enclosing a small sinus; outer lip rather acute at the edge, sometimes internally and transversely grooved, and, in some instances, with a dentated margin; columella smooth, sometimes a little roughened at its inferior extremity; canal generally very short and straight; operculum horny and thickened.

1. B. LAVATUM.—The Washed Buccinum, pl. XXXII. fig. 1, 2.

Buccinum lavatum. Brander, Foss. Hant. fig. 16. Sowerby, Min. Conch. V. p. 11, pl. 412, fig. 3, 4. Fleming, Brit. An. p. 345.

Oblong-ovate, consisting of six considerably acuminated and convex volutions, terminating in a short apex, with many prominent, longitudinal, equal, curved ribs, crossed by numerous strong spiral striæ, which feel rough to the touch; aperture oblong, somewhat contracted above; outer lip striated internally; crenulated at the margin, and destitute of a sinus.

Found plentifully in the Blue Clay at Barton Cliff.

2. B. GRANULATUM.—The Granulated Buccinum, pl. XXXII. fig. 7.

Buccinum granulatum. Sowerby, Min. Conch. II. p. 18, pl. 110, fig. 4. *Nassa granulatum.* Fleming, Brit. An. p. 341.

Shell oblong-ovate, consisting of five or six broad, slightly inflated volutions, tapering to an obtuse apex; transversely striated, and furnished with twenty rows of moderately elevated tubercles, arranged in the form of longitudinal ribs, and sometimes largest on the upper margin of the volutions; aperture elongated, and slightly oblique; inner lip smooth, and reflected on the columella, with a tooth on its upper part, situate opposite one on the outer lip, producing the

appearance of a sinus; outer lip thickened, internally toothed, and a little straitened in the middle externally; basal sinus slightly curved, varying in size from a quarter to nearly three quarters of an inch.

Found in the Crag at Ipswich.

3. B. RUGOSUM.—The Rough Buccinum, pl. XXXII. fig. 11.

Buccinum rugosum. Sowerby, Min. Conch. II. p. 16, pl. 110, fig. 3. Fleming, Brit. An. p. 344.

Shell oblong-ovate; volutions of the spire prominent, and longitudinally ribbed, with wide-set transverse striæ; aperture obovate, about a third the length of the shell, somewhat widened below; the sinus of the beak hardly recurved; columella smooth.

Found in the Crag at Holywell.

4. B.? IMBRICATUM.—The Imbricated Buccinum, pl. XXXII. fig. 10.

Buccinum imbricatum. Sowerby, Min. Conch. VI. p. 127, pl. 566, fig. 2.

Shell ovate, spire short, consisting of four or five slightly inflated volutions, with obtuse upper margins, which closely embrace the volutions; the whole shell provided with obscure longitudinal striæ; aperture oblong-ovate, and half the length of the shell.

Found in the Mountain Limestone at Bradley, near Newton-Bushel, Devonshire.

5. B. TENERUM.—The Tender Buccinum, pl. XXXII. fig. 12, 13. Fleming, Brit. An. p. 345.

Shell ovate, thin, spire consisting of four or five somewhat inflated volutions, with longitudinal imbricated and arcuated undulations; crossed by coarse, irregular, wide-set striæ; beak antiquated; columella smooth; aperture oblong-ovate, slightly narrowed above.

Found plentifully in the English Crag.

6. B. RETICOSUM.—The Reticulated Buccinum, pl. XXXII. fig. 15.

Buccinum reticosum. Sowerby, Min. Conch. II. p. 17, pl. 110, fig. 2. Fleming, Brit. An. p. 344.

Shell oblong-ovate; spire short, consisting of six volutions abruptly tapering to a point; outer surface strongly reticulated with longitudinal and transverse striæ; aperture short, somewhat ovate, contracted above, and with a recurved sinus below; columella smooth, and broadly reflected on the body; outer lip even, toothed and striated within; the greatest width of the shell only half its length.

Found in the Crag at Holywell.

7. B. GLOBULARE.—The Globular Buccinum, pl. XXXII. fig. 16.

Buccinum globulare. Phillips, Geo. of Yorkshire, II. p. 230, pl. 16, fig. 15.

Shell subglobular, consisting of six much inflated, well defined volutions; spire small in proportion to the size of the body, and terminating in an obtuse apex, with wide-set, nearly obsolete spiral striæ; aperture subrotund; columella with a slight notch near its centre; outer lip plain.

Found at Bolland, Queen's County, Ireland.

8. B. GLABRATUM.—The Smooth Buccinum, pl. XXXII. fig. 19.

Eburna glabrata. Parkinson, Organic Remains, III. p. 59, pl. 5, fig. 25.

Shell ovate, tumid, smooth; body very large; spire very small, consisting of three rounded volutions, terminating in an obtuse apex; aperture oblong-ovate, narrowed above; columella thickened and glabrous; outer lip thin, and plain at the margin; beak short, with a few indistinct plications.

Found in the Crag, Essex.

9. B. DALEI.—Dale's Buccinum, pl. XXXII. fig. 26, 27.

Buccinum Dalei. Sowerby, Min. Conch. V. p. 139, pl. 486, fig. 1, 2.

Shell ovate, thick, smooth, sometimes with indistinct sulci on the back, near the outer lip; spire short, consisting of four inflated sulcated volutions, well defined by a deep suture, and terminating in an obtuse apex; aperture ovate, contracted above; columella rather broad, spreading on the body, and somewhat recurved at the edge; outer lip plain on the margin; canal very short.

Found in the Crag, Suffolk.

There are two varieties of this fossil,—α, ventricose, and but seldom sulcated, as in our figure; β elongated, and more or less sulcated.

10. B. LABIATUM.—The Thick Lipped Buccinum, pl. XXXII. fig. 22, 23.

Buccinum labiatum. Sowerby, Min. Conch. V. p. 11, pl. 412, fig. 1, 2.

Shell acuminated, with twelve or thirteen long, curved, prominent ribs, crossed by numerous strong elevated, alternately large and small striæ; spire consisting of about six broad, inflated volutions, which are slightly concave above, and terminating in an acute apex; body longer than the spire; aperture oblong, a little angular above; columella smooth; beak wide, open, and twisted; outer lip thin, and acute at the edge, and somewhat expanded, and incurved in the centre, and internally striated.

Found in the upper Marine formation, Colwell Bay, Isle of Wight; Plumsted; and on the Hampshire coast.

11. B. ELONGATUM. — The Elongated Buccinum, pl. XXXII. fig. 21.

Buccinum elongatum. Sowerby, Min. Conch. II. p. 15, pl. 110, fig. 1. Fleming, Brit. An. p. 344.

Shell considerably elongated, more than twice its greatest diameter; consisting of seven or eight somewhat inflated volutions, which are separated by a well marked suture; the external surface traversed by longitudinal ribs, which are most conspicuous on the spire and higher region of the body, where they are more undulous than the ribs; the whole shell covered with strong, regular, transverse striæ, which do not cross the ribs upon the spire, but become obsolete below; aperture oval, not half the length of the shell, with a short, recurved sinus; and slightly angular above; outer lip even on the margin, with obscure crenulations internally; pillar lip smooth, and thickest at the base.

Discovered in the Walton le Stoken Crag-pits, Essex.

12. B. LATUS.—The Broad Buccinum, pl. XXXII. fig. 29.

Buccinum latus. Sowerby, Min. Conch. I. p. 80, pl. 35, lower left hand figure.

Shell oblong-ovate, consisting of five or six somewhat inflated volutions; spire short, about a third the length of the shell, and terminating in an acute apex; surface even, covered with transverse, alternately large and small linear striæ; upper portion of each volution, with slightly oblique undulations; aperture oblong-ovate; columella smooth, broadest above; outer lip even, entire and smooth on the edge, and

internally striate, the striæ terminating a little way from the edge; beak straight, short, truncated, and expanding into a wide canal in front.

Found at Plumsted.

13. B. PROPINQUUM.—The Kindred Buccinum, pl. XXXII. fig. 31, 32.

Buccinum propinquum. Sowerby, Min. Conch. V. p. 121, pl. 477, fig. 2. Fleming, Brit. An. p. 345.

Shell oblong-ovate, acute, with six rapidly decreasing deeply divided volutions, ending in a sharp apex, covered with numerous strong longitudinal ribs, and crossed by many transverse deep sulci, giving the whole surface a tuberculated appearance; the upper sulci very broad, producing a subcoronated aspect on the upper margin of the volutions; aperture nearly circular; columella smooth, and broadly reflected in the front above, and narrowed below; outer lip even on the edge; length six-eighths of an inch; breadth more than three-eighths.

Found in the Suffolk Crag.

14. B. LEATHESII.—Leathes' Buccinum, pl. XXXII. fig. 28.

Buccinum sulcatum. Sowerby, Min. Conch. V. p. 122, pl. 477, fig. 4.

Shell oblong-ovate, consisting of five, slightly defined, nearly flat volutions, terminating in an obtuse apex; covered with strong, wide-set, transverse, striæ; aperture elongated, somewhat narrowed above; outer lip plain on the margin, and toothed internally; length six-eighths of an inch; breadth not three-eighths.

Found in the Suffolk Crag.

15. B. LABIOSUM.—The Gross-lipped Buccinum, pl. XXXII. fig. 37, 38.

Buccinum labiosum. Sowerby, Min. Conch. V. p. 122, pl. 477, fig. 3. Fleming, Brit. An. p. 345.

Shell oblong-ovate, consisting of seven volutions; spire tapering rapidly, and terminating in an acute apex; sides of the volutions somewhat flattened, and slightly separated; covered with fine transverse sulci, from ten to twelve on each volution, in some instances more; aperture oblong-ovate, slightly narrowed above; pillar lip broadly reflected on the columella above, and contracting as it descends; outer lip smooth and thin; length six-eighths of an inch.

Found in the Suffolk Crag.

16. B. ELEGANS.—The Elegant Buccinum, pl. XXXII. fig. 35, 36.

Buccinum elegans. Sowerby, Min. Conch. V. p. 121, pl. 477, fig. 1.

Shell subconic, acuminated, consisting of seven ventricose, deeply defined volutions, and terminating in an acute apex; with longitudinal, rounded, prominent ribs, and crossed by nine or ten sharp, distant, elevated striæ; aperture slightly ovate; pillar lip smooth; outer lip toothed within.

Found in the Suffolk Crag.

17. B. SPINOSUM.—The Spined Buccinum, pl. XXXII. fig. 24, 25.

Buccinum spinosum. Sowerby, Min. Conch. V. p. 128, pl. 566, fig. 5, 6.

Shell conical, elongated, subturreted; each volution invested by a sharp spiral furrow, above which is a continuous series of large, blunt, tubercular spines, with a row of smaller ones at the base; aperture semiovate; columella smooth; beak somewhat produced.

Found in the Carboniferous or Mountain Limestone of Torquay and Newton Bushel, Devonshire.

18. B. UNILINEATUM.—The One-Lined Buccinum, pl. 486, fig. 5, 6.

Buccinum unilineatum. Sowerby, Min. Conch. V. p. 140, pl. 486, fig. 5, 6.

Shell elongated, consisting of six volutions, with straight sides, and gradually tapering to a rather obtuse apex; each volution with a single linear furrow close to its upper edge; body rather ventricose; the whole covered with very fine spiral striæ; aperture obliquely elongated, narrow, and straitened at both extremities; beak short; columella smooth; outer lip thin; length not three-eighths of an inch; breadth half its length.

Found in the Limestone at Ancliff.

19. B. PARALLELE.—The Parallel Buccinum, pl. XXXII. fig. 30.

Buccinum parallele. Phillips, Geo. of York. II. p. 229, pl. 16, fig. 8.

Volutions slightly inflated, and well defined by the suture, spirally striated, their upper portions plane, the lower portions convex with many equal spiral furrows.

Found in the Mountain Limestone at Bolland, Queen's County, Ireland.

GENUS XII.—DOLIUM.—*D'Argenville.*

Shell suboval, extremely ventricose, thin, sometimes subglobose, frequently transversely costated, or sulcated; spire short; aperture very large, provided with a short reflected canal; outer lip generally thin, in some instances a little thickened, reflected and crenated at the margin; external surface generally covered with a thin, horny epidermis.

1. D. NODOSUM.—The Nodulous Dolium, pl. XXXIII. fig. 9, 10.

Dolium nodosum. Sowerby, Min. Conch. V. p. 34, pl. 426 and 427. A cast of a species of Dolium, Mantell, Geo. Sussex, p. 196.

Shell ovate, ventricose; spire depressed, consisting of three volutions, and having spiral-rounded belts, crossed by a few wide-set, longitudinal striæ, ending in a flattened apex; whole shell provided with numerous transverse rows of large and somewhat flattened knobs, with intervening sulci.

Discovered in the Chalk at Clayton Pit, by Richard Weeks, Esq.

GENUS XIII.—PURPURA.—*Bruguiere.*

Shell generally ovate or oblong; spire short, mostly grooved, granose, or tuberculate, or externally spinose; aperture generally largely dilated and ovate; margin of the outer lip usually sharp, and frequently toothed within, near the edge; emarginate at the base, where it is notched, and ending in a short canal; columella generally depressed, often internally acute at the edge, and terminating below in a sharp point; operculum horny, provided with a lateral nucleus, thinner on the margin next the columella.

1. P. TETRAGONA.—The Tetragonal Purpura, pl. XXXII. fig. 17, 18.

Purpura tetragonum. Fleming, Brit. An. p. 341. *Buccinum tetragonum.* Sowerby, Min. Conch. V. p. 13, pl. 414, fig. 1.

Shell thick, ovate; body large; spire short, consisting of four narrow volutions, a little flattened above; whole shell provided with strong, elevated, longitudinal ribs, crossed by four large, and several smaller, intermediate, transverse furrows between them, which divide the shell into squarish cells; aperture oblong-ovate, rounded above, and slightly contracted below; columella smooth, broadly and thickly reflected, and continuous above; outer lip somewhat undulous on the margin, provided with strong blunt tubercular teeth within; beak short, and but slightly curved.

Discovered by Mrs. Cobbold, in the Crag, near Ipswich.

2. P. CRISPATA.—The Curled Purpura, pl. XXXII. fig. 33, 34.

Purpura imbricata. Lamarck, An. San. Vert. VII. p. 557, *P. lapillus*, Lamarck, Env. de Paris, p. 36. *P. crispatum*, Fleming, Brit. An. p. 341. *Buccinum crispatum*, Sowerby, Min. Conch. V. p. 12, pl. 413, fig. 3.

Shell oblong-ovate; body large; spire short, consisting of five or six well-defined, inflated volutions, terminating in a somewhat acute apex; whole surface invested with numerous, close, spiral ribs, which are covered by rough, imbricated scales, with several projecting, longitudinal lines of growth; aperture semiovate, rounded above, and slightly contracted below; inner lip smooth, and reflected on the columella, continuous above, and not extending to the base of the short beak below; outer lip slightly reflected, thin, and undulous on the margin, and subcrenated internally.

Found plentifully in the Suffolk and Norfolk Crag.

3. P. CARINATA. The Keeled Purpura, pl. XXXII. fig. 41, 42.

Purpura crispatum. Fleming, Brit. An. p. 341. *Buccinum crispatum.* Sowerby, Min. Conch. V. p. 12, pl. 413, fig. 2.

Shell oblong-ovate, subturreted; body large; spire short, consisting of four or five volutions, which, with the body and surface, are obliquely flattened above; whole covered with strong, remote, transverse, rounded ribs, which are invested with rough, imbricated scales, the superior rib on the body, and central one on the spire, being more elevated than the rest; the intervening furrows with longitudinal curved striæ; aperture ovate, rounded above; pillar lip smooth, continuous above, and extending to the base of the short canal; outer lip thin, undulous on the margin, and subcrenated internally.

Found in the Norfolk and Suffolk Crag.

4. P. INCRASSATA.—The Thickened Buccinum, pl. XXXII. fig. 39, 40.

Purpura incrassatum. Fleming, Brit. An. p. 341. *Buccinum incrassatum.* Sowerby, Min. Conch. V. p. 13, pl. 414, fig. 2.

Shell very thick, ovate; body large; spire very short, being only a third the length of the body in front, consisting of four volutions, terminating in an obtuse apex; all the volutions obliquely flattened above; body provided with five or six strong, rounded, transverse ribs, the superior one the largest, which continues spirally along the centre of the volutions; the whole surface covered with irregular, broken, waved, longitudinal striæ, or lines of growth; aperture rather small, subovate, rounded above, and slightly contracted below; pillar lip broadly reflected on the columella, and continuous above; outer lip a little thickened and undulous on the margin, with obscure furrows, and blunted tubercles between them internally.

Found plentifully in the Suffolk Crag.

5. A. DESERTA.—The Forsaken Purpura, pl. XXXII. fig. 3, 4.

Purpura desertum. Fleming, Brit. An. p. 342. *Buccinum desertum*, Brander, Fossil, Hant. fig. 15. Sowerby, Min. Conch. V. p. 14, pl. 415, fig. 1, two smaller figures.

Shell ovate; spire short, conical, consisting of five somewhat depressed volutions, abruptly tapering to a point, and separated by a broad, rounded groove, which winds spirally close to the suture; the whole shell provided with numerous, longitudinal, irregular, rather flattened ribs, with sharp points upon their upper extremities, which are crossed by remote, spiral striæ; aperture ovate, widened above and narrow below, with distant grooves within; columella smooth, with an obscure fold at its base; canal very short.

Found at Barton Cliff, in the Blue Clay.

6. P. DENTII. Dent's Purpura, pl. XXXII. fig. 5, 6.

Buccinum desertum. Sowerby, Min. Conch. V. p. 14, pl. 415, fig. 1, larger figure.

Shell oblong-ovate; spire conical, consisting of five somewhat inflated volutions, tapering rather abruptly to an obtuse apex; the volutions separated by a double, wide, spiral furrow, situate immediately below the suture; the whole shell furnished with strong, longitudinal, unequal ribs; aperture ovate, widened above, and a little contracted below, and grooved internally; columella smooth; aperture short.

This species differs from the preceding in having a double spiral groove separating the volutions, and in the spire being somewhat more produced.

Found in the Blue Clay at Barton Cliff.

GENUS XIV.—CALIENDRUM.—*Brown.*

Shell oblong-ovate, acute; volutions deeply divided; aperture irregularly ovate; columella greatly reflected and undulous, destitute of a canal at the base; outer lip very broad, somewhat reflected and smooth on the margin.

1. C. VITTATUTUM.—The Girdled Caliendrum, pl. XXXII. fig. 20.

Buccinum vittatum. Phillips, Geo. of York. II. p. 230, pl. 16, fig. 14.

Shell elongated, smooth; body large, considerably inflated; spire consisting of six very ventricose, deeply-divided volutions, terminating in a blunted opex; a broad flat mesial band commences on the back of the outer lip, and encompasses the centre of the bod andy superior volutions, and terminates in the apex; aperture irregularly oval; columella undulous, broadly reflected on the body, continuous both above and below, and destitute of a canal; outer lip broad, thick, reflected, and thin and even on the margin.

Found in the Mountain Limestone at Bolland, Queen's County, Ireland.

GENUS XV.—CASSIS.—*Bruguière.*

Shell ventricose, gibbous, mostly subtrigonal; spire generally very short; aperture longitudinal, narrow, in some species nearly equal to the whole length of the shell, in others proportionably wider (in which case the aperture can hardly be considered as elongated) with a more produced spire; base of the aperture terminating in a short canal, abruptly reflected on its inner margin, which is acute; columella twisted or rugose, and provided with transverse plaits; outer lip usually thickened, inflected, and spread over the lower part of the body, producing a flattened disk reaching beyond the edge of the lower varix, internally dentated, and in various species forming a varix at the completion of each volution.

1. C. BICATINATUS.—The Double-Chained Cassis, pl. XXXIII. fig. 7, 8.

Cassis bicatinatus. Sowerby, Min. Conch. II. p. 117, pl. 151, fig. 1, 2.

Shell ovate, ventricose; spire of medium length, consisting of five well defined volutions, and terminating in an obtuse apex; whole surface traversed by numerous, transverse, prominent, narrow ribs, with broad intermediate furrows, decussated by small, slightly oblique longitudinal costæ upon the superior portions of the volutions, most distinct upon the central volutions, giving a chain-like appearance to two or three pairs of the furrows, but becoming obsolete below; aperture ovate, somewhat straitened towards both extremities, and ending in a short canal; pillar lip spreading broadly over the columella, which is slightly plaited and extending over an open umbilicus; outer lip thickened, rounded, reflected, and obscurely tuberculated within.

Discovered in the Crag at Bawdsey, Suffolk, by the Rev. J. Lambert, of Trinity College, Cambridge.

GENUS XVI.—CASSIDARIA.—*Lamarck.*

Shell obovate, ovate or oblong; ventricose; body very large; spire short; aperture longitudinal, narrow, terminating at the base in a recurved canal, which points upwards when the shell is placed with the aperture downwards; outer lip marginate, thickened, reflected, and frequently dentated within; inner lip expanded, covering the lower part of the body and columella, but detached from it at the base, immediately above the canal, which in some species is rough, granular, tuberculate or rugose; outer surface generally grooved, tuberculated, and covered with a thin, horny epidermis.

1. C. CARINATA.—The Keeled Cassidaria, pl. XXXIII. fig. 1, 2.

Cassis carinata. Sowerby, Min. Conch. I. p. 23, pl. 6, three upper figures. *Morio carinata,* Fleming, Brit. An. p. 340.

Shell pyriform; body very large, obliquely flattened above; spire very short, consisting of five or six abruptly tapering, depressed angular volutions, terminating in an acute apex; body with three remote, nodulous transverse ribs, and numerous, close, undulous, transverse, alternately large and small striæ, which are decussated by many lines of growth; aperture oblong, straitened both above and below, and ending in a narrow recurved beak; pillar lip concave, very broadly reflected on the columella, with numerous tooth-like processes on its inner margin, and two or three on the inner margin of the outer lip; outer lip broad, continuous above, smooth on the margin, and extending over the umbilicus.

Found in the London Clay at Highgate Hill.

2. C. STRIATA.—The Striated Cassidaria, pl. XXXIII. fig. 3, 4.

Cassis striata. Sowerby, Min. Conch. I. p. 24, pl. 6, four lower figures. Fleming, Brit. An. p. 339.

Shell ovate; body large; spire small, consisting of five or six rounded, abruptly tapering, volutions, terminating in a sharp apex; whole shell covered with transverse wide-set striæ; a spiral ridge of transversely oblong nodules invest the superior portion of the body, which is also crossed by indistinct lines of growth; aperture greatly elongated, narrow, and contracted at both extremities; pillar lip much reflected on the columella, broad above and narrowing towards the base, which is provided with a narrow, slightly bent canal, and toothed within; outer lip broad, plicated internally, and reflected over the umbilicus behind.

Found in the London Clay at Highgate Hill.

FAMILY IV.—ALATA.

Shell provided with a canal of greater or less extent, situate at the base of the aperture; the right lip changes its form as the animal advances in age, and is provided with a sinus at the lower part.

GENUS XVII.—ROSTELLARIA.—*Lamarck.*

Shell turreted or fusiform; spire uniformly longer than the aperture; the superior volutions generally longitudinally grooved; aperture oblong, its upper part prolonged into an elongated narrow canal, which in some instances extends to the apex of the spire, and not unfrequently turns down on the opposite side; base with a more or less lengthened canal, pointed beneath; outer lip in the infant state, thin, but becomes greatly dilated with age, entire, or dentated at its lower margin, or digitated; outside covered with a thin horny epidermis; aperture provided with a thick corneous operculum of an oblong form, rounded at one end and pointed at the other.

SECTION I.—OUTER LIP EXPANDED.

1. R. MACROPTERA.—The Long-Winged Rostellaria, pl. XXXIII. fig. 17, 18, 19.

Rostellaria macroptera. Lamarck, Env. de Paris, p. 48. Lyell's Elts. of Geology, p. 310, fig. 138. Fleming, Brit. An. p. 360. Sowerby, Min. Conch. III. p. 177, plates 298, 299,

and 300. *Strombus amplus*, Brander, p. 76. *Hippocrenes macropterus*, Montfort, II. p. 523.

Shell fusiform, smooth; spire taper, acute, the sides of which are flat, consisting of from ten to fourteen volutions, defined only by the suture line, and terminating in a sharp apex; aperture oblong-ovate, much contracted, and acute above and below; inner lip smooth, shining, very broadly reflected on the columella, extending over three-fourths of the body in front, and in some instances with a second and more thickened reflection (as in fig. 18) spreading entirely around the base, and extending to the point of the beak; outer lip very large, spreading, and semicircular, in the form of an expansive wing, extending in some instances from the fifth or sixth volution of the spire, encompassing the apex, and projecting considerably beyond the spire; at the upper junction of the two lips there is a variously bent and long canal, which is sometimes nearly concealed by a reflection of the superior portion of the outer lip; beak short and pointed, extending a little way beyond the lip, with a contracted canal.

This shell is subject to much variety in form; in some specimens the external edge of the outer lip is provided with a deep sinus in the upper part which separates it from the canal near the spire, as in fig. 18. In young shells there is no development of the outer lip, and they may be in consequence mistaken for a *Fusus*, as in fig. 19. Its sides are nearly parallel, and its surface very smooth and shining.

Found in the London Clay at Hordwell and Highgate.

SECTION II.—SHELLS TURRETED, OUTER LIP SINUATED.

2. R. PES PELICANI.—The Pelican's Foot Rostellaria, pl. XXXIII. fig. 16.

Rostellaria pes pelicani. Parkinson, Org. Rem. III. p. 63. Lamarck, An. San. Vert. VII. p. 193. Sowerby, Min. Conch. VI. p. 109, pl. 558, fig. 1. Fleming, Brit. An. p. 359. *Strombus pes pelicani*, Linn. Syst. Nat. II. p. 1207. Mont. Test. Brit. p. 253. Brown, Illust. Brit. Conch. pl. 5, fig. 21, 39.

Spire pyramidal, tapering to a fine point, and consisting of eight or ten transversely ribbed and carinated volutions, terminating in an acute apex; body volution with two rows of tubercles placed upon the keels; outer lip greatly expanded and quadrifid, its upper angle extending high upon the spire; base ending in a short acutely pointed beak with a shallow canal in its centre.

This species varies considerably as to the development of the outer lip, and presents very different aspects in its progress from the young to the adult condition.

Discovered in a Clay pit at Tottenhill, near Lynn, Norfolk; it has also been met with in the Suffolk Crag and at Swaffham.

3. R. PARKINSONI.—Parkinson's Rostellaria, pl. XXXIII.* fig. 12, 13, 14, 15.

Rostellaria Parkinsoni. Sowerby, Min. Conch. IV. p. 69, pl. 349, fig. 1 to 5. Ib. VI. p. 112, pl. 558, upper fig. 3. Ib. Geo. Trans. IV. 2nd series, p. 344, pl. 18, fig. 24. Mantell. Geo. of Sussex, p. 72, 82, and 108. Fleming, Brit. An. p. 360, Rostellaria having only one spur-like process, Parkinson, Org. Rem. III. p. 63, pl. 5, fig. 11.

Shell turreted, with numerous oblique, long longitudinal ribs, and transversely striated; the lower volution of the spire, ribbed and obscurely carinated; outer lip considerably expanded, with but one large, subulate, spur-like process, directed upwards, with a broad, angular expansion under it; aperture elongated and narrow; beak long, subulate, and pointed; the canal very narrow beneath.

Found at Blackdown, Faversham, in the Green sand and Gray Chalk Marle.

4. R. FITTONI.—Fitton's Rostellaria, pl. XXXIII.* fig. 15.

Rostellaria Parkinsoni. Sowerby, Min. Conch. VI. p. 112, pl. 558, lower fig. 3.

Shell turretted; body and spire nearly of equal length; spire consisting of six somewhat flattened volutions; and with numerous longitudinal, somewhat oblique ribs; body with a carina near its upper extremity; lip expanded, the carina crossing it behind, and some longitudinal wrinkles near its margin; beak short and nearly straight.

Found at Feversham.

5. R. MACROSTOMA.—The Long-mouthed Rostellaria, pl. XXXIII.* fig. 11.

Rostellaria macrostoma. Sowerby, Geo. Trans. IV. 2nd series, p. 344, pl. 18, fig. 23.

Shell turreted; body large; spire short, consisting of four or five rounded carinated volutions, five on each, the centre one the most prominent; aperture small, round; outer lip greatly expanded and flattened, provided with two lobes; beak curved.

Found in the Green sand of Blackdown.

6. R. BISPINOSA.—The Two-spined Rostellaria, pl. XXXIII. fig. 14.

Rostellaria bispinosa. Phillips, Geo. of Yorkshire, I. p. 107, pl. 40, fig. 32, and pl. 6, fig. 13.

Shell turreted; spire consisting of seven deeply divided volutions terminating in an acute apex, with an acute spiral carina in their centre, which emanates from the superior portion of the body; and giving to the volutions a triangular form; beneath this on the body is another smaller keel; beak of moderate length, and terminating in a sharp point.

Found in the Lower Calcareous grit, and in the Kelloways Rock, by Mr. Williamson, Scarborough.

7. R. CARINATA.—The Keeled Rostellaria, pl. XXXIII. fig. 11, pl. XXXIII.* fig. 8.

Rostellaria carinata. Mantell, Geo. of Sussex, p. 86, pl. 19, fig. 10, 11, 12, 14. Sowerby, Geo. Trans. IV. 2nd series, p. 337, pl. 11, fig. 19.

Shell turreted; spire acute, nearly subulate, consisting of eight or nine convex volutions, which are ornamented with a series of regular rather elongated small tubercles, assuming somewhat the aspect of ribs, in the centre of the spire; body provided with two carinæ a little above its centre; whole shell covered with minute spiral striæ; aperture ovate, contracted both above and below, and ending in a wide canal; outer lip furnished with a long, farcated projection, produced by an elongation of the upper keel on the back of the shell; beak long and subulate.

Found in the blue Chalk Marle, at Laughton, Ringmer, and Norlington.

8. R. COMPOSITA.—The Composite Rostellaria, pl. XXXIII. fig. 22.

Rostellaria composita. Sowerby, Min. Conch. VI. p. 111, pl. 558, fig. 2. Phillips, Geo. of Yorkshire, I. p. 124, pl. 9, fig. 28.

Shell turreted; spire costated, consisting of seven well defined volutions terminating in an acute apex, lower volution bicarinated; columella smooth; outer lip much developed and spreading, and with a canal at its upper extremity, consisting of one lobe only, and provided with a spine where the superior carina terminates upon its margin.

Found in the stratum above the Coal, at Brora, Scotland, and in the Oxford Clay, at Weymouth, also at Scarborough.

9. R. CALCARATA. — The Spur-shaped Rostellaria, pl. XXXIII. fig. 5, 6.

Rostellaria calcarata. Sowerby, Min. Conch. IV. p. 70, pl. 349, fig. 6, 7. Parkinson, Organic Remains, III. p. 63, pl. 5, fig. 2. Fleming, Brit. An. p. 360.

Shell turreted, with six or seven well defined volutions, crossed by numerous longitudinal, somewhat elevated, linear, curved ribs, and a few varicose sutures; lower or body volution carinated, having a principal and several smaller carinæ; the whole exterior surface covered with close striæ; outer lip provided with a large, oblong, squarish, ascending process, in the form of a curved spur or spine on its upper angle, which is produced by an elongation of the larger keel; the superior canal of the lip short and obtusely pointed; beak short and somewhat acute; inner lip entire with its edges a little rounded.

Found at Blackdown, in the Whetstone pits.

10. R. TRIFIDA.—The Trifid Rostellaria, Phillips, Geo. of Yorkshire, I. p. 109, pl. 5, fig. 14.

Shell provided with several carinæ, the outer lip hardly expanded, and furnished with a long subspatulose, slightly ascending process; beak arcuated.

Found in the Oxford Clay at Scarborough, by Mr. Bean.

11. R. ANGULATA.—The Angled Rostellaria.

R. angulata. Phillips, Geo. of Yorkshire. II. p. 230, pl. 16, fig. 16.

"Volutions angular, the upper ones tricarinate."

Found in the Mountain Limestone at Bolland, Queen's County, Ireland.

12. R. RETUSA.—The Blunted Rostellaria, pl. XXXIII.* fig. 10.

Rostellaria retusa. Sowerby, Geo. Trans. IV. p. 344, pl. 18, fig. 22.

Shell short ovate; body long, spire small, consisting of four narrow, rounded volutions, each provided with one distinct, elevated carina, and also an obsolete one; whole shell with a finely polished surface, and covered with close and fine spiral striæ; outer lip furnished with an elongated, narrow, slightly ascending, spur-like process, projecting from the elevated carina.

SECTION III.—OUTER LIP NOT EXPANDED.

13. R. LUCIDA.—The Shining Rostellaria, pl. XXXIII. fig. 20, 21.

Rostellaria? lucida. Sowerby, Min. Conch. I. p. 203, pl. 91, fig. 1, 2, 3. Fleming, Brit. An. p. 359.

Shell glossy, fusiform; spire consisting of eight gradually tapering volutions, and terminating in a somewhat acute apex; body volution nearly equal in length to the spire; whole shell covered with many obtusely rounded, longitudinal volutions, and crossed by numerous, transverse, elevated, obtuse striæ; inner lip smooth and broadly reflected on the columella; outer lip thickened and provided with a very short channel at its upper extremity, with an obscure sinus at its lower extremity, and terminating in a very short beak.

We have not met with the immature shell, but Sowerby says that its lip is not thickened; and when the body volution is about half-formed its growth appears to cease and then the margin of the lip is inflected; and on its becoming perfect the outer lip is thickened, when the inflected part of the former lip is visible about half a convolution from the outer lip, in the form of a prominent rib.

Found in the London Clay at Highgate Hill.

14. R. RIMOSA.—The Cleft Rostellaria, pl. XXXIII. fig. 12, 13.

Rostellaria rimosa. Sowerby, Min. Conch. I. p. 204, pl. 91, fig. 4, 5, 6. Fleming, Brit. An. p. 360. *Murex rimosus,* Brander, Fossil Hant. fig. 29.

Shell fusiform and shining; body in front equal to about half the shell; spire consisting of eight or nine slightly convex volutions, which are but moderately defined by the suture, and terminate in an acute apex; whole shell covered with numerous, slightly rounded, longitudinal, sharp ribs, and transversely striated; columella strongly defined, and extending to the superior margin of the fifth or sixth volution of the spire; aperture obliquely ovate, contracted at both extremities, with a long undulating and pretty deep canal, extending as far as the extremity of the columella; outer lip reflected, and slightly flattened in front, with a sinus towards its lower extremity; beak straight and short.

This species varies considerably from its young to its adult state; in the very young stage, the reflected and extended columella and lip are not formed, although the lip in this condition is frequently thickened; and when more advanced, or about half its full size, the lip extends over about two volutions, which when mature reaches the fifth or sixth volution, terminating in a gentle curvature.

Found plentifully in the London Clay at Barton Cliff.

15. R. ELONGATA. — The Elongated Rostellaria. pl. XXXIII.* fig. 5.

Rostellaria elongata. Sowerby, Geo. Trans. IV. 2nd series, p. 336, pl. 11, fig. 16.

Shell turreted, greatly elongated; body and spire nearly of equal length, the latter consisting of four or five volutions, divided by a broad, hollow suture, crossed by a longitudinal series of ribs, and transversely striated; the upper edges of the volutions smooth; aperture subovate, pointed, both above and below; inner lip with a sub-umabilicus.

Found by Dr. Fitton, in the Gualt.

16. R. MARGINATA. — The Marginated Rostellaria, pl. XXXIII.* fig. 6, 7.

Rostellaria marginata. Geo. Trans. IV. 2nd series, p. 336, pl. 11, fig. 18.

Shell conical, turreted; body and spire nearly equal, the latter consisting of six or seven moderately inflated volutions, divided by an elevated, linear suture, each volution provided with eight or ten longitudinal, short, obtuse ribs, crossed by numerous striæ; the body destitute of ribs and furnished with a nearly central, elevated carina; aperture slightly ovate.

This species is nearly allied to *Rostellaria Parkinsoni*, but may at once be distinguished by the spiral, elevated band which divides the volutions.

Found in the Gualt.

17. R. BUCCINOIDES.—The Buccinum-shaped Rostellaria, pl. XXXIII.* fig. 9.

Rostellaria Buccinoides. Sowerby, Geo. Trans. IV. 2nd series, p. 336, pl. 11, fig. 17.

Shell subulate; body short; spire long, consisting of eight rounded volutions, each furnished with a single varix, and terminating in an acute apex; whole shell covered with numerous, slightly bent, longitudinal ribs; outer lip destitute of a lobe.

Found in the Gualt.

FAMILY V.—CANALIFERA.

Shell with a canal of greater or less length, situated at the base of the aperture; the outer lip differing but little in the young and adult state.

Sub-division I. Having a permanent varix on the outer lip; and varices on the spire.

GENUS XVIII.—TRITON.—*Lamarck.*

Shell oblong; spire rather prominent, and acute at the apex; volutions with never more than two on each; aperture nearly round; outer lip thickened; inner or pillar lip generally rugose; beak somewhat elongated, and turned backwards; operculum of a horny texture.

1. T. CANALICULATUM.—The Canaled Triton, pl. XXXIV. fig. 7, 8.

Buccinum canaliculatum. Sowerby, Min. Conch. V. p. 14, pl. 415, fig. 2, 2. *Buccinum desertum,* Brander, fig. 18, 19. *Nassa canaliculata,* Fleming, Brit. An. p. 341.

Shell elongated; spire consisting of six volutions with somewhat flattened sides, and separated by a depressed canaliculate suture, which is provided with a prominent margin; upper volutions with strong longitudinal ribs, which are less marked in two or three of the lower volutions, but these are provided at irregular intervals with a few varices; whole shell transversely striated; inner lip smooth and flattened; outer lip thickened, with crenulations internally, but plain at the margin; aperture ovate, with a slight canal at its upper extremity; beak short and curved.

Found plentifully in the London Clay at Barton Cliff and Muddiford.

GENUS XIX.—MUREX.—*Linnæus.*

Shell subturreted, more or less elongated; spire for the most part prominent, terminating in an acute apex, furnished with three or more rows of digitated, muricated, or spinous varices, or with an irregularly foliaceous or lacerated fringe; aperture suborbicular; columella smooth; beak generally much elongated, sometimes very long, and frequently recurved, provided with a horny operculum.

1. M. CORONATUS.—The Crowned Murex, pl. XXXIV. fig. 33, 34.

Murex coronatus. Sowerby, Min. Conch. III. p. 52, pl. 230, fig. 3.

Oblong-ovate, turreted; spire consisting of four or five volutions, which are slightly concave above, and terminating in a somewhat obtuse apex; body and spire covered with ten longitudinal acute ribs, each of which terminate in a sharp point above; between the ribs the shell is widely striated; aperture oblong-ovate, wide, and flattened above, and narrowed beneath; inner lip broadly reflected on the columella; outer lip thick, and crenulated internally; beak slightly curved.

Found in the London Clay at Highgate Hill.

2. M. MINAX.—The Threatning Murex, pl. XXXIV. fig. 9, 10.

Murex minax. Brander, fig. 62. Sowerby, Min. Conch. III. p. 51, pl. 229, fig. 2.

Short; body large in proportion to the spire; spire consisting of four narrow volutions, tuberculated above, and terminating in a sharp apex; body somewhat inflated, and provided with a double zone of tubercles, those on the upper portion are spine-shaped, and furrowed on their outer margins; whole shell covered with somewhat undulous and close, irregular striæ; base of the body sulcated; aperture nearly orbicular; inner lip smooth, and broadly reflected on the columella; outer lip thin; beak short, and slightly curved.

Found in the London Clay at Highgate Hill.

3. M. TOROSUS.—The Knobby Murex, pl. XXXIV. fig. 20.

Murex tuberosus. Sowerby, Min. Conch. pl. 229, fig. 1.

Oblong-ovate, subterreted; spire consisting of five or six volutions, ending in a pointed apex; body and spire provided with numerous, large, blunted, nearly obsolete ribs, which terminate in large obtuse knobs on the most prominent part of the volutions; base convex; the whole shell covered with many rough lines of growth, which are crossed by thick-set, strong spiral striæ; aperture ovate; outer lip blunt; beak short, and slightly curved.

Found in the London Clay at Highgate Hill.

4. M. CRISTATUS.—The Crested Murex, pl. XXXIV. fig. 1, 2.

Murex cristatus. Sowerby, Min. Conch. III. p. 52, pl. 230, fig. 1, 2.

Ovate; body large; spire short, consisting of five abruptly tapering volutions, terminating in a slightly pointed apex; six or seven longitudinal, sharp, prominent ribs cover the body of the shell, and extend to the volutions of the spire, these are all spiniform and canaliculated above, and each provided with three plaits, formed by ribs behind; whole shell covered with fine, spiral striæ; aperture ovate, widest above; beak curved, and of medium length; canal rather wide; inner lip broadly reflected on the columella above, and narrowing as it descends, with a subumbilicus below; outer lip considerably produced above, in the form of a canaliculate elongation, and with two other produced undulations below; back of the beak exhibiting two tubular, projecting processes, being the former bases of the beak, produced by the growth of the shell.

Discovered in the London Clay at Highgate Hill, by G. B. Snow, Esq.

5. M. ARGUTUS.—The Sugar-loaf Murex, pl. XXXIV. fig. 35, 36.

Murex argutus. Brander, 13. Sowerby, Min. Conch. IV. p. 59, pl. 344.

Oblong-ovate; spire consisting of eight prominent, abruptly tapering volutions, deeply divided by the suture; body furnished with five or six transverse, rather depressed ribs, which are prominently knotted at somewhat regular intervals; the spire has only two ribs on each volution; about three longitudinal varices traverse the body, which however, do not extend beyond the inflation of the volutions; whole surface covered with numerous, elevated, spiral striæ, several of which are large towards the centre of each volution; in the intervals between the ribs at the backs of the varices are deep hollows; aperture nearly circular, slightly narrowed above and below; inner lip smooth, thinly reflected on the columella, and slightly subumbilcate behind at the base of the body, with a few wart-like tubercles near its lower extremity; outer lip thick with strong crenulations, within, and also on its outer margin; beak short, thick, and slightly ascending.

Found in the London Clay at Barton Cliff.

6. M. ALVEOLATUS.—The Celled Murex, pl. XXXIV. fig. 15, 16.

Fusus alveolatus. Fleming, Brit. An. p. 354. *Murex alveolatus,* Sowerby, Min. Conch. V. p. 9. pl. 411, fig. 2.

Oblong-ovate, considerably acuminated; spire nearly equal to the body in length, consisting of seven rapidly decreasing volutions, deeply divided by the suture, flattened above, and terminating in an acute apex; whole shell covered by prominent longitudinal and transverse ribs, producing deep cell-like interstices, which are provided with less prominent transverse ribs; aperture ovate, a little pointed above and below; beak short and but slightly curved; inner lip smooth, reflected on the columella, with an open umbilicus behind at its base; outer lip somewhat thickened, toothed within, and thin at its edge.

Found in the Crag, Suffolk and Norfolk.

7. M. BISPINOSUS.—The Two-spined Murex, pl. XXXIV. fig. 24, 25.

Murex bispinosus. Sowerby, Min. Conch. V. p. 15, pl. 416, fig. 2.

Oblong-ovate; spire consisting of six volutions terminating in an acute apex; body with three foliated and laminated longitudinal varices, beset with two prominent acute canaliculated spines on each varix; these extend over the spire, which is provided with two or three transverse ridges; between each varix is placed a small tubercle; aperture ovate; inner lip slightly reflected on the columella, and continuous with the outer lip, which is thin on the margin, thickened, and toothed within; beak nearly straight.

Found at Barton Cliff.

8. M. CALCAR.—The Spur Murex, pl. XXXIV. fig. 31, 32.

Murex calcar. Sowerby, Min. Conch. V. p. 7, pl. 410, fig. 2.

Oblong-ovate; spire acuminated, nearly equal in length to the body, and consisting of six, subturreted, volutions obliquely flattened above, and terminating in a pointed apex; the spire provided with numerous elevated, sharp ribs, and those of the body somewhat obsolete, where they only appear in the form of blunted tubercles; two transverse spinous ribs invest the body volution, and assume a spur-like appearance on the margin of the outer lip, with a slight canal in their centre; shell covered with strong, remote, elevated, partially granulated striæ; aperture subquadrangular, slightly pointed on its upper extremity; inner lip smooth and narrowly reflected on the columella, and is continuous on the outer lip, which is thin; beak long, the canal nearly closed in front.

Found in the Green Sand, Blackdown.

9. M. DEFOSSUS.—The Hidden Murex, pl. XXXIV. fig. 11, 12.

Murex defossus. Sowerby, Min. Conch. V. p. 9, pl. 411, fig. 1. *Buccinum defossum,* Pilkinton, Linn. Trans. VII. p. 117.

Oblong-ovate; spire acuminated nearly equal in length to the body, consisting of seven well rounded, deeply defined volutions, terminating in an acute apex; whole shell covered with numerous, sharp, elevated, longitudinal, and alternately large and small transverse ribs; intervening cells smooth; aperture ovate, slightly pointed above and below; inner lip smooth, broadly reflected on the columella above,—where it has one or two irregular plaits,—and narrowing as it descends; outer lip thin on the edge, considerably thickened within, and provided with many, elongated, lamellar teeth; beak short, and but slightly curved.

Found at Hordwell.

10. M. FRONDOSUS.—The Leaved Murex, pl. XXXIV. fig. 22, 23.

Murex frondosus. Lamarck, Env. de Paris, p. 51. Ib. An. San. Vert. VII. p. 573. Sowerby, Min. Conch. V. p. 16, pl. 416, fig. 3.

Oblong-ovate; spire short, subturreted, consisting of five deeply defined volutions, and terminating in an acute apex; body with eight or nine sharp, elevated, longitudinal, foliated varices; crossed by numerous transverse ribs, producing a tuberculated appearance as they pass over the longitudinal ribs, and giving a rough feel and crisped appearance to the whole of their lamellated surface; intervening cavities rough; aperture nearly circular; beak short, thick, and slightly curved; canal nearly closed; inner lip smooth, broadly reflected over the columella above, and abruptly narrowing as it descends; outer lip sharp on the edge, with a broad foliated expansion on its outer side.

Found at Highgate Hill and Barton.

11. M. TRICARINATUS.—The Three-keeled Murex, pl. XXXIV. fig. 13, 14.

Murex tricarinatus. Lamarck, An. San. Vert. VII. p. 177. Sowerby, Min. Conch. V. p. 15, pl. 416, fig. 1. *Murex asper,* Brander, fig. 77, 78, 79, and 80.

Oblong-ovate; spire about the same length as the body, consisting of six subturreted volutions, and terminating in an acute apex; with three elevated, longitudinal, foliaceous, dentated varices, extending from the body to the tip of the spire; crossed by about seven wide-set prominent striæ, which correspond with the plaits of the varices, these are provided with a long, canaliculate spine on the top of each; aperture semi-ovate; inner lip slightly reflected on the columella; outer lip with a broad foliated margin; beak considerably recurved; canal rather wide.

Found at Barton Cliff.

12. M. QUADRATUS.—The Squarish Murex, pl. XXXIV. fig. 37.

Murex quadratus. Sowerby, Min. Conch. V. p. 7, pl. 410, fig. 1.

Short, slightly rhomboidal; spire short, consisting of three gradually tapering, slightly defined volutions, apex rather

obtuse; body bicarinated, which become obsolete in the spire; whole shell covered with regular elevated striæ, which are obscurely decussated by the lines of growth; aperture subquadrangular; canal very short and nearly straight.

Found at Blackdown.

13. M. SEXDENTATUS. — The Six-toothed Murex, pl. XXXIV. fig. 17, 18.

Murex sexdentatus. Sowerby, Min. Conch. V. p. 10, pl. 411, fig. 3.

Oblong-ovate; spire nearly as long as the body, consisting of five ventricose volutions, well defined by the suture; whole shell provided with numerous longitudinal ribs, which, with the intervals between them, are decussated with strong, sharp, spiral striæ; aperture elongated; slightly narrowed beneath; inner lip smooth, behind which at its termination is a subumbilicus; outer lip somewhat thickened with five or six obtuse teeth inside.

Discovered at Colwell Bay, Isle of Wight, by Professor Sedgwick.

14. M. TORTUOSUS.—The Tortuous Murex, pl. XXXIV. fig. 29, 30.

Murex turtuosus. Sowerby, Min. Conch. V. p. 48, pl. 434, fig. 2.

Turreted; spire consisting of four or five broad volutions; body and spire with three elevated flexuous subfoliaceous varices, with two or three knobs between each; and crossed by wide-set, transverse, nearly obsolete ribs upon the middle and lower portion of the volutions, and a fourth situate near the superior part of the volutions; beak short, slightly bent; aperture oblong-ovate; inner lip smooth, a little reflected on the columella; outer lip rather thin and straight, thickened within.

A Crag fossil, found at Woodbridge, by Mrs. Cobbold.

15. M. HACCANENSIS.—The Hackness Murex, pl. XXXIV. fig. 28.

Murex Haccanensis. Phillips, Geo. York, I. p. 102, pl. 4, fig. 18.

Turreted; spire abruptly tapering, with six or seven volutions; with nine or ten strong, elevated, longitudinal ribs, transversely striated; aperture obovate; outer lip thin; base of body with several nearly obsolete, transverse folds.

Found in the Coralline Oolite at Hackness.

GENUS XX.—TYPHIS.—*Fleming.*

Shell subcylindrical, subturreted; volutions provided with numerous cylindrical, pervious processes; aperture suborbicular; beak short, with a closed tubular canal.

1. T. FISTULOSUS.—The Pipe Typhis, pl. XXXIV. fig. 5, 6.

Murex fistulosus. Brocchi, Sub. App. II. p. 394, pl. 7, fig. 12. Sowerby, Min. Conch. II. p. 201. *Murex pungens,* Brander, fig. 82. *Typhis fistulosus,* Fleming, Brit. An. p. 356.

Subcylindrical, provided with several thick, somewhat foliated varices, each terminating above in a slightly recurved tube, most of which are truncated and perforated; spire short, consisting of four or five rapidly decreasing volutions, and terminating in an acute apex; aperture entire, subovate; both lips continuous, the left or outer one with a marginal foliated varixo, and four or five sinuated fimbriæ behind; beak nearly straight, closed in front, and obliquely truncated below.

In old shells the beak is frequently double, and sometimes even triple; diameter of the shell about half its length.

Found at Barton Cliff.

2. T. TUBIFER.—The Tubular Typhis, pl. XXXIV. fig. 3, 4.

Murex tubifer. Lamarck, Env. de Paris, p. 54. Parkinson, Org. Remains, III. p. 65, pl. 5, fig. 15. *Murex pungens,* Brander, p. 35, fig. 81. M. horridas, Brocci, Sub. App. II. p. 405, pl. 7. *Typhis tubifer,* Fleming, Brit. An. p. 356.

Oblong-ovate, with four or five rapidly decreasing volutions, each furnished with four or five longitudinal rows of tubular spines, generally set in threes, between each of which is placed a solitary, erect, somewhat arcuated tube, situate upon the superior portion of the volution, a little pointed, somewhat oblique, sometimes double, and open at the base.

Found at Barton Cliff, in the London Clay.

In the young state the beaks of this species, as well as that of *fistulosus,* are open.

GENUS XXI.—RANELLA.—*Lamarck.*

Shell oval or oblong; subcompressed; with depressed, straight or slightly oblique distichous varices, situated at intervals of half a volution, forming a continuous longitudinal row on each side; aperture subovate; base canaliculated, and frequently with a small canal above, at the junction of the outer and inner lips; outer lip grooved with its edge crenated or dentated; inner lip usually rugose; the outside more or less tuberculate, frequently set in small bead-like rows, and generally covered with a thickish olivaceous epidermis.

1. R. BARTONENSIS.—The Barton Ranella, pl. XXXV. fig. 1, 2, 3.

Murex Bartonensis. Sowerby, Min. Conch. I. p. 77, pl. 34. Three lower figures.

Oblong-ovate; spire about half the length of the body, consisting of four gently tapering somewhat rounded volutions, terminating in an obtuse apex; the body and two lower volutions of the spire with numerous, nearly straight, longitudinal ribs, the interstices being crossed by fine, regular, transverse striæ, producing a beautifully cancellated appearance; aperture obliquely elongated, curved, and acute at both extremities; having a shallow groove or canal above, and with an oblique canal below; inner lip smooth and broadly reflected on the columella, somewhat raised, and extending to nearly the superior region of the body, where it is continuous with the outer lip, which is undulate, the margin also very broad, and toothed within, with a furrow which extends from the fourth tooth to the beak; inner lip also toothed; beak short, thick, and curved.

Not quite half an inch in length.

Found at Barton Cliff, by the Rev. W. Bingley.

GENUS XXII.—PYRULA.—*Lamarck.*

Shell thin, oblong, ventricose above, somewhat attenuated below, and usually very regular in form; spire short and rounded; aperture elongated, lengthened into a short, broad canal at the base, narrower in its superior extremity and broader in the middle, in consequence of the columella sinus; outer lip sharp on the margin, and minutely crenulated; inner lip very thin, and spreading over the front, sometimes nearly imperceptible; outside generally cancellated, but destitute of varices or umbilicus; and covered with an excessively thin epidermis.

1. P. NEXILIS.—The Wreathed Pyrula, pl. XXXV. fig. 6, 7.

Pyrula nexilis. Lamarck, Env. de Paris, fig. 67. Sowerby, Min. Conch. IV. p. 33, pl. 331. *Murex nexilis,* Brander, 55.

Pyriform, or obovate; spire very short, consisting of three rounded volutions, and terminating in a rather obtuse apex; whole surface covered with wide-set, elevated, longitudinal, and spiral striæ, the transverse striæ, the most acute and uniform, producing a beautiful cancellated appearance; aperture long, narrow, acute above, and terminating below in a contracted canal.

Found in the London Clay at Barton Cliff.

2. P. GREENWOODII.—Greenwood's Pyrula, pl. XXXV. fig. 4, 5.

Pyrula Greenwoodii. Sowerby, Min. Conch. V. p. 157, pl. 498.

Pyriform, thin; spire very short, consisting of four rounded volutions, and terminating in a somewhat obtuse apex; surface covered with rather irregular, elevated, longitudinal, and transverse striæ; aperture much elongated and narrow, pointed above, and terminating below in a narrow canal; beak considerably pointed.

Found in Hampshire, by Mrs. Greenwood.

3. M. TUBEROSUS.—The Tuberose Murex, pl. XXXIV. fig. 19.

Murex tuberosus. Sowerby, Min. Conch. VI. p. 152, pl. 578, fig. 4.

Oblong-ovate; body and spire of nearly equal length; spire small, consisting of three or four squarish volutions, terminating in an obtuse apex, with a single row of blunted tubercles upon the upper part of each volution; whole shell beset with irregular spiral striæ; aperture subovate; beak very short, and slightly produced.

Found in the Pisolite at Malton.

This shell differs considerably from the species of the same name figured and described by Sowerby, vol. III. pl. 229, fig. 1.

4. P. BULLATUS.—The Bossed Pyrula, pl. XXXIV. fig. 21.

Murex Smithii. Var. *β.* Spire produced. Sowerby, Min. Conch. VI. p. 151, pl. 578, fig. 3.

Nearly orbicular; body large; spire short, consisting of three rounded, slightly depressed volutions, and terminating in a blunted apex; body covered with large, distant knobs, set in three interrupted rows; aperture ovate, narrowed above; character of the beak unknown.

Found in the London Clay at Maida Hill, Paddington.

This species and the two preceding are nearly allied to each other.

5. P. SMITHII.—Smith's Pyrula, pl. XXXIV. fig. 26, 27.

Murex Smithii. Sowerby, Min. Conch. VI. p. 151, pl. 578, fig. 1, 2.

Pyriform; body large in proportion to the spire, which consists of four depressed volutions, hardly a sixth the length of the body; on the body are three rows of oblong, short, blunted tubercles, those of the superior row being the largest, and more pointed than the others; whole shell covered with unequal spiral striæ; beak considerably produced, and appears but little curved; aperture subquadrangular, extending from the superior portion of the body; inner lip not thickened upon the columella; outer lip thin.

Found in Alum Bay, Isle of Wight.

GENUS XXIII.—FUSUS.—*Lamarck.*

Shell fusiform, or subfusiform; spire usually turreted, with many rounded volutions, and gradually acuminated, generally terminating in a pointed apex, although it is sometimes mamillary; for the most part with longitudinal ribs and spiral grooves; aperture elliptical, terminating in a lengthened, straight canal.

1. F. REGULARIS.—The Straight Fusus, pl. XXXV. fig. 15, 16, and pl. XXXVI. fig. 22, 23.

Murex antiquus. Brander, Foss. Hant. p. 33, pl. 6, fig. 74. *Murex regularis,* Sowerby, Min. Conch. V. p. 27, pl. 423, fig. 1, and II. p. 195, pl. 187, fig. 2.

Elongated; spire moderate, consisting of from five to eight well rounded and somewhat inflated volutions, flattened and nearly smooth above, terminating in a rather obtuse apex; longitudinally ribbed, and crossed by numerous, fine, irregular, spiral, sharp striæ; aperture elongated, wide, and somewhat rounded above, narrowed below, and ending in an open, nearly straight, rather short canal, which is contracted towards the point; inner lip smooth, in general broadly reflected on the columella above, and diminishing as it descends; outer lip sharp on the edge, and thin with a few plaits internally; aperture to the point of the beak equal in length to the other portion of the shell.

Found at Barton Cliff by Miss Salisbury.

2. F. COMPLANATUS.—The Flattened Fusus, pl. XXXV. fig. 21, 23, 24.

Fusus complanatus. Sowerby, Min. Conch. V. p. 27, pl. 423, fig. 2, 3.

Fusiform; spire consisting of five volutions, with their upper edges elevated, and pressed upon the spire; the whole surface covered with large, oblique, longitudinal ribs, and crossed by numerous, close-set, spiral striæ, with obtuse intervening ridges; aperture ovate, contracted both above and below, and ending in a curved, slightly expanding canal of medium length; inner lip smooth, narrowing as it descends; outer lip sharp on the edge; beak somewhat shorter than the spire.

Figure 21 is a variety in which the longitudinal ribs are more prominent than the others, and with a sub-carina in the middle of the body.

Found in the London Clay at Highgate Hill.

3. F. LIMA.—The File Fusus, pl. XXXV. fig. 19.

Fusus Lima. Sowerby, Min. Conch. V. p. 28, pl. 423, fig. 4.

Fusiform; spire consisting of six volutions, with their upper edges elevated and pressed upon the spire, and terminating in a pointed apex; the shell covered with transverse and longitudinal elevated ribs, which at the points of intersection produce an acute spiniform appearance upon the lower parts of the shell, but upon the superior portions of the volutions, these become simple striæ, and are decussated by depressed lines of growth.

Found in the London Clay at Barton Cliff.

4. F. CONIFERUS.—The Pine-shaped Fusus, pl. XXXVI. fig. 1, 2.

Fusus coniferus. Sowerby, Min. Conch. II. p. 195, pl. 187, fig. 1.

Shell greatly elongated; spire consisting of six or seven inflated, deeply divided volutions, slightly flatteded above, and terminating in an acute apex; body and beak with twelve or thirteen spiral, distant, narrow, and slightly elevated ribs, the volutions of the spire with four or five only, the intervals with numerous close-set, irregular, slightly undulating striæ, crossed by distant, longitudinal, unequally elevated undulations, which are obsolete on the upper part of the volutions; aperture oblong-ovate, about half the length of the shell, wide above, narrowed below, and ending in a short, wide canal; inner lip smooth and narrow; outer lip sharp and even on the edge.

The volutions of the spire appear as if they were tuberculate, from the ribs passing over the longitudinal undulations, which are more prominent than on the body.

Found at Highgate Hill.

5. F. STRIATUS.—The Striated Fusus, pl. XXXVI. fig. 26.

Murex striatus. Sowerby, Min. Conch. I. p. 61, pl. 22, fig. 1, 2, 3.

Ventricose; spire short, being not quite a fourth of the length of the shell, consisting of five or six rounded volutions, and terminating in a somewhat obtuse apex; the whole shell covered by numerous, distant, rounded, and rather flattened narrow transverse ribs, with from three to five fine, parallel, but not very equal striæ, occupying the intervening spaces; these are crossed by obsolete lines of growth and striæ; aperture semi-ovate, rounded above, and rather narrow below, and ending in a short, wide, and nearly straight canal; inner lip smooth and broadly reflected on the columella, which is widest above, and contracts as it descends, with a duplicature behind at the beak; outer lip smooth and even.

This shell varies in size from three to four inches and a quarter.

Found in the Crag-pits of Suffolk and Essex, and at Holywell, near Ipswich.

6. F. CARINATUS.—The Keeled Fusus, pl. XXXVI. fig. 45.

Murex striatus, variety *a carinatus.* Sowerby, Min. Conch. II. p. 13, pl. 109, fig. 1.

Oblong-ovate; spire short with four volutions, terminating in an obtuse apex, body with six or seven rounded and prominent transverse ribs, and two on the volutions of the spire, intervening spaces covered with irregular spiral striæ; crossed by nearly obsolete, longitudinal wrinkles and lines of growth; aperture oblong-ovate, slightly pointed above, and terminating in a short, slightly oblique, open canal; pillar lip smooth and broadly reflected on the columella; outer lip regular and rather blunted on the edge.

Found in the Crag pits of Essex and Sussex.

This species is liable to considerable variety in the disposition and character of its transverse ribs.

7. F. ERRANS.—The Wandering Fusus, pl. XXXVI. fig. 33, 34.

Fusus errans. Sowerby, Min. Conch. IV. p. 139, pl. 400. *Strombus errans*, Brander, Foss. Hant. p. 23, pl. 2, fig. 42.

Oblong-ovate; spire acute, subturreted, and of medium length, consisting of six volutions flattened above and ending in a pointed apex; body, with two large prominent, and several lesser intermediate transverse ribs; the whole shell covered by fine spiral striæ, these decussated by minute, longitudinal lines of growth, which are most conspicuous above the larger ribs; aperture oblong-ovate, narrowed above and below, ending in a nearly straight, slightly compressed canal; columella nearly straight; the inner lip smooth; outer lip thin, angular above, and waved below.

Found at Hordwell and Barton Cliffs, and it has also been discovered at Stubbington.

It is distinguished from the following by always having more than one transverse rib, and also by its inferior size.

8. F. BIFASCIATUS.—The Two-faced Fusus, pl. XXXVI. fig. 43, 44.

Fusus bifasciatus. Sowerby, Min. Conch. III. p. 49, pl. 228. Fleming, Brit. An. p. 352.

Shell elongated; spire long, being nearly equal in length to the body, consisting of six turreted volutions, flattened at top, and much produced in the centre, nearly in the shape of a keel, which extends over the centre of the body volution, and terminates in the outer lip; the sides of this carina are nearly equal in inclination; the whole shell covered by strong, rough, longitudinal and transverse striæ; body somewhat ventricose below the keel; aperture oblong, widest above, and contracted beneath into a short, nearly straight canal.

Found at Highgate Hill,

9. F. TRILINEATUS.—The Three-lined Fusus, pl. XXXVI. fig. 35, 36.

Murex trilineatus. Sowerby, Min. Conch. I. p. 80, pl. 35, fig. 4, 5.

Shell considerably elongated; spire short, consisting of five or six not much inflated volutions, and terminating in a rather obtuse apex; whole shell covered by numerous, transverse, narrow, projecting ribs, each divided into three thread-like divisions; aperture elongated, pointed above, and terminating below in a straight, short, open canal; inner lip narrowly reflected on the columella; outer lip thin, even at the edge, with nine or ten folds within, situate a little way from the margin

Sometimes extends to upwards of two inches in length. It is, however, usually the size of our figure.

Found in the London Clay at Highgate.

10. F. CORNEUS.—The Horny Fusus, pl. XXXV. fig. 20.

Murex corneus. Sowerby, Min. Conch. I. p. 79. pl. 35. Three upper figures.

Shell elongated, somewhat slender; spire long, nearly equal in length to the body, consisting of seven or eight slightly inflated volutions, terminating in a somewhat obtuse apex; whole

shell covered with numerous, nearly obsolete, spiral striæ; aperture oblong-ovate, slightly pointed above and below, ending in a short, nearly straight canal; inner lip smooth, rather broad in proportion to the size of the shell; outer lip thin and even on the edge.

In some fossil specimens the beak is considerably curved.

Found at Holywells, Aldborough and Walton, Suffolk.

11. F. Manni.—Mann's Fusus, pl. XXXVI. fig. 20, 21.

Murex rugosus. Sowerby, Min. Conch. II. p. 225, pl. 190, fig. 1, 2.

Shell subfusiform; spire consisting of five or six well rounded volutions, terminating in a somewhat obtuse apex, with about twelve longitudinal, elevated ribs; the whole shell covered with regular spiral striæ, and the body volution devoid of ribs; aperture elliptical, a little pointed above, and terminating beneath in a short, straight canal; inner lip smooth, slightly reflected on the columella above, and gradually widening as it descends, until it reaches the beak, when it becomes suddenly contracted; outer lip slightly thickened and smooth on the margin.

Named in honour of my respected friend Robert Mann, Esq., surgeon, Manchester, a zealous naturalist.

Found in the Crag at Plumstead.

12. F. Parkinsonii.—Parkinson's Fusus, pl. XXXVI. fig. 17.

Murex rugosus. Parkinson, Org. Rem. III. p. 64, pl. 5, fig. 16.

Shell elongated; spire rather more than a third of the length of the shell, consisting of five or six moderately ventricose volutions, terminating in an obtuse apex; with many longitudinal, rather flat ribs, crossed by numerous faint striæ; aperture ovate, a little contracted above, and ending below in a short, slightly bent canal; pillar lip smooth and broadly reflected on the columella; outer lip a little thickened internally.

Found in the Crag, Essex.

13. F. interruptus. — The Interrupted Fusus, pl. XXXVI. fig. 37, 38.

Murex interruptus. Pilkinton, Linn. Trans. VII. p. 117, pl. 11, fig. 5. Sowerby, Min. Conch. III. p. 181, pl. 304, fig. 1, 2.

Shell subturreted; spire smooth and of medium length, consisting of five or six nearly flat volutions, terminating in a sharp apex; the smaller volutions with a broad, flattened space, above which two sharp furrows run along their upper edges: body rather inflated, covered with many spiral furrows; aperture ovate, slightly pointed above, terminating beneath in a wide, slightly curved canal of medium length; inner lip smooth, a little reflected on the columella, and displays the impression of the sulci beneath, which produces a striated appearance; outer lip plaited internally, and smooth on its margin.

Found in the London Clay in Hampshire, and at Barton.

14. F. junceus.—The Slender Fusus, pl. XXXVI. fig. 29, 30.

Murex junceus. Brander, Foss. Hant. p. 17, pl. 1, fig. 26. *Buccinum junceum,* Sowerby, Min. Conch. IV. p. 103, pl. 375, fig. 1.

Shell much elongated and taper; spire greatly produced, equal in length to the body, with six or seven moderately inflated volutions, divided by a small, plain furrow, and terminating in an obtuse apex; whole shell covered with sharp, elevated, uniform, spiral and longitudinal striæ, producing a fine reticulated appearance; aperture long, narrow, acute, and angular above, with a slight internal notch, terminating below in a very short, straight canal; inner lip smooth, broad above, and narrowing as it descends; outer lip somewhat arcuated in its centre, sharp at the edge, and deeply striated within.

Found at Barton, and in the London Clay at Highgate.

15. F. sulcatus.—The Furrowed Fusus, pl. XXXVI. fig. 18, 19.

Buccinum sulcatum. Sowerby, Min. Conch. IV. p. 103, pl. 375, fig. 2. Fleming, Brit. An. p. 344.

Shell greatly elongated, subturreted; spire much produced, equal in length to the body, consisting of six or seven ventricose volutions, terminating in an obtuse apex, furnished with about seven linear, transverse furrows on each of the volutions; aperture ovate, ending below in a short, slightly recurved canal; pillar lip smooth, a little concave; outer lip considerably thickened, rounded beneath, with about twelve elongated teeth internally.

Found in the Crag at Ramshot.

16. F. Mitrula.—The Mitre-formed Fusus, pl. XXXVI. fig. 3, 4.

Buccinum Mitrula. Sowerby, Min. Conch. IV. p. 103, pl. 375, fig. 3.

Shell turreted; spire long, about equal to the body, with six or seven volutions, ending in an acute apex; the whole shell covered with from ten to twelve longitudinal ribs, which are most prominent on the upper part of the volutions; aperture elongated, a little contracted both above and below, obtuse above, terminating in a short, straight, wide canal, which is even at the base; inner lip narrowly reflected on a straight columella; outer lip almost straight on the margin, having a small rounded sinus near its junction with the body, below which it is slightly produced.

Found in the Crag at Ramshot.

17. F. costelliferus. — The Small-ribbed Fusus, pl. XXXVI. fig. 11, 12.

Fusus costellifer. Fleming, Brit. An. p. 353. *Murex costellifer,* Sowerby, Min. Conch. II. p. 225, pl. 199, fig. 3.

Shell subturreted; spire of medium length, consisting of four somewhat ventricose volutions; with about eighteen rather depressed, slender, longitudinal ribs, crossed by numerous, sharp, spiral striæ; aperture subovate, slightly contracted above, and terminating in a short, open, and nearly straight canal; inner lip reflected on the straight part of the columella only; outer lip expanded, and smooth on the margin.

Found in the Crag at Malden.

18. F. gradatus.—The Graduated Fusus, pl. XXXVI. fig. 7, 8.

Fusus gradatus. Fleming, Brit. An. p. 352. *Murex gradatus,* Sowerby, Min. Conch. II. p. 227, pl. 199, fig. 6.

Shell ventricose; spire short, acute, consisting of four abruptly tapering volutions, terminating in a sharp apex, with about ten longitudinal, varicose ribs, which are very prominent above, and producing a square, strongly turreted, and flattened step-like appearance in the volutions; aperture oval, slightly angular above, ending in a short, open, slightly curved canal; inner lip smooth; outer lip a little expanded, and even on the margin.

Found in the Crag at Malden.

19. F. CURTUS.—The Short Fusus, pl. XXXVI. fig. 5, 6.

Fusus curtus. Fleming, Brit. An. p. 353. *Murex curtus.* Sowerby, Min. Conch. II. p. 227, pl. 199, fig. 5.

Shell ovate, ventricose; spire short, consisting of four abruptly tapering volutions, terminating in a rather obtuse apex, with about twelve longitudinal, rounded, undulating ribs upon each volution; crossed by numerous, sharp, somewhat distant striæ, which become rather stronger on the base of the shell; aperture oval, a little pointed above and below, and ending in a short, slightly curved, and narrow canal; pillar lip slightly reflected on the columella; outer lip thin, internally striated with elevated lines.

The substance of the shell being thin, gives the costæ the appearance of concave undulations internally.

Found in the Blue Clay, Highgate Hill.

20. F. ECHINATUS.—The Spined Fusus, pl. XXXVI. fig. 9, 10.

Fusus echinatus. Fleming, Brit. An. p. 353. Sowerby, Min. Conch. II. p. 226, pl. 199, fig. 4, 4.

Shell elongated, turreted; spire long, consisting of five ventricose volutions, well defined by a deep suture; the whole shell covered with numerous, longitudinal, sharp ribs, crossed by remote, transverse, elevated, rounded striæ, which preserve their thickness in passing over the ribs, producing the appearance of elevated angular spines; aperture ovate, terminating in a short and slightly curved canal; inner lip not reflected on the pillar, and the striæ continued over the columella; outer lip a little thickened and striated internally.

Found in the Crag at Malden.

21. F. CANCELLATUS.—The Latticed Fusus, pl. XXXVI. fig. 15, 16.

Fusus cancellatus. Sowerby, Min. Conch. VI. p. 45, pl. 525, fig. 2.

Shell considerably elongated; spire long, consisting of five ventricose volutions, with a sharp apex; covered with acute, longitudinal, and transverse ribs, producing a beautiful cancellated appearance, with four or five rows of cells to each volution, the whole intersections provided with short spines; aperture elongated, somewhat contracted above, and terminating below in a short, slightly curved, open canal; base of the beak even.

Found in the Crag of Norfolk and Suffolk.

22. F. HEYWOODII.—Heywood's Fusus, pl. XXXVI. fig. 13, 14.

Murex Peruvianus. Sowerby, Min. Conch. V. p. 47, pl. 434, fig. 1, 1.

Shell oblong-ovate; spire about half the length of the shell, consisting of five or six subturreted, inflated volutions; general surface smooth, provided with fourteen or fifteen thin, laminated, elevated, longitudinal ribs, and several varices; aperture ovate, somewhat rounded above, and contracted below into a long, narrow, slightly twisted canal; inner lip smooth, slightly reflected on the columella; outer lip thin, a little produced above.

Found in the Crag at Woodbridge.

I have named this shell in honor of James Heywood, Esq., of Acresfield, Pendleton, a zealous and expert geologist.

This is not the F. Peruvianus of Lamarck.

23. F. CARINELLUS.—Small-Keeled Fusus, pl. XXXVI. fig. 24, 25.

Fusus carinella. Fleming, Brit. An. p. 353. *Murex carinella,* Sowerby, Min. Conch. II. p. 196, pl. 187, fig. 3, 4.

Shell considerably elongated; spire rather short, consisting of six convex volutions, along the middle of which, as well as the body, there is a sub-carina, produced by one of the striæ, which is more prominent than the others; whole shell with many longitudinal ribs, crossed by numerous, strong, elevated, unequal, spiral striæ; aperture oblong-ovate, rounded above, somewhat contracted below, and terminating in a long, nearly straight, open canal; inner lip narrowly reflected on the columella above, widening as it descends, and ending in a sharp point at the base; outer lip thin, even, and with the striæ shining through, from the thinness of the shell.

Found in the London Clay at Barton Cliff.

24. F. FICULNEUS.—The Fig-like Fusus, pl. XXXV. fig. 8, 9.

Fusus ficulneus. Sowerby, Min. Conch. III. p. 166,* pl. 291, fig. 7, 7. Fleming, Brit. An. p. 352. *Murex turgidus,* Brander, Foss. Hant. p. 26, pl. 4, fig. 56.

Shell ovate, sub-fusiform, ventricose; spire short, consisting of five slightly rounded volutions, flattened at top, and terminating in a sharp apex, with many longitudinal, depressed ribs; the margin of the depressed portions of the volutions is furnished with a row of more or less acute tubercles, and in some instances double, beneath which the space is concave, and from whence the costæ eminate; base and part of the beak provided with pretty strong, transverse striæ; aperture oblong-ovate, a little pointed above, and ending below in a short, oblique, rather wide canal; inner lip broadly reflected on the columella above, narrower below, and with a single plait near its base; outer lip expanded, and even on the edge.

Found in the London Clay at Hordwell Cliff.

25. F. BULBIFORMIS.—The Bulb-shaped Fusus, pl. XXXV. fig. 12, 13.

Fusus bulbiformis. Sowerby, Min. Conch. III. p. 165, pl. 291, fig. 1 to 6. Fleming, Brit. An. p. 352. *Murex Bulbus,* Brander, Foss. Hant. p. 27, pl. 4, fig. 54. *Murex Pyrus,* Ib. p. 27, pl. 4, fig. 52, 53. *Fusus bulbiformis,* Lamarck, Env. de Paris, 62.

Shell ovate, ventricose, nearly smooth; spire mucronated, very short, about a sixth of the whole length of the shell, consisting of six volutions, ending in a short apex; aperture oblong-ovate, contracted above and below, and terminating in a short, slightly curved canal; inner lip smooth, broadly reflected on the columella, with a slight protuberance inside near the top, which produces a subcanaliculate depression above the upper angle of the aperture; outer lip thick, smooth, and sharp on the edge; beak with obsolete striæ.

Found in the London Clay at Hordwell, and the New Forest, Hampshire.

This shell is subject to several varieties:

α. With the pillar lip plaited within.

β. Spire more elevated, and beak more produced, than in the variety described, which is the type of the species, with a concave furrow at the upper part of each volution.

γ. Spire considerably produced; shell longer than in the type; volutions subventricose, with a deep, rounded, obtuse canal on the upper part of each volution of the spire.

26. F. SIGMILINIATUS.—The Sigmi-lined Fusus, pl. XXXV. fig. 11.

Buccinum sigmilineum. Phillips, Geo. of Yorkshire, II. p. 230, pl. 16, fig. 12.

Shell elongated; spire rather lengthened, consisting of six or seven ventricose volutions; whole shell covered with sigmoidal striæ; aperture oblong-oval, ending in a short, nearly straight beak; outer lip rather thin, and even.

Found in the Mountain Limestone at Bolland and Kildare, Queen's County, Ireland.

27. F. CONTRARIUS.—The Reversed Fusus, pl. XXXV. fig. 10.

Fusus contrarius. Fleming, Brit. An. p. 253. Lyell's Elts. of Geo. p. 303, f. 129. *Murex contrarius,* Sowerby, Min. Conch. I. p. 63, pl. 23.

Shell elongated, fusiform, reversed; spire consisting of five or six hetrostrophe, rather ventricose volutions; whole shell generally with numerous, rounded, spiral striæ (and in some instances smooth); aperture oblong placed on the right side, a little pointed above, and terminating below in a short, slightly bent, open canal; inner lip broadly reflected on the columella; outer lip somewhat thickened, and expanding.

This species is sometimes met with upwards of four inches and a half in length.

Found in the Suffolk Crag, &c.

28. F. ALVEOLATUS.—The Checquered Fusus, pl. XXXVI. fig. 27, 28.

Fusus alveolatus. Sowerby, Min. Conch. VI. p. 45, pl. 525, fig. 1.

Shell turreted, much elongated; spire consisting of six or seven volutions, obliquely flattened above; the whole shell provided with thick, straight, rounded, longitudinal ribs, crossed by two obtuse, spiral ribs on the volutions of the spire, and with six or seven on the body, which gradually diminish in thickness as they descend upon the beak; the intervals between the ribs presenting series of square and deep cells; aperture nearly round, contracting towards the canal below, which is close and narrow; inner lip smooth, broadly reflected on the columella, and descending to the base of the canal; outer lip plain, and even on the edge; beak half cylindrical in its form.

Found in the Suffolk Crag.

29. F. LONGÆVUS.—The Lengthened Fusus, pl. XXXV. fig. 14.

Fusus longævus. Sowerby, Min. Conch. I. p. 141, pl. 63. Fleming, Brit. An. p. 352. *Murex longævus,* Brander, Foss. Hant. p. 22, pl. 2, fig. 40, pl. 6, fig. 73, and pl. 8, fig. 93.

Shell ventricose, smooth; spire consisting of eight or nine abruptly tapering, turreted volutions, flattened above, with several knobs on the lower volutions, which extend to the body, and terminate on the upper and inner margin of the outer lip, where they are about half an inch in length, and the same distance apart; aperture nearly circular, contracting below into a long, nearly straight, narrow canal, which is a little curved near the base; inner lip smooth, broadly reflected on the columella, and suddenly contracted as it approaches the canal, continuing a mere line to the base of the beak, which is about the same length as the spire; outer lip thin, and even on its edge.

In the young state, the tubercles are nearly obsolete, and with some transverse striæ upon the upper volutions. The full grown shell is from seven and a half to eight and three quarter inches in length.

Found at Hordwell and Barton Cliffs, Hampshire; and also at Muddiford.

30. F. PORRECTUS.—The Elongated Fusus, pl. XXXV. fig. 17.

Fusus porrectus. Fleming, Brit. An. p. 352. *Fusus rugosus,* Sowerby, Min. Conch. III. pl. 274, fig. 8, 9. *Murex porrectus,* Brander, Foss. Hant. p. 21, pl. 2, fig. 35.

Shell much elongated, and narrow; spire consisting of twelve or thirteen inflated volutions, well defined by the suture; whole shell covered by numerous, prominent, longitudinal ribs, each crossed by eight or nine fine, sharp, elevated striæ, producing a rough appearance on the surface; aperture subovate, contracting as it descends, and ending in a long, narrow canal; inner lip smooth, rather broad above, and continuing to the base of the lengthened, nearly straight beak; outer lip thin.

Found in the London Clay at Hordwell.

31. F. ACUMINATUS.—The Accuminated Fusus, pl. XXXV. fig. 22.

Fusus acuminatus. Sowerby, Min. Conch. III. p. 131, fig. 1, 2, 3. Fleming, Brit. An. p. 352. *Murex porrectus,* Brander, Foss. Hant. pl. 2, fig. 36.

Shell much elongated, acicular; spire consisting of eight or ten ventricose volutions; the whole shell provided with many depressed, nearly obsolete, irregular, longitudinal ribs, crossed by numerous, elevated, spiral striæ; aperture oblong-ovate, contracting beneath into a narrow, lengthened canal; inner lip narrowly reflected on the columella; outer lip expanded, and even on the edge.

Found in the London Clay at Hordwell.

32. F. ASPER.—The Rough Fusus, pl. XXXV. fig. 18.

Fusus asper. Sowerby, Min. Conch. III. p. 131, pl. 274, fig. 4, 5, 6, 7. Fleming, Brit. An. p. 352.

Shell much elongated; spire consisting of six or seven ventricose volutions, terminating in an acute apex; whole shell with numerous, longitudinal, rather depressed ribs, which do not extend to the beak; crossed by four or five elevated, sharp, tuberculate ridges, which are most conspicuous as they pass over the costæ, and especially on the upper volutions; aperture oblong-ovate, narrowing as it approaches the canal, which is very long, and contracted; inner lip slightly reflected on the columella; outer lip thin.

Found in the London Clay at Hordwell Cliff.

33. F. HARPULUS.—The Little-Harp Fusus, pl. XXXVI. fig. 31, 32.

Murex Harpula. Sowerby, Min. Conch. VI. p. 152, pl. 578, fig. 5.

Shell oblong-ovate; spire short, consisting of five depressed, somewhat square volutions, terminating in a sharp apex; with numerous, close, thin, oblique, longitudinal ribs, which increase in number towards the base, from intervening shorter ones; aperture almost orbicular, ending in a nearly straight canal.

Found in the Carboniferous Limestone at Bradley.

GENUS XXIV.—CANCELLARIA.—*Lamarck.*

Shell oval, subturreted; spire short in most species, but produced in a few; body large, ventricose, greatly exceeding the spire in length; aperture not quite entire, the base being for the most part somewhat extended into a canal, distinct in some cases, but always short and recurved; outer lip transversely sulcated within; inner lip reflected over the columella, and part of the front of the body; columella plaited, varying in number and size, for the most part they are large, compressed, and much depressed, in some instances they are small, few, and placed far within the columella, so as to be nearly obscured; at other times low down.

1. C. QUADRATA.— The Square-shaped Cancellaria, pl. XXXVI. fig. 41, 42.

Cancellaria quadrata. Sowerby, Min. Conch. IV. p. 83, pl. 360. Fleming, Brit. An. p. 334.

Oblong-ovate; spire of medium length, consisting of four inflated volutions, the body occupying about two-thirds the length of the shell, separated by a narrow suture, and terminating in a rather obtuse apex; whole shell provided with sharp, elevated, spiral, longitudinal, and very regular striæ, the spiral ones the strongest; the intermediate spaces being small, hollow squares; aperture oblique, oblong-ovate, contracted both above and below; inner lip broadly spread over the columella, on which there are two obtuse plaits, with a spiral fold on its edge; outer lip sharp, entire, internally striated.

Perfect specimens of this shell are to be met with, varying in size from three-eighths of an inch to nearly an inch and a quarter.

Found in the London Clay at Barton.

2. C. EVULSA.—The Drawn-out Cancellaria, pl. XXXVI. fig. 46, 47.

Cancellaria evulsa. Sowerby, Min. Conch. IV. p. 84, pl. 361, fig. 2, 3, 4. Fleming, Brit. An. p. 334. *Buccinum evulsum*, Brander, Foss. Hant. p. 13, pl. 1, fig. 14.

Shell ovate, short; body large; spire short, consisting of five narrow, subturreted volutions, terminating in an acute apex; provided with varicose, longitudinal varices and ribs, crossed by many elevated, spiral striæ, which are most prominent as they pass over the ribs and varices, with intermediate, less prominent striæ, producing a roughness to the touch; aperture oblique, oblong-ovate, contracted both above and below; pillar lip broadly reflected on the columella, the base of which is provided with two strong plaits and a spiral ridge, beneath which is a very short, rounded canal; outer lip sharp at the edge, with a strong varix behind, and striated internally.

Found abundantly at Barton in the London Clay, as also at Lyndhurst, Southamptonshire.

3. C. LÆVIUSCULA.--The Smoothish Cancellaria, pl. XXXVI. fig. 39, 40.

Cancellaria læviuscula. Sowerby, Min. Conch. IV. p. 84, pl. 361, fig. 1. Fleming, Brit. An. p. 334.

Shell short; body large; spire small, consisting of four inflated volutions, well separated by the suture, and terminating in an acute apex; provided with longitudinal somewhat waved varicose varices and ribs, crossed by numerous, obtuse, elevated striæ; aperture oblique, rounded above, and contracted beneath; inner lip broadly reflected on the columella above, and narrowing as it descends, provided with two plaits, and a spiral ridge; outer lip a little thickened near the edge, and ribbed internally.

Found in the London Clay at Highgate, Barton, and Lyndhurst.

GENUS XXV.—PLEUROTOMA.—*Lamarck.*

Shell fusiform, turreted; spire generally longer than the body; aperture oval, with a canal more or less elongated at its base; outer lip with a notch or fissure at the upper part, contiguous to the suture; operculum horny, accuminated, its nucleus situate at the lower extremity; some of the species are covered by a thin epidermis.

1. P. COLON.— The Colon-marked Pleurotoma, pl. XXXVII. fig. 10.

Pleurotoma colon. Sowerby, Min. Conch. II. p. 106, pl. 146, fig. 7, 8. Fleming, Brit. An. p. 355.

Fusiform; body and spire nearly of equal length; the latter consisting of six or seven subturreted volutions, terminating in an acute apex, these are concave above, with their margins crenulated, and deeply divided by the suture; below the projecting margin, the body and volutions of the spire are provided with numerous, rugged, spiral ridges, alternating, with fine striæ, which in some specimens divide the undulations into two small tubercles, crossed by many short longitudinal undulations, which are frequently doubled in the same manner as the undulations; base conical; aperture oblong-ovate, nearly half the length of the shell, ending in an obtuse beak; diameter about a third of its length.

Found in the London Clay at Barton Cliff.

2. P. SEMICOLON.—The Semicolon-marked Pleurotoma, pl. XXXVII. fig. 5.

Pleurotoma semicolon. Sowerby, Min. Conch. II. p. 106, pl. 146, fig. 6. Fleming, Brit. An. p. 355.

Elongated, turreted; body and spire nearly equal in length; spire consisting of four or five inflated volutions, provided with granuated margins, which correspond with the long, narrow, curved spiral ribs; base of body conical, decussated; aperture ovote, one-third the length of the shell, ending in a nearly straight canal, which is a little expanding below; outer lip thin on the edge; pillar lip smooth, slightly reflected on the columella.

Found in the London Clay at Stubbington.

3. P. COMMA.— The Comma-marked Pleurotoma, pl. XXXVII. fig. 8, 9.

Pleurotoma comma. Sowerby, Min. Conch. II. p. 105, pl. 246, fig. 5. Fleming, Brit. An. p. 355.

Elongated, turreted; body somewhat shorter than the spire, consisting of five or six volutions, which, as well as the body are smooth in the middle, with numerous short, curved, elevated, longitudinal ribs on their superior portion, these are most prominent above, and pointed below in the form of commas; furnished with a few acute, elevated, sharp spiral striæ,

which are most prominent near the middle of the volutions; aperture oblong-ovate, about two-fifths the length of the shell, terminating in a short, slightly curved canal.

Found in the London Clay at Stubbington.

4. P. ACUMINATA.—The Acuminated Pleurotoma, pl. XXXVII. fig. 6.

Pleurotoma acuminata. Sowerby, Min. Conch. II. p. 105, pl. 146, fig. 4. Fleming, Brit. An. p. 355.

Shell greatly elongated; body considerably shorter than the spire, which consists of nine or ten turreted, inflated volutions, which are concave above, provided with a fimbriated margin, and terminating in an acute apex, the volutions being separated by an elevated thread-like suture; the whole shell with many longitudinal, slightly waved ribs, which are thickest and more elevated above, on the body, and sulcato-striated below; many spiral, fine striæ invest the shell from the apex to the base; aperture oblong-ovate, which, including the beak, is one-fifth the length of the shell, and ending in a wide canal.

Found in the London Clay at Highgate Hill.

5. P. EXORTA.—The Risen Pleurotoma, pl. XXXVII. fig. 2.

Pleurotoma exorta. Sowerby, Min. Conch. II. p. 104, pl. 146, fig. 2. Fleming, Brit. An. p. 354. *Murex exortus,* Brander, Foss. Hant. p. 20, pl. 2, fig. 32.

Elongated, turreted; base conical; spire and body of nearly equal length; spire consisting of nine or ten inflated volutions, which are concave and smooth above, convex below, with twelve or fourteen longitudinal, undulated costæ, which are most prominent on the spire; the smooth and concave portion of the volutions is bounded by the abrupt commencement of the ribs, with many tuberculated, spiral lines; length of aperture and beak equal to two-fifths of the length of the shell, and elongated in form, ending in a slightly curved, short canal; outer lip thin; inner lip slightly reflected on the columella.

Found in the London Clay at Barton Cliff.

6. P. ROSTRATA.—The Beaked Pleurotoma, pl. XXXVII. fig. 11.

Pleurotoma rostrata. Sowerby, Min. Conch. II. p. 104, pl. 146, fig. 3. Fleming, Brit. An. p. 354. *Murex rostratus,* Brander, Foss. Hant. p. 21, pl. 2, fig. 34.

Shell fusiform; body and spire of nearly equal length; spire consisting of eight or nine expanded, convex volutions, slightly concave above, somewhat ventricose and rough below, and separated by a wide suture, granulated in the centre; upper part of the body, and ventricose portion of the volutions of the spire, provided with short, broad, rather obscure, longitudinal ribs; the whole shell crossed by numerous spiral ridges, and narrow, elevated, sharp, somewhat undulating ribs, which feel rough to the touch by means of the lines of growth; the whole surface obscurely decussated, but more distinct towards the edge; aperture ovate, ending in a long, narrow, and nearly straight canal.

Found in the London Clay at Barton Cliff, Hampshire; and at Devizes.

7. P. ATTENUATA.—The Slender Pleurotoma, pl. XXXVII. fig. 1.

Pleurotoma attenuata. Sowerby, Min. Conch. II. p. 103, pl. 146, fig. 1. Fleming, Brit. An. p. 354.

Fusiform; body a little longer thsn the spire; base attenuated; spire consisting of nine greatly produced volutions, a little flattened above, deeply separated by the suture, and each provided with a series of projecting, blunted, wide-set tubercles; body with five or six longitudinal, undulating costæ, crossed by numerous, transverse, sharp, subtuberculated, narrow, undulous ribs, with many intermediate and fine striæ; aperture elongated, narrow, which with the beak is about equal to half the entire length of the shell; beak tapering gradually from the upper portion of the body; the longitudinal, irregular lines of growth make the shell feel rough to the touch. Diameter of the shell about one-fourth its length.

Found in the London Clay at Stubbington.

8. P. BREVIROSTRA.—The Short-beaked Pleurotoma, pl. XXXVII. fig. 3, 4.

Pleurotoma brevirostrum. Sowerby, Min. Conch. IV. p. 120, pl. 387, fig. 2. Fleming, Brit. An. p. 355.

Elongated, turreted; body short; spire long, consisting of ten or eleven ventricose, abruptly tapering volutions, flattened at top, separated by a deep suture, and terminating in an acute apex; lower parts of volutions of the spire, and upper portion of the body, with many elevated, longitudinal ribs; whole shell crossed by numerous spiral striæ, which are strongest upon the middle of each volution; aperture obovate, ending in a short, slightly curved narrow canal; outer lip thin; inner lip smooth, broadly reflected on the columella.

Found in the London Clay at Muddiford.

9. P. FUSIFORMIS.—The Spindle-shaped Pleurotoma, pl. XXXVII. fig. 14.

Pleurotoma fusiformis. Sowerby, Min. Conch. IV. p. 119, pl. 387, fig. 1. Fleming, Brit. An. p. 355.

Elongated, fusiform; body long; spire short, consisting of seven abruptly tapering volutions, slightly flattened above, and subcarinated, separated by a striated, and elevated smoothish fillet, their lower portions furnished with eight or nine longitudinal, somewhat obscure, depressed ribs; whole shell with deep spiral striæ, and also with longitudinal striæ, which is arcuated near the top of the volutions, and following the sinus in the upper part of the outer lip; aperture oblong, lanceolate, widest above, and narrowing as it descends, terminating in a widish canal; beak not well defined; outer lip rather thick; inner lip reflected on the columella, and transversely striated. This shell feels rough to the touch, from the elevated lines of growth and decussating striæ.

Found in the London Clay at Highgate Hill.

10. P. PRISCUS.—The Ancient Pleurotoma, pl. XXXVII. fig. 12, 13.

Pleurotoma priscus. Sowerby, Min. Conch. IV. p. 119, pl. 386. Fleming, Brit. An. p. 355. *Pleurotoma clavicularis,* Lamarck, Env. de Paris, p. 69. Hist. Nat. An. San. Vert. VII. p. 98. *Murex priscus,* Brander, Foss. Hant. p. 16, pl. 1, fig. 25, and pl. 3, fig. 44.

Fusiform, turreted, smooth; base of body transversely sulcated; body and spire of about equal length; spire consisting of eight slightly convex volutions, terminating in a sharp apex; the volutions separated by a flat suture, on which are two or three wide spiral striæ; base of shell considerably produced, but destitute of a distinct beak, blunt at the lower extremity, and

strongly striated to the base of the body; outer lip wing-shaped, and nearly semicircular; aperture elongated, and oblique; inner lip narrowly reflected on the columella.

Found in the London Clay at Hordwell.

11. P. LÆVIGATA.—The Smooth Pleurotoma, pl. XXXVII. fig. 8, 9.

Pleurotoma lævigata. Sowerby, Min. Conch. IV. p. 120, pl. 387, fig. 3. Fleming, Brit. An. p. 355.

Elongated, turreted, almost smooth; body and spire nearly of equal length; spire consisting of seven ventricose volutions, a little concave above, well defined by the suture, and provided with rather flattened, longitudinal ribs; a few obscure spiral striæ invest the shell, and some nearly obsolete lines of growth; aperture oblong-ovate, pointed above, and ending below in a short, almost straight, narrow canal, which with the aperture is nearly equal to the spire in length.

Found in the London Clay at Muddiford and Highgate Hill, London.

GENUS XXVI.—CERITHIUM.—*Bruguière.*

Shell greatly lengthened, turreted; with numerous volutions; more or less tubercular, or spinous, or rough, in a very few instances smooth, or spirally grooved; aperture subquadrate or ovate, its upper part modified within by the abdominal region of the body; the outer lip or peritreme a little thickened, and sometimes broadly reflected, with a groove at its upper extremity; columella arcuated, with a sharp spiral plait at its base, and forming the upper margin of the canal, which is somewhat short, truncated, and generally reflected; aperture closed by a small horny operculum.

1. C. CORNUCOPIA.—The Horn of Plenty Cerithium, pl. XXXVII. fig. 17.

Cerithium cornucopiæ. Sowerby, Min. Conch. II. p. 197, pl. 188, fig. 1, 3, and 4. *Terebra cornucopiæ*, Fleming, Brit. An. p. 347.

Subulate, turreted, punctated; with upwards of thirty variously ornamented volutions, terminating in a rather acute apex; volutions contiguous to the apex, with one crenulated keel, situated a little under the centre; in those immediately succeeding, the margin imperceptibly assumes a tuberculated appearance, and a small knobbed carina rises between it and the middle one, with its lower edge crenulated; the tubercles on the upper margin gradually increase, the central keel becomes more depressed, while other carinæ arise on each side of it in the central volutions, tuberculated above, undulated below with four or five transverse furrows; these carinæ become broader, and the intermediate spaces assume the form of furrows, while the crenulations and tubercles continue in an undulating series, those on the upper edge being elongated, and towards the interior portion of the shell unite with the undulations under them, and gradually supercede the furrows; from this point they by degrees recede from the margins, and on the two or three lower volutions, as well as the body, assume the form of oblong, obtuse, somewhat oblique knobs, nine or ten in number; whole surface covered by minute punctures disposed in lines, which diverge as they pass over the tubercles, and converge as they descend; aperture quadrate, terminating in a short, narrow, curved canal, its edge rising on the columella in the form of a plait; outer lip semicircular; columella with three strong, oblique plaits, and frequently provided with a ridge above, on the base of the body.

This shell is subject to great variety of aspect in its progress from the young to the adult condition, and varies in length and breadth in the full grown shell. It frequently exceeds a foot in length, the diameter of the body being one-fourth the length of the shell.

Found in the London Clay, mixed with Green Sand, under Stubbington Cliff.

2. C. GIGANTEUM.—The Gigantic Cerithium, pl. XXXVII. fig. 18.

Cerithium giganteum. Lamarck, Env. de Paris, p. 95. Knorr, III. pl. 107, fig. 1. Parkinson, Organic Rem. III. p. 71. Sowerby, Min. Conch. II. p. 199, pl. 188, fig. 2. *Terebra gigantea*, Fleming, Brit. An. p. 347.

Subulate; body short; spire very long, gradually tapering, consisting of numerous, fluted, minutely punctured volutions, which are separated by a shallow and narrow suture; superior portion of the volutions slightly nodulous, below which are six or seven equidistant, nearly obsolete transverse striæ; aperture ovate, contracted above and below, columella having four plaits.

This shell is said to attain the extraordinary length of *thirty* inches, while the diameter of the body volution is seven and a half inches.

3. C. GEMINATUM.—The Gemmed Cerithium, pl. XXXVII. fig. 22, 23.

Cerithium gemminatum. Sowerby, Min. Conch. II. p. 63, pl. 127, fig. 2, 2. Fleming, Brit. An. p. 357.

Elongated, turreted, conical, smooth; body and spire of nearly equal length; the latter consisting of ten or eleven turreted volutions, terminating in an acute apex; each volution provided with seven or eight pairs of longitudinally disposed tubercles, the upper pair the largest, particularly on the body volution, where it is frequently bifid; the body is also furnished with two rows of very small tubercles; two nearly obsolete, transverse carinæ uniting one pair of tubercles to the succeeding ones; aperture nearly orbicular, terminating in a slightly recurved canal; outer lip even; inner lip pretty broadly reflected on the columella.

Found in the London Clay at Barton Cliff.

4. C. FUNATUM.—The Corded Cerithium, pl. XXXVII. fig. 15, 16.

Cerithium funatum. Sowerby, Min. Conch. II. p. 64, pl. 128. Fleming, Brit. An. p. 358.

Conical, elongated, tapering gradually to a somewhat pointed apex; body about half the length of the spire, which consists of nine or ten volutions, each of which is furnished with two obtuse crenulated spiral ridges, thickened and tuberculate on their superior portion, which strongly resemble the twisting of a cord; body volution differing from the others, in being garnished with two additional transverse ridges; aperture somewhat quadrangular, terminating in a slightly twisted, short canal; base smooth; outer lip even on the edge; pillar lip reflected on the columella, narrowed at its connexion with the body, and widening towards the centre.

In some specimens the tubercles on the superior portion of the volutions have a coronated appearance.

Found in the Blue Clay, or Plastic Clay, above the indurated Marle, Castle-hill, near Newhaven, Sussex, and at Hordwell Cliff.

5. C. PYRAMIDALIS.—The Pyramidal Cerithium, pl. XXXVII. fig. 28, 29.

Cerithium pyramidalis. Sowerby, Min. Conch. II. p. 61, pl. 127, fig. 1, 1. *Cerithium hexagonum*, Lamarck, Env. de Paris, p. 79. *Murex hexagonus*, Chemnitz Conch. X. p. 261, pl. 162, fig. 1554-5. *Murex angolosus*, Brander, p. 24, fig. 46. Fleming, Brit. An. p. 397.

Pyramidal, turreted; body occupying about a third of the shell; spire consisting of nine or ten volutions, provided with six prominent, tuberculated ribs, all the volutions having three transverse, tuberculated, slightly arcuated, obtuse carinæ, each with three tubercles, corresponding to the number of carinæ which cross them; the upper portion of the body volution furnished with six compressed tubercles, and seven or eight carinæ, and is destitute of costæ on its lower portion; whole surface covered with minute, transverse or spiral striæ; aperture somewhat orbicular, terminating in a short, twisted canal; outer lip expanded, undulous, but smooth on the edge; pillar lip broadly reflected on the columella.

Found in the London Clay at Barton Cliff and Hordwell Cliff.

Genus XXVII.—NERINEA.—*Defrance.*

Shell turreted, oblong, subcanaliculated, with numerous volutions; aperture subquadrate; columella provided with a strong fold, also one on the outer lip, and one on the inner lip at the edge of the body.

1. N. GOODHALLII.—Goodhall's Nerinea, pl. XXXVII.* fig. 2, 3.

Nerinea Goodhallii. J. de C. Sowerby, in Geological Trans. 2nd Ser. IV. p. 348, pl. 23, fig. 11. G. B. Sowerby, Junr., Conch. Man. fig. 374.

Turreted, smooth; provided with numerous concave volutions, half as long as they are wide; interior with three plaits, one situate on the columella, one opposite it, and another above it within the volution; aperture rhomboidal.

Fig. 3 represents a section of the shell, which exhibits its generic character.

Found by Dr. Fitton in the Oxford Oolite.

Genus XXVIII.—POTAMIS.—*Brongniarte.*

Shell turreted; aperture almost semicircular, but destitute of a canal in the upper angle; base contracted into a short, slightly truncated beak; outer lip dilated, provided with a horny operculum, in the recent condition.

1. P. POLITUS.—The Polished Potamis, pl. XXXVII. fig. 21.

Cerithium politus. Sowerby, Min. Conch. IV. p. 50, pl. 339, fig. 3. *Cerithium melanoides*, Ibid. II. p. 109, pl. 147, fig. 6, 7. Fleming, Brit. An. p. 358.

Subulate, smooth, shining, turreted, with obscure longitudinal undulations; body not quite one-third the length of the shell; spire consisting of ten or eleven volutions, which are very convex in the centre, and separated by a very distinct suture; above the centre of the volutions is a spiral carina, which is beset with large, oblong tubercles, with two or three spiral tuberculated carina below, and usually with four on the body volution; aperture nearly circular, terminating in a very short, slightly curved canal.

Found in the Plastic Clay at Southfleet, Hamsay, near Croydon, Kent, and plentifully at Charlton.

2. P. DUBIUS.—The Doubtful Potamis, pl. XXXVII. fig. 20.

Cerithium dubium. Sowerby, Min. Conch. II. p. 108, pl. 147, fig. 5. Fleming, Brit. An. p. 358.

Subulate, turreted; body about a third of its whole length; spire consisting of ten volutions, with a spiral carina of sharp, compressed, ovate tubercles near the centre, and two series of lesser tubercles below; base with one or two belts of tubercles; aperture nearly circular, terminating in a very short, twisted canal.

In this species the tubercles are situate about one-third the length of the volutions from its upper edge; and differs from the *P. politus* in the tubercles being sharper.

Found in the London Clay at Stubbington.

3. P. FUNICULATUS.—The Rope-like Potamis, pl. XXXVII. fig. 35.

Cerithium funiculatum. Sowerby, Min. Conch. II. p. 107, pl. 147, fig. 1, 2. Fleming, Brit. An. p. 358.

Pyramidal, tapering abruptly; body about one-third the length of the shell; spire with ten or eleven volutions, flattened on the sides, and separated by a shallow suture, provided with four nearly equal, crenulated, rope-like carinæ, the upper and largest one situate near the margin of the volutions, the next one the smallest, the whole being nearly equidistant from each other; aperture almost circular, ending a very short, slightly twisted canal; margin of the outer lip plain.

The carinæ in this shell strongly resemble closely knotted ropes.

Found in the Plastic Clay at Plumstead.

4. P. INTERMEDIUS.—The Intermediate Potamis, pl. XXXVII. fig. 32.

Cerithium intermedium. Sowerby, Min. Conch. II. p. 107, pl. 147, fig. 3, 4. Fleming, Brit. An. p. 358.

Pyramidal; body about a third of the length of the shell, consisting of twelve or thirteen gradually diminishing, flat-sided volutions, their superior margins closely bounded by a thick, deeply crenulated carina, with four or five unequal, plain, or subtuberculated and irregular carina, crossed by strong and sharp lines of growth; several elevated ridges on the base of the body; aperture subovate, rounded above, and terminating below in a short, slightly bent canal.

Found plentifully in the Plastic Clay at Charlton.

This species may be distinguished from the *P. funiculatus* by the irregularity of its keels.

5. F. RIGIDUS.—The Rigid Potamis, pl. XXXVII. fig. 30, 31.

Potamides rigidus. Sowerby, Min. Conch. IV. p. 48, pl.

338. *Cerithium rigidum*, Fleming, Brit. An. p. 358. *Buccinum rigidum*, Brander, p. 43.

Conical, general surface smooth; body not a third the length of the shell; spire consisting of seven or eight gradually tapering, flattened volutions, separated by a very narrow and shallow suture, with a large, somewhat blunted carina towards their upper margin, or about one-third below the suture; the whole surface with many regular, curved grooves, or lines of growth; aperture oval, ending in an extremely short, almost straight, very narrow canal, which may be regarded as a mere sinus; outer lip greatly expanded, and even on the margin; above the carina, the grooves are sometimes decussated.

This shell differs much in the young and adult conditions; in the former it is nearly quite smooth, and terminates in an acute point, while in the adult the apex is generally decorticated.

Found in the London Clay at Barton Cliff, Hampshire.

6. P. CONCAVUS.—The Concave Potamis, pl. XXXVII. fig. 34.

Potamides concavus. Sowerby, Min. Conch. IV. p. 50, pl. 339, fig. 1, 2. *Cerithium concavum*, Fleming, Brit. An. p. 358.

Shell subulately conical, with transverse, shallow striæ; body nearly equal to the spire in length; spire consisting of nine or ten slightly raised volutions, separated by a shallow suture, and are a little concave towards their superior portion, with longitudinal, obscure, arcuated, irregular costæ, and a slight eminence above the middle of each; aperture nearly circular, notched at the base, terminating in a short canal, and having a slight groove in the upper angle; outer lip somewhat enlarged below, and a little inflected; columella smooth; base convex, provided with one or two granulated carinæ, and somewhat recurved.

Found in the London Clay at Barton Cliff, and at Headon Hill, Isle of Wight.

Distinguished from *P. Melanoides* by the concavity on the volutions and the curvature of the beak.

7. P. CINCTUS.—The Girdled Potamis, pl. XXXVII. fig. 26.

Potamides cinctus. Sowerby, Min. Conch. IV. p. 51, pl. 340, fig. 1. *Cerithium cinctum*, Lamarck, Env. de Paris, p. 84. *Terebra cinctus*, Fleming, Brit. An. p. 347.

Shell subulato-conical; body short; spire very long, tapering, consisting of ten or eleven somewhat inflated, and well defined volutions, terminating in an obtuse apex, each volution furnished with three belts of nearly equal granules, and two carinæ near the margin of the base, which is somewhat flattened; aperture subrotund, terminating in a longish canal, obtuse at its termination; columella provided with a single plait; outer lip pretty long, and thin.

Found in the Upper Marine formation at Headon Hill, and also in the same formation, Isle of Wight.

It may be distinguished from the *P. Lamarckii* in its beak being longer, and in the plait upon the columella.

8. P. MARGARITACEUS.—The Pearly Potamis, pl. XXXVII. fig. 33.

Potamides margaritaceus. Sowerby, Min. Conch. IV. p. 51, pl. 339, fig. 4. *Murex margaritaceus*, Brocci, p. 447, pl. 9, fig. 4. *Cerithium margaritaceum*, Fleming, Brit. An. p. 358.

Conical, turreted; body short, equal to a third of the length of the shell; spire long, consisting of ten or eleven moderately ventricose volutions, well defined by the suture, each furnished with five spiral bands of elevated bead-like tubercles, the first and fourth bands being minute, and the fifth larger than the remaining two, placed near the upper edge of the volutions, producing a subcoronated aspect; these numerous granules giving the surface a rough appearance; aperture subovate, oblique, narrowed to a point above, and terminating below in a rounded, short, slightly oblique canal; outer lip expanded, slightly inflected and plicated, with two or three furrows within, on its superior part; inner lip smooth, and broadly reflected over the columella, which is recurved and obtusely carinated.

Found in the Upper Marine formation, Isle of Wight.

9. P. PLICATUS.—The Wrinkled Potamis, pl. XXXVII. fig. 24.

Potamides plicatus. Sowerby, Min. Conch. IV. p. 52, pl. 340, fig. 2. *Cerithium plicatum*, Lamarck, Env. de Paris, p. 84. Fleming, Brit. An. p. 358.

Shell subulate, conical, or subcylindrical; body large, ventricose, not a third of its length; spire consisting of ten or eleven rounded and rapidly diminishing volutions; provided with longitudinal plaits, and three or four spiral sulci; these crossing the plaits produce arcuated rows of obtuse tubercles, the plaits being deepest on the superior portion of each volution, gives the convex base the appearance of being less regularly tuberculate; aperture subovate, a little oblique, somewhat contracted above into a canal, and terminating below in a rather wide, slightly twisted canal; outer lip crenulated; pillar lip smooth, and rather broadly reflected on the columella.

Found in the Upper Marine formation, Isle of Wight.

10. P. DUPLEX.—The Doubled Potamis, pl. XXXVII. fig. 19.

Potamides duplex. Sowerby, Min. Conch. IV. p. 52. pl. 340, fig. 3. *Cerithium duplex*, Fleming, Brit. An. p. 358.

Shell subulate, conical; body short, not a third of its entire length; spire consisting of eleven or twelve rather flat and gradually tapering volutions, separated by a narrow, ill defined suture, the upper ones being the largest and ornamented with two spiral belts of tubercles, and the lower ones with three; base of the body flat, with two carinated ridges near its margin; aperture small, nearly round, terminating in a slightly twisted and oblique, short canal, with the inner ridge rising upon the columalla; outer lip a little waved.

This shell is nearly allied to *P. cinctus*, but may be distinguished from it by having only two rows of tubercles upon the upper volutions, and also in their being so arranged as to give the spire the appearance of being nine-sided. The suture line is so indistinct, that the separations of the volutions can only be determined by the larger girdle of tubercles near their upper edge.

Found in the Upper Marine formation, Isle of Wight.

11. P. ACUTUS.—The Acute Potamis, pl. XXXVII. fig. 27.

Potamides acutus. Sowerby, Min. Conch. IV. p. 53, pl. 341, fig. 2. *Potamidum acutum*, Fleming, Brit. An. p. 358.

Shell conical, turreted; body nearly equal to half its length; spire consisting of seven or eight inflated and deeply defined, acutely bicarinated volutions, terminating in a sharp apex; base convex, bistriated; aperture nearly orbicular, terminating in a short, narrow, and slightly curved canal; outer lip but little bent, and inflected.

The shell is smooth, except where the sharp carinæ appear: its length being only about half an inch, and its diameter half its length.

Found in the Lower Fresh Water formation, Isle of Wight.

12. P. VENTRICOSUS.—The Bellied Potamis, pl. XXXVII. fig. 25.

Potamides ventricosus. Sowerby, Min. Conch. IV. p. 53, pl. 341, fig. 1. *Potamidum ventricosum*, Fleming, Brit. An. p. 358.

Shell conical, turreted, body a third of its length; spire consisting of nine or ten ventricose, longitudinally ribbed, and sprirally striated, deeply divided volutions, each with two or three strong striæ, which nearly divide the ribs into three tubercles; base convex, with two additional striæ; aperture orbicular, destitute of an internal furrow on its upper part, and terminating below in a very short, slightly curved canal; outer lip but little twisted, and even on the edge; inner lip somewhat reflected on the columella, and smooth.

Found in the Fresh Water formation at Cowes, Isle of Wight.

SECTION II.—PHYTIPHAGA.

Shell with the aperture entire, and destitute of a notch or canal.

FAMILY I.—TURBINACEA.

Shell turreted, or conical, with an oblong or rounded aperture, not expanding, and the margin disunited.

GENUS XXIX.—TURRITELLA.—*Lamarck.*

Shell turreted; spire greatly elongated, consisting of many volutions; body small in proportion to the spire; aperture orbicular or subangulated, entire, its margin disunited above, but not reflected; outer and inner lips thin, with a slight sinus, situated generally near the upper part, well marked in some species; a more or less distinct sinus at the inferior and inner part of the lip, which is here very slightly reflected, but not turned back; aperture furnished with a horny operculum.

1. T. CONOIDEA.—The Conical Turritella, pl. XXXVIII. fig. 23.

Turritella conoidea. Sowerby, Min. Conch. I. p. 109, pl. 51, fig. 1, 4, 5. Fleming, Brit. An. p. 304.

Shell greatly elongated, taper; body occupying about a fourth of the length; spire very long, consisting of sixteen or seventeen almost flat-sided volutions, slightly projecting over each other at their base, and separated by an angular spiral groove; whole shell beset with regular spiral striæ, seven or more on each volution, with intermediate minute ones, all of which are acutely crenulated; aperture nearly circular, slightly contracted above; outer lip plain, simple; no reflection of the inner lip upon the columella.

Found in the London Clay at Highgate; also at Stubbington, and in the Crag at Holywell.

2. T. EDITA.—The Produced Turritella, pl. XXXVIII. fig. 21.

Turritella edita. Sowerby, Min. Conch. I. p. 111, pl. 51, fig. 7. Fleming, Brit. An. p. 304. *Turbo editus*, Brander, pl. 3, fig. 48.

Shell greatly elongated; body somewhat more than a fourth the length of the shell; spire very long, consisting of eighteen or nineteen deeply divided volutions, somewhat flattened on the sides, the lower parts ventricose, with numerous nearly obsolete spiral striæ; aperture circular; outer lip plain.

Found in the London Clay.

3. T. SULCATA.—The Furrowed Turritella, pl. XXXVIII. fig. 10.

Melania sulcata. Sowerby, Min. Conch. I. p. 85, pl. 39, middle fig. Fleming, Brit. An. p. 317.

Shell rather strong, much elongated; body very short, little more than a seventh of the whole; spire very long, consisting of sixteen or seventeen ventricose, spirally striated volutions, separated by a well defined, deep, concave sulcus, and having a marginated ridge along the superior portions of the volutions.

Found in the London Clay at Stubbington Cliffs.

4. T. ELONGATA. — The Lengthened Turritella, pl. XXXVIII. fig. 1.

Turritella elongata. Sowerby, Min. Conch. I. p. 110, pl. 51, fig. 2. Fleming, Brit. An. p. 304.

Shell greatly elongated; body nearly a third of the total length; spire consisting of thirteen or fourteen lengthened volutions, separated by a well defined suture, the base of each volution projecting beyond that below it, upper portion of the volutions somewhat rounded, flattened in the middle, the lower portion rather angular and projecting; whole shell covered with numerous striæ, more remote towards the middle of the volutions, and when viewed through a lens, presents a regularly crenulated appearance, and with fine intermediate striæ.

Found in the London Clay at Barton Cliff, and Christchurch, Hampshire.

5. T. BREVIS.—The Short Turritella, pl. XXXVIII. fig. 3.

Turritella brevis. Sowerby, Min. Conch. I. p. 110, pl. 51, fig. 3. Fleming, Brit. An. p. 304.

Shell elongated, body equal to a third of its length; spire consisting of nine or ten well defined volutions, their superior and lower margins equally rounded, and furnished with ten or twelve spiral, finely crenulated striæ. Length one inch.

Found in the London Clay at Barton Cliff, Hampshire.

6. T. INCRASSATA. — The Thickened Turritella, pl. XXXVIII. fig. 28.

Turritella incrassata. Sowerby, Min. Conch. I. p. 111, pl. 51, fig. 6. Fleming, Brit. An. p. 304.

Shell strong, greatly elongated; body not quite a third of its total length; spire consisting of about fourteen volutions, with flattened sides, their lower parts angular, terminating in an acute apex, with three elevated, nearly equidistant, smooth, spiral striæ, the two lower ones more elevated than the superior one, that in the centre being the most prominent; opposite to which, on the outer lip, in full grown shells, it is provided with an internal eminence, which produces a thickness in the outer lip in its centre; inner lip reflected on the columella, behind

which the base is provided with a deep umbilicus, which is nearly concealed by the reflection of the columellar lip.

Found in the Crag at Holywell.

7. T. CINGENDA.—The Girdled Turritella, pl. XXXVIII. fig. 9.

Turritella cingenda. Sowerby, Min. Conch. V. p. 160, pl. 499, fig. 3. Phillips, Geo. of Yorkshire, I. p. 129, pl. 11, fig. 28. Fleming, Brit. An. p. 304.

Shell subulate; body not a third of the total length; spire consisting of about fourteen volutions, with concave sides, and each with a crenated girdle upon their lower edges; whole shell covered with distinct, but fine, spiral striæ, which are closer in the middle of each volution; the superior volutions of the spire faintly ribbed, but these become obsolete as they descend, until they totally disappear; base flat, with a rounded edge, from which the girdle emanates that winds around the spire.

Found in the Shale, Robin Hood's Bay, near Scarborough; and common in the Inferior Oolite.

8. T. MURICATA.—The Prickly Turritella, pl. XXXVIII. fig. 6.

Turritella muricata. Sowerby, Min. Conch. V. p. 159, pl. 499, fig. 1, 2. Fleming, Brit. An. p. 304. Phillips, Geo. of Yorkshire, I. p. 102, pl. 4, fig. 8.

Shell subulate; body more than a third of its length; spire consisting of ten or eleven rounded, and deeply separated volutions, with their upper edges flattened, terminating in an acute apex; whole surface with strong, rough, muricated spiral striæ, the spinous murications being most prominent on the edges of the volutions, and also provided with longitudinal arcuated ribs; base convex, with elevated sharp striæ, but destitute of spines. Length nearly an inch.

Found in the Coral Rag, and Shale of Robin Hood's Bay, and also at Steeple Ashton; Seamar, Malton, and Pickering, Yorkshire.

9. T. ABBREVIATA. — The Shortened Turritella, pl. XXXVIII. fig. 13.

Turritella abbreviata. Sowerby, Min. Conch. VI. p. 125, pl. 565, fig. 2.

Shell very short, conical, acute; body large, occupying nearly half the length of the shell; spire consisting of seven volutions, each of their edges defined by a large, obscurely granulated ridge, and two small close-set ones wind round the centre from the base to the apex; the base produced, and provided with a single ridge.

Found in the decomposing Mountain Limestone, Bradley, near Newton Bushel, Devonshire.

10. T. COSTATA.—The Ribbed Turritella, pl. XXXVIII. fig. 24.

Shell subulate, much elongated, and acute; body short, occupying about a fourth of the shell; spire abruptly tapering, consisting of fifteen or sixteen well divided volutions, at the base of each a thread-like, carinated spiral ridge strongly marks the separation of the volutions; whole surface covered with longitudinal costæ, which are crossed by numerous fine striæ, giving the shell a rough appearance; base flat, with a carinated margin.

Found in the Whetstone pits, Blackdown.

11. T. EXCAVATA. — The Excavated Turritella, pl. XXXVIII. fig. 8.

Turritella excavata. Sowerby, Min. Conch. VI. p. 126, pl. 565, fig. 5. *Cerithium excavatum,* Cuvier and Brongniarte, Env. de Paris, p. 399, pl. 9, fig. 10.

Shell subulate, short, smooth; body short, occupying about a third of the shell; spire with eleven or twelve volutions, which are concave in the centre, with prominent edges both above and below; base convex.

Full grown shells have their lower volutions with a ridge in the middle.

Found in the Limestone at Chilmark, Tisbury, Wiltshire.

12. T. GRANULATA. — The Granulated Turritella, pl. XXXVIII. fig. 18.

Turritella granulata. Sowerby, Min. Conch. VI. p. 126, pl. 565, fig. 1. *Cerithium turritellum,* Parkinson, Org. Rem. III. p. 71.

Shell subulate, tapering acutely; body occupying more than a third of the length of the shell; spire consisting of about fourteen slightly inflated volutions, terminating in an acute apex, the upper edges of the volutions with a pretty broad, flat spiral band; whole shell covered with spiral striæ and numerous nearly regular granules, but with three or four of them somewhat larger than the others.

Found in the Whetstone pits at Blackdown.

13. T. TEREBRA.—The Wimble Turritella, pl. XXXVIII. fig. 27.

Turritella Terebra. Lamarck, Hist. Nat. VII. p. 56. Sowerby, Min. Conch. VI. p. 126, pl. 565, fig. 3.

Shell turreted, much elongated; body short, about a third the length of the shell; spire consisting of thirteen or fourteen ventricose volutions, and terminating in an acute apex; whole shell covered with numerous, almost equal, spiral sulci.

This shell is stronger than the recent species of the same name, but differs in no other particular.

Found in the Suffolk Crag, and has been met with in a clay pit at Tottenhill.

14. T. PHILLIPSII.—Phillips's Turritella, pl. XXXVIII. fig. 4.

Turritella? Phillips, Geo. of Yorkshire, p. 94, pl. 2, fig. 38.

Shell subulate, smooth; body occupying about a fifth of the entire shell; spire consisting of seven narrow, somewhat ventricose and deeply divided volutions, terminating in an acute apex.

Found in the Speeton Clay at Speeton.

15. T. QUADRIVITTATA.—The Four-banded Turritella, pl. XXXVIII. fig. 16.

Turritella quadrivittata. Phillips, Geo. of Yorkshire, I. p. 129, pl. 11, fig. 23.

Shell elongated; body occupying nearly half its length; spire consisting of six ventricose, deeply divided volutions, crossed by numerous strong, slightly muricated spiral striæ, and terminating in an acute apex; outer lip thin; inner lip slightly reflected on the columella.

Found in the Blue Wick of the Inferior Oolite.

This shell feels rough to the touch, in consequence of its muricated striæ.

16. T. TENUISTRIA. — The Thin-striated Turritella, pl. XXXVIII. fig. 11.

Turritella tenuistria. Phillips, Geo. of Yorkshire, II. p. 229, pl. 16, fig. 11.

Shell conical; volutions imbricated, flat-sided, broad, plane, angular below, and furnished with rather wide spiral striæ, and oblique, distant, longitudinal striæ.

Found in the Mountain Limestone of Yorkshire.

17. T. SPIRALIS.—The Spiral Turritella, pl. XXXVIII. fig. 17.

Turritella spiralis. Phillips, Geo. of Yorkshire, II. p. 229, pl. 16, fig. 5.

Obliquely conical; with imbricated, broad volutions, their lower edges projecting over the suture; whole surface covered with spiral, wide, equidistant striæ, and oblique, longitudinal striæ, producing a fine reticulated appearance.

Found in the Mountain Limestone of Yorkshire.

18. T. SUTURALIS.—The Broad-sutured Turritella, pl. XXXVIII. fig. 2.

Turritella suturalis. Phillips, Geo. of Yorkshire, II. p. 229, pl. 16, fig. 6.

Shell conical, smooth; with broad volutions, which are projecting at the edges of the suture, and concave below their sutural edges.

Phillips mentions one specimen with the sutural and lower edges of a milk-white colour.

Found in the Mountain Limestone at Bolland and Kirby Lonsdale.

19. T. TRISERIALIS.—The Three-notched Turritella, pl. XXXVIII. fig. 5.

Turritella triserialis. Phillips, Geo. of Yorkshire, II. p. 229, pl. 16, fig. 25.

Shell elongated; with numerous ventricose volutions, deeply divided by the sutural line, each furnished with three medial, one sutural, and one inferior spiral granulated striæ.

Found in the Mountain Limestone, Otturburn, Northumberland.

20. T. TÆNIATA.—The Worm-like Turritella, pl. XXXVIII. fig. 7.

Turritella tæniata. Phillips, Geo. of Yorkshire, II. p. 229, pl. 16, fig. 7.

Shell turreted, elongated; with broad convex volutions; provided with a flat mesial band, and wide flexuous spiral striæ.

Found in the Mountain Limestone of Yorkshire.

21. T. ACICULA.—The Sharp Turritella,

Turritella acicula. Phillips, Geo. of Yorkshire, II. p. 229.

"Very elongate; volutions with three medial spiral, granulated lines, the upper one set on an angle."

Found in the Mountain Limestone, Otterburn, Northumberland.

22. T. URII.—Ure's Turritella, pl. XXXVII,* fig. 4.

Turritella Urii. Fleming, Brit. An. p. 305. Ure's History of Rutherglen, p. 308, pl. 14, fig. 7.

"Elongated, striated transversely."

Found in the Limestone of the Coal formation, at Rutherglen, Renfrewshire.

23. T. ELONGATA.—The Elongated Turritella, pl. XXXVII. fig. 5.

Turritella elongata. Fleming, Brit. An. p. 305. Ure's History of Rutherglen, p. 308, pl. 14, fig. 11.

"Elongated, striated spirally."

Found in the Limestone of the Coal formation, Rutherglen, Renfrewshire.

GENUS XXX.—PHASIANELLA.—*Lamarck.*

Shell oblong, smooth; spire regular, somewhat acuminated; volutions rather ventricose, but the suture not well defined; aperture oblong, entire, contracted and acutely angulated at its upper part, and rounded at its base; outer lip not continuous with the pillar lip above; inner lip white and thickened, especially at the base of the columella; operculum testaceous, thick, spiral, externally convex, with its spire in the inner side, to which the foot of the animal is adherent.

1. P. ANGULOSA.—The Cornered Phasianella, pl. XXXVIII. fig. 34.

Phasianella angulosa. Sowerby, Min. Conch. II. p. 168, pl. 175, fig. 2. Fleming, Brit. An. p. 302.

Shell conical, smooth; body large; spire short, abruptly tapering, and consisting of five or six slightly raised and somewhat angulated, or subcarinated, volutions; aperture nearly circular; outer lip plain, and rather sharp on the edge.

Found in the Limestone at Shalcomb, Isle of Wight.

2. P. ORBICULARIS.—The Orbicular Phasianella, pl. XXXVIII. fig. 29.

Phasianella orbicularis. Sowerby, Min. Conch. II. p. 167, pl. 175, fig. 1. Fleming, Brit. An. p. 302.

Shell conical, acute, smooth; body large; spire small, consisting of five rather ventricose volutions, terminating in an acute apex, and exhibiting a few longitudinal, somewhat oblique lines of growth, and some spiral striæ upon the superior volutions; aperture nearly orbicular.

Found in the Fresh Water Limestone at Shalcomb, Isle of Wight.

3. P. MINUTA.—The Minute Phasianella, pl. XXXVIII. fig. 35, 36.

Phasianella minuta. Sowerby, Min. Conch. II. p. 168, pl. 175, fig. 3. Fleming, Brit. An. p. 302.

Shell elongated, smooth; body large, ventricose; spire short, consisting of four rather inflated, somewhat squared, and deeply divided volutions, a little flattened above, terminating in an acute apex; aperture oblong.

Found in the Fresh Water Limestone, Isle of Wight.

4. P. CINCTA.—The Girdled Phasianella, pl. XXXVIII. fig. 38.

Phasianella cincta. Phillips, Geo. of Yorkshire, I. p. 123, pl. 9, fig. 29.

Shell conical, smooth; body somewhat longer than the spire, and provided with a broad, elevated spiral girdle, situate towards the base of the body; spire consisting of five narrow, slightly inflated volutions, terminating in an obtuse apex.

Found in the Grey Limestone, or Cave Oolite, at Cloughton and Brandsby, Yorkshire.

5. P. PUSILLA.—The Slender Phasianella, pl. XXXVII.* fig. 6.

Phasianella pusilla. Sowerby, Geo. Trans. IV. 2nd series, p. 343, pl. 18, fig. 13.

Shell elliptical, smooth; body large, being more than double the length of the spire, which consists of four nearly flat, gradually tapering volutions, terminating in a somewhat obtuse

apex; aperture ovate, rounded beneath, and contracted and pointed above; outer lip thin, even; pillar lip slightly reflected at the base.

Found by Dr. Fitton in the Green Sand of Blackdown.

6. P. STRIATA.—The Striated Phasianella, pl. XXXVII.* fig. 9, 10.

Phasianella striata. Sowerby, Geo. Trans. IV. 2nd series, p. 343, pl. 18, fig. 15.

Shell elliptical; body very large in proportion to the spire, which is very short, consisting of four abruptly tapering, slightly inflated volutions, terminating in an acute apex, and occupying not more than a fifth of the total length of the shell; entire surface covered with strong, regular spiral striæ; aperture oval, rounded below, and acute above; outer lip plain, and thin; inner lip slightly reflected on the columella.

Found by Dr. Fitton in the Green Sand of Blackdown.

7. P. FORMOSA. — The Handsome Phasianella, pl. XXXVII.* fig. 7, 8.

Phasianella formosa. Sowerby, Geo. Trans. IV. 2nd series, p. 343, pl. 18, fig. 14.

Shell oblong-oval, subcylindrical, smooth; body very large; spire very small, occupying about a fifth of the entire length of the shell, consisting of four, not very oblique, slightly inflated volutions, and well defined by the suture line; base with a few striæ, conforming to the outline of the pillar lip; aperture elliptical, slightly contracted below, and acutely pointed above; outer lip thin, and even; pillar lip slightly reflected on the columella.

Found by Dr. Fitton in the Green Sand of Blackdown.

Fig. 7 is the natural size of the species.

GENUS XXXI.—TURBO.—*Linnæus.*

Shell turbinated, spiral, and solid; spire most commonly of mediocre length, sometimes very short; aperture nearly circular, but sometimes a little transverse and slightly trapizoidal, with the outer lip acute, but not reflected, and subeffuse at the base; operculum solid, testaceous, covered internally with a spiral horny plate, and extremely variable in its aspect.

1. T. CARINATUS.—The Keeled Turbo, pl. XXXVIII. fig. 30 and 37.

Turbo carinatus. Sowerby, Min. Conch. III. p. 69, pl. 240, fig. 3. Fleming, Brit. An. p. 301.

Shell conical, oblong-ovate; body large; spire rather short, consisting of five or six deeply divided volutions; whole shell covered with many strong, spiral, crenulated ridges; the centre volution provided with a prominent, thick spiral carina; aperture slightly ovate.

Found in the Green Sand.

2. T. MURICATUS.—The Prickly Turbo, pl. XXXVIII. fig. 41, 42.

Turbo muricatus. Sowerby, Min. Conch. III. p. 70, pl. 240, fig. 4. *Turbo*, Smith, Strat. Syst. p. 49. Strata identified, p. 20. Coral Rag, fig. 1. Phillips, Geo. of Yorkshire, I. p. 102, pl. 4, fig. 14.

Shell short, subconic; body large, about double the length of the spire, with four moderately ventricose volutions, which suddenly decrease in size, and terminate in a sharp apex; body considerably inflated; surface invested with many spiral, muricated, regular ridges, which are equal in breadth to the intermediate spaces; the spines are short, semicylindrical, and hollow, forming a beautiful fimbriated appearance on the margin of the outer lip, which is plaited internally; inner lip reflected on the columella, with a longitudinal indentation, or subumbilicus, behind it, at the base of the shell.

Found in the Coral Rag at Steeple Ashton.

3. T. ORNATUS.—The Embellished Turbo, pl. XXXVIII. fig. 43, 44.

Turbo ornatus. Millers, MSS. Sowerby, Min. Conch. III. p. 69, pl. 240, fig. 1, 2. Fleming, Brit. An. p. 301.

Shell conical, subturreted; body and spire of nearly equal length; the latter consisting of four or five volutions, terminating in a rather obtuse apex; whole shell longitudinally striated; each volution furnished with three or four strong, acutely tuberculated spiral ribs, the middle one being considerably larger than the others; tubercles a little flattened, and connected, in transverse ridges, by narrow carinæ; base provided with three or four small concentric ridges, with blunt tubercles; aperture entire, and nearly orbicular.

Found in the Lower Oolite at Dundry.

4. T. MONILIFERUS.—The Collared Turbo, pl. XXXVIII. fig. 48, 49.

Turbo moniliferus. Sowerby, Min. Conch. IV. p. 131, pl. 395, fig. 1. Fleming, Brit. An. p. 301.

Shell conical, short; body and spire of nearly equal length; the latter consisting of five slightly inflated volutions, separated by a channelled suture; each volution provided with a granulated fillet on its superior margin, and the spire with very small granules; whole surface furnished with many wide, equidistant, prominent striæ; with a prominent base, which is simply and finely striated; provided with a large, wrinkled umbilicus, which is granulated within, and undulated on its edge; aperture nearly orbicular.

Found in the Green Sand at Blackdown.

5. T. SULCATUS.—The Ridged Turbo, pl. XXXVIII. fig. 31, 33.

Turbo sulcatus. Pilkinton, Linn. Trans. VII. p. 118, pl. 11, fig. 9. Fleming, Brit. An. p. 301. *Turbo sculptus*, Sowerby, Min. Conch. IV. p. 132, pl. 395, fig. 2.

Shell conical; body somewhat longer than the spire, which consists of four abruptly tapering, inflated volutions, terminating in an acute apex, and deeply divided by the canaliculate sutural line; whole shell invested by strong, deep spiral grooves, crossed by minute longitudinal striæ; base rounded, provided with a small umbilicus, near to which is a recurved expansion; aperture nearly circular, slightly angulated on the upper part, corresponding with the upper edges of the volutions; outer lip thin, and slightly serrated on the margin; inner lip a little reflected on the columella, narrow above, and becoming broader as it descends.

Found in the London Clay at Barton Cliff.

6. T. CONICUS.—The Conical Turbo, pl. XXXVIII. fig. 50, 51.

Turbo conicus. Sowerby, Min. Conch. V. p. 45, pl. 433, fig. 1. Fleming, Brit. An. p. 301.

Shell ovately-conical; body large, ventricose; spire short, consisting of four rapidly decreasing ventricose volutions, deeply separated by the line of the suture, slightly depressed on their upper parts, and terminating in a very acute apex; whole shell invested by numerous, very fine spiral striæ, crossed by distant, very slender lines of growth; base rounded, and provided with a small and deep umbilicus; aperture nearly circular, and slightly contracted above; outer lip thin, and even; pillar lip not reflected on the columella.

Found in the Green Sand of Blackdown.

7. T. ROTUNDATUS.—The Rounded Turbo, pl. XXXVIII. fig. 39, 40.

Turbo rotundatus. Sowerby, Min. Conch. V. p. 45, pl. 433, fig. 2. Fleming, Brit. An. p. 301.

Shell ovate, subglobose, smooth, with a few longitudinal, distant, nearly obsolete lines of growth; body very large, ventricose; spire short, consisting of five inflated, rapidly decreasing volutions, terminating in a sharp apex; base moderately rounded, and provided with a narrow umbilicus; aperture large, suborbicular, oblique, somewhat contracted above, and equal to about half the length of the shell; outer lip plain; inner lip slightly reflected on the columella.

Found in the Green Sand of Blackdown.

8. T. OBTUSUS.—The Obtuse Turbo, pl. XXXVIII. fig. 45, 46.

Turbo obtusus. Sowerby, Min. Conch. VI. p. 97, pl. 551, fig. 2.

Shell conical, short; body occupying more than half its length; spire consisting of three gradually diminishing volutions, with somewhat flattened sides, and terminating in an obtuse apex; base convex, and solid; aperture suborbicular, slightly oblique; whole surface covered with numerous fine striæ, exceeding twelve upon each volution, and crossed by very fine, longitudinal, nearly invisible lines of growth.

Found in the London Clay at Ancliffe.

9. T. TIARA.—The Tiara Turbo, pl. XXXVIII. fig. 32.

Turbo Tiara. Sowerby, Min. Conch. VI. p. 97, pl. 551, fig. 1.

Shell short, conical, turban-shaped; volutions few, depressed, flattened on the sides, and each crowned by about twenty large, somewhat obliquely elongated knobs; body about half its length; spire consisting of six volutions, terminating in a flattened apex; base convex, and umbilicated.

In the very young specimens the volutions are divested of the knobs, as are also the superior volutions in the adult shell.

Found in the Mountain Limestone, near Preston, Lancashire.

10. T. BICOSTATUS. — The Double-ribbed Turbo, pl. XXXVII.* fig. 11, 12, 13.

Shell short, conical; volutions depressed; body very large; spire very short, consisting of two volutions; body girdled by two strong, elevated, thick spiral ribs, the lower one near the base, and the upper one on the superior portion of the body; top of volutions hollow; the inferior rib terminates above the outer lip, and the superior one loses itself in the lower volution of the spire; aperture suborbicular, subtransverse, and very slightly contracted above; outer lip thin; inner lip slightly reflected on the columella, and widening as it descends; whole shell covered with distant, strong, irregular, waved, longitudinal wrinkles.

Found by Mr. Samuel Gibson, of Hebden Bridge, in the Mountain Limestone at Witherell, near Clitheroe; and is in his cabinet.

11. T. PULCHERRIMUS. — The Splendid Turbo, pl. XXXVII.* fig. 14.

Turbo? pulcherrimus. Phillips, Geo. of Yorkshire, I. p. 94, pl. 2, fig. 35.

Shell pyramidal; body considerably shorter than the spire, which consists of five gradually tapering volutions, with their sides somewhat flattened, terminating in an acute apex; base rounded; whole shell covered with very fine, regular spiral striæ; the lower and superior portions of the volutions provided with longitudinal ribs; the most prominent part of the body is girdled by an elevated zone, consisting of small, regularly set tubercles; and the whole base covered by a series of very small tuberculate girdles.

This beautiful species was found by Mr. Bean, of Scarborough, in the Speeton Clay at Speeton.

12. T. FUNICULATUS. — The Rope-girdled Turbo, pl. XXXVIII. fig. 59.

Turbo funiculatus. Phillips, Geo. of Yorkshire, p. 102, pl. 4, fig. 11.

Shell short, subconic; body large; spire small, with few volutions; body provided with six or seven strong, elevated, transverse, rope-like ribs; base slightly flattened.

Found in the Coralline Oolite at Malton and Leamer.

13. T. SULCOSTOMUS.—The Sulcated Turbo, pl. XXXVIII. fig. 60.

Turbo sulcostomus. Phillips, Geo. of Yorkshire, I. p. 112, pl. 6, fig. 10.

Shell subconic; body large; spire small, consisting of three smooth ventricose volutions, terminating in an obtuse apex; body furnished with three or four sharp spiral costæ; outer lip grooved internally.

Found in the Kelloways Rock at Hackness, South Cave.

14. T. LÆVIGATUS.—The Smooth Turbo, pl. XXXVIII. fig. 52.

Turbo lævigatus. Phillips, Geo. of Yorkshire, I. p. 129, pl. 11, fig. 31.

Shell subconic, smooth; body large; spire small, consisting of four abruptly tapering, inflated volutions, terminating in an acute apex; surface with very indistinct, longitudinal lines of growth.

Found in the Blue Vick of the Inferior Oolite.

15. T. UNDULATUS.—The Waved Turbo, pl. XXXVIII. fig. 47.

Turbo undulatus. Phillips, Geo. of Yorkshire, p. 134, pl. 13, fig. 18.

Shell subconic; body large; spire small, consisting of three or four rapidly diminishing, inflated volutions; whole shell covered with spiral, undulating, strong striæ, crossed by a few indistinct and broken lines of growth.

Found in the Marlstone, Lias formation, Yorkshire.

16. T. MANCUNIENSIS. — The Manchester Turbo, pl. XXXVII.* fig. 15, 16.

Turbo Mancuniensis. Brown, Transactions of the Manchester Geological Society, I. p. 63, pl. 6, fig. 1, 2.

Shell ovate; body large; spire short, consisting of three ventricose volutions, separated by a channelled suture; body provided with many prominent, spiral ribs; three on the body above, with five or six concentric ones beneath on the base, and two on each of the volutions of the spire; these are crossed by numerous longitudinal wrinkles; aperture large, orbicular; outer lip expanded, smooth; pillar lip with an oblong umbilicus behind it. Length upwards of a quarter of an inch; body nearly the same in diameter.

Found in the Red Magnesian Marl at Collyhurst, Manchester, by E. W. Binney, Esq., and is in the museum of the Manchester Geological Society.

17. T. MINUTUS.—The Minute Turbo, pl. XXXVII.* fig. 17, 18.

Turbo minutus. Brown, Trans. Manchester Geo. Soc. I. p. 63, pl. 6, fig. 4, 5.

Shell slightly ovate; body very large; spire very small, consisting of three abruptly diminishing volutions, flattened above, terminating in an obtuse apex, and separated by a somewhat grooved suture; aperture orbicular; outer lip slightly notched on the edge, produced by the projecting ribs; whole shell covered with strong, slightly undulous transverse costæ, two on the superior portion of the body, the lower one so much larger than the others, that it produces a carinated appearance, and with four or five concentric ribs below on the base, which is flattened; pillar lip with an umbilicus behind.

Found in the Red Magnesian Marl at Collyhurst, Manchester, by E. W. Binney, Esq., and is in the Manchester Geological Society's museum.

GENUS XXXII.—LITTORINA.—*Ferussac.*

Shell turbinated, generally ovate, or oblong-ovate, for the most part thick and solid; spire in general gradually acuminated and subturreted, in some species very short and obtuse at the apex; aperture round, or slightly elliptical, somewhat acute above in some species; outer lip, or peritreme, sharp-edged; columella somewhat flattened; operculum horny, spiral, consisting of a few rapidly enlarging volutions, and furnished with a central nucleus.

1. L. BARTONENSIS.—The Barton Littorina, pl. XXXVIII. fig. 54, 55.

Turbo littoreus. Sowerby, Min. Conch. I. p. 163, pl. 71, fig. 1, two upper figures.

Shell oblong-ovate, thick; body large; spire small, consisting of three moderately inflated, well defined volutions, with their upper parts nearly flat, terminating in an obtuse apex; whole surface covered with fine spiral, somewhat irregular striæ; aperture subovate, rounded beneath, and slightly contracted above; outer lip even at the edge, considerably thickened within; pillar lip broadly reflected on the columella.

This shell differs from the *L. communis* in being much more erect, in the volutions being much flatter on the sides, and in its obtuse apex.

Found in the Crag at Bramerton Hill, near Norwich. It is often procured with the coloured bands quite distinct.

2. L. COMMUNIS.—The Common Littorina, pl. XXXVIII. fig. 56.

Turbo littoreus. Sowerby, Min. Conch. I. p. 163, pl. 71, lower figure 1.

Shell subovate; body large; spire short, acute, consisting of three or four moderately inflated volutions, terminating in an acute apex; aperture suborbicular, slightly contracted above; whole surface covered with numerous, slightly nodulous, but regular striæ.

Found in the Crag at Bramerton Hill, near Norwich.

3. L. RUDIS.—The Robust Littorina, pl. XXXVIII. fig. 57, 58.

Turbo rudis. Sowerby, Min. Conch. I. p. 164, pl. 71, fig. 2.

Shell subovate; body occupying more than two-thirds of the shell; spire consisting of four moderately inflated and well defined volutions, swelled above; whole shell covered by numerous spiral, somewhat irregular striæ; these are crossed by a few inequidistant, longitudinal wrinkles, or lines of growth, which gives the shell a rugged aspect.

Found in the Crag, near Aldborough.

4. L. PUNGENS.—The Pricking Littorina, pl. XXXVII.* fig. 19.

Littorina pungens. Sowerby, Trans. Geo. Soc. IV. 2nd series, p. 343, pl. 18, fig. 5.

Shell conical, smooth; body large, ventricose; spire short, consisting of five narrow, gradually tapering volutions, a little flattened at the sides, and terminating in an acute apex; aperture orbicular, with an acute, angular elongation above; outer lip thin, and even.

Found in the Lower Green Sand, Blackdown, by Dr. Fitton.

5. L. GRACILIS.—The Slender Littorina, pl. XXXVII.* fig. 20, 21.

Littorina gracilis. Sowerby, Geo. Trans. IV. 2nd series, p. 343, pl. 18, fig. 12.

Shell elongated, acute; body shorter than the spire, which consists of five ventricose, deeply divided, and gradually tapering volutions, terminating in a pointed apex; aperture round, with a slight angle below; outer lip even; pillar lip slightly reflected on the columella; whole surface covered with wide, longitudinal, regular furrows, which are crossed by transverse spiral striæ, giving it a fine decussated aspect.

Found in the Lower Green Sand at Blackdown, by Dr. Fitton.

GENUS XXXIII.—TROCHUS.—*Linnæus.*

Shell conical; spire elevated, sometimes abbreviated; aperture more or less transversely depressed, frequently quadrangular or trapeziform, its edge being oblique to the direction of the last volution, exhibiting the inferior portion of the columella; base generally flattish, or, in some instances concave; columella more or less arcuated,

and its base truncated in some species; operculum horny, circular, and spiral, with many close-set volutions, and an external spiral line outside, frequently covered with a horny epidermis.

1. T. DUPLICATUS. — The Two-plaited Trochus, pl. XXXIX. fig. 1, 2.

Trochus duplicatus. Sowerby, Min. Conch. II. p. 181, pl. 182, fig. 5. Fleming, Brit. An. p. 324.

Shell conical, shining; spire consisting of four volutions, with plain, concave sides, a single projecting crenulated fillet on the upper edge, and a double crenulated spiral carina round the base of each; base with an open umbilicus, the margin of which is beset with about seven, somewhat prominent tubercles; aperture quadrangular.

Found in the Inferior Oolite at Little Sodbury.

2. T. GIBSII.—Gibs' Trochus, pl. XXXIX. fig. 3, 4.

Trochus Gibsii. Sowerby, Min. Conch. III. p. 139, pl. 278, fig. 1. Fleming, Brit. An. p. 325.

Shell conical, short, wider than high; spire with four or five volutions, flattened on the sides, with obtusely carinated edges, on their upper parts a concentric, elevated spiral band, which is crossed by curved striæ; base convex, furnished with concentric and radiating striæ, producing a fine reticulated appearance; umbilicus large, and almost smooth; aperture rhomboidal; inner lip somewhat reflected over the base of the columella, but not encroaching upon the umbilicus.

The semicircular striæ on the concentric band seems to indicate a sinus in the outer lip of the perfect shell.

Found in the Chalk Marl, or Pyritiferous Clay, at Folkstone.

3. T. DIMIDIATUS.—The Divided Trochus, pl. XXXIX. fig. 5.

Trochus dimidiatus. Sowerby, Min. Conch. II. p. 181, pl. 181, fig. 4. Fleming, Brit. An. p. 324.

Shell conical, surface rough, and free from polish; body volution flat on the sides, and concave above, with an entire carina in the centre; superior volutions convex; base convex, and provided with a carinated margin; aperture pentangular; columella straight, and solid.

Found at Little Sodbury, in the Inferior Oolite.

4. T. CONCAVUS.—The Concave Trochus, pl. XXXIX. fig. 6, 7.

Trochus concavus. Sowerby, Min. Conch. II. p. 180, pl. 181, fig. 3.

Shell conical; spire consisting of three spirally striated volutions, with concave sides, where it is provided with a slightly developed row of tubercles, and the lower margin of each carinated; base smooth, destitute of an umbilicus; its diameter being somewhat more than its height; aperture acutely rhomboidal.

Found in the Inferior Oolite, Little Sodbury.

Distinguished from the *T. duplicatus* by its spiral striæ.

5. T. SIMILIS.—The Similar Trochus, pl. XXXIX. fig. 8, 9,

Trochus similis. Sowerby, Min. Conch. II. p. 179, pl. 181, fig. 2. Fleming, Brit. An. p. 324.

Conical; spire consisting of four flat-sided volutions, the base of each projecting slightly over that under it; all of them provided with numerous transverse, variously-sized ridges, enlarging as they descend, the lower and largest with minute intervening ones; several of the ridges on each volution are granulated, between each of which are small plain ones.

Found in the Crag at Holywell.

6. T. DUBIUS.—The Doubtful Trochus, pl. XXXIX. fig. 10.

Trochus ——? Mantell, Geo. of Sussex, p. 109, pl. 18, fig. 7.

Shell smooth, subconic; spire occupying nearly half the length of the shell, and consisting of three moderately inflated, well defined volutions; base rounded.

Found in the Grey Chalk Marl at Hamsey, Sussex.

7. T. MANTELLI.—Mantell's Trochus, pl. XXXIX. fig. 11.

Trochus agglutinans? Sowerby, Min. Conch. I. p. 224, pl. 223, smaller figs. *Trochus* ——? Mantell, Geo. of Sussex, p. 109, pl. 18, fig. 9. Lamarck, Foss. des Env. de Paris, p. 102. *Trochus umbilicaris*, Brander, Foss. Hant. p. 10, pl. 1, fig. 4, 5.

Shell depressed, discoidal, with a slightly convex base, a plicated, wide and shallow, scolloped umbilicus, and its margin acutely angular; aperture oblong.

Found at Hamsey, Sussex; and Barton Cliff.

8. T. TIARA.—The Tiara Trochus, pl. XXXIX. fig. 12, 13.

Trochus bicarinatus. Sowerby, Min. Conch. III. p. 39, pl. 221, fig. 2. *Trochus Tiara*, Fleming, Brit. An. p. 325.

Shell subconic, subdepressed; body large; spire small, with divergent furrows and ridges; volutions with two obscure carinæ; body spirally striated; base produced, concentrically striated, and provided with a wide and deep umbilicus.

Found in the Green Sand at Marsham Field, near Oxford.

9. T. FASCIATUS.—The Banded Trochus, pl. XXXIX. fig. 14.

Trochus fasciatus. Sowerby, Min. Conch. III. p. 37, pl. 220, fig. 1. Fleming, Brit. An. p. 324.

Shell conical; body large; spire of medium length, consisting of six or seven well divided, somewhat convex volutions, with a spiral band round the centre of each; base rather flattened, its diameter nearly equal to the height of the shell; whole external surface covered with rather wide longitudinal and spiral striæ; the latter being the most prominent, and the longitudinal ones diverging from the central band in both directions; aperture large, quadrangular; columella with a single plait upon it.

Found in the Inferior Oolite at Dundry.

10. T. MONILIFER.—The Necklace Trochus, pl. XXXIX. fig. 15, 16.

Trochus monilifer. Sowerby, Min. Conch. III. p. 91, pl. 367. Fleming, Brit. An. p. 325. *Trochus nodulosus*, Brander, Foss. Hant. p. 10, pl. 1, fig. 6.

Conical, sides nearly flat; body occupying about a third of the length of the shell; volutions but slightly produced, each provided with three spiral rows of tubercles, and having the lower edges crenated; base a little convex, its diameter about equal to the height of the shell, and provided with six rows of regularly set granules, its centre smooth; aperture quadrangular, and placed obliquely, its margin entire and undulous, inside pearlaceous; columella truncated, and lying along the inner margin of the aperture.

Found in the London Clay at Hordwell, where it was discovered by Miss Teed.

11. T. GUTTATUS.—The Spotted Trochus, pl. XXXIX. fig. 17.

Trochus guttatus. Phillips, Geo. of Yorkshire, p. 112, pl. 6, fig. 14.

Shell depressed, subconic; base very wide, its diameter being considerably more than the length of the shell; spire consisting of four volutions, at the base of each a band of large granules; the general surface smooth, with rust-coloured spots.

Found in the Kelloways Rock, near Scarborough.

12. T. LINEARIS.—The Lineated Trochus, pl. XXXIX. fig. 18.

Trochus linearis. Mantell, Geo. of Sussex, p. 110, pl. 18, fig. 17. Fleming, Brit. An. p. 325.

Conical, subdepressed; volutions slightly convex, transversely striated, with a narrow prominent, spiral fillet in the centre, and at the base of each volution; base flat; the umbilicus obscured by the last volution; aperture transversely depressed.

Found at Hamsey and Middleham, Sussex.

13. T. RETICULATUS. — The Reticulated Trochus, pl. XXXIX. fig. 19, 20.

Trochus reticulatus. Sowerby, Min. Conch. III. p. 128, pl. 272, fig. 2. Fleming, Brit. An. p. 325.

Shell conical, subturreted; body large; spire consisting of six volutions, obliquely flattened above; their upper and under margins provided with a pretty broad and somewhat elevated carina, the upper one more prominent than the lower, and situate on the superior portion of the volutions, where they commence to be flattened; aperture obtusely quadrangular; base provided with a close umbilicus; whole surface covered with numerous spiral and longitudinal striæ, the former connected by some which are less elevated; diameter of the base about equal to the length of the shell.

Found in the Kimmeridge Clay at Ringstead Bay, near Weymouth; and also at Portland Ferry.

14. T. ANGLICUS.—The English Trochus, pl. XXXIX. fig. 21.

Trochus similus. Sowerby, Min. Conch. II. p. 95, pl. 142. Fleming, Brit. An. p. 324.

Conical; body large; spire small, consisting of six or seven flat-sided, subturreted volutions, obliquely flattened above, and each provided with two spiral series of large, somewhat depressed tubercles, the superior one at the slope of the volutions, and the lower ones at the base of each volution; three strong, elevated, spiral striæ invest the whole surface of the shell, these are crossed by numerous sharp, close, and arcuated lines of growth; aperture quadrangular, with rounded angles; columella imperforforate; inner lip thickened.

Found in the Blue Lias, near Yeovil, Shotover, Lackington Park, and at Weston, near Bath.

15. T. EXTENSUS.—The Extended Trochus, pl. XXXIX. fig. 22, 23.

Trochus extensus. Sowerby, Min. Conch. III. p. 140, pl. 278, fig. 2, 3. Fleming, Brit. An. p. 325.

Shell depressed, conical, its diameter being nearly twice its height; volutions elevated in the centre, obliquely striated, and with rugose undulations; margin of the body volution broad, thin, and undulated; base convex, smooth, with a large and nearly smooth umbilicus, and is sometimes covered over in the adult shells.

Found in the London Clay at Highgate Tunnel; and in the Cliff, Isle of Sheppy.

16. T. BENETTIÆ.—Benett's Trochus, pl. XXXVII.* fig. 37, 38.

Trochus Benettiæ. Sowerby, Min. Conch. I. p. 224, pl. 98, larger fig. 3.

Shell conical, depressed; upper surface of the volutions obliquely and longitudinally wrinkled, their margin irregularly undulated; base expanded, and provided with a broad, projecting scolloped margin; base concave; umbilicus plicated, and partly covered; aperture narrow and compressed.

Found in the London Clay by Miss Benett, and named in honor of her.

17. T. MONILITECTUS.—The Necklace-roofed Trochus, pl. XXXVIII. fig. 9.

Trochus monilitectus. Phillips, Geo. of Yorkshire, I. p. 123, pl. 9, fig. 33.

Shell conical, gradually tapering to an acute apex; whole surface covered with numerous moniliform, spiral ridges; base produced, and destitute of an umbilicus.

Found in the Cave Oolite at Cloughton Wyke.

18. T. LÆVIGATUS.—The Smooth Trochus, pl. XXXIX. fig. 24, 25.

Trochus lævigatus. Sowerby, Min. Conch. II. p. 179, pl. 181, fig. 2. Fleming, Brit. An. p. 324.

Shell conical; body large; spire small, consisting of six slightly inflated volutions; base convex; columella smooth, oblique, and angular; aperture subrhomboidal, with rounded angles; whole surface smooth and glossy, with only a few nearly obsolete spiral grooves, and crossed by some fine, nearly invisible lines of growth; destitute of an umbilicus.

Found in the Crag pits at Holywell.

19. T. ARENOSUS.—The Sandy Trochus, pl. XXXIX. fig. 26.

Trochus arenosus. Fleming, Brit. An. p. 324. *Trochus granulatus,* Sowerby, Min. Conch. III. p. 37, pl. 220, fig. 2.

Shell conical, short, subturreted; volutions obliquely flattened, and a little rounded above, with a central spiral band; base convex, in part almost smooth; whole surface covered with spiral and longitudinal furrows, which produce a granulated appearance, varying in depth in different specimens, but for the most part are deepest towards the margin; height about half the diameter at the base.

Found in the Inferior Oolite at Dundry.

20. T. PROMINEUS.—The Prominent Trochus, pl. XXXIX. fig. 27.

Trochus promineus. Fleming, Brit. An. p. 324. *Trochus sulcatus,* Sowerby, Min. Conch. III. p. 38, pl. 220, fig. 3.

Shell conical, short, subturreted; spire consisting of four volutions, convex and flattened above, with a spiral sulcus around their centre, and finely striated spirally, sharp covering the whole surface on the superior volutions, while in the inferior ones they are limited to the marginal parts below the sulcus; crossed near the superior margins by many undulations; sulcus crossed by very minute striæ; the whole surface exhibiting many fine lines of growth.

Found in the Inferior Oolite at Dundry.

21. T. BISERTUS.—The Two-plaited Trochus, pl. XXXIX. fig. 28.

Trochus bisertus. Phillips, Geo. of Yorkshire, I. p. 129, pl. 11, fig. 27.

Shell conical; sides nearly flat; base prominent; each volution provided with two plaits of small, nearly equidistant papillæ; the intervening spaces covered by minute longitudinal striæ.

Found in the Blue Wick in the Inferior Oolite Sand at Cold Moor, Yorkshire, by Mr. Williamson.

22. T. PYRAMIDATUS. — The Pyramidal Trochus, pl. XXXIX. fig. 29.

Trochus pyramidatus. Phillips, Geo. of Yorkshire, I. p. 129, pl. 11, fig. 22.

Shell conical, abruptly tapering to an acute apex; spire consisting of four slightly raised volutions, well defined by the sutural line, and provided with oblique, longitudinal flattened ribs; base flat; aperture subquadrangular.

Found in the Blue Wick of the Inferior Oolite Sand at Cold Moor, near Glaizedale, Yorkshire, by Mr. Bean of Scarborough.

23. T. TORNATILUS.—The Turned Trochus, pl. XXXIX. fig. 30.

Trochus tornatilus. Phillips, Geo. of Yorkshire, I. p. 102, pl. 4, fig. 16.

Shell much depressed; spire consisting of three volutions, but little elevated above the body volution, which is rounded on the sides; a narrow flattened space emanates from the insertion of the outer lip, and winds spirally along the superior margin of the volutions.

Found in the Coralline Oolite at Scarborough.

24. T. PUNCTATUS.—The Punctured Trochus, pl. XXXIX. fig. 31.

Trochus punctatus. Sowerby, Min. Conch. II. p. 211, pl. 193, fig. 1 and 4. Fleming, Brit. An. p. 324.

Conical, its height exceeding the diameter of the base, sides nearly flat; volutions with numerous, minute, spiral striæ, the upper ones upon each volution most prominent, and crossed by longitudinal, oblique, undulating lines, the lower ones studded with minute granulations; between every two sets, a narrow spiral fillet.

Found in the Inferior Oolite at Dundry, in the neighbourhood of Bristol.

25. T. IMBRICATUS. — The Imbricated Trochus, pl. XXXIX. fig. 35.

Trochus imbricatus. Sowerby, Min. Conch. III. p. 127, pl. 272, fig. 3, 4. Fleming, Brit. An. p. 325.

Pyramidal, subturreted, its height being nearly double its breadth at the base; volutions angular, obliquely flattened above, imbricating each other at their base; each volution provided with several elevated, thread-like lines, crossed by numerous fine longitudinal striæ; base very convex; striated in the same manner as the superior portion of the shell; furnished with a closed umbilicus.

Found in the Lias Clay, near Cheltenham.

26. T. ELONGATUS.—The Elongated Trochus, pl. XXXIX. fig. 33.

Trochus elongatus. Sowerby, Min. Conch. II. p. 211, pl. 193, fig. 2, 3. Fleming, Brit. An. p. 324.

Conical, greatly elongated, its breadth at the base being only two-thirds its height; with nine or ten concave-sided volutions, each with a rounded, broad prominent band at the base, with an obscure fillet a little below the middle; whole surface with strong spiral striæ, granulated near the apex; and each of the volutions slightly undulated near its superior edge.

Distinguished from *T. punctatus* by being more elongated, and the margins of the volutions being more produced.

Found in the Inferior Oolite at Dundry, near Bristol.

27. T. PALLIUM.—The Mantled Trochus, pl. XXXIX. fig. 34.

Trochus pallium. Fleming, Brit. An. p. 325. *Trochus ornatus,* Sowerby, Min. Conch. III. p. 39, pl. 221, fig. 1.

Shell subconic, depressed; body large; spire small, consisting of three or four volutions, depressed above in the middle, each provided with a band of elongated divergent tubercles on its upper margin; body with three series of tubercles; the whole shell with divergent striæ, which are in several parts very obscure, and are semicircular where they cross the tubercular band; base convex, furnished with strong tubercular concentric striæ, umbilicated, and plaited in some instances; margin with large crenulations. Height about half its diameter.

Found in the Inferior Oolite at Dundry, near Bristol.

28. T. SEGWICKII.—Segwick's Trochus, pl. XXXIX. fig. 32.

Trochus Segwickii. Fleming, Brit. An. p. 325. *Trochus concavus,* Sowerby, Min. Conch. III. p. 127, pl. 272, fig. 1.

Conical, smooth; volutions somewhat concave above, and convex below, with an obtuse carinated edge, and elevated rather indistinct striæ; base rather convex, with concentric striæ, which are strongest towards its centre; aperture rhomboidal; umbilicus closed.

Found in the Suffolk Crag.

29. T. ABBREVIATUS. — The Shortened Trochus, pl. XXXIX. fig. 36.

Trochus abbreviatus. Sowerby, Min. Conch. II. p. 212, pl. 193, fig. 5. Fleming, Brit. An. p. 324.

Shell conical, abbreviated; the base of each of the volutions provided with a greatly produced, rounded spiral fillet; whole surface with fine spiral striæ, which are faintly decussated by oblique lines of growth, these are semicircular as they pass over the fillet; base rather flat, and furnished with sharp concentric striæ; the breadth at the base exceeds its height.

Found at Dundry in the Inferior Oolite.

GENUS XXXIV.—SOLARIUM.—*Lamarck.*

Shell subdiscoidal beneath; spire obtusely conical; in some instances of a more lengthened conical form; the lower margin of the body angular, and rather sharp; umbilicus broad and deep, and reaching to the apex, its margin crenulated, and exhibiting the internal edges of the superior volutions in the form of a winding gallery; aperture wide, trapeziform, with its angles somewhat rounded, and the peritreme or outer lip thin and sharp; outside covered with a horny epidermis; operculum

horny, more or less spiral, and variable in form; outer side flat; inner side furnished with an irregular, nearly lateral tubercle.

1. S. DISCOIDEUM.—The Discoidal Solarium, pl. XLI. fig. 1, 2.

Solarium discoideum. Sowerby, Min. Conch. I. p. 36, pl. 11, upper right hand figs. Fleming, Brit. An. p. 325.

Shell discoidal; spire consisting of five or six volutions, somewhat acuminated at the apex; outer edge of the body volution provided with a very sharp carina, within which, on the base, is a shallow canal; the upper margin broad, considerably undulated, and spirally striated, but becoming obsolete towards the spire; umbilicus deep, rounded, and transversely wrinkled; aperture rhomboidal, obliquely elliptical, and a little pointed at both ends; outer lip acute at the margin.

Found in the London Clay at Barton Cliff, Hampshire.

2. S. CANALICULATUM.—The Canaled Solarium, pl. XLI. fig. 3, 4.

Solarium canaliculatum. Sowerby, Min. Conch. VI. p. 43, pl. 524, fig. 1. Fleming, Brit. An. p. 326. Lamarck, Env. de Paris, p. 104. *Turbo,* Brander, Foss. Hant. p. 10, pl. 1, fig. 7, 8. *Trochus canaliculatus,* Brocchi, II. p. 359.

Shell discoidal, convex; body provided with a prominent crenated margin, both above and below with numerous spiral, unequal, granulated lines; umbilicus furrowed, and crenated internally; aperture quite circular.

Found plentifully in the London Clay at Barton Cliff.

3. S. CONÖIDEUM.—The Conical Solarium, pl. XLI. fig. 5, 6.

Solarium conöideum. Sowerby, Min. Conch. I. p. 36, pl. 11, three middle figs. Ib., Geo. Trans. IV. 2nd series, p. 336, pl. 11, fig. 14. Fleming, Brit. An. p. 325.

Shell conical, its height being equal to the diameter of the base, smooth; volutions slightly depressed, or concave in the middle, and covered with decussating striæ, producing rows of granules; umbilicus deep and narrow, with its inner spiral ridges crenated; aperture rhomboidal, or nearly quadrangular.

Found in the Upper Oolite at Portland, and the Galt, near Folkstone, Kent.

4. S. SOWERBYII.—Sowerby's Solarium, pl. XLI. fig. 7, 8.

Solarium patulum. Sowerby, Min. Conch. I. p. 35, pl. 11, lower left hand figs.

Shell almost discoidal; spire much depressed; umbilicus large, with nearly obsolete crenulations on its margin, except in its interior, where it is striated.

Found in the London Clay at Highgate Hill.

5. S. PLICATUM.—The Plicated Solarium, pl. XLI. fig. 10, 11.

Solarium plicatum. Sowerby, Min. Conch. VI. p. 44, pl. 524, fig. 2. Fleming, Brit. An. p. 326. Lamarck, Env. de Paris, p. 104.

Shell convex, subdiscoidal; upper surface longitudinally wrinkled, ornamented with three or four very narrow, deep spiral sulci; base with a small umbilicus, surrounded by a produced, crenated ridge, which descends into the cavity, and sometimes half closes it, and in other instances it is left more open; five or six concentric strong, or unequal sulci; aperture nearly orbicular.

Found in the London Clay at Barton Cliff.

6. S. PATULUM.—The Spreading Solarium, pl. XLI. fig. 12, 13.

Solarium patulum. Sowerby, Min. Conch. I. p. 35, pl. 11, lower right hand figs. Lamarck, Ann. du Mus. IV. p. 53, pl. 35, fig. 3. Fleming, Brit. An. p. 325.

Shell depressed, discoidal, smooth; volutions defined by a crenulated carina, which is strong and produced on the body; umbilicus wide, with a beautifully crenulated margin, which is surrounded by a border of small denticles; surface provided with fine longitudinal striæ; base with divergent striæ.

Found in the Dark-coloured London Clay at Highgate.

7. S. TABULATUM.—The Boarded Solarium, pl. XLI. fig. 14.

Solarium tabulatum. Phillips, Geo. of Yorkshire, I. p. 94, pl. 2, fig. 36.

Shell pyramidal, subturreted; the volutions obliquely flattened above, with a carinated margin on their upper and lower edges, and terminating in a somewhat acute apex; surface covered with wide-set, longitudinal, strong striæ; base flat; umbilicus small.

Found in the Speeton Clay at Speeton.

8. S. CALIX.—The Chalice Solarium, pl. XLI. fig. 15.

Solarium Calix. Phillips, Geo. of Yorkshire, I. p. 129, pl. 11, fig. 30.

Shell pyramidal, turreted; body large; spire small, consisting of four rapidly diminishing, flat-sided volutions, bounded above and below by a slightly crenulated, rounded, projecting spiral band; base rather flat, furnished with a wide, expanding umbilicus; aperture subquadrangular.

Found in the Blue Wick of the Inferior Oolite, Cold Moor, by Mr. Bean of Scarborough.

9. S. ORNATUM.—The Adorned Solarium, pl. XXXVII.* fig. 39.

Solarium ornatum. Sowerby, Geo. Trans. IV. 2nd series, p. 336, pl. 11, fig. 13.

Shell discoidal; with seven or eight volutions, the three lower ones produced in the middle, and sloping towards each side; the other volutions, which are very small, and rising abruptly in a conical form, terminate in an acute apex; the three upper ones smooth, all the others ornamented above by obtuse, smooth radiating ribs, with a sharp carina bounding the body volution; near the margin, both above and below, beset with granules, placed in quincunx order; aperture rhomboidal.

Found by Dr. Fitton in the Upper Green Sand, Isle of Wight.

FAMILY II.—SCALARIDES.

Shell devoid of plaits or folds on the columella; margins of the aperture united in a circular form.

GENUS XXXV.—RISSOA.—*Freminville.*

Shell oblong, turreted, considerably acuminated; spire consisting of numerous volutions; aperture orbicular, or

oval, oblique, pointed posteriorly, and anteriorly dilated, generally with a slight sinus at the base of the columella; lips nearly united, the outer one thickened, emarginated, and not reflected; operculum horny.

1. R. acuta.—The Acute Rissoa, pl. XXXVIII. fig. 25, 26.

Rissoa acuta. Sowerby, Min. Conch. VI. p. 230, pl. 609, fig. 2.

Shell minute, elongated, turreted; body somewhat shorter than the spire, which consists of six moderately ventricose, turreted, and gradually tapering volutions, terminating in an acute apex; aperture rather large, oblique, pointed both above and below; outer lip considerably expanded; pillar lip a little reflected on the columella; whole shell covered with longitudinal, prominent ribs, numbering ten or twelve on each volution. Length about three-sixteenths of an inch; diameter not half its length.

Found in the Great Oolite at Ancliffe.

2. R. lævis.—The Smooth Rissoa, pl. XXXVIII. fig. 12.

Rissoa lævis. Sowerby, Min. Conch. VI. p. 229, pl. 609, fig. 1.

Shell minute, oblong-oval, smooth, subcylindrical; body considerably longer than the spire, which consists of five flat-sided volutions, divided by a slight suture, and terminating in a moderately pointed apex; aperture placed obliquely, narrow, slightly acute below, and rather sharp-pointed above; outer lip broad; pillar lip a little reflected on the base of the columella. Length about an eighth of an inch; diameter not half its length.

Found in the Great Oolite at Ancliffe.

3. R. duplicata.—The Two-plaited Rissoa, pl. XXXVIII. fig. 14, 15.

Rissoa duplicata. Sowerby, Min. Conch. VI. p. 230, pl. 609, fig. 4.

Shell minute, elongated, turreted; body occupying about three-fifths of the shell; spire consisting of five somewhat ventricose volutions, with a flat spiral keel winding along their centre, and terminating in a very sharp apex; whole surface covered with numerous longitudinal, straight ribs, which are divided in the middle by the carina; towards the base of the body the ribs become obsolete; aperture rather large, oblique, oblong-oval, and pointed both above and below; outer lip broad; pillar lip slightly reflected on the columella. Length about an eighth of an inch; diameter half its length.

Found in the Great Oolite at Ancliffe.

4. R. obliquata.—The Oblique Rissoa, pl. XXXVIII. fig. 19, 20.

Rissoa obliquata. Sowerby, Min. Conch. VI. p. 230, pl. 609, fig. 3.

Shell minute, elongated, subturreted; body and spire about equal in length; the latter consisting of five moderately ventricose and well defined volutions, terminating in a rather blunted apex; whole shell invested by numerous oblique, curved longitudinal ribs; aperture rather small, narrow, oblique, and pointed both above and below; outer lip broad; inner lip narrowly reflected on the columella. Length three-sixteenths of an inch; diameter somewhat more than a third of its length.

Found in the Great Oolite at Ancliffe.

5. R. pucilla.—The Slender Rissoa, pl. XXXVII.* fig. 22, 23, 24.

Rissoa pucilla. Brown, Trans. Manchester Geo. Soc. I. p. 63, pl. 6, fig. 6, 7, 8.

Shell smooth, ovate; body large, inflated; spire short, consisting of three ventricose, deeply divided volutions, terminating in a somewhat obtuse apex; aperture ovate; columella subumbilicate.

This species differs from the *R. Leighi* in the volutions being much less oblique, and being only one-sixteenth of an inch in length, and nearly the same in diameter.

Found in the Magnesian Marl at Collyhnrst, near Manchester, by E. W. Binney, Esq., and is in his cabinet.

6. R. Leighi.—Leigh's Rissoa, pl. XXXVII.* fig. 25, 26, 27.

Rissoa Leighi. Brown, Trans. Manchester Geo. Soc. I. p. 64, pl. 6, fig. 9, 10, 11.

Shell smooth, oblong-ovate; spire long, consisting of four deeply divided, inflated volutions, terminating in a somewhat obtuse apex; aperture ovate, slightly contracted above, and rounded at the base; columella subumbilicated. Length one-eighth of an inch; breadth one-fourteenth of an inch.

Found in the Magnesian Marl at Collyhurst, and is in Mr. Binney's cabinet.

7. R. minutissima. — The Very Minute Rissoa, pl. XXXVII.* fig. 28, 29, 30.

Rissoa minutissima. Brown, Trans. Manchester Geo. Soc. I. p. 64, pl. 6, fig, 12, 13, 14.

Shell smooth, slightly ovate; body very large, ventricose; spire very short, consisting of two abruptly tapering, deeply divided volutions, flattened above, and terminating in an acute apex; aperture nearly orbicular; outer lip smooth, projecting considerably from the body above.

Found in the Magnesian Marl at Collyhurst. In Mr. Binney's cabinet.

8. R. Gibsoni.—Gibson's Rissoa, pl. XXXVII.* fig. 31, 32, 33.

Rissoa Gibsoni. Brown, Trans. Manchester Geo. Soc. I. p. 64, pl. 6, fig. 15, 16, 17.

Shell smooth, oblong-ovate; spire and body of nearly equal length; spire consisting of four not very oblique, but rapidly decreasing volutions, terminating in an acute apex; suture well marked, but not deep; aperture ovate; outer lip smooth. Length not quite a quarter of an inch; breadth somewhat more than one-eighth of an inch.

Found in the Magnesian Marl at Collyhurst. In Mr. Binney's cabinet.

9. R. obtusa.—The Obtuse Rissoa, pl. XXXVII.* fig. 34, 35, 36.

Rissoa obtusa. Brown, Trans. Manchester Geo. Soc. I. p. 64, pl. 6, fig. 19, 20, 21.

Shell ovate, smooth, ventricose; spire nearly equal to the body in length, consisting of three depressed, subturreted volutions, divided by a deep suture; aperture nearly orbicular; pillar lip not reflected, but provided with a slight umbilicus at the base of the columella. Length upwards of a quarter of an inch; diameter not quite so much.

Found in the Magnesian Marl, Collyhurst. In Mr. Binney's cabinet.

GENUS XXXVI.—CIRRUS.—*Sowerby.*

Spiral; conical; with a hollow, funnel-shaped axis; volutions contiguous, numerous, rounded, or slightly angulated.

The shells of this genus nearly resemble those of *Trochus*, but may be distinguished by their funnel-shaped umbilicus.

1. C. NODOSUS.—The Knotty Cirrus, pl. XLI. fig. 9 and 21.

Cirrus nodosus. Sowerby, Min. Conch. III. p. 35, pl. 219, fig. 1 and 4. Ib., II. p. 94, pl. 141, fig. 2, a cast. Fleming, Brit. An. p. 313.

Shell conical, rugose, reversed, acuminated; body large, discoidal, in diameter, occupying not quite a third of the entire length of the shell; spire acutely conical, consisting of ten or eleven flat-sided volutions, separated by a narrow suture, with two rows of lengthened tubercles, and crossed by many small carinæ; body with four series of spiral, undulous carinæ, which are crossed by numerous lengthened tubercles; between the transverse carinæ are fine, regular, elevated striæ, which are very conspicuous on the lower portion of each volution.

Found in the Inferior Oolite, Dundry.

Fig. 21 is a cast of the shell.

2. C. LEACHII.—Leach's Cirrus, pl. XLI. fig. 19.

Cirrus Leachii. Sowerby, Min. Conch. III. p. 36, pl. 219, fig. 3. Fleming, Brit. An. p. 313.

Conical; with numerous longitudinally striated volutions, provided with several rows of tubercles, crossed by numerous small carinæ; the superior row of tubercles on the body volution crowned with slightly arcuated, strong compressed spines.

Found in the Lower Oolite at Dundry.

3. C. TURBANOIDES.—The Turbanated Cirrus, pl. XLI. fig. 24.

Cirrus nodosus, var. Sowerby, Min. Conch. III. p. 35, pl. 219, fig. 2.

Shell reversed; with the body volution discoidal, above which the spire rises into a flattened cone; the four or five superior volutions abruptly conical, and terminating in a rather acute apex; the whole surface covered with divergent ribs, which do not, however, extend to the four or five superior volutions; aperture subovate.

Found in the Lower Oolite at Dundry.

4. C. PENTAGONALIS.—The Pentagonal Cirrus, pl. XLI. fig. 16.

Cirrus pentagonalis. Phillips, Geo. of Yorkshire, II. p. 226, pl. 13, fig. 8.

Shell conical, obtuse; body large; spire short, with subpentagonal volutions; base flattish, with an acute margin; umbilicus large, deep, with an acute margin; aperture subovate, transverse, descending; outer lip thin; inner lip reflected on the columella, but not intruding upon the umbilicus.

Found in the Mountain Limestone at Bolland.

5. C. SPIRALIS.—The Spiral Cirrus, pl. XLI. f. 18.

Cirrus spiralis. Phillips, Geo. of Yorkshire, II. p. 226, pl. 13, fig. 14.

Shell obtusely conical; body large; spire short, consisting of three moderately rounded volutions, terminating in a sub-acute apex; base rounded; whole surface covered with strong, spiral, and longitudinal nearly obsolete, oblique striæ.

Found in the Mountain Limestone at Bolland.

6. C. PILEOPSIDEOUS.—The Cap-like Cirrus, pl. XLI. fig. 22.

Cirrus pileopsideous. Phillips, Geo. of Yorkshire, II, p. 226, pl. 13, fig. 6.

Shell considerably depressed; body very large; spire small, consisting of three flattened volutions; whole shell covered with irregular, somewhat arcuated striæ.

Found in the Mountain Limestone at Bolland.

7. C. CINGULATUS.—The Small-girdled Cirrus, pl. XLI. fig. 17.

Cirrus cingulatus. Phillips, Geo. of Yorkshire, I. p. 107, pl. 4, fig. 28.

Shell subconic, subdepressed, somewhat turban-shaped; body and spire of about equal length; spire with spiral and longitudinal striæ; each volution with a smooth girdle at its upper part; body with many longitudinal, arcuated smooth bands; base rounded; apex obtuse.

Found in the Lower Calcareous Grit at Scarborough; and is in the cabinet of Mr. Bean, by whom it was discovered.

8. C. PLICATUS.—The Plicated Cirrus, pl. XLI. fig. 20.

Cirrus plicatus. Sowerby, Min. Conch. II. p. 94, pl. 141, fig. 3.

Shell conical; body large; spire small, consisting of four flat-sided volutions, well divided by the suture; the whole shell with pretty wide spiral striæ; base somewhat angular, and its diameter a little more than the length of the shell; aperture subquadrangular, its width exceeding its length; umbilicus plaited, and rather small.

Found at Folkstone.

9. C. ACUTUS.—The Acute Cirrus, pl. XLI. fig. 23 and 25.

Cirrus acutus. Sowerby, Min. Conch. II. p. 93, pl. 141, fig. 1.

Shell conical; body large; spire short, consisting of six or seven somewhat ventricose volutions, with an obscure carina near the upper part of each, and terminating in a rather acute apex; base rounded; umbilicus funnel-shaped, expanding; aperture orbicular; surface with fine, regular lines of growth.

Found in the Limestone, Derbyshire.

10. C. ROTUNDATUS.—The Rounded Cirrus, pl. XLI. fig. 24 and 27.

Cirrus rotundatus. Sowerby, Min. Conch. V. p. 36, pl. 429, fig. 1, 2.

Conical, smooth; volutions convex; base rounded; umbilicus large, with an orbicular aperture; lines of growth fine; height and diameter of base nearly equal.

Distinguished from *C. acutus*, in being devoid of the flattened portions on the upper surface of the volutions; and in its general aspect has a bluntness, which serves to characterise it.

Found in the Limestone of the Lead measures, near Settle, Yorkshire.

11. C. TABULATUS.—The Boarded Cirrus, pl. XLI. fig. 28.

Cirrus tabulatus. Phillips, Geo. of Yorkshire, II. p. 226, pl. 13, fig. 7.

Shell subconic, depressed; volutions few, subquadrate, tabulate, or concave above, with flattened sides, and their upper margins acute; aperture transverse, and ovate.

Found in the Mountain Limestone of Kendal, Bolland, and Northumberland.

12. C. DEPRESSUS.—The Depressed Cirrus, pl. XLI. fig. 29, 30.

Cirrus depressus. Mantell, Geo. of Sussex, p. 195, pl. 18, fig. 18 and 22. Sowerby, Min. Conch. V. p. 35, pl. 428, fig. 3. Phillips, Geo. of Yorkshire, I. p. 112, pl. 6, fig. 12.

Shell depressed, subdiscoidal; volutions separated by a deep, wide, canaliculate, angular suture, a small portion of each only being visible, their internal sides regularly convex, the apical one hardly elevated above the body volution; aperture obtusely angular; whole surface covered with strong spiral striæ.

This species differs from *C. perspectivus*, in the spire being hardly elevated above the margin of the body volution, which renders the umbilicus shallow.

Found in the Upper or Flinty Chalk, near Lewis, Suffolk; Kent, and Wiltshire; also in the Kelloways Rock at Hackness and Scarborough.

13. C. PERSPECTIVUS.—The Perspective Cirrus, pl. XLI. fig. 31 and 33.

Cirrus perspectivus. Mantell, Geo. of Sussex, p. 194, pl. 18, fig. 12 and 21. Sowerby, Min. Conch. V. p. 35, pl. 428, fig. 1, 2.

Shell obtusely conical, not quite so high as wide; volutions six or seven, convex, a little square externally; base rather flattened; umbilicus wide and deep, exposing about a third of the width of the inner and convex edges of the volutions; aperture transversely oblong; surface covered with fine spiral striæ; inner surface pearlaceous.

Found in the Upper Chalk of the South Downs, Sussex; Kent, and Wiltshire; and sparingly in the Lower Chalk.

14. C. CARINATUS.—The Keeled Cirrus, pl. XLI. fig. 32.

Cirrus carinatus. Sowerby, Min. Conch. V. p. 36, pl. 429, fig. 3, 4.

Shell discoidal, smooth,; spire depressed, consisting of three or four ventricose volutions, obtusely carinated, and convex below; umbilicus large and deep; aperture transverse and subovate.

Found at Lakehampton Hill, near Cheltenham.

15. C. GRANULATUS.—The Granulated Cirrus.

Cirrus granulatus. Mantell, Geo. of Sussex, p. 195.

Conical; with five or six obscurely quadrangular volutions, depressed on their upper and under surface, broad and slightly convex on the outer margin; ornamented with very regular, granulated, or moniliform striæ.

Found in the Lower Chalk, near Lewis, by Dr. Mantell.

We have never seen either a figure or specimen of this species.

GENUS XXXVII.—EUOMPHALUS.—*Sowerby.*

Orbicular, conical; spire short, with three or four volutions, imbricated above, and smooth below; aperture of a round polygonal form; umbilicus large, penetrating to the apex of the shell.

The shells of this genus are known only in a fossil state; the species strongly resemble those of *Delphinula*, the volutions, however, of that genus increase in size much more rapidly than those of *Euomphalus*.

1. E. CALYX.—The Flower-cup Euomphalus, pl. XLII. fig. 23.

Euomphalus calyx. Phillips, Geo. of Yorkshire, II. p. 225, pl. 13, fig. 3.

Shell depressed; with three or four volutions, the apical one hardly elevated above the others; external margin of the volutions provided with a narrow carina, which forms a separating internal suture to the lower portions of all the volutions; base of the shell deeply concave.

Found in the Mountain Limestone at Bolland.

2. E. ANGULATUS.—The Angular Euomphalus, pl. XLII. fig. 26, 27.

Euomphalus angulatus. Sowerby, Min. Conch. I. p. 114, pl. 52, fig. 3.

Shell with three much depressed volutions, and a series of three spiral ribs on their upper surface, the lower one on the extreme edge of the volution; the whole surface being covered with numerous longitudinal, subimbricated, distant, rough, irregular striæ; base with five concentric, somewhat rounded ribs, which are crossed by remote, indistinct striæ, diverging from the centre; these concentric ridges on the base form five sharpish angles, and those of the spire three more acute angles, on the margin of the outer lip; aperture obscurely octangular.

Found in Limestone at Colebrook Dale.

3. E. FUNATUS.—The Corded Euomphalus, pl. XLII. fig. 24, 25.

Euomphalus funatus. Sowerby, Min. Conch. V. p. 71, pl. 450, fig. 1, 2. *Skenea funata*, Fleming, Brit. An. p. 314.

Shell subconic, very short, consisting of three depressed volutions; provided with a series of narrow, rounded, thread-like, spiral ribs, crossed by numerous, transverse, thin striæ; umbilicus rather small; base with several concentric ridges.

This species is distinguished from *E. discors*, by having ribs on its base, and in the transverse striæ being much finer, closer, and less rough in appearance, particularly those upon the upper surface.

Found in the Limestone at Dudley.

4. E. PENTANGULATUS.—The Five-angled Euomphalus, pl. XLII. fig. 28, 29.

Euomphalus pentangulatus. Sowerby, Min. Conch. I. p. 97, pl. 45, fig. 1, 2. Phillips, Geo. of Yorkshire, II. p. 225, pl. 13, fig. 13. Ib., Treatise on Geology, I. p. 163, fig. 13. *Skenea perangulatus*, Fleming, Brit. An. p. 314.

Shell consisting of five or six depressed, almost entirely exposed, volutions; the spire being somewhat sunk below the body, or external volution; the volutions provided with an acute, elevated, central, spiral carina, or rib, on the superior portion of the shell, extending from the centre of the aperture to the apical convolution; the base with a slightly angular, nearly obsolete, concentric ridge; the whole crossed by somewhat fine, sharp, elevated striæ; aperture obscurely pentangular, somewhat rounded externally; the under side deeply and widely umbilicated; internal cavity divided into chambers, by imperforate septa.

The shell appears to be thin.

Found in the Carboniferous Limestone of Ireland.

5. E. CATILLUS.—The Little-dish Euomphalus, pl. XLII. fig. 30, 31.

Euomphalus catillus. Sowerby, Min. Conch. I. p. 98, pl. 45, fig. 3, 4. Phillips, Geo. of Yorkshire, II. p. 225, pl. 13,

fig. 1, 2. *Helix catillus*, Martin, Petrificata Derbiensia. Parkinson, Org. Rem. III. pl. 6, fig. 1 and 3. *Skenea catellus*, Fleming, Brit. An. p. 314.

Shell depressed, consisting of four or five almost entirely exposed volutions, with a prominent central carina, or ridge, both above and below, and one side deeply umbilicate, in the form of a hollow cone; aperture subtriangular, taking the sharp form of both the carinæ, the sides next the body being longest.

Distinguished from *E. pentangulatus*, by the keel on its inferior surface.

Found in the Carboniferous and Mountain Limestone.

6. E. DISCORS.—The Discordant Euomphalus, pl. XLII. fig. 32, 33.

Euomphalus discors. Sowerby, Min. Conch. I. p. 113, pl. 52, fig. 1. *Delphinula discors*, Fleming, Brit. An. p. 313.

Shell subdepressed; with three or four volutions, the larger or body one subimbricated the whole surface above, covered with wide-set, undulating, transverse striæ, most conspicuous in passing over the spiral carinæ, and producing a cord-like appearance; and with five spiral, rather prominent, rounded ribs on the superior portion of the volutions, which rise a little above the body, and the two superior ones terminating in a flattened, truncated surface; base of the body volution smooth, large, and rounded; the other volutions small, with a deeply umbilicated centre.

Found in the Carboniferous Limestone, Colebrook Dale.

7. E. RUGOSUS.—The Wrinkled Euomphalus, pl. XLII. fig. 34, 35.

Euomphalus rugosus. Sowerby, Min. Conch. I. p. 113, pl. 52, fig. 2. *Delphinula rugosa*, Fleming, Brit. An. p. 313.

Shell with three or four depressed volutions; with four spiral ribs above, crossed by oblique, wide-set, undulating strong striæ, which are stronger as they pass over the ribs, the lower one of which forms an acutely carinated margin to the body volution; under surface of the body with strong, irregular, transversely curved plaits, and deeply umbilicated; aperture subovate, acutely pointed at the carina, and where it forms a junction with the body.

This species will be easily recognised from the *E. discors*, by its plaited under surface.

Found in the Carboniferous Limestone of Colebrook Dale.

8. E. CRISTATUS.—The Crested Euomphalus, pl. XLII. fig. 36.

Euomphalus cristatus. Phillips, Geo. of Yorkshire, II. p. 225, pl. 13, fig. 5.

Shell with three, widely separated, rather smooth volutions, nearly equally rounded on both sides; the exterior margin provided with a series of alternately large and somewhat smaller, conical, recurved, rather sharp tooth-like processes, which extend to the inner volution.

Found in the Mountain Limestone at Bolland.

9. E. NODOSUS.—The Knotty Euomphalus, pl. XLII. fig. 37, 38.

Euomphalus nodosus. Sowerby, Min. Conch. I. p. 99, pl. 46, fig. 1, 2. *Delphinula nodosa*, Fleming, Brit. An. p. 313.

Shell depressed, rather smooth, consisting of four volutions; the upper side with a nearly central, elevated, rounded spiral ridge; under surface with a central, spiral series of ovate, rather large, nodular elevations; these continue in the lower side of all the volutions, but are only here visible, as the volutions conceal the external sides of each other to that extent; aperture nearly orbicular, the side next the body being a little square; under surface forming a cup-shaped hollow cone.

Found in the Carboniferous Limestone of Derbyshire.

10. E. BIFRONS.—The Double-fronted Euomphalus, pl. XLII. fig. 39.

Euomphalus bifrons. Phillips, Geo. of Yorkshire, II. p. 225, pl. 13, fig. 4.

Shell with three rounded volutions; with a spiral series of nearly orbicular, prominent tubercles above, and obtusely angulated and umbilicated below.

Found in the Mountain Limestone at Bolland.

11. E. PUGILIS.—The Champion Euomphalus.

Euomphalus pugilis. Phillips, Geo. of Yorkshire, p. 225.

Volutions tuberculate on both sides, which distinguishes it from the *E. bifrons*, to which it otherwire bears a strong resemblance.

12. E. CORONATUS.—The Crowned Euomphalus, pl. XLII. fig. 20, 21, 22.

Euomphalus coronatus. Sowerby, Min. Conch. V. p. 71, pl. 450, fig. 3.

Shell discoidal, quite flat above, the volutions being ranged on the same plain; the margin provided with a carina of broad, flat, slightly pointed, sharp spines; volutions below, rounded, and deeply concave, terminating in a central umbilicus.

Found at Ancliffe.

GENUS XXXVIII.—SCALARIA.—*Lamarck.*

Shell turreted, elongated, with gibbous, deeply defined volutions, quite apart in some species, provided with longitudinal, oblique, acute ribs, which in some instances are so thickened as to become distinctly varicose, in one or two instances, however, they are barely elevated above the surface of the shell; aperture nearly orbicular, but generally somewhat longer than broad, its margin thickened all round and reflected, and more so in such species where the volutions are separated; on one side, the lower part of the columella assumes the appearance of an indistinct canal, which is more conspicuous in some species than in others; operculum thin, and cornuous.

1. S. FRONDOSA.—The Leafy Scalaria, pl. XLII. fig. 1.

Scalaria frondosa. Sowerby, Min. Conch. VI. p. 149, pl. 577, fig. 1.

Shell conical, turreted, elongated; with seven or eight deeply divided, distinct, smooth volutions; each covered with about twelve longitudinal, membranaceous, very thin, recurved, very uniform ribs, with their superior portions extending above the upper margins of the volutions in the form of concave spines.

This beautiful species is found in the Suffolk Crag.

2. S. FOLIACEA.—The Foliated Scalaria, pl. XLII. fig. 2.

Scalaria foliacea. Sowerby, Min. Conch. IV. p. 125, pl. 390, fig. 2. Fleming, Brit. An. p. 312. G. B. Sowerby, Genera of Shells, No. 11.

Shell turreted; with seven or eight well defined, disunited volutions, covered with somewhat distant, slender edged, broad based, slightly curved and oblique, longitudinal, reflected ribs, a little bent back in the centre; aperture nearly round, and destitute of a cord round the base, and also of a subumbilicus.

This species is closely allied to the *S. clathrus*, but a little attention to the above specific character will shew the difference.

Found in the Suffolk Crag at Woodhall.

3. S. RETICULATA.—The Reticulated Scalaria, pl. XLII. fig. 3, 4.

Scalaria reticulata. Sowerby, Min. Conch. VI. p. 150, pl. 577, fig. 5. *Turbo reticulatus*, Brander, fig. 27.

Shell subulate, short; with eight well defined, inflated, acute volutions, covered with numerous, close, longitudinal ribs, and crossed by nine or ten prominent spiral striæ, producing a reticulated aspect; columella hollow; base smooth.

Found in the London Clay at Barton Cliff.

4. S. SIMILIS.—The Similar Scalaria, pl. XLII. fig. 5, 6.

Scalaria similis. Sowerby, Min. Conch. I. p. 49, pl. 16, two upper figs. Fleming, Brit. An. p. 311.

Shell with eight or nine well defined volutions; provided with remote, rounded, circular, and prominent longitudinal ribs; a series of five or six spiral, slightly elevated ribs traverse the shell from the base to the apex, but are interrupted by each of the ribs; the lower one on each volution the most prominent; aperture slightly ovate; lips broad; and nearly of uniform thickness all round.

This is a Crag fossil, and is found at Bramerton, near Norwich, and at Holywells, near Ipswich.

5. S. INTERRUPTA.—The Interrupted Scalaria, pl. XLII. fig. 7, 8.

Scalaria interrupta. Sowerby, Min. Conch. VI. p. 149, pl. 577, fig. 3.

Shell subulate; volutions united and convex; with numerous longitudinal, obtuse ribs, slightly elevated at both extremities, and united at both ends by transverse ridges, and a large varix upon each volution: the whole shell spirally striate between the ribs; aperture circular, and its base projecting beyond the lower portion of the body.

A striking character of this shell is the union of all the ribs by a thread-like, spiral rib.

Found in the London Clay at Barton Cliff.

6. S. SUBULATA.—The Subulate Scalaria, pl. XLII. fig. 9, 10.

Scalaria subulata. Sowerby, Min. Conch. IV. p. 125, pl. 390, fig. 1. Fleming, Brit. An. p. 312.

Shell subulate, turreted; with eight slightly defined, contiguous volutions; covered by ten or twelve thick, well raised, longitudinal ribs, which are reflected, and broadest at their upper ends; aperture nearly circular; destitute of a cord around the base, and without an umbilicus.

Found in the Suffolk Crag.

7. S. ACUTA.—The Acute Scalaria, pl. XLII. fig. 11, 12.

Scalaria acuta. Sowerby, Min. Conch. I. p. 50, pl. 16, two lower figs. Fleming, Brit. An. p. 312.

Shell turreted; with eight or nine very gradually tapering, deeply defined, and somewhat distant volutions; with numerous, longitudinal, expanded, recurved ribs, acutely angular on their upper ends, uniting the volutions to each other, and forming a flattened space above; three spiral, depressed ribs extend from the base to the apex, between the longitudinal ribs, and a fourth more prominent one near the lower margin of each volution; aperture circular, with its margin reflected, and contracted into a spine-formed process at its upper and outer extremity, and slightly peaked below the columellar side.

Found in the London Clay at Barton Cliff.

8. S. UNDOSA.—The Waved Scalaria, pl. XLII. fig. 13.

Scalaria undosa. Sowerby, Min. Conch. VI. p. 150, pl. 577, fig. 4.

Shell subulate; volutions united, convex; with about twenty-four slightly elevated, waved, broad, longitudinal ribs, and fine numerous, spiral striæ crossing them, and terminating in a transverse band; base almost smooth, with nearly obsolete lines emanating from the ribs.

Found in the London Clay at Barton Cliff.

9. S. MINUTA.—The Minute Scalaria, pl. XLII. fig. 14, 15.

Scalaria minuta. Sowerby, Min. Conch. IV. p. 125, pl. 390, fig. 3, 4. Fleming, Brit. An. p. 312.

Shell turreted; with seven or eight contiguous, smooth volutions; each furnished with about twenty obtuse, thin, slightly elevated, nearly straight, longitudinal ribs; aperture slightly ovate, furnished with a narrow lip all round, and is destitute of an umbilicus.

This shell is only about half an inch in length. Fig. 14 is a magnified figure. It strongly resembles the recent species, *S. Clathratulus*, but the ribs in that shell are more numerous and sharp.

Found in the Crag at Ramshot.

10. S. SEMICOSTATA.—The Semi-ribbed Scalaria, pl. XLII. fig. 16, 17.

Scalaria semicostata. Sowerby, Min. Conch. I. p. 50, pl. 16, middle fig. Fleming, Brit. An. p. 312.

Shell with about seven contiguous, inflated volutions; with numerous, slightly elevated, longitudinal ribs, extending only about half way down each volution, the lower portion being quite smooth, all the upper portion spirally striated; aperture circular. Length about half an inch.

Found in the London Clay at Barton Cliff.

11. S. MUTICA.—The Barbless Scalaria, pl. XLII. fig. 19.

Scalaria acuta, var. mutica. Sowerby, Min. Conch. VI. p. 149, pl. 577, fig. 2.

Shell subturreted; with seven inflated volutions, and about sixteen longitudinal, thick, sharp edged, reflected, unequal ribs on each volution, but not produced above; about four flat and narrow spiral ribs intervene betwixt the longitudinal ones, but do not cross them; aperture circular; margin thin.

Found in the London Clay in Alum Bay, Isle of Wight.

12. S. PLICATA.—The Plaited Scalaria, pl. XLII. fig. 18.

Scalaria plicata. Deshayes, Foss. Env. des Paris, pl. , fig. . *Scalaria semicostata*, Sowerby, Min. Conch. VI. p. 150, pl. 577, fig. 6.

Shell greatly elongated; with eleven or twelve attached, moderately inflated volutions, ending in an acute apex; with numerous, nearly straight, longitudinal, blunted ribs, the interstices crossed by fine spiral striæ; base of the body smooth; aperture slightly ovate; lips smooth and rounded, in their whole circumference.

Found in the London Clay at Barton Cliff.

GENUS XXXIX.—VERMETUS.—*Adanson.*

Shell thin, tubulose, loosely spiral in the lower portion, three or four upper volutions regularly spiral; adherent to extraneous substances by the apex of the spiral part; aperture orbicular; margins united, and provided with an operculum.

1. V. BOGNORIENSIS.—The Bognor Vermetus, pl. XLIII. fig. 1.

Vermetus Bognoriensis. Sowerby, Min. Conch. VI. p. 194, pl. 596, fig. 1, 2, 3. *Vermicularia Bognoriensis,* Mantell, Geo. of Sussex, p. 272. *Serpula?* Parkinson, Org. Rem. III. p. 97, pl. 7, fig. 8.

The spiral portion smooth, circular, conical, and concave beneath; tube obscurely pentangular, with a furrow above and below; the tubular projection cylindrical, slightly curved, and generally exceeding in length the longest diameter of the shell.

This species is gregarious, and is plentiful in the Sandstone of the Bognor Rocks, and on the coast of Sheppy, as well as at Highgate Hill. Dr. Mantell mentions a block of Sandstone in his possession, about four inches square, which contains nearly twenty specimens lying in relief.

2. V. POLYGONALIS.—The Polygonal Vermetus, pl. XLIII. fig. 2.

Vermetus polygonalis. Sowerby, Min. Conch. VI. p. 196, pl. 596, fig. 6.

Spiral portion in the form of a short cone, provided with one involute, prominent, erect ridge, which wind to the apex, and two less elevated ridges round the margin, where they terminate more prominently, and their points ending in two short spines; tubular projection, having a trumpet-shaped termination, and with seven acute angles.

Found at Seabrook, in Limestone belonging to the Lower Greensand series.

3. V. CONCINNUS.—The Trim Vermetus, pl. XLIII. fig. 3.

Vermetus concinnus. Sowerby, Min. Conch. VI. p. 195, pl. 596, fig. 5.

Shell circularly convolute, slightly convex on one side, and concave on the other, a great portion of the tube projecting; tube pentangular, four of the angles acute, and the other rather obscure.

Found plentifully in a brown Sandy Limestone in Robin Hood's Bay, Isle of Wight.

4. V. TUMIDUS.—The Tumid Vermetus, pl. XLIII. fig. 4, 5.

Vermetus tumidus. Sowerby, Min. Conch. VI. p. 195, pl. 596, fig. 4.

Shell thick, discoidal; with few volutions, seldom exceeding two; tube thick, externally marked with a broad, concentric furrow or two on the sides; prolonged portion small, short, and cylindrical; margin of the aperture thickened; apex with a callus.

Found in the Coral Rag at Scarborough.

5. V. CONCAVUS.—The Concave Vermetus, pl. XXXVII.* fig. 40.

Vermetus concavus. J. de C. Sowerby, Geo. Trans. IV. 2nd series, p. 343, pl. 18, fig. 10. Fitton, Ib., p. 228. *Vermicularia concava,* Sowerby, Min. Conch. I. p. 125, pl. 57, figs. 1 to 5.

Shell smooth; spiral portion depressed above, and concave beneath; three or four volutions, united at the sides by a spiral projection; prolonged portion always at least double the diameter of the spiral part in length; tube rounded throughout.

Found in the Greensand at Dilton, near Westbury, and in the Upper Greensand of Dorsetshire.

6. V. STRIATUS.—The Striated Vermetus, pl. XLIII. fig. 14, 15.

Planorbis radiatus. Sowerby, Min. Conch. II. p. 92, pl. 140, fig. 5. Fleming, Brit. An. p. 279.

Shell strong; with the spiral portion of the volutions nearly lenticular, considerably produced, and nearly concealed in the lower side; both sides traversed by radiating striæ, which are sharp and acute in and near the umbilicus, but gradually become obsolete towards the back of the volutions; under side umbilicated; aperture orbicular, swelling at the margins; thickness about a fourth of its diameter.

Found in the Greensands of Blackdown, Devonshire.

FAMILY III.—PLICACEA.

Shell with the aperture somewhat contracted, and the columella plaited.

GENUS XL.—TORNATELLA.—*Lamarck.*

Shell oval or oblong, cylindrical, generally grooved or striated; spire very short, and somewhat obtuse, in a few species acute; aperture longitudinal, elongated, not less than half the length of the shell, but frequently two-thirds, straitened above, and somewhat widened below; outer lip simple, with an acute edge; inner lip thin, and but slightly reflected over the body; columella, which is spiral, thickened, plaited, its base confluent with the outer lip.

1. T. ACUTUS.—The Acute Tornatella, pl. XLIII. fig. 6, 7, 8.

Tornatella acutus. Fleming, Brit. An. p. 336. *Acteon acutus,* Sowerby, Min. Conch. V. p. 78, pl. 455, fig. 2.

Shell subcylindrical, smooth; spire short, conical, and acute; columella provided with one plait; aperture about three-fourths the length of the shell.

Found in the Oolite at Ancliffe.

Fig. 7, natural size; 6 and 8, magnified.

2. T. NOÆ.—Noah's Tornatella, pl. XLIII. fig. 9, 10.

Tornatella Noæ. Fleming, Brit. An. p. 336. *Acteon Noæ,* Sowerby, Min. Conch. IV. p. 101, pl. 374.

Shell oval, fragile, subcylindrical; with one large plait at the base of the columella; aperture oblong-ovate, straitened, and pointed above, much widened and rounded below; outer lip sulcated within; whole surface covered with numerous, equidistant, transverse striæ, and obscurely decussated by longitudinal striæ.

Found in the Crag at Walton, Essex.

3. T. CUSPIDATUS—The Pointed Tornatella, pl. XLIII. fig. 11, 12.

Tornatella cuspidatus. Fleming, Brit. An. p. 336. *Acteon cuspidatus,* Sowerby, Min. Conch. V. p. 77, pl. 455, fig. 1.

Shell smooth, subcylindrical; gradually contracting from the centre to the base, which ends in a narrowed point; superior portion of the body volution flattened, and rather hollowed around the base of the spire; spire conical, consisting of four volutions, and terminating in a sharp apex; aperture greatly elongated, extending above the body, and much contracted, gradually widening as it descends; columella provided with a single plait, and an acute spiral edge above it; outer lip slightly crenated within.

Found in the Oolite at Ancliffe.

4. T. RETUSUS.—The Blunted Tornatella, pl. XLIII. fig. 13.

Acteon retusus. Phillips, Geo. of Yorkshire, I. p. 107, pl. 4, fig. 27.

Shell subovate, smooth; body large, ventricose; spire small, consisting of three volutions, terminating in an obtuse apex; aperture subovate; columella with two plaits; outer lip plain, and rather acute.

Found in the Calcareous Grit at Scarborough.

5. T. ELONGATA.—The Elongated Tornatella, pl. XXXIII.* fig. 10, 11.

Tornatella elongata. J. de C. Sowerby, Geo. Trans. IV. 2nd series, p. 335, pl. 11, fig. 1. Fitton, Ib., p. 363.

Shell elongated, elliptical; body large; spire short, consisting of three or four volutions; aperture elongated, contracted above, and wide below; outer lip slightly thickened; surface covered with spiral, regular furrows, crossed by longitudinal striæ, which do not extend over the intervening ribs.

Found in the Chalk Marl of the Upper Greensand, Kent.

6. T. AFFINIS.—The Related Tornatella, pl. XXXIII.* fig. 12, 13.

Tornatella affinis. J. de C. Sowerby, Geo. Trans. IV. 2nd series, p. 343, pl. 18, fig. 9.

Shell ovate; body large; spire short, consisting of four gradually tapering volutions, terminating in an acute apex; aperture occupying about half the length of the body, ovate, contracted above, and gradually widening as it descends, the lower part much rounded, and terminating in a truncated base; outer lip plain; columella with one single and one double fold; surface covered by numerous, spiral grooves, crossed by many longitudinal, somewhat oblique striæ.

This species has a strong resemblance to *Auricula simulata,* pl. XLVI. fig. 40, 41, but is more elongated, more acute, and of smaller size.

Found in the Gault, Kent.

7. T. POPII.—Pope's Tornatella, pl. XXXIII.* fig. 14, 15.

Tornatella Popii. J. de C. Sowerby, Geo. Trans. IV. 2nd series, p. 347, pl. 23.

Shell smooth, oblong-ovate; body large; spire small, consisting of about three volutions; aperture oblong, rather wide, slightly contracted above, expanding below, and occupying about two-thirds of the body; columella with two plaits.

Found in the Hastings Sand, Sussex.

FAMILY IV.—MACROSTOMA.

Shell auriform, with a very wide aperture, and the margins disunited; destitute of a culumella or operculum.

GENUS XLI.—PLEUROTOMARIA.—*Defrance.*

Shell turbinated, spiral, for the most part trochiform, and abruptly conical, and in some species subturreted; aperture generally subquadrate, with rounded angles, in others more orbicular, and flattened at the base; outer lip sharp edged, with a deep slit near its junction with the spire; provided with a large umbilicus.

1. P. ATOMARIA.—The Atomed Pleurotomaria, pl. XL. fig. 1.

Pleurotomaria atomaria. Phillips, Geo. of Yorkshire, II. p. 227, pl. 15, fig. 11.

Shell ovate; body large, inflated; spire small, consisting of three tabulated, rapidly decreasing volutions, terminating in an obtuse apex; two sharp spiral carinæ traverse the shell; surface covered with fine, punctated, spiral, and longitudinal striæ, producing an obscure reticulated appearance.

Found in the Mountain Limestone at Bolland.

2. P. UNDULATA.—The Waved Pleurotomaria, pl. XL. fig. 2.

Pleurotomaria undulata. Phillips, Geo. of Yorkshire, II. p. 227, pl. 15, fig. 14.

Shell ovate; body large, ventricose; spire small, consisting of two convex volutions, terminating in an acute apex; a single broad, flat band traverses the centre of the body, and lower portion of the spiral convolutions; surface covered with longitudinal, undulating striæ, every third one more prominent than the others.

Found in the Mountain Limestone at Bolland.

3. P. INCONSPICUA.—The Inconspicuous Pleurotomaria, pl. XL. fig. 3 and 5.

Pleurotomaria inconspicua. Phillips, Geo. of Yorkshire, II. p. 227, pl. 15, fig. 8.

Shell somewhat depressed; body very large; spire very small, consisting of two flattened volutions; convex at the sides; aperture large, transversely oval, very much expanded; outer lip plain; inner lip broadly reflected on the columella; an obscure narrow band traverses the centre of the body, and base of the volutions of the spire; whole surface covered with distinct, undulating, longitudinal striæ.

Found in the Mountain Limestone at Bolland.

4. P. DEPRESSA.—The Depressed Pleurotomaria, pl. XL. fig. 4.

Pleurotomaria depressa. Phillips, Geo. of Yorkshire, II. p. 227, pl. 15, fig. 7.

Shell depressed; volutions plane above, convex and concentrically striated beneath; with a prominent rounded band investing the central portion of the body.

Found in the Mountain Limestone, Bolland.

5. P. FIBULA.—The Button Pleurotomaria, pl. XL. fig. 6.

Pleurotomaria strialis. Phillips, Geo. of Yorkshire, II. p. 227, pl. 15, fig. 9.

Shell somewhat depressed; body large, inflated; spire very short, consisting of three volutions, terminating in a very acute apex; mesial band broad, plain, and investing the body somewhat below the centre; surface covered with fine, regular, spiral striæ.

Found in the Mountain Limestone, Bolland.

I have altered the specific name, as it was too near *striata*, No. 12.

6. P. SULCATA.—The Sulcated Pleurotomaria, pl. XL. fig. 7.

Pleurotomaria sulcata. Phillips, Geo. of Yorkshire, II. p. 226, pl. 15, fig. 6.

Shell ovoid; body very large; spire very small, consisting of three rounded volutions, with an obscure, nearly central, transverse mesial band; surface invested with numerous, rounded, spiral sulci.

Found in the Mountain Limestone, Bolland.

7. P. SULCATULA.—The Furrowed Pleurotomaria, pl. XL. fig. 11.

Pleurotomaria sulcatula. Phillips, Geo. of Yorkshire, II. p. 226, pl. 15, fig. 5.

Shell subdepressed; body large; spire small, conoidal, with three slightly inflated, rapidly diminishing volutions, terminating in a subacute apex; aperture transversely oblong, much expanded; superior surface spirally furrowed; inferior surface with fine concentric striæ; mesial band rather narrow, and situate a little below the centre.

Found in the Mountain Limestone, Bolland, and the Isle of Man.

8. P. EXPANSA.—The Expanded Pleurotomaria, pl. XL. fig. 8.

Pleurotomaria expansa. Phillips, Geo. of Yorkshire, II. p. 226, pl. 15, fig. 4.

Shell subconic, depressed; body very large; spire very small, consisting of three depressed, gradually decreasing volutions; aperture much expanded transversely; mesial band flattened, and crossed by arcuated striæ; surface covered with oblique striæ, and obsolete spiral striæ.

Found in the Mountain Limestone, Bolland.

9. P. LIRATA.—The Ridged Pleurotomaria, pl. XL. fig. 9, 10.

Pleurotomaria lirata. Phillips, Geo. of Yorkshire, II. p. 227, pl. 15, fig. 13.

Shell conical; body large; spire small, consisting of four gradually tapering volutions, terminating in an acute apex; aperture nearly circular, slightly pointed above; outer lip plain; inner lip narrowly reflected on the columella above, increasing in breadth as it descends; mesial band prominent, with arcuated transverse striæ; surface above the band with longitudinal, oblique sulci, and with straight, longitudinal furrows beneath the band; base rounded.

Found in the Mountain Limestone, Bolland.

10. P. ACUTA. — The Acute Pleurotomaria, pl. XL. fig. 12.

Pleurotomaria acuta. Phillips, Geo. of Yorkshire, II. p. 228, pl. 15, fig. 21.

Shell reversed, conical; spire consisting of three inflated volutions; body traversed at its angle by a short mesial band; surface obliquely striated above the carina, and with spiral lines below.

Found in the Mountain Limestone, Bolland.

11. P. ABDITA.—The Concealed Pleurotomaria, pl. XL. fig. 13, 14.

Pleurotomaria abdita. Phillips, Geo. of Yorkshire, II. p. 227, pl. 15, fig. 15.

Shell smooth, subdepressed; body very large; spire very small, consisting of three flat volutions, a little rounded at the sides, ending in an obtuse apex; aperture large, transversely expanded; outer lip bounded by the band; inner lip reflected on the columella; mesial band broad, flat, and losing itself in the suture of the spire.

Found in the Mountain Limestone, Bolland.

12. P. STRIATA.—The Striated Pleurotomaria, pl. XL. fig. 15, 16.

Helix? striatus. Sowerby, Min. Conch. II. p. 159, pl. 171, fig. 1.

Shell conical, subdepressed; body large; spire small, consisting of three flattened volutions, rounded at the sides; aperture suborbicular, occupying more than half the length of the body; an elevated, broad, transverse, mesial band invests the centre of the body, and is continued along the base of the volutions of the spire, and crossed by arcuated striæ; columella solid; surface covered by oblique, somewhat wide striæ.

Found in the Mountain Limestone of Derbyshire.

13. P. GLABRATA.—The Smooth Pleurotomaria, pl. XL. fig. 17.

Pleurotomaria glabrata. Phillips, Geo. of Yorkshire, II. p. 229, pl. 15, fig. 28.

Shell depressed, smooth; body large; spire small, with three gradually tapering volutions; body rounded at the sides; length only about half its diameter; destitute of a band.

Found in the Mountain Limestone, Bolland.

14. P. FLAMMIGERA.—The Flame Pleurotomaria, pl. XL. fig. 18.

Pleurotomaria flammigera. Phillips, Geo. of Yorkshire, II. p. 226, pl. 15, fig. 2. Ib., Treatise on Geology, I. p. 163, fig. 11.

Shell subconic; spire with three moderately inflated volutions; body having a broad mesial band, with arcuated transverse striæ; whole surface covered with longitudinal and transverse, wide-set striæ, producing a fine reticulated appearance; above the band, the surface is covered with handsome flame-like, zigzag lines of colour.

Found in the Mountain Limestone, Bolland.

15. P. OVOÏDEA.—The Ovate Pleurotomaria, pl. XL. fig. 19.

Pleurotomaria ovoïdea. Phillips, Geo. of Yorkshire, II. p. 228, pl. 15, fig. 27.

Shell smooth, ovate, subconic; body large; spire small, consisting of four moderately rounded volutions, subangular below; surface with flexous lines of growth.

Found in the Mountain Limestone, in Derbyshire, Bolland, Isle of Man, and Otterburn, Northumberland.

16. P. HELICOIDES.—The Helix-formed Pleurotomaria, pl. XL. fig. 20.

Pleurotomaria Helicoides. Phillips, Geo. of Yorkshire, II. p. 228, pl. 15, fig. 26.

Shell smooth, subdepressed; body large; spire small, with four rounded volutions, terminating in an acute apex; base

umbilicated, with its edges spirally striated; aperture lunate; surface covered with faint lines of growth, which are retroflexed in the middle.

Found in the Mountain Limestone, Bolland.

17. P. VITTATA.—The Banded Pleurotomaria, pl. XL. fig. 21.

Pleurotomaria vittata. Phillips, Geo. of Yorkshire, II. p. 228, pl. 15, fig. 24.

Shell conical, subturreted; spire and body of nearly equal length; volutions ventricose; a broad, flat, spiral, mesial band invests the body, somewhat lower than the centre; surface covered with longitudinal, slightly oblique striæ.

Found in the Mountain Limestone, Otterburn and Bolland.

18. P. SCULPTA.—The Carved Pleurotomaria, pl. XL. fig. 22.

Pleurotomaria sculpta. Phillips, Geo. of Yorkshire, II. p. 227, pl. 15, fig. 12.

Shell conical, elongated; body large; spire small, consisting of three slightly inflated, tabulated volutions, each furnished with three carinæ, the spaces between which are provided with very delicate striæ; upper and under surfaces longitudinally plaited.

Found in the Mountain Limestone, Bolland.

19. P. INTERSTRIALIS.—The Interstriated Pleurotomaria, pl. XL. fig. 23.

Pleurotomaria interstrialis. Phillips, Geo. of Yorkshire, II. p. 227, pl. 15, fig. 10.

Shell oblong-ovate, pyramidal; spire conical, of medium length, consisting of four volutions, terminating in an acute apex; body invested by three rather prominent, spiral carinæ, each with two or three strong, spiral striæ between them; base convex, concentrically striate; aperture nearly orbicular; whole surface covered with fine, longitudinal, fimbriated striæ.

Found in the Mountain Limestone, Bolland.

20. P. CARINATA.—The Keeled Pleurotomaria, pl. XL. fig. 24, 25.

Pleurotomaria carinata. Phillips, Geo. of Yorkshire, II. p. 226, pl. 15, fig. 1. *Helix carinatus,* Sowerby, Min. Conch. I. p. 34, pl. 10, upper and lower figures.

Shell pyramidal; body large; spire small, consisting of four flat-sided volutions, terminating in a rather acute apex; body invested by a broad, flat, elevated, spiral, mesial band, emanating from the superior edge of the outer lip, winding along the centre of the body, and continued at the base of each volution, until it loses itself in the apical one; portion of the body below the band smooth, as well as the base, which is furnished with a pretty large, open umbilicus; superior portion of the body and spire, as well as the band, covered by oblique striæ; aperture large, and expanded laterally.

Found in the Mountain Limestone at Settle, Yorkshire.

21. P. TUMIDA.—The Tumid Pleurotomaria, pl. XL. fig. 26.

Pleurotomaria tumida. Phillips, Geo. of Yorkshire, II. p. 226, pl. 15, fig. 3.

Shell subdepressed; body large, tumid; spire short, consisting of three rounded volutions, excavated above, as well as the body; a broad, flat, spiral, mesial band invests the centre of the body; whole surface covered with nearly obsolete, spiral striæ, and with longitudinal arcuated striæ.

Found in the Mountain Limestone at Bolland.

22. P. DUBIA.—The Doubtful Pleurotomaria, pl. XL. fig. 27.

Cirrus, probably *C. rotundatus.* Phillips, Geo. of Yorkshire, p. 250, pl. 15, fig. 31.

Shell cirriform, depressed, smooth; spire small, consisting of two flat volutions.

Found in the Mountain Limestone at Bolland.

23. P. GEMMULIFERA.—The Gemmed Pleurotomaria, pl. XL. fig. 28, 29.

Pleurotomaria gemmulifera. Phillips, Geo. of Yorkshire, II. p. 227, pl. 15, fig. 19.

Shell subconic, subdepressed; body large; spire small; volutions convex above, and flat beneath; edge nodular; aperture very large, transversely expanded; the whole upper surface covered by gemmuliferous, spiral striæ.

Found in the Mountain Limestone, Bolland.

24. P. MONILIFERA.—The Necklace-striate Pleurotomaria, pl. XL. fig. 30 and 34.

Pleurotomaria monilifera. Phillips, Geo. of Yorkshire, II. p. 227, pl. 15, fig. 10, *a.*

Shell oblong-ovate; superior portion of the body and spire conical; body with a large, prominent, spiral, mesial band on its extreme edge, with a smaller one below, these extend to the spire; aperture of moderate size; whole surface covered with moniliform, spiral striæ.

Found in the Mountain Limestone at Bolland.

25. P. CONCENTRICA.—The Concentric Pleurotomaria, pl. XL. fig. 31.

Pleurotomaria concentrica. Phillips, Geo. of Yorkshire, II. p. 228, pl. 15, fig. 23.

Shell turreted; with quadrate, subtabulate volutions above, convex below; umbilicus closed; whole surface covered by numerous, strong, spiral sulci, the basal furrows being the largest.

Found in the Mountain Limestone, Bolland.

26. P. CONICA.—The Conical Pleurotomaria, pl. XL. fig. 32.

Pleurotomaria conica. Phillips, Geo. of Yorkshire, II. p. 228, pl. 15, fig. 22.

Shell conical; body ventricose; spire consisting of five nearly flat-sided volutions, ending in an acute apex; base umbilicated; aperture large, subovate, laterally expanded; a bicarinate, spiral, mesial band invests the lower portion of the body, and, ascending, winds round the base of the volutions of the spire, covered with oblique, acutely elevated striæ.

In some varieties the band is tricarinate, with a sulcus separating the two superior ones.

Found in the Mountain Limestone of Derbyshire, and at Bolland.

27. P. LIMBATA.—The Bordered Pleurotomaria, pl. XL. fig. 33.

Pleurotomaria limbata. Phillips, Geo. of Yorkshire, II. p. 227, pl. 15, fig. 18.

Shell conical, subdepressed; spire consisting of five rather flat-sided volutions; base of the volutions, as well as the body, provided with numerous, oblique ribs; the superior margin of all the volutions nodular; base flat.

Found in the Mountain Limestone at Bolland.

28. P. BISERRATA.—The Doubly-serrated Pleurotomaria, pl. XL. fig. 35.

Pleurotomaria biserrata. Phillips, Geo. of Yorkshire, II. p. 228, pl. 15, fig. 29.

Shell acutely conical; body not quite so long as the spire; suture of the spire, and lower angle of the volutions, provided with a doubly serrated carina, and between them a crenulated line; base provided with three concentric furrows; and the whole surface obliquely striate.

Found in the Mountain Limestone, Derbyshire.

29. P. TORNATILIS.—The Turned Pleurotomaria, pl. XL. fig. 36.

Pleurotomaria tornatilis. Phillips, Geo. of Yorkshire, II. p. 228, pl. 15, fig. 25.

Shell ovate; body large, inflated; spire small, consisting of four ventricose volutions; base somewhat pointed, and acute; body invested by a very broad, spiral, mesial band, with a furrow on each side, continued around the base of the volutions of the spire; base provided with two concentric furrows; the whole surface covered with distinct, spiral striæ.

Found in the Mountain Limestone, Bolland.

30. P. SQUAMULA.—The Scaly Pleurotomaria, pl. XL. fig. 37.

Pleurotomaria squamula. Phillips, Geo. of Yorkshire, II. p. 227, pl. 15, fig. 17.

Shell regularly conical; body and spire of nearly equal length; sides almost flat; spire consisting of five volutions; whole surface covered with numerous, squamous, oblique ribs, either entire or bifurcate, or alternately long and short.

Found in the Mountain Limestone, Bolland.

31. P. CIRRIFORMIS.—The Cirrus-shaped Pleurotomaria, pl. XL. fig. 38 and 42.

Helix? cirriformis. Sowerby, Min. Conch. II. p. 160, pl. 171, fig. 2.

Shell conical, ventricose; volutions a little tabulate above; aperture nearly circular; a broad, raised, mesial band traverses the centre of the body and volutions of the spire, and is crossed by arcuated striæ; whole surface covered with longitudinal and spiral, distinct, small, arcuated striæ; base with a narrow umbilicus.

Found in the Mountain Limestone of Derbyshire.

32. P. EXCAVATA.—The Excavated Pleurotomaria, pl. XL. fig. 39.

Pleurotomaria excavata. Phillips, Geo. of Yorkshire, II. p. 228, pl. 15, fig. 20.

Shell conical; the volutions tumid, and provided with a sharp carina on their sides; almost plain above and below; umbilicus closed.

Found in the Mountain Limestone at Bolland.

33. P. FUSIFORMIS.—The Spindle-shaped Pleurotomaria, pl. XL. fig. 40.

Pleurotomaria fusiformis. Phillips, Geo. of Yorkshire, II. p. 227, pl. 15, fig. 16.

Shell smooth, fusiform; spire not quite so long as the body; sides of the volutions rather flat, and furnished with three spiral carinæ, the lower one sutural; aperture ovate.

Found in the Mountain Limestone, Bolland.

34. P. SERRILIMBA.—The Tooth-bordered Pleurotomaria, pl. XL. fig. 41.

Pleurotomaria serrilimba. Phillips, Geo. of Yorkshire, II. p. 228.

Shell acutely conical; body very short; spire long, with nearly flat sides; the band which traverses the lower margin, with a serrated margin.

Found in the Mountain Limestone, Derbyshire.

35. P. COMPRESSA.—The Compressed Pleurotomaria, pl. XXXIII.* fig. 16, 17.

Helicina compressa. Sowerby, Min. Conch. II. p. 33, pl. 10, three middle figures.

Shell thick, strong, depressed; body large; spire short, consisting of three nearly flat-sided volutions; aperture subovate, a little angular above; body provided with an elevated, sharp, narrow, mesial band, which also invests the lower part of the volutions of the spire.

Found in the Mountain Limestone of Leicestershire.

GENUS XLII.—SIGARETUS.—*Lamarck.*

Shell subauriform, somewhat orbicular, and depressed, generally with a nearly marginal, hardly prominent spire, consisting of two or three volutions; aperture entire, longer than wide, greatly dilated, with its edges disunited at the upper extremity, and embracing the lower part of the body; inner lip short, spirally twisted, and for the most part a very little reflected above, but in some instances so much so, as to form a small umbilicus; inside of the aperture exhibiting two muscular impressions, one at the upper, and the other at the lower extremity.

1. S. CANALICULATUS.—The Canaled Sigaretus, pl. XLIII. fig. 16, 17.

Sigaretus canaliculatus. Sowerby, Min. Conch. IV. p. 115, pl. 384.

Shell slightly ovate, convex; spire depressed, with two canaliculate volutions, terminating in a pointed apex; aperture subovate, rounded below, and somewhat square next the columella, over which the inner lip is broadly reflected, with a large umbilicus behind; whole surface covered by longitudinal striæ, which are decussated by transverse lines of growth. Length varying from half an inch to three-quarters.

Found in the London Clay at Hordwell.

FAMILY V.—NERITACEA.

Shells inhabiting the sea and fresh waters; semiglobular, or oval in their form; destitute of a columella; the margin of the inner lip sharp edged, and placed transversely; always provided with an operculum.

GENUS XLIII.—NATICA.—*Adanson.*

Shell subglobose, oval, or oblong; umbilicate; spire short, sometimes very short, with apex very rarely pointed; aperture large, semicircular, and very seldom

effuse; outer lip sharp-edged, smooth within; columellar lip transversely oblique, destitute of teeth, generally thickened, and sometimes with a coating of enamel spread thickly over the umbilicus; umbilicus usually large, having a spiral callosity within, which in some instances increases so as to cover it, in others it is very small, and in a few instances nearly obsolete, so much so, as to be hardly perceptible as an umbilical opening; operculum testaceous in some species, and horny in others.

1. NATICA GLAUCINOIDES. — The Grayish Natica, pl. XLIII. fig. 30, 31.

Natica glaucinoides. Sowerby, Min. Conch. I. p. 19, pl. 5, three upper figures. Fleming, Brit. An. p. 320.

Shell semiglobular; body very large, inflated, slightly flattened, and a little concave above; spire small, consisting of four rounded, rapidly decreasing volutions, terminating in a pointed apex; umbilicus large, simple, while in some specimens it is partly closed, by a slight elongation of the glazing of the pillar lip; surface very glossy, of a light grayish-brown colour, with indications of darker bands.

This shell strongly resembles *N. glaucina*, but its spire is more produced than in that species, the inner lip is also stronger, and liable to become callous over the umbilical region.

Found in the London Clay at Highgate, and in the Suffolk Crag.

2. NATICA SIMILIS.—The Similar Natica, pl. XLIII. fig. 28, 29.

Natica similis. Sowerby, I. p. 20, pl. 5, two middle figures. Fleming, p. 320.

Shell smooth, somewhat rhomboidal, or slightly ovate; spire very short, consisting of three or four depressed volutions, the apicial one obtuse; aperture sublunate, longitudinal; outer lip not much expanded, and plain; inner lip thickened, bilobate, dividing the umbilicus, which is deep, and with a flattened area at its lower side.

Found in the London Clay at Highgate, and also at Bognor.

3. NATICA DISCREPANS.—The Differing Natica, pl. XLIII. fig. 24.

Natica glaucinoides. Sowerby, V. p. 126, pl. 499, fig. 4.

Shell ovate, smooth, and glossy; spire very short, consisting of four depressed volutions, with the apicial one obtuse; aperture large, sublunate, with the outer lip considerably expanded, and plain at the edge; pillar lip broadly thickened upon the columella above, but narrowed below; umbilicus deep and wide, but suddenly contracting internally.

This shell differs from the *N. glaucinoides*, in its more expanded outer lip, and in the aperture being larger in proportion to the size of the shell.

Found in the Suffolk Crag, and at Bramerton, Norfolk.

4. NATICA SIGARATINA.—The Sigaritus-formed Natica, pl. XLIII. fig. 18, 19.

Natica sigaratina. Sowerby, V. p. 126, pl. 479, fig. 3. Fleming, p. 321.

Shell smooth, greatly depressed; spire small, with three ill defined volutions, hardly rising above the body; aperture ovate, obliquely curved, and contracted above; outer lip even; thickening on the pillar narrow; umbilicus large, nearly filled with a lenticular callus, a small portion, however, is always open.

Found in the London Clay.

5. NATICA CIRRIFORMIS.—The Cirrus-shaped Natica, pl. XLIII. fig. 20, 21.

Shell subglobose; spire rather short, consisting of three well rounded, but somewhat depressed volutions, the apicial one much blunted; body rather flattened above; aperture small, sublunate, rounded both above and below; pillar lip thickened, with a central sinus; umbilicus very large, intruding upon the columella, destitute of a spiral ridge, and exposing the volutions internally as far as the apicial one; behind the pillar lip some strong, elevated, nearly equidistant, longitudinal ridges.

Found in the Suffolk Crag.

6. NATICA PATULA.—The Open Natica, pl. XLIII. fig. 22, 23.

Natica patula. Sowerby, IV. p. 99, pl. 373, three lower figures. Fleming, p. 321.

Shell slightly ovate; body very large, flattened in front; spire very short, and much depressed, hardly rising above the general surface of the body, consisting of four very small volutions, terminating in an acute apex; aperture sublunate, rounded both above and below; pillar lip considerably thickened; umbilicus large, and partly filled by a callus, with a smaller one, forming a spiral ridge within; general surface smooth, with very minute, concentric striæ, and rather obsolete lines of growth.

Found at Ipswich, in the Suffolk Crag.

7. NATICA CINCTA. — The Girdled Natica, pl. XLIII. fig. 25.

Natica cincta. Phillips, I. p. 101, pl. 4, fig. 9.

Shell ovate; spire depressed, consisting of three volutions, flattened above; body with a large obliquely flattened space above, with a subcarinated edge; aperture sublunate, with a sharp outer lip, and a moderately thick columellar glazing; umbilicus rather small; outer surface smooth, with distinct lines of growth; the body invested by a spiral fillet or band.

Found in the Coralline Oolite at Malton.

8. NATICA AMPLIATA.—The Ample Natica, pl. XLIII. fig. 26, 27.

Natica ampliata. Phillips, II. p. 224, pl. 14, fig. 21 and 24.

Shell hemispherical; body very large, much inflated; spire very small, sunk behind the outer lip, and consisting of two much depressed, ill defined volutions; aperture ample; outer lip much expanded; columellar lip plane; whole surface covered with small, equidistant, filiform, longitudinal striæ.

Found in the Mountain Limestone at Bolland, and in Northumberland.

9. NATICA PLICISTRIA.—The Plicistriate Natica, pl. XLIII. fig. 32.

Natica plicistria. Phillips, II. p. 225, pl. 14, fig. 25.

Shell oblong-ovate; body large, smooth; spire small, subconic, consisting of three plicistriate volutions, their superior edges being obliquely flattened, as well as that of the body.

When the shell is old, the flat space becomes concave.

Found in the Mountain Limestone of Bolland, Bristol, Northumberland, Kirby Lonsdale, and Kildare, Ireland.

10. NATICA ADDUCTA.—The Close Natica, pl. XLIII. fig. 33 and 41.

Natica adducta. Phillips, I. p. 123, pl. 9, fig. 30, and p. 129, pl. 11, fig. 35.

Shell smooth, nearly hemispherical; body large; spire pretty large, produced, consisting of four rather inflated volutions, terminating in a sharp apex; a few indistinct lines of growth.

Found in the Oolite called the White Nab, at Cloughton, and in the Inferior Oolite Sand called the Blue Wick.

11. NATICA ELLIPTICA.—The Elliptical Natica, pl. XLIII. fig. 34.

Natica elliptica. Phillips, II. p. 224, pl. 14, fig. 23.

Shell elliptical; body very large, covered with fine, oblique striæ; spire short, very small, consisting of three greatly depressed volutions, with the apicial one quite obtuse; columella plain, and arcuated.

Found in the Mountain Limestone, in Northumberland, and at Bolland.

12. NATICA PLANISPIRA.—The Flat-spired Natica, pl. XLIII. fig. 35.

Natica planispira. Phillips, II. p. 224, pl. 14, fig. 30.

Shell oblong-ovate; body very large; spire very small, consisting of two well defined volutions, flattened above; aperture large, wide, and subquadrate; outer lip much expanded, and produced in the centre; columellar lip widely thickened above, and narrowing as it descends; umbilicus closed; body flattened above, and plicistriate.

Found in the Mountain Limestone at Bolland.

13. NATICA HEMICLAUSA.—The Half-closed Natica, pl. XLIII. fig. 36, 37.

Natica hemiclausa. Sowerby, V. p. 125, pl. 479, fig. 2. Fleming, p. 321.

Shell smooth, subovate; body very large in proportion to the size of the spire, which consists of two very small, ill defined volutions; aperture ovate, occupying about two-thirds of the length of the shell; outer lip smooth-edged; pillar lip considerably thickened above, narrow beneath, and slightly reflected into the moderately-sized umbilicus, which it half closes; it is destitute of a spiral ridge; the shell is thickened in the middle, and gradually tapers towards the apex, and also towards the base, which is somewhat produced.

Found in the Crag at Woodbridge, Bramerton, Ipswich, and various other places in Suffolk and Norfolk.

14. NATICA LIRATA.—The Lyre-shaped Natica, pl. XLIII. fig. 38, 39.

Natica lirata. Phillips, II. p. 224, pl. 14, fig. 22.

Shell suborbicular; body very large; spire very small, mammillary, consisting of two or three volutions, the lower one large in proportion to the others, and terminating in a rounded apex; aperture smooth internally, rather large; outer lip greatly expanded; body somewhat flattened above, and the whole surface covered with longitudinal, lamellar, raised, thread-like striæ, resembling the strings of a lyre.

A variety is found with interlaminar striæ.

This species occurs in the Mountain Limestone at Bolland.

15. NATICA TABULATA.—The Tabulated Natica, pl. XLIII. fig. 40.

Natica tabulata. Phillips, II. p. 225, pl. 14, fig. 29.

Shell oblong-ovate; spire produced, consisting of three volutions, flattened, or tabulated above; body subcylindrical, with a subacute base; and its superior portion flattened, and slightly oblique, with five longitudinal striæ.

Found in the Mountain Limestone at Bolland.

16. NATICA TUMIDULA.—The Slightly-tumid Natica, pl. XLIII. fig. 42, 43.

Natica tumidula. Phillips, I. p. 129, pl. 11, fig. 25.

Shell smooth, nearly orbicular; body large and tumid; spire exceedingly small, consisting of two very ill defined volutions, which hardly rise above the body; aperture very large, extending nearly the whole length of the shell; outer lip sharp at the edge; pillar lip broadly reflected on the columella, slightly waved on the side next the aperture, the other side considerably indented above, with a large callus, which completely closes the umbilicus.

Found in the Blue Wick, by Mr. Bean, of Scarborough, and has also been met with in the Oolite Sand, Somersetshire.

17. NATICA ELONGATA.—The Elongated Natica, pl. XLIII. fig. 44.

Natica elongata. Phillips, II. p. 225, pl. 14, fig. 28.

Shell oblong-ovate; body large, oblique; spire small, consisting of two or three mammillated volutions; surface covered with oblique, minute striæ.

Found in the Mountain Limestone at Bolland.

18. NATICA VARIATA.—The Variable Natica, pl. XLIII. fig. 45, 46.

Shell subovate, slightly flattened above; spire small, consisting of two volutions, with an acute apex; surface covered with striæ, which is partly oblique and partly spiral; aperture suboval; outer lip rather expanding; pillar lip broadly reflected on the columella; umbilicus closed.

Found in the Mountain Limestone at Bolland.

19. NATICA STRIATA.—The Striated Natica, pl. XLIII. fig. 47, 48.

Natica striata. Sowerby, IV. p. 99, pl. 373, two upper figures. Fleming, p. 321.

Shell smooth, oblong-ovate; spire small, consisting of three narrow, but well defined volutions, the apicial one somewhat obtuse; aperture, occupying about three-fourths of the length of the shell, rounded below, and a little contracted above; outer lip blunted at the edge; inner lip broadly reflected on the columella above, but with a sinus at the umbilical region; umbilicus of medium size, open, and destitute of spiral ridges; base concentrically striated.

Found in the London Clay.

20. NATICA DEPRESSA.—The Depressed Natica, pl. XLIII. fig. 49, 50.

Natica depressa. Sowerby, I. p. 21, pl. 5, lower figures. Fleming, p. 320.

Shell slightly ovate; spire of medium length, consisting of five well defined and rounded volutions, their superior surface subtabulated; body volution subcompressed above the centre, the top being flattened; aperture slightly ovate, rounded below, and slightly contracted above; inner lip rather broadly reflected on the columella, and of nearly uniform breadth its whole length; umbilicus rather small, oblong, and rather shallow.

Found in the Crag Marl at Woodbridge, Suffolk.

21. NATICA CANALICULATA.—The Canaled Natica, pl. XXXIII.* fig. 19, 20.

Natica canaliculata. Sowerby, Geo. Trans. IV. 2nd series, p. 336, pl. 11, fig. 12, and pl. 18, fig. 6. *Ampullaria canaliculata*, Mantell, Geo. of Sussex, p. 87, pl. 19, fig. 13.

Spherical, depressed, smooth; spire short, consisting of two inflated volutions, their upper edges furnished with a concave, transversely striated groove or band, with a blunted apex; umbilicus large, circular, gradually expanding into the base of the body.

Found in the Gault at Folkstone, Kent.

22. NATICA ELEGANS.—The Elegant Natica, pl. XXXIII.* fig. 21.

Natica elegans. Sowerby, Geo. Trans. IV. 2nd series, p. 347, pl. 23, fig. 3.

Oblong, smooth; spire small, with four flat-sided volutions, their upper edges a little rounded, ending in an acute point; aperture somewhat more than two-thirds the length of the shell.

Found in the Portland Stone, Vale of Wardour, South Wiltshire.

23. NATICA CARINATA.—The Keeled Natica, pl. XXXIII.* fig. 22, 23.

Natica carinata. Sowerby, Geo. Trans. IV. 2nd series, p. 343, pl. 18, fig. 8.

Shell transversely ovate; body very large, flattened above; spire small, with two volutions, placed obliquely to the base of the shell, and obtuse at the point; body provided with five prominent and rugged keels, which terminate on the margin of the widely expanding outer lip, and forming a scolloped edge; aperture very large, semilunar; inner lip very broadly reflected on the columella.

Found in the Sands of Blackdown, Devonshire.

24. NATICA GRANOSA.—The Granular Natica, pl. XXXIII.* fig. 24, 25.

Natica granosa. Sowerby, Geo. Trans. IV. 2nd series, p. 343, pl. 18, fig. 7.

Subglobose; body very large, much inflated, and covered with numerous, regular, spiral, rounded ridges, which are crossed by many longitudinal striæ, or lines of growth, producing rounded granulations; spire small, consisting of three well rounded, rapidly diminishing volutions, ending in a sharp point; aperture oblong, slightly twisted, contracted above, and orbicular below; outer lip much dilated; inner lip broad, with a large open umbilicus behind it.

Found in the Sands at Blackdown, Devonshire.

GENUS XLIV.—NERITA.—*Lamarck.*

Shell solid, generally thick, semiglobular, or obovate; spire very short; base of the body for the most part flattened beneath, but destitute of an umbilicus; aperture semicircular; margin of the outer lip sharp, and crenulated, or toothed on the inner side; pillar lip generally oblique, flattened, sharp on the margin, which lies oblique to the axis of the shell, and for the most part dentated or crenated; a small prominence exists at the lower extremity of the inner lip, between which and the inner lip the small appendage to the operculum slides, as the animal opens or closes the aperture for egress; moving in the same manner as a door on its hinges, when the animal protrudes its body; operculum testaceous.

1. NERITA COSTATA.—The Ribbed Nerita, pl. XLIV. fig. 1, 2.

Nerita costata. Sowerby, V. p. 94, pl. 463, fig. 5, 6. Fleming, p. 319.

Shell nearly globular; spire much depressed, consisting of two volutions, with a canaliculate suture; whole surface covered by numerous, thin, sharp, longitudinal ribs; aperture nearly orbicular, much expanded; outer lip rather thickened; pillar somewhat produced, and obtuse, and nearly divided by a slight sinus into two blunt teeth.

Found in the Oolite at Ancliffe.

2. NERITA LÆVIGATA.—The Smooth Nerita, pl. XLIV. fig. 3, 4.

Nerita lævigata. Sowerby, III. p. 31, pl. 217, fig. 1. Fleming, p. 318.

Subglobose, smooth, glossy; spire conical, consisting of two slightly divided, flat-sided volutions; body invested by a subcentral, nearly obscure, transverse sulcus; base convex; aperture sublunate, its width greater than its length; outer lip smooth-edged; columella obscure.

Found in the Oolite at Dundry.

3. NERITA MINUTA.—The Minute Nerita, pl. XLIV. fig. 5, 6, 7.

Nerita minuta. Sowerby, V. p. 93, pl. 463, fig. 3, 4. Fleming, p. 318.

Orbicular, smooth; spire obscure, much depressed, consisting of one volution and a half; aperture oval; outer lip blunted; pillar lip destitute of any appearance of teeth. Diameter not an eighth of an inch. Fig. 7, natural size.

Found in the Oolite at Ancliffe.

4. NERITA APERTA.—The Open Nerita, pl. XLIV. fig. 8, 9.

Nerita aperta. Sowerby, V. p. 30, pl. 424, fig. 2, 3, 4. Fleming, p. 318.

Suborbicular, smooth, with acutely zigzag brown lines, which are equal in thickness to the white intervals between them; spire depressed, with two volutions; aperture wide, semilunate; outer lip much thickened, its edge sharp and even; inner lip broadly reflected on the columella, its inner edge obscurely crenated, and furnished with one large tooth.

Found in the London Clay at Cowell Bay, Isle of Wight.

5. NERITA GLOBOSA.—The Globular Nerita, pl. XLIV. fig. 10, 11.

Nerita globosa. Sowerby, V. p. 29, pl. 424, fig. 1. Fleming, p. 318.

Suborbicular; spire hardly elevated above the body, with two volutions; aperture somewhat orbicular, within which, near its lower end, a lamelliform tooth; outer lip thin, destitute of crenulations; pillar lip narrowly reflected on the columella above, but wider below, provided with one very obtuse tooth near its upper end; whole surface transversely sulcated.

Found in the London Clay, Hampshire.

6. NERITA SPIRATA.—The Short-spired Nerita, pl. XLIV. fig. 24, 25.

Nerita spirata. Sowerby, V. p. 93, pl. 463, fig. 1, 2. Fleming, p. 319.

Subglobose, smooth; spire very small, in proportion to the size of the shell, consisting of two volutions, and with an obscure canal round their base; body extremely large, broadly

canaliculate above, and exhibiting inequidistant lines of growth, which are more conspicuous above, and nearly obsolete below; aperture transversely ovate.

Found in the Mountain Limestone, Gloucestershire.

7. NERITA SINUOSA.—The Sinuated Nerita, pl. XLIV. fig. 26, 27.

Nerita sinuosa. Sowerby, IV. p. 32, pl. 217, fig. 2. Fleming, p. 318.

Subovate; spire short, with three rather inflated volutions, the apicial one obtuse; aperture elongated; outer lip plain, with a sinuated lobe on its edge, near the base; columellar lip broad and flat; body with an angular, transverse sinus above the middle, and bordered with an obtuse keel; whole surface with irregular, well defined lines of growth.

Found in the Portland Oolite at Chilmarsh.

8. NERITA ANGULATA. — The Angulated Nerita, pl. XXXVII.* fig. 40, 41.

Nerita angulata. Sowerby, Geo. Trans. IV. N. series, p. 347, pl. 23, fig. 2. Benetts, Cat. p. 4.

Subglobose? body large, with an elevated spiral carina somewhat below its centre; spire small, and obtuse; aperture oblong.

A cast of the shell.

Found in the Portland Stone, North Wiltshire.

GENUS XLV.—PILEOLUS.—*Cookson.*

Shell concave; spire internal, very short; with a subcentral, erect vertex; base concave, nearly orbicular, and somewhat cushion-shaped; aperture situate in the lower disk, and provided with a crenulated, internal lip; external lip furnished with a raised margin.

1. PILEOLUS LÆVIS.—The Smooth Pileolus, pl. XLIV. fig. 16, 17.

Pileolus lævis. Sowerby, V. p. 43, pl. 432, fig. 5, 6, 7, 8. Fleming, p. 363. G. B. Sowerby, Gen. Rec. and Foss. Sh.

Rather depressed, smooth, or with irregular, nearly obsolete, divergent furrows; margin entire; the inner lip obscurely crenated. Fig. 16, natural size.

Found in the Oolite at Hinton and Ancliffe, Somersetshire.

2. PILEOLUS PLICATUS.—The Plicated Pileolus, pl. XLIV. fig. 13, 14.

Pileolus plicatus. Sowerby, V. p. 43, pl. 432, fig. 1, 2, 3, 4. Fleming, p. 363. G. B. Sowerby, Gen. Rec. and Foss. Sh.

Obtusely conical, with divergent ridges emanating at the apex, and terminating on the margin, which is irregularly crenated; centre of the base divided into a cushion-like form, and divided in the centre into two parts, by a slight sulcus; height not equal to the diameter of the base; inner lip strongly crenated.

Found in the Oolite at Hinton and Ancliffe.

GENUS XLVI.—NERITINA.—*Lamarck.*

Shell thin, external surface generally smooth, and frequently covered with a strong, horny epidermis; spire usually very short, sometimes nearly concealed, and at others obsolete; aperture semicircular; outer lip plain, sharp, and destitute of teeth or crenulations internally, but within the lower region of the aperture, it is provided with a somewhat elongated, transverse prominence, which seems the fulcrum for the articulation of the operculum; inner lip flattened, reflected on the columella, and placed obliquely to the axis of the shell; edge generally short, and dentated or crenulated; as the animal enlarges in dimensions, part of the columellar lip is absorbed, which gives it the appearance of being devoid of a columella; operculum testaceous, semicircular, closing the aperture entirely, covered with a horny epidermis, and provided internally at the lower end with a tooth-like appendage, which fits into a hollow between the prominence and lip.

1. NERITINA CONCAVA.—The Concave Neritina, pl. XLIV. fig. 20, 21.

Neritina concava. Sowerby, IV. p. 118, pl. 385, fig. 1 to 8. Fleming, p. 321.

Obliquely subovate; body large, the surface ornamented with deeply undulating, zigzag, fine dark-coloured lines, which nearly approximate at their angles, and produce a reticulated appearance; spire short, oblique, and somewhat prominent, with three volutions, each of which is concave above; aperture semicircular; outer lip entire, smooth, and even on the edge; pillar lip broadly reflected on the columella, and narrowed above and below.

This species has much the aspect of *N. fluviatiles*, but differs in the aperture being smaller, and in the columella being less flattened than in that shell.

Found in various strata from the London Clay to the Crag.

2. NERITINA UNIPLICATA.—The One-plaited Neritina, pl. XLIV. fig. 18, 19.

Neritina uniplicata. Sowerby, IV. p. 118, pl. 385, fig. 9, 10. Fleming, p. 321.

Smooth, subglobular; body large; spire concealed, and only indicated by a sunk point, from which emanates a curved line, terminating in the aperture, which is semilunar; outer lip sharp at the edge; inner lip extremely broad, and somewhat convex, its edge somewhat curved, and provided with a single tooth-like projection.

In some specimens the remains of an olive-green epidermis is discoverable.

Found in the London Clay at Woolwich and Charlton.

3. NERITINA FITTONII.—Fitton's Neritina, pl. XXXVII.* fig. 42, 43.

Neritina Fittonii. Sowerby, Geo. Trans. IV. 2nd series, p. 346, pl. 22, fig. 7. Mantell, Geo. S.E. of England, p. 248.

Convex, much depressed above; spire very small, consisting of a single volution; body large, with three prominent, rounded, transverse carina, or ribs; aperture large.

Found in the Hastings Sand of Sussex.

FAMILY VI.—PERISTOMIDA.

Shell conoidal, or subdiscoidal, with the margins of the aperture united; aperture protected by an operculum; fluviatile, and the animals respiring in water.

GENUS XLVII.—AMPULLARIA.—*Lamarck.*

Shell globular, or globularly discoidal, or discoidal and umbilicated; spire short, the volutions ventricose; aperture entire, oblong-oblique, and its length considerably exceeding its breadth; operculum testaceous, annular, with its nucleus almost central, but placed rather nearer the inner side; covered by an olive-green epidermis, and exactly fitting the aperture.

1. AMPULLARIA PATULA. — The Wide Ampullaria, pl. XLIV. fig. 23.

Ampullaria patula. Lamarck, Env. de Paris, p. 148. Sowerby, III. p. 152, pl. 284, two middle figures. Fleming, p. 316. *Helix mutabilis*, Brander, fig. 57.

Slightly ovate, ventricose, smooth; body large; spire small, very short, consisting of four rapidly decreasing, rounded volutions, sometimes slightly flattened above, terminating in an acute apex; aperture subovate; outer lip expanding, smooth, and even on the edge; inner lip broadly, but thinly reflected on the columella, with a large open umbilicus situate in its centre, very slightly closed on the left edge of the opening, below which a lamina protrudes, which forms the lining of the umbilicus.

Found in the London Clay at Barton.

2. AMPULLARIA NOBILIS. — The Noble Ampullaria, pl. XLIV. fig. 28.

Ampullaria nobilis. Sowerby, VI. p. 39, pl. 522, fig. 1. Fleming, p. 317.

Body subglobose; spire occupying about a third of the length of the shell, conical, consisting of five slightly inflated volutions, with a rather sharp apex; base convex, and destitute of an umbilicus; aperture oblong-oval, sublunate, somewhat contracted above, and extending about a half of the length of the shell.

Found in the Carboniferous Limestone called the Black Rock, Queen's County, Ireland.

3. AMPULLARIA HELICOIDIS.—The Helix-like Ampullaria, pl. XLIV. fig. 29, 30.

Ampullaria helicoidis. Sowerby, VI. p. 40, pl. 522, fig. 2. Fleming, p. 317.

Nearly discoidal, smooth; spire short, obtuse, the volutions inflated, and deeply divided by the sutural line; body considerably inflated at the sides; base with a deep, moderately-sized umbilicus; aperture ovate, somewhat contracted above, and well rounded below; the outer lip considerably expanded. Diameter nearly double its length.

Found in the Carboniferous Limestone of Cork and Queen's County, Ireland.

4. AMPULLARIA AMBULACRUM.—The Gallery Ampullaria, pl. XLIV. fig. 31, 32.

Ampullaria ambulacrum. Sowerby, IV. p. 97, pl. 372. Fleming, p. 317.

Nearly spherical, smooth; body large, much inflated; spire small, abruptly conical, consisting of seven ventricose volutions, with a deep spiral, flat-bottomed canal, with nearly perpendicular margins, winding round the base of each; aperture oblong-ovate, contracted above, and rounded at the base; outer lip smooth, and even; inner lip broadly reflected on the columella above, but becoming gradually narrower as it descends, and is lost in the outer lip as it passes the umbilicus, which is open, and plain internally.

The *A. canaliculata* of Lamarck has a strong resemblance to this species; but the umbilicus being destitute of an internal spiral groove, the trench-like appearance of its canal, and the inflation of its sides, form good distinctions.

Found in the London Clay at Stubbington, Hordwell, and Muddiford.

5. AMPULLARIA ACUTA. — The Acute Ampullaria, pl. XLIV. fig. 33, 34.

Ampullaria acuta. Lamarck, Env. de Paris, p. 147. Sowerby, III. p. 151, pl. 284, three upper figures. Fleming, p. 316. *Helix mutabiles*, Brander, fig. 58, 59.

Subovate, smooth, ventricose; body large; spire conical, a fourth of the length of the shell, consisting of five inflated, deeply divided volutions, terminating in an acute apex; aperture oblong-ovate, its length nearly double its width, contracted and pointed above, rounded at the base; outer lip plain, and smooth on the edge, and not so much expanded as the former species; pillar lip gently curved, reflected on the columella, moderately broad, equal in width its whole length, and generally covering half of the umbilicus, which is naturally rather small.

Found in the London Clay at Christ Church.

6. AMPULLARIA SIGARETINA.—The Sigaretus-like Ampullaria, pl. XLIV. fig. 35, 36.

Ampullaria Sigaretina. Lamarck, Env. de Paris, p. 148. Sowerby, III. p. 152, pl. 284, two lower figures. Fleming, p. 316.

Body of the shell large, much inflated, and forming a short, oblique oval; spire small, subconic, consisting of four ventricose, deeply defined, rapidly decreasing volutions; aperture large, suborbicular, a little contracted and pointed above, and much rounded at the base; outer lip much expanded, smooth, and even on the edge; inner lip broadly reflected on the columella, and subdivided, one part entering the umbilicus, and lining more than half its internal surface; the other portion closes the umbilicus; external surface with sharp, elevated, irregular, slightly waved striæ, or lines of growth.

Found in the London Clay at Bognor, Hampshire.

GENUS XLVIII.—PALUDINA.—*Lamarck.*

Shell ovate, or oblong; spire somewhat turreted; volutions smooth; rounded and subcarinated in most species; aperture subrotund, ovate, or oblong, a little angulated above, and slightly modified on the inner side by the gibbosity of the body volution; operculum corneous, with concentric lines of growth, and provided with a sublateral nucleus.

1. PALUDINA CONCINNA.—The Neat Paludina, pl. XLV. fig. 1.

Paludina concinna. Fleming, p. 316. *Vivipara concinna*, Sowerby, I. p. 80, pl. 31, fig. 4, 5.

Conical, smooth; spire with four well defined, slightly inflated volutions, angulated below, and ending in a sharp apex; aperture ovate, acute above, and rounded beneath.

Found in the London Clay at Barton Cliff.

2. PALUDINA LENTA.—The Flimsy Paludina, pl. XLV. fig. 2, 3, and 9.

Paludina lenta. Fleming, p. 316. *Vivipara lenta*, Sowerby, I. p. 79, pl. 31, fig. 3. *Helix lenta*, Brander, fig. 60.

Oblong-ovate, smooth; spire consisting of four inflated, deeply divided volutions, ending in an acute apex; aperture nearly orbicular, entire, slightly contracted above, and rounded below; surface sometimes exhibiting distinct lines of growth. Length an inch; breadth not half an inch.

Found in the London Clay at Barton Cliff and Hordwell.

3. PALUDINA EXTENSA.—The Long Paludina, pl. XLV. fig. 4, 5.

Paludina extensa. Fleming, p. 316. Sowerby, I. p. 78, pl. 31, fig. 2.

Smooth, oblong-ovate; body inflated; spire consisting of four somewhat ventricose volutions, a little angular below; aperture nearly orbicular, a little contracted above; outer lip somewhat extended; inner lip slightly reflected over the columella, with a small, narrow umbilicus behind it.

Found in the London Clay at Blackdown, Hordwell, and Barton.

4. PALUDINA SUBOPERTA.—The Half-covered Paludina, pl. XLV. fig. 7, 8.

Paludina suboperta. Fleming, p. 316. *Vivipara suboperta.* Sowerby, I. p. 80, pl. 31, fig. 6.

Convex, smooth; spire with four inflated volutions, with a flattened line on their superior portion, and terminating in an acute apex; aperture ovate, contracted above; inner lip a little reflected on the columella.

Found in the Crag at Holywells.

5. PALUDINA FLUVIORUM.—The Fresh Water Paludina, pl. XLV. fig. 12, 13.

Paludina fluviorum. Fleming, p. 316. *Vivipara fluviorum*, Sowerby, I. p. 79, pl. 31, fig. 1. Mantell, Geo. of Sussex, p. 45, pl. 17, fig. 56. Fitton, Geo. Trans. IV. 2nd series, p. 363.

Ventricose, smooth; spire with four or five inflated volutions, well defined by the sutural line, and terminating in an acute apex; lines of growth sharp, nearly equidistant, and having the appearance of fine striæ.

Found in the Weald Clay, above and below the Iron Sand, Sussex and Isle of Wight.

6. PALUDINA CARINIFERA.—The Keeled Paludina, pl. XLV. fig. 10, 11.

Paludina carinifera. Sowerby, VI. p. 12, pl. 509, fig. 3, Fleming, p. 316. Fitton, Geo. Trans. IV. 2nd series, p. 363.

Elongated, smooth, convex; spire with three or four volutions, ending in a blunted apex, the two superior volutions encompassed with a linear keel at their lower edge; aperture slightly ovate, a little contracted above.

Found in the Purbeck Limestone and Hastings Sand, Sussex.

7. PALUDINA ELONGATA.—The Lengthened Paludina, pl. XLV. fig. 14, 15.

Paludina elongata. Sowerby, VI. p. 11, pl. 509, fig. 1, 2. Fleming, p. 316. Fitton, Geo. Trans. IV. 2nd series, p. 363.

Considerably elongated, smooth; body and spire of nearly equal length; the latter with four not much inflated, but well defined, rather oblique volutions, with a sharp apex; aperture oblong, somewhat contracted above.

Found in the Weald Clay at Compton Grange, Chive, Isle of Wight; East Peckham, Kent; and Sussex.

8. PALUDINA SUSSEXENSIS.—The Sussex Paludina, pl. XXXIII.* fig. 18.

Paludina Sussexensis. Sowerby, Zool. Trans. IV. N. series, p. 346, pl. 22, fig. 6.

Elongated, smooth; spire acute, consisting of four flat-sided volutions.

Found in the Hastings Sand, Sussex.

FAMILY VII.—MELANIDES.

Fluviatile shells, with the margin of the aperture disunited, the outer lip edged; animal furnished with two tentacula.

GENUS XLIX.—MELANOPSIS.—*Férussac.*

Shell oblong, fusiform, or conico-cylindrical; spire with from five to fifteen volutions, terminating in a pointed apex, but decollated in some species; body frequently equal to two-thirds of the whole shell; aperture oblong-ovate, pointed at the upper extremity; outer lip somewhat thickened, slightly inflected, and deeply notched above; columella twisted, solid, callous, and separated from the exterior margin at the base, by a deep sinus, in most species, but devoid of it in some; callosity thickest at its junction with the upper extremity of the aperture; operculum spiral, corneous, and not quite fitting the aperture.

1. MELANOPSIS BREVIS.—The Short Melanopsis, pl. XLV. fig. 24, 25.

Melanopsis brevis. Sowerby, VI. pl. 523, fig. 2. Fleming, p. 359.

Ovate; body large, inflated, smooth; spire short, with three well rounded volutions, a little contracted above; apex acute; aperture oval, a little narrowed both above and below; outer lip plain; inner lip thickened, equal in breadth its whole length; callus rather flat. Diameter about two-thirds of its length.

Found in the Hampshire Fresh Water formation of Hordwell.

2. MELANOPSIS CARINATA.—The Keeled Melanopsis, pl. XLV. fig. 18, 19.

Melanopsis carinata. Sowerby, VI. p. 41, pl. 503, fig. 1. Fleming, p. 359.

Oblong-ovate, considerably acuminated, smooth; body very large; spire short, consisting of five volutions, with a spiral keel winding along the upper edge of each, giving a turreted aspect to the spire; tip acute; body with flattened sides, and an obscure carina near its upper edge; aperture elongated, a little contracted both above and below; outer lip thin, and plain on the edge; inner lip broadly reflected upon the columella. Length somewhat more than double its diameter.

3. MELANOPSIS DEPTFORDENSIS.—The Deptford Melanopsis, pl. XLV. fig. 22, 23.

Melanopsis fusiformis. Sowerby, IV. p. 36, pl. 332, fig. 5.

Shell smooth, oblong-ovate, fusiform, acuminated both above and below; body considerably ventricose in the middle; spire short, with three flat-sided volutions, and acutely pointed; aperture elongated, sharp and contracted above, and also narrowed below; outer lip slightly undulated; inner lip broadly reflected on the columella above, and gradually becoming narrower as it descends.

This differs from the preceding, in being much shorter in proportion to its breadth, in being more ventricose, and tapering more abruptly to both extremities.

Found in the Marine formation, Isle of Wight.

4. MELANOPSIS FUSIFORMIS.—The Spindle-shaped Melanopsis, pl. XLV. fig. 20, 21.

Melanopsis fusiformis. Sowerby, IV. p. 35, pl. 332, fig. 2, 3, 6, and 7. Fleming, p. 359.

Smooth, subcylindrical, fusiform, acuminated at both extremities; spire with four flat-sided volutions, defined by a very narrow sutural line, and ending in an obtuse apex; aperture oblong, half the length of the shell, contracted both above and below; inner lip very glossy, broadly spread over the columella above, becoming narrower as it descends, and ending in a mere point at the base.

Found at Hordwell and New Charlton, in the Upper Marine formation.

5. MELANOPSIS SUBULATUS.—The Awl-shaped Melanopsis, pl. XLV. fig. 16, 17.

Melanopsis subulatus. Sowerby, IV. p. 36, pl. 332, fig. 8. Fleming, p. 359.

Smooth, subulate, and conical; spire rather elongated, with six or seven nearly flat-sided volutions; aperture ovate, short, being only one-third the length of the shell.

Found in the Upper Marine formation, Isle of Wight.

6. MELANOPSIS SEDGVICKII.—Sedgwick's Melanopsis, pl. XLV. fig. 6.

Melanopsis fusiformis. Sowerby, IV. pl. 332, fig. 1.

Smooth, oblong, fusiform, tapering to both extremities; body very large; spire very short, consisting of three flat-sided volutions; aperture oblong, occupying nearly half the length of the shell; outer lip slightly inflected; pillar lip a little spread over the columella.

This shell differs from *M. Deptfordensis*, in being less fusiform, and in the upper portion of the body being more inflated.

Found in the Upper Marine formation, Isle of Wight.

7. MELANOPSIS? TRICARINATA.—The Three-keeled Melanopsis, pl. XXXIII.* fig. 26.

Melanopsis tricarinata. Sowerby, Geo. Trans. IV. 2nd series, p. 346, pl. 22, fig. 4. *Melania tricarinata,* Ann. Phil. VIII. N. series, p. 376.

Turreted, subulate, conical; spire consisting of six carinated, deeply divided volutions; three carinæ occupy the exposed portion of the volutions, the central one considerably more elevated than the others; these are crossed by strong, distinct lines of growth; aperture suborbicular, slightly contracted both above and below.

Found in the Blue Clay of Punfield, Dorsetshire, and in the Hastings Sand at Pounceford, near Burford, Sussex.

8. MELANOPSIS? ATTENUATA.—The Attenuated Melanopsis, pl. XXXIII.* fig. 27.

Melanopsis attenuata. Sowerby, Geo. Trans. IV. 2nd series, p. 346, pl. 22, fig. 5.

Subulate, attenuated; with seven or eight somewhat inflated, deeply divided volutions, with several carinæ on each, the upper one the strongest; crossed by undulating, irregular striæ, or lines of growth; aperture subovate, short, and not occupying more than a fourth of the length of the shell.

Found in the Blue Clay of Punfield, Dorsetshire, and in the Hastings Sand at Hollington and Pounceford, Sussex.

GENUS L.—MELANIA.—*Lamarck.*

Shell turreted, or subturreted; spire for the most part elongated, with the volutions divided by a deep suture, and generally terminating in an acute apex; aperture entire, oval or oblong, in most species acuminated at the superior extremity, and rounded below; with an indistinct canal at the base of the columella; outer lip simple, and somewhat sharp; columella smooth, incurved; outside covered with a strong, horny, olivacious, brown, or black epidermis; operculum horny, oblong, spiral, with two or three volutions.

1. MELANIA SCALARIOIDEA.—The Scalariform Melania, pl. XLV. fig. 46.

Melania scalarioidea. Phillips, II. p. 229, pl. 16, fig. 3.

Somewhat scalariform, elongated; volutions broad, rather convex on the sides, with longitudinal, equal, thread-like striæ.

Found in the Mountain Limestone, Bolland.

2. MELANIA SULCULOSA.—The Sulcated Melania, pl. XLV. fig. 26.

Melania sulculosa. Phillips, II. p. 228, pl. 16, fig. 1 *a.*

Elongated; with convex, deeply divided volutions, which are thickly invested with longitudinal, arcuated sulci, which deepen towards the lower portion of the volutions.

Mountain Limestone, Kildare and Bolland.

3. MELANIA TRUNCATA.—The Truncated Melania, pl. XLV. fig. 27, 28.

Melania truncata. Sowerby, III. p. 72, pl. 241, fig. 4. Fleming, p. 317.

Smooth, polished, elongated, conical; body short; spire long, consisting of eight or nine flat-sided volutions, which are somewhat angular below; aperture ovate, contracted above, and truncated below; outer lip somewhat thickened. Not a line in length.

London Clay, Brakenhurst.

4. MELANIA MINIMA.—The Least Melania, pl. XLV. fig. 29, 30.

Melania minima. Sowerby, III. p. 72, pl. 241, fig. 3. Fleming, p. 317.

Smooth, subulate; body short; spire long, with eight or nine flat-sided volutions, the apicial one acute; aperture ovate, contracted above, and rounded below. Length equal to four times its diameter; very minute, not a line in length.

London Clay, Brakenhurst.

5. MELANIA LINEATA.—The Lineated Melania, pl. XLV. fig. 31, 32.

Melania lineata. Sowerby, III. p. 33, pl. 218, fig. 1. Fleming, p. 317.

Acuminated; body short; spire long, with nine or ten slightly raised volutions, with a slight constriction towards the upper portion of each; whole surface covered with very fine, regular striæ, which is slightly bent towards the base of each volution, and on the body they follow the curve of the outer lip; aperture subovate, a little contracted above, and rounded beneath. Length about four times the diameter of the body.

Inferior Oolite, Dundry.

6. MELANIA HEDDINGTONENSIS.—The Heddington Melania, pl. XLV. fig. 33.

Melania Heddingtonensis. Sowerby, I. p. 86, pl. 39, right and left hand figures. Fleming, p. 317. Phillips, I. p. 116.

Fusiform; body short; spire long, with eight or ten nearly flat-sided volutions, with their upper portion slightly raised and obtusely angular, and a little hollow in the middle; whole surface rugged, with rather deep lines of growth. Length about three times its diameter.

Upper and Middle Oolite at Heddington, near Calne, Wilts.

7. MELANIA STRIATA.—The Striated Melania, pl. XLV. fig. 35.

Melania striata. Sowerby, I. p. 101, pl. 47. Fleming, p. 317.

Elongated, abruptly tapering to the apex; spire with eleven or twelve well separated, somewhat inflated volutions; body nearly half the length of the shell; whole surface covered with spiral, narrow, slightly elevated ribs, with about sixteen on each volution, crossed by as many somewhat sharp, but fine longitudinal striæ. Length about twice and a half its diameter; sometimes occurring about eight inches in length.

Lias at Lymington, Somersetshire.

8. MELANIA FASCIATA.—The Banded Melania, pl. XLV. fig. 36, 37, 38.

Melania fasciata. Sowerby, III. p. 71, pl. 241, fig. 1. Fleming, p. 317.

Turreted; spire consisting of about five volutions, each coronated with rather remote, obtuse knobs; surface with three slightly coloured, transverse bands, and numerous spiral striæ; aperture ovate, oblique. Fig. 38, natural size.

Fresh Water formation, Isle of Wight.

9. MELANIA? VITTATA.—The Filleted Melania, pl. XLV. fig. 34.

Melania vittata. Phillips, I. p. 116, pl. 7, fig. 15.

Elongated; volutions deeply defined, with an obliquely flattened fillet on the superior portion of each, and hollow in the middle.

Cornbrash at Scarborough and Gristhorpe.

10. MELANIA COSTATA.—The Ribbed Melania, pl. XXXV. fig. 39, 40, 41.

Melania costata. Sowerby, III. p. 71, pl. 241, fig. 2. Fleming, p. 317.

Turreted; spire long, consisting of six or seven gradually tapering, nearly flat-sided volutions, with numerous, longitudinal, slightly elevated ribs, crossed by fine spiral striæ; aperture ovate, oblique. Length about three times its diameter. Fig. 41, natural size.

11. MELANIA TUMIDA.—The Swollen Melania, pl. XLV. fig. 42.

Melania tumida. Phillips, II. p. 229, pl. 16, fig. 2.

Turreted, smooth; body short; spire long, consisting of about eight very tumid, and deeply defined volutions; whole surface covered with fine, regular, longitudinal striæ; aperture oblique, ovate, wider than long.

Mountain Limestone, Kildare and Bolland.

12. MELANIA CONSTRICTA.—The Constricted Melania, pl. XLV. fig. 43, 44.

Melania constricta. Sowerby, III. p. 33, pl. 218, fig. 2. Fleming, p. 317. Phillips, II. p. 228, pl. 16, fig. 1. *Conchyliolithus constrictus,* Martin, Pet. Derb. I. pl. 38, fig. 3.

Turreted, smooth; spire of eight or nine volutions, constricted above, tumid on their lower parts, with an adpressed, crenated, sutural, fimbriated margin.

Mountain Limestone at Tideswell, Derbyshire, and Kildare.

13. MELANIA RUGIFERA.—The Rugged Melania, pl. XLV. fig. 45.

Melania rugifera. Phillips, II. p. 229, pl. 16, fig. 26.

Turreted, greatly elongated, smooth, finely striated; body short; spire long, consisting of eleven or twelve volutions, convex below, and adpressed at the suture, on the lower half of each, oblique, slightly arcuated, very strong, longitudinal ribs, which are very prominent at their base, terminating in an acute apex; aperture subovate.

Mountain Limestone, Otterburn, Northumberland, &c.

14. MELANIA COMPRESSA.—The Compressed Melania, pl. XXXIII.* fig. 28, 29.

Elongated; body and spire about equal in length; the latter with six or seven abruptly tapering volutions, separated by a deep waved, sutural line, and terminating in an acute apex, a spiral depression occupies the upper portion of each; whole surface marked by irregular waved, longitudinal striæ.

Found at Gisborne, Yorkshire, by Mr. S. Gibson, of Hebden Bridge, and in his cabinet.

FAMILY VIII.—LYMNÆCEA.

Shells spiral, generally smooth on the external surface; margin of the outer lip always acute, and not reflected. The animals of this family are fluviatile, amphibious, and usually destitute of an operculum.

GENUS LI.—LYMNÆA.—*Lamarck.*

Shell oblong, thin, sometimes elongated, and acutely turreted; spire always produced; aperture large, entire, oblong, generally straitened, somewhat acuminate above, and rounded below; outer lip acute; the lower part of the inner lip ascending on the columella, forming an oblique fold, or plait, and rising, spreads more or less on the columella, or front of the body volution; external surface smooth, frequently polished; destitute of an operculum.

1. LYMNÆA PYRAMIDALIS.—The Pyramidal Lymnæa, pl. XLVI. fig. 1, 2.

Lymnæa pyramidalis. Brard; Ann. du Mus. XV. pl. 24, fig. 1, 2. Deshayes, II. p. 95, pl. 10, fig. 14, 15. Sowerby, VI. p. 53, pl. 528, fig. 3. Fleming, p. 276. Brown, Elements Fossil Conchology, p. 59, pl. 4, fig. 13.

Elongated, subcylindrical; body large; spire pyramidal, small, with five inflated, well defined volutions, the apicial one acute; aperture oblong, half the length of the shell, a little contracted above, and rounded below; outer lip sharp on the edge, and but slightly expanded; callus on the columella, with a shallow, faintly defined furrow in its centre.

Fresh Water formation, Headon Hill, Isle of Wight.

2. LYMNÆA MAXIMA.—The Great Lymnæa, pl. XLVI. fig. 3, 4.

Lymnæa maxima. Sowerby, VI. p. 53, pl. 528, fig. 1, 1. Fleming, p. 276.

Oblong-ovate, subcylindrical; body large, and slightly inflated; spire a little pyramidal, with five moderately convex volutions, terminating in an obtuse apex; aperture oblong, a little contracted above, and rounded below, occupying about half the length of the shell; outer lip thin; columellar lip but slightly reflected.

Fresh Water formation, Isle of Wight.

3. LYMNÆA MINIMA.—The Least Lymnæa, pl. XLVI. fig. 5, 6, 7.

Lymnæa minima. Sowerby, II. p. 156, pl. 169, fig. 1. Fleming, p. 276.

Oblong-oval, convex, smooth; body large; spire small, with four rather inflated volutions, terminating in an acute apex; aperture elongated, contracted and pointed above, and slightly straitened below, occupying half the length of the shell. Length a little more than a quarter of an inch.

Fresh Water formation, Isle of Wight.

4. LYMNÆA LONGISCATA.—The Lengthened Lymnæa, pl. XLVI. fig. 8, 9.

Lymnæa longiscata. Sowerby, IV. p. 57, pl. 343. Fleming, p. 276. *Limneus longiscatus?* Brongniart, Mem. sur des Terr. p. 16, pl. 1, fig. 9. Ann. du Mus. XV. pl. 22, fig. 9.

Elongated, smooth, shining, with regular lines of growth; body large; spire of medium length, with six or seven broad, oblique, slightly inflated volutions, ending in an acute apex; aperture ovate, elongated, occupying two-fifths the length of the shell, contracted and acute above, and rounded below; outer lip thin-edged; pillar lip broad, obtuse at the edge, with a shallow twisted plait.

Upper Fresh Water formation, Headon Hill, Isle of Wight.

5. LYMNÆA FUSIFORMIS.—The Spindle-shaped Lymnæa, pl. XLVI. fig. 10, 11.

Lymnæa fusiformis. Sowerby, II. p. 155, pl. 169, fig. 23. Fleming, p. 276.

Subfusiform, smooth, and shining; body large, slightly inflated; spire small, pyramidal, with five rather flat-sided volutions, the apicial one acute; aperture elongated, narrow, slightly contracted above, and rather rounded below, occupying about half the length of the shell; entire surface coverod with rather sharp, regular lines of growth.

Fresh Water formation, Isle of Wight.

6. LYMNÆA COLUMELLARIS.—The Columellar Lymnæa, pl. XLVI. fig. 16, 17.

Lymnæa columellaris. Sowerby, VI. p. 53, pl. 528, fig. 2.

Oblong-ovate, smooth; body very large; spire short, with four inflated volutions; aperture oblong, wide, occupying about half the length of the shell, contracted above, much expanded and rounded below; outer lip thin, ample; inner lip with a broad, greatly twisted, thick columella.

The shortness of the spire will readily distinguish this from its fossil congeners.

Fresh Water strata, Hordwell Cliff.

GENUS LII.—PLANORBIS.—*Müller.*

Shell discoidal, umbilicate; spire and base depressed; apex always distinct; the volutions turning nearly on the same plane, from right to left, so that when the spire is held upwards, and the aperture next the observer, it is situate on the left hand side; volutions ventricose, in many species, often carinated, either above or below; aperture entire, obliquely semilunate, its length and breadth being nearly equal, but broader than long in some instances; outer lip sometimes thickened; umbilicus very wide; destitute of an operculum.

1. PLANORBIS OBTUSUS.—The Obtuse Planorbis, pl. XLVI. fig. 12, 13.

Planorbis obtusus. Sowerby, II. p. 91, pl. 140, fig. 3. Fleming, p. 279.

Depressed, discoidal, smooth, pellucid, and shining; volutions few, greatly concealed, embracing; aperture oblique, obtuse, subcordiform.

Fresh Water formation, Isle of Wight.

2. PLANORBIS HEMESTOMA.—The Red-mouthed Planorbis, pl. XLVI. fig. 18, 19, 20.

Planorbis hemestoma. Sowerby, II. p. 91, pl. 140, fig. 6. Fleming, p. 279.

Discoidal, depressed, smooth; volutions partly concealed; spire convex, umbilicate; base flat; aperture subtriangular, oblique. Diameter one line; thickness the fourth of a line.

Plastic Clay, Plumstead.

3. PLANORBIS CYLINDRICUS.—The Cylindrical Planorbis, pl. XLVI. fig. 21, 22.

Lymnæa cylindricus. Sowerby, II. p. 90, pl. 140, fig. 2. Fleming, p. 279.

Cylindrical; three or four adpressed volutions, with concentric, and obscurely elevated, striæ on the left side; aperture transverse, oblong, quadrangular, the angles obtuse, its width exceeding its length, but without any indentation from the second volution. Diameter nearly three times its thickness.

Fresh Water formation, Isle of Wight.

4. PLANORBIS LENS.—The Lens-shaped Planorbis, pl. XLVI. fig. 26, 27.

Planorbis Lens. Sowerby, II. p. 91, pl. 140, fig. 4. Fleming, p. 279.

Lenticular, flat, equally concave above and below, subcarinated, with embracing volutions; aperture subcordate, and very oblique. Thickness about equal to a sixth of its diameter.

Fresh Water formation, Isle of Wight.

5. PLANORBIS EUOMPHALUS. — The Euomphalus-formed Planorbis, pl. XLVI. fig. 23, 24.

Planorbis Euomphalus. Sowerby, II. p. 92, pl. 140, fig. 7, 8, 9. Fleming, p. 279.

Discoidal, with five or six depressed volutions, subcarinated, and covered with pretty strong, equal concentric striæ, a few on the superior side larger and more prominent than the others; upper side flat; under side rounded, and largely umbilicated; aperture subtriangular, with a slight impression from the second volution.

Fresh Water formation, Isle of Wight.

GENUS LIII.—CRASSIDORSA.—*Brown.*

Shell discoidal, involute; spire equally flat both above and below, the whole of the volutions exposed; aperture circular, entire; substance of the shell thicker on the back than on the inner side; outer volution subcarinated.

1. CRASSIDORSA EQUALIS.—The Equal-sided Crassidorsa, pl. XLVI. fig. 25.

Planorbis equalis. Sowerby, II. p. 89, pl. 140, fig. 1. *Skenea equalis,* Fleming, p. 314.

Smooth, equilaterally concave, with a single, nearly obsolete keel on the right side, and two on the left; with five entirely exposed, rounded volutions; aperture orbicular, not embracing the volutions; the substance of the shell thick towards the outside; whole exterier covered with somewhat obsolete, concentric striæ.

Carboniferous Limestone, Kendal.

FAMILY IX.—COLIMACEA.

Shell spiral; external surface generally smooth, exhibiting only lines of growth; right margin of the aperture frequently reflected outwards; animals terrestrial, with cylindrical tentacula; some species with an operculum, and others devoid of one.

GENUS LIV.—AURICULA.—*Lamarck.*

Shell solid, oval or oblong-ovate, cylindrical or conic; body large; spire very small, obtuse; aperture elongated, narrow, generally contracted near the centre, and rounded below; outer lip thickened, reflected, or denticulated; inner lip with two or three strong plaits; outer surface covered with a horny epidermis.

1. AURICULA SEDGVICI.—Sedwick's Auricula, pl. XLVI. fig. 28.

Auricula Sedgvici. Phillips, I. p. 129, pl. 11, fig. 33.

Ovate; body large; spire very small, with three volutions, the apex obtuse; aperture oval; one plication on the pillar lip.

Blue Wick, Inferior Oolite, Yorkshire.

2. AURICULA OBSOLETA. — The Obsolete Auricula, pl. XLVI. fig. 29.

Auricula obsoleta. Phillips, I. p. 94, pl. 2, fig. 40.

Suborbicular; body large; spire small, with two volutions, the apicial one rather obtuse; entire surface covered with a numerous series of spiral, regular punctated striæ.

Speeton Clay at Speeton.

3. AURICULA PYRAMIDALIS.—The Pyramidal Auricula, pl. XLVI. fig. 32, 33.

Auricula pyramidalis. Sowerby, IV. p. 109, pl. 379, fig. 1, 2.

Ovate, smooth; body large; spire small, pyramidal, consisting of five or six narrow, well defined volutions, rounded above, with an acute apex; aperture elongated, narrow above, occupying half the length of the shell; outer lip sharp; inner lip somewhat thickened, with two rather contiguous, slightly obtruding plaits upon the columella, and a small umbilicus behind it.

4. AURICULA INCRASSATA.—The Thickened Auricula, pl. XLVI. fig. 44, 45.

Auricula incrassata. Sowerby, II. p. 143, pl. 163, fig. 1, 2, 3. *Auricula ringens,* Parkinson, Org. Rem. III. p. 84, pl. 5, fig. 4.

Ovate, ventricose; body very large; spire small, with three well rounded volutions, the apicial one very minute; aperture smooth within, oblong, semilunar, contracted above, wide below; outer lip very broad, greatly thickened behind, with very strong longitudinal lines of growth, instead of sulci, slightly reflected in front; pillar lip broad, thick, with three plaits; whole surface covered with numerous, regular, spiral ribs, the intervening furrows furnished with longitudinal, regular, sharp, elevated, wide-set striæ, dividing them into small, oblong, rectangular cells, which can only be distinctly seen by the aid of a strong lens.

London Clay at Blackdown.

5. AURICULA TURGIDA.—The Swollen Auricula, pl. XLVI. fig. 46, 47.

Auricula turgida. Sowerby, II. p. 143, pl. 163, fig. 4.

Subovate, glossy; body large, nearly orbicular; spire short, with three slightly rounded, but not deeply defined volutions, the apex acute; aperture oblong, a little oblique, contracted above; outer lip thick, smooth internally at the edge, and somewhat elevated and contracted in the middle; inner lip rather broadly and thickly reflected on the columella, with two thin, prominent folds; surface covered with fine, regular, spiral striæ. Length somewhat more than an eighth of an inch.

London Clay at Highgate Hill, London.

6. AURICULA VENTRICOSA.—The Ventricose Auricula, pl. XLVI. fig. 34, 35.

Auricula ventricosa. Sowerby, V. p. 99, pl. 465, fig. 1.

Subovate; body large, inflated; spire conical, of medium length, with four well rounded volutions, slightly flattened above, and acute at the apex; aperture elongated, contracted, narrower above; outer lip much thickened, a little reflected on the edge; inner lip with a broad and thick callous, and three elevated, sharp plaits; base notched; surface with pretty strong, regular, spiral striæ. Length three-eighths of an inch.

A Crag fossil from near Ipswich.

7. AURICULA BUCCINEA.—The Buccinum Auricula, pl. XLVI. fig. 38, 39.

Auricula Buccinea. Sowerby, V. p. 100, pl. 465, fig. 2. *Voluta Buccinea,* Brocchi, p. 319, pl. 4, fig. 9.

Subovate, smooth; body ventricose; spire of medium length, with four slightly rounded volutions, terminating in an acute

apex; aperture elongated, narrow, acutely pointed above; outer lip much thickened and elevated in front, and distinctly defined behind; inner lip with a broad reflection, and three strong, sharp plaits, the upper one partly concealed by the callous, the lower one formed by the spiral edge of the columella; base slightly notched. Length upwards of three-eights of an inch.

The Crag at Ramshot.

8. AURICULA SIMULATA.—The Dissembled Auricula, pl. XLVI. fig. 40, 41.

Auricula simulata. Sowerby, II. p. 144, pl. 163, fig. 5, 6. *Bulla simulata*, Brander, p. 61.

Oblong-ovate; spire of medium length, consisting of four ventricose, well defined volutions; aperture elongated, narrowed both above and below; outer lip sharp, even on the edge, not much expanded, and striated internally; columellar lip slightly thickened, and provided with two broad, prominent, laterally compressed plaits, and a slight sinus dividing this from the outer lip; whole surface covered by spiral, close-set ribs, serrated on both sides, facing each other on the opposed ribs, and forming a series of cell-like hollows. Length three-quarters of an inch.

The London Clay, Barton Cliff.

9. AURICULA DISCREPANS.—The Discrepant Auricula, pl. XLVI. fig. 42, 43.

Auricula simulata. Sowerby, II, p. 144, pl. 163, fig. 7, 8.

Oblong-ovate; spire conical, of medium length, with five slightly ventricose volutions, ending in an acute apex; aperture oblong, contracted and pointed above, as well as below; outer lip plain and sharp at the edge, and internally striated; pillar lip broadly reflected on the columella, with three rather oblique plaits, the superior one shorter and more slender than the others; surface covered with spiral, close-set, serrated ribs, the points of each nearly joining with those of the opposing ribs, leaving cell-like openings between them.

London Clay at Barton Cliff and Hordwell.

This shell may easily be mistaken for *A. simulata*, but differs in being somewhat more elongated, the spire less ventricose and more acute, in having an additional volution, and in the plaits of the lip being more oblique, with a third and smaller one above the others.

10. AURICULA INFLATA. — The Inflated Auricula, pl. XXX.* fig. 30.

Auricula inflata. Sowerby, Geo. Trans. IV. N. series, p. 336, pl. 11, fig. 11. Bennett, Cat. Wilt. Foss. p. 2.

Oblong-ovate; body long; spire short, with four rather inflated volutions, the apicial one acute; aperture subquadrangular below, but with one of its upper angles acutely elongated; outer lip much thickened, obtuse on the edge, and united with the inner lip, which has two strong plaits, the upper one slightly inclined downwards at the point, the lower one sometimes divided in the middle by a longitudinal groove; surface with numerous spiral lines of elongated punctures.

This species differs from *A. incrassata*, in being much longer, with the lip less enlarged.

Found in the Gault, Kent and Wiltshire.

GENUS LV.—BULINUS.—*Bruguière.*

Shell oval or oblong, generally thin, and covered with a slender epidermis; spire obtuse, variable in length and number of its volutions, which for the most part are few; aperture oval, wide, anteriorly rounded; outer lip simple, reflected, continuous, joining the columellar lip without an emargination, and reflected over part of the body; columella smooth, straight, without a truncature, or widening at the base.

1. BULINUS COSTELLATUS. — The Ribbed Bulinus, pl. XLVI. fig. 30, 31.

Bulinus costellatus. Sowerby, IV. p. 89, pl. 366. Fleming, p. 266.

Oblong-ovate, slightly inflated; spire with four nearly flat-sided volutions, the apex rather obtuse; aperture elongated, acute above, and rounded below, occupying about half the length of the shell; surface covered with numerous, small, thin, sharp, longitudinal, slightly oblique ribs, the interstices plain.

Fresh Water formation, Isle of Wight.

This species differs from the following, but the aperture in this is much larger in proportion to the size of the shell, and, besides, it is always a dextral shell, while all the specimens of *B. ellipticus* are sinistral.

2. BULINUS ELLIPTICUS. — The Elliptical Bulinus, pl. XLVI. fig. 36, 37.

Bulinus ellipticus. Sowerby, IV. p. 46, pl. 337. Fleming, p. 266.

Shell an elongated ellipsis, thickened in the centre, and gradually tapering to both extremities; body occupying about half the length of the shell; spire with five reversed, very slightly inflated volutions, with an obtuse apex, and the sutural line shallow; aperture small, narrow, its length being equal to twice its width, situate on the left side, contracted above, and wide below; columella a little oblique; outer lip plane; base equally blunt with the apex; whole surface covered by numerous, somewhat obtuse, longitudinal, slightly oblique ribs, with furrows between them. Sometimes attains the size of four inches.

Fresh Water formation at Schalcomb, Isle of Wight.

GENUS LVI.—COCHLICARINA.—*Brown.*

Shell subdiscoidal; spire variable, subdepressed in some, and more subconic in others; body provided with a carina on its upper edge; base imperforate, and ventricose; aperture subquadrangular; columella with a broad, thickened callus.

1. COCHLICARINA EXPANSA.—The Expanded Cochlicarina, pl. XLVII. fig. 1, 2.

Helicina expansa. Sowerby, III. p. 129, pl. 273, fig. 1, 2, 3. Fleming, p. 258.

Suborbicular, nearly smooth; body flattened above, with an acute carina on its superior edge, which is continuous at the base of the volutions to the apicial one; spire conical, depressed, consisting of four flattened, abruptly diminishing volutions, ending in an acute apex, and obscurely striated; body very ventricose below, with an expanded callus at the columella, spreading over a considerable portion of the base.

Blue Lias at Lyme Regis.

2. COCHLICARINA SOLARIOIDES.—The Sun-like Cochlicarina, pl. XLVII. fig. 3, 4.

Helicina solarioides. Sowerby, III. p. 129. Fleming, p. 258.

Subdiscoidal; spire depressed, with four flattened volutions, with an indistinct carina at the base of each; body flat above, and carinated, convex beneath; callus, narrow, and rather elevated, and not so distinct as in the former species; surface with obscure striæ.

Lias, Lyme Regis, Dorsetshire.

3. Cochlicarina compressa.—The Compressed Cochlicarina, pl. XLVII. fig. 7, 8.

Helicina compressa. Sowerby, I. p. 33, pl. 10, three middle figures. Fleming, p. 258.

Subglobose, smooth, thick, and strong; spire slightly depressed; superior portion of the body, and base of the volutions of the spire, carinated; base convex; callus broad; aperture somewhat angular above.

In Lias Limestone, Gloucestershire.

4. Cochlicarina polita.—The Polished Cochlicarina, pl. XLVII. fig. 5, 6.

Helicina polita. Sowerby, III. p. 153, pl. 285. Fleming, p. 258.

Subrotund, smooth, polished; spire subconic, consisting of five volutions, subdepressed above, with a carina at their base, which continues along the superior portion of the body, and terminates in the outer lip; body separated from the spire by an impressed fillet, and finely rounded below, with a thin callus expanded half over the base; aperture subquadrangular; upper parts with perversely arcuated lines of growth, which indicate a sinus in the right lip.

In Marly Sandstone of the Lower Oolitic series at Cropredy.

Genus LVII.—HELIX.—*Linnæus.*

Shell orbicular, thin, subglobose; body very large; spire short, and small in proportion to the body; aperture oblique; outer lip reflected, and interrupted by the bulging of the body; columella confluent with the outer lip, and situate on the lower portion of the axis; destitute of an operculum.

1. Helix Gentii.—Gent's Helix, pl. XLVII. fig. 9, 10.

Helix Gentii. Sowerby, II. p. 101, pl. 145. Fleming, p. 264.

Subglobose, smooth; body large; spire small, consisting of three depressed volutions, the apex obtuse; superior portion of the body, and base of the volutions, provided with a spiral, narrow, hollow band, or sulcus; aperture elliptical, ample, much expanded; whole surface furnished with obscure, arcuated lines of growth, except in the sulcus, where they are more conspicuous.

Greensand near Devizes.

2. Helix globosa.—The Globular Helix, pl. XLVII. fig. 33, 34.

Helix globosus. Sowerby, II. p. 157, pl. 170. Fleming, p. 264.

Globular, slightly longer than broad; body very large; spire rather short, obtuse, consisting of three rather broad, slightly tumid, and gradually increasing volutions, with obscure, irregular, spiral striæ, and crossed by lines of growth; aperture semilunate; outer lip slightly reflected; umbilicus concealed by the expanded glazing on the columellar lip.

Young shells are somewhat depressed, provided with an umbilicus.

Crag, Fresh Water formation, Isle of Wight.

ORDER IV.—GASTEROPODA.

Animals with the body straight, never spiral, nor totally enveloped in their shell; the foot, or disc, situated under the belly, united to the body nearly its whole length, and serving as an organ of locomotion.

Grand-Division I.—PNEUMOBRANCHIÆ.

Branchiæ in the form of a vascular net, or the wall of a particular cavity, opening by a hole, which the animal contracts or dilates at pleasure. They respire air.

FAMILY I.—BULLACEA.

Shells greatly distended, and without any apparent columella.

Genus I.—BULLA.—*Linnæus.*

Shell convolute, oval, with a depression above instead of a spire; aperture longitudinal, as long, or longer than the convolutions, straitened above, and expanded beneath, where it is effuse; outer lip thin; columellar lip generally reflected, with a coating of shelly matter.

1. Bulla convoluta.—The Convoluted Bulla, pl. XLVII. fig. 11, 12.

Bulla convoluta. Brocchi, p. 277, pl. 1, fig. 7. Sowerby, V. p. 95, pl. 464, fig. 1. Fleming, p. 295.

Cylindrical, smooth; aperture narrow, linear, widened near the base; vertex obtuse, subtruncated, perforated, exposing a deep umbilicus.

In the Crag at Ipswich.

2. Bulla elliptica.—The Elliptical Bulla, pl. XLVII. fig. 13, 14.

Bulla elliptica. Sowerby, V. p. 96, pl. 464, fig. 6. Fleming, p. 295.

Regularly elliptical, elongated, rounded at both extremities; vertex deeply perforated; aperture linear, wider below than above; surface with fine, regular, transverse striæ, somewhat wider near the base. Three lines long.

London Clay, Barton Cliff.

3. Bulla elongata.—The Elongated Bulla, pl. XLVII. fig. 19.

Bulla elongata. Phillips, I. p. 102, pl. 4, fig. 7.

Elongated, smooth, narrow, and umbilicated above, wide beneath; outer lip thin, and somewhat hollow in the centre; aperture contracted above, rounded, and wide beneath.

Coralline Oolite, in the lower beds at Seamar, Malton, and Scarborough.

4. Bulla filosa.—The Thready Bulla, pl. XLVII. fig. 20.

Bulla filosa. Sowerby, V. p. 97, pl. 464, fig. 4. Fleming, p. 295.

Elliptical; aperture narrow above, wide, and rounded beneath; outer lip considerably expanded; surface covered with numerous, regular, transverse striæ.

Distinguished from the preceding by its expanded lip and numerous striæ.

5. BULLA ATTENUATA.—The Attenuated Bulla, pl. XLVII. fig. 24.

Bulla attenuata. Sowerby, V. p. 97, pl. 464, fig. 3. Fleming, p. 295.

Elliptical, narrow above, ventricose in the middle, with an expanded, well rounded base; aperture long, curved, narrow above, expanded below; outer lip extending beyond the top of the body, which is truncated above, with a deep perforation; surface covered with fine, transverse striæ, which are narrower and less conspicuous in the middle, and close set and deep above, more numerous below, but rather indistinct. About twice as long as wide.

London Clay at Hordwell.

6. BULLA ACUMINATA. — The Acuminated Bulla, pl. XLVII. fig. 15, 16.

Bulla acuminata. Sowerby, V. p. 98, pl. 464, fig. 5.

Elongated, cylindrical; vertex acuminated; aperture linear, narrow, a little wider at the base; outer lip rising a little above the vertex, and produced to a point; surface with fine, regular, transverse striæ, which are somewhat obscure in the middle. Length equal to thrice its diameter.

London Clay, Barton Cliff.

7. BULLA CONSTRICTA. — The Constricted Bulla, pl. XLVII. fig. 17, 18.

Bulla constricta. Sowerby, V. p. 96, pl. 464, fig. 2.

Subcylindrical, with a central constriction; vertex truncated, and deeply perforated; aperture linear, contracted above, and considerably widened below; base rounded; superior portions of the exterior smooth; base with obscure, spiral striæ. Length three times its diameter.

London Clay at Barton Cliff.

8. BULLA MANTELLIANA.—Mantell's Bulla, pl. XXXIII.* fig. 31.

Bulla Mantelliana. Sowerby, Geo. Trans. IV. 2nd series, p. 346, pl. 22, fig. 3. Mantell, Geo. S.E. of England, p. 249.

Cylindrical, smooth; truncated at both extremities, but not umbilicated; aperture contracted above, and considerably widened below; outer lip a little inflected in the centre. Length nearly double its diameter.

Hastings Sand, Tilgate Forest.

GENUS II.—UTRICULUS.—*Brown.*

Shell small, oblong-ovate; body very large; spire very short, with rounded volutions; aperture frequently as long as the body, and others not, narrow above, wide, and rounded at the base; lips continuous; outer lip thin, and slightly inflected; inner lip not reflected on the columella.

SECTION I.—APERTURE NOT SO LONG AS THE BODY.

1. UTRICULUS HUMERALIS.—The Shouldered Utriculus, pl. XLVII. fig. 26.

Actæon humeralis. Phillips, I. p. 129, pl. 11, fig. 34.

Subcylindrical, smooth; body long, a flat space on its superior margin; spire short, consisting of four subturreted volutions, flattened above, and ending in an acute apex; apex oblong-oval, a little compressed above, and rounded below; outer lip with a slight flexure near its centre; inner lip narrowly reflected on columella.

Blue Wick of the Inferior Oolite.

2. UTRICULUS CRENATUS.—The Crenated Utriculus, pl. XLVII. fig. 21, 22, 23.

Acteon crenatus. Sowerby, V. p. 87, pl. 460, fig. 1. *Tornatella crenetus,* Fleming, p. 336.

Oblong-ovate; body large, a little ventricose; spire small, acute, with four very slightly inflated volutions, and a shallow sutural line; aperture elongated, narrow, about two-thirds the length of the body, contracted and pointed above, gradually widening below, and terminating in a rounded base; outer lip sharp, almost straight; columella with a series of minute crenulations. Fig. 23 is the natural size of the shell.

London Clay, Barton Cliff.

3. UTRICULUS ELONGATUS.—The Elongated Utriculus, pl. XLVII. fig. 27, 28, 29.

Actæon elongatus. Sowerby, V. p. 88, pl. 460, fig. 3. *Tornatella elongatus,* Fleming, p. 337.

Greatly elongated, subcylindrical; body long; spire of medium length, with four gradually tapering volutions, defined by a narrow sutural line, and ending in an obtuse apex; aperture short, about half the length of the body, slightly oblique, contracted above, and rounded and widened beneath; outer lip a little expanded, and slightly inflected in the centre; whole surface covered with very fine spiral striæ, which are very indistinct on the spire and superior portion of the body. Fig. 28 is the natural size of the shell.

London Clay, Barton Cliff.

SECTION II.—APERTURE AS LONG AS THE BODY.

4. UTRICULUS GLABER. — The Smooth Utriculus, pl. XLVII. fig. 30.

Utriculus glaber. Brown, Elts. Foss. Conch. p. 64, pl. 5, fig. 9. *Actæon glaber,* Phillips, Geo. of Yorkshire, I. p. 129, pl. 9, fig. 31.

Cylindrical, oblong; body very large; spire very short, depressed, consisting of three slightly inflated, gradually diminishing volutions, the apicial one obtuse; aperture elongated, narrow, extending the whole length of the body, straitened above, gradually expanding as it descends, and pretty wide below; outer lip nearly straight; columellar lip destitute of a thickening; whole surface smooth, with wide-set, indistinct, nearly equidistant, transverse striæ; base rounded.

Grey Limestone of the Cave Oolite at Cloughton.

FAMILY II.—CALYPTRACEA.

The branchiæ of the animal situated in a dorsal cavity, or projecting beyond its shell, which is invariably exterior.

GENUS III.—ANCYLUS.—*Müller.*

Shell thin, obliquely conical, patelliform; vertex somewhat pointed, short, turned backwards, and slightly inwards, but not spiral; aperture oval, or oblong, with the margins simple and entire.

1. ANCYLUS ELEGANS.—The Elegant Ancylus, pl. XLVII. fig. 32 and 35.

Ancylus elegans. Sowerby, VI. p. 64, pl. 533. Fleming, p. 280. Brown, Elts. Foss. Conch. p. 64, pl. 4, fig. 14.

Subconical, rather convex, smooth; apex pointing obliquely to one side, and situate near the narrower end of the shell; aperture subovate, narrower at the apicial end, and more pointed, the opposite extremity rather flattened; surface covered with extremely minute, divergent striæ, which are only discoverable by the aid of a strong lens. Height nearly equal to half its greatest diameter.

Dark-gray sand of the London Clay at Hordwell.

GENUS IV.—CALYPTRÆA.—*Lamarck.*

Shell conical; vertex subcentral, imperforate, and acute; base of aperture orbicular, or nearly so, its margins sharp and entire; internal cavity provided with a lateral salient appendage, or septum, which varies much in form in different species; various species have a strongly marked, muscular impression, just above the fold of the inner lip; in other species, it is situate on the outside of the inner cup, but never within it.

SECTION I.—TROCHIFORM, THE SEPTUM SOMEWHAT SPIRAL.

1. CALYPTRÆA ECHINULATUM.—The Spined Calyptræa, pl. XLVII. fig. 36, 37.

Infundibulum echinulatum. Sowerby, I. p. 221, pl. 97, fig. 2. Fleming, p. 363.

Smootn, conical, depressed, oblique, inflated on the sides; with three or four spiral convolutions, the apicial one acute, and two or three lower ones smooth; body with regular series of rather obscure, short spines, which are most developed near the edge. Diameter three-quarters of an inch.

Plastic Clay at Plumstead.

2. CALYPTRÆA RECTUM.—The Rectangular Calyptræa, pl. XLVII. fig. 38, 39.

Infundibulum rectum. Sowerby, I. p. 220, pl. 97, fig. 3. Fleming, p. 362.

Conical; apex central; body inflated; spire with two or three obsolete volutions, ending in an acute, nearly central vertex; aperture nearly circular; internal plate rectangular, and with one volution; columella slender; external surface concentrically striated.

The Crag at Holywells.

3. CALYPTRÆA OBLIQUUM.—The Oblique Calyptræa, pl. XLVII. fig. 40, 41, 42.

Infundibulum obliquum. Sowerby, I. p. 220, pl. 97, fig. 1. Fleming, p. 363.

Subconic, somewhat depressed, very smooth, oblique; vertex turned to one side; aperture circular; internal transverse partition reaching two-thirds across the inside, its edge reflected near the columellar region, and having the aspect of an umbilicus. Fig. 42, natural size of the shell.

London Clay, Barton Cliff, and at Brakenhurst, Surrey.

4. CALYPTRÆA SPINULOSUM.—The Spinous Calyptræa, pl. XLVII. fig. 46, 47.

Infundibulum spinulosum. Sowerby, I. p. 222, pl. 97, fig. 6. Fleming, p. 363.

Subconic, ventricose; with three or four obscurely defined volutions, the superior ones slightly inflated; vertex nearly central, the apex acute; surface covered with numerous, small, extremely short, somewhat reflected hollow spines; aperture orbicular; outer lip curved internally; the transverse septum reaching three-fourths across the cavity; slightly twisted at the base of the columella, producing the appearance of a subumbilicus. Diameter nearly an inch and a half.

London Clay at Barton Cliff.

5. CALYPTRÆA TUBERCULATUM.—The Tuberculated Calyptræa, pl. XLVII. fig. 45.

Infundibulum tuberculatum. Sowerby, I. p. 221, pl. 97, fig. 4, 5. Fleming, p. 363. *Trochus apertus,* Brander, Foss. Hant. pl. 1, fig. 1, 2.

Subconic, inflated, oblique; spire with two or three volutions, apex obtuse; whole surface covered with spiral bands of rugose tubercles; aperture subrotnnd.

London Clay, Hampshire.

GENUS V.—PILEOPSIS.—*Lamarck.*

Shell obliquely conical, posteriorly recurved, with an uncinate spiral apex; the volutions serrated, and rolled inwards; aperture large, ovate; anterior margin shortest, the posterior one large, and rounded; inside with two elongated, arcuated, muscular impressions, situated under the posterior margin; external surface covered with a thick, horny, somewhat pilous epidermis.

1. PILEOPSIS UNGUIS.—The Hoof Pileopsis, pl. XLVII. fig. 43, 44.

Patella unguis. Sowerby, II. p. 88,* pl. 139, fig. 7. *Capulus unguis,* Fleming, p. 364.

Subdepressed, suborbicular; vertex recurved, oblique, extending beyond the margin, the convolution small and acute; base suboval, contracting internally; outer lip even. Height about a third of its width.

Found in the Crag at Holywells.

2. PILEOPSIS STRIATUS.—The Striated Pileopsis, pl. XLVII. fig. 49.

Pileopsis striatus. Phillips, II. p. 224, pl. 14, fig. 15.

Oval; apex placed near one end; vertex incurved, and free; arcuated from the base to the vertex; outer surface covered with strong, sharp, radiating striæ, crossed by numerous, remote, transverse lines of growth; base suboval.

Mountain Limestone, Northumberland, Bolland, and County of Kildare, Ireland.

3. PILEOPSIS NERITOIDES.—The Nerita-formed Pileopsis, pl. XLVII. fig. 48 and 51.

Pileopsis Neritoides. Phillips, II. p. 224, pl. 14, fig. 16, 17, 18.

Obliquely spiral; spire depressed, with two volutions, the apex blunted; aperture oval; outer surface with strong, irregular lines of growth, and concentrically striate at the base.

Mountain Limestone at Bolland.

4. PILEOPSIS TRILOBUS.—The Three-lobed Pileopsis, pl. XLVII. fig. 50 and 55.

Pileopsis? trilobus. Phillips, II. p. 224, pl. 14, fig. 12, 13.

Subconic, smooth, arcuated from the base to the vertex, which is straight, gradually tapering and acute at the vertex, pointing downwards, and nearly reaching the margin; aperture trilobate; base taking the undulous character of the lobes.

Mountain Limestone of Bolland.

5. PILEOPSIS TUBIFER.—The Tubed Pileopsis, pl. XLVII. fig. 52.

Pileopsis tubifer. Sowerby, VI. p. 224, pl. 607, fig. 4. Phillips, II. p. 224, pl. 14, fig. 14.

Elongated, smooth, narrow, arcuated; vertex but slightly curved; three obscure, divergent, spinous ridges emanating near the vertex, and terminating on the margin, with three rows of long tubular spines, extending upwards of half an inch beyond the margin.

Mountain Limestone, Bolland, and near Preston.

6. PILEOPSIS VETUSTUS. — The Ancient Pileopsis, pl. XLVII. fig. 53.

Pileopsis vetusta. Sowerby, VI. p. 223, pl. 607, fig. 1, 2, 3. Phillips, II. p. 224, pl. 14, fig. 19?

Subconical, considerably arcuated, smooth; vertex blunt, and slightly bent; posteriorly contracted, and compressed on the sides; each with two or three irregular undulations, crossed by nearly obsolete, waved lines of growth; aperture oblong-ovate, broadest in front, the margin sinuous, conforming to the undulations.

Mountain Limestone, Queen's County, Ireland, Preston, and at Bolland.

7. PILEOPSIS ANGUSTUS.—The Straitened Pileopsis, pl. XLVII. fig. 54.

Pileopsis angustus. Phillips, II. p. 224, pl. 14, fig. 20.

Subconic, spiral, smooth, narrow above; vertex turned to one side, obtuse; with transverse, wide-set lines of growth; aperture elongated, and expanded behind.

Mountain Limestone, Bolland.

GENUS VI.—FISSURELLA.—*Bruguière.*

Shell oblong, shield-shaped, or conically depressed; concave within; destitute of spiral convolutions; with the vertex perforated, and directed towards the front of the shell, the perforation subovate in some species, and nearly round in others; margin of the shell thickened around the inside, and generally crenulated; muscular impression visible near the inner edge, all round, widest on the sides near the front; outer surface striated, grooved, or radiated, from the vertex to the margin, and generally decussated by lines of growth.

1. FISSURELLA GRÆCA. — The Greek Fissurella, pl. XLVIII. fig. 7, 8.

Fissurella Græca. Sowerby, V. p. 132, pl. 483. Fleming, p. 365. *Patella Græca*, Brocchi, II. p. 259.

Oblong-ovate, convex, somewhat longitudinally arcuated, perforation oval; whole surface with many small ribs, radiating from the apex to the base, composed of sets, consisting of one large and two small ones, and between each set is a still larger rib; these are intersected by numerous, transverse, elevated, narrow thread-like ribs, which produce a thickening at their intersections; inside oblong-oval, smooth; margin crenulated, and a little arcuated.

The Crag at Ipswich.

GENUS VII.—SIPHO.—*Brown.*

Shell ovate, subconic; vertex reflected, and slightly spiral; with a small dorsal fissure situate near the vertex, terminating internally by a rhombic, funnel-shaped syphon, or cup, in some species, but devoid of it in others; base ovate; exterior surface ribbed or striated.

1. SIPHO CALTHRATA.—The Barred Sipho, pl. XLVIII. fig. 1, 2.

Emarginula? s. Fissurella? clathrata. Sowerby, VI. p. 33, pl. 519, fig. 1. *Fissurella clathrata*, Fleming, p. 365.

Prominently conical; the vertex thick, and considerably incurved, reaching nearly to the base; whole surface with strong, longitudinal, divergent ribs, emanating from the apex, and terminating on the base, each of which project beyond the edge, and form a crenulated margin, in the centre is a much thicker rib, with an awl-shaped fissure, extending from the back of the apex about half way down; these ribs are crossed by transverse ribs, which produce a beautifully reticulated aspect; aperture oval.

The Oolite at Ancliffe.

GENUS VIII.—EMARGINULA.—*Lamarck.*

Shell conical, shield-shaped; vertex inclined to the posterior extremity; anterior margin with a notch, or fissure; internal cavity simple; anterior sides of the muscular impression interrupted, expanded, and not continued across the front.

1. EMARGINULA RETICULATA.—The Reticulated Emarginula, pl. XLVIII. fig. 3, 4.

Emarginula reticulata. Sowerby, I. p. 74, pl. 33, lower figures. Fleming, p. 365.

Greatly conical, elongated; vertex elevated, slightly turned to one side, but not acute; surface with twenty-four, or more, strong, divergent ribs, crossed by numerous thread-like striæ, which produce a fine reticulated appearance; fissure short; aperture oval; inside smooth.

From the Crag, Holywells.

2. EMARGINULA SCALARIS.—The Ladder-like Emarginula, pl. XLVIII. fig. 5, 5,* 6.

Emarginula scalaris. Sowerby, VI. p. 34, pl. 519, fig. 3. Fleming, p. 366.

Conical; vertex but very slightly bent, somewhat eccentric, and obtuse; with many divergent, equal ribs, the central one cleft by the marginal fissure, the intervals crossed by very fine striæ; aperture obovate. Diameter a little more than an eighth of an inch. Fig. 5,* natural size.

Found in the Oolite at Ancliffe.

3. EMARGINULA SULCATA.—The Furrowed Emarginula, pl. XLVIII. fig. 16, 16,* 17.

Emarginula scalaris. Sowerby, VI. pl. 519, fig. 4.

Somewhat acutely conical, with the vertex slightly turned downwards; surface with about seventeen rather flat ribs, which hardly protrude beyond the margin, the central one cleft by the fissure, with broad furrows between each, which are crossed by fine, somewhat irregular, nearly obsolete striæ; marginal fissure very short; aperture suborbicular. Fig. 16,* the natural size.

Found in the Oolite at Ancliffe.

This shell has been confounded with the preceding species, but will at once be distinguished by the ribs being more acute, and better defined.

4. EMARGINULA TRICARINATA.—The Three-keeled Emarginula, pl. XLVIII. fig. 14, 14,* 15.

Emarginula tricarinata. Sowerby, VI. p. 34, pl. 519, fig. 2. Fleming, p. 366.

Conical; the vertex considerably bent down, and rather acute at the apex; surface with three principal, much thicker, more prominent, and widely-set divergent ribs, situated in front, the central one cleft by the fissure, which is gradually closed as the shell increases in size, and leaves a longitudinal, transversely striate space in the centre of it, and about ten or twelve lesser ribs on the sides and back, the intervening furrows almost smooth; aperture elongated, and slightly quadrangular. Fig. 14,* the natural size of the shell.

Found in the Oolite at Ancliffe.

5. EMARGINULA CRASSA.—The Thick Emarginula, pl. XLVIII. fig. 9, 10.

Emarginula crassa. Sowerby, I. p. 73, pl. 33, two upper figures. Fleming, p. 365.

Obtusely conical, very thick; vertex short, turned backwards, and subacute at the apex; whole surface with nearly equidistant, divergent, flat ribs, the intervening furrows with four or five longitudinal striæ between each, crossed by many lines of growth, which in old shells become very close and irregular towards the base; marginal fissure wide, and filled up half its length by thinner shelly matter than the other parts; aperture oblong-oval, glossy within, margin somewhat undulated.

The Crag near Ipswich.

FAMILY III.—PHYLLIDIACEA.

The branchiæ of the animals situated beneath the margin of the mantle, in a longitudinal series around the body. They respire in water. Shell simple.

GENUS IX.—PATELLA.—*Linnæus.*

Shell ovate or oblong, more or less of a conical form, sometimes, although rarely, pyramidal; vertex rarely central, generally placed anteriorly, with its apex inclined towards the head of the animal; concave within, and the margin entire; muscular impressions distinct, and same form as the shell, placed about half way betwixt the summit and the margin, interrupted in front, where the head of the animal is situated; external surface striated or ribbed in a variable manner, from the apex to the base, in the latter case, the margin is variously dentated or crenulated.

1. PATELLA MUCRONATA.—The Pointed Patella, pl. XLVIII. fig. 11.

Patella mucronata. Phillips, II. p. 223, pl. 14, fig. 3.

Smooth, subconic, depressed; apex mucronate, central, and acute; aperture nearly orbicular, the marginal lips a little concave.

Mountain Limestone, Bolland.

2. PATELLA STRIATA.—The Striated Patella, pl. XLVIII. fig. 12, 13.

Patella striata. Sowerby, IV. p. 123, pl. 389. Fleming, p. 288.

Oblong-ovate, slightly oblique, irregularly conical; with numerous, acute, irregularly large and small divergent ribs, here and there interrupted by somewhat irregular lines of growth; sides frequently pressed inwards; vertex acute, and placed towards the anterior end; inside thickened towards the apicial region.

Young shells are nearly flat, and acquire the conical form as they advance in age.

London Clay at Stubbington.

3. PATELLA RUGOSA.—The Rugged Patella, pl. XLVIII. fig. 18.

Patella rugosa. Sowerby, II. p. 87,* pl. 139, fig. 6. Parkinson, III. p. 50, pl. 5, fig. 21. Fleming, p. 288.

Obovate, thick, depressed; apex placed near one end, depressed, and slightly recurved; dorsal end somewhat concave; surface with numerous, rather regular, divergent ribs, and with two or three large reflected concentric undulations, which are so much developed behind the vertex, that they give the appearance of having been rolled together, and provided with indistinct lines of growth.

The Lower Oolite, Gloucestershire.

4. PATELLA SINUOSA.—The Crooked Patella, pl. XLVIII. fig. 19.

Patella sinuosa. Phillips, II. p. 223, pl. 14, fig. 2.

Oviform, smooth, depressed, subconic; vertex irregular, prominent, and situate near the narrow end; surface with indistinct lines of growth.

Mountain Limestone, Bolland.

5. PATELLA SCUTIFORMIS.—The Scuttle-shaped Patella, pl. XLVIII. fig. 20.

Patella scutiformis. Phillips, II. p. 223, pl. 14, fig. 1.

Scutiform, smooth, elliptical, depressed; vertex inflexed, acute, situate near the margin of the narrow end; surface with very fine, divergent striæ.

Mountain Limestone, Bolland.

6. PATELLA LÆVIS.—The Smooth Patella, pl. XLVIII. fig. 21, 22.

Patella lævis. Sowerby, II. p. 86,* pl. 139, fig. 3, 4. *Patella lævior,* Fleming, p. 288.

Subconic, slender, depressed; vertex obtuse, and eccentric; surface very smooth, and shining; aperture oviform.

Alum Clay of Whitby and Folkstone.

7. PATELLA LATA.—The Broad Patella, pl. XLVIII. fig. 23.

Patella lata. Sowerby, V. p. 133, pl. 484, fig. 2. Fleming, p. 288.

Obovate, its length and breadth being nearly equal, depressed; vertex eccentric, situate about one-third of the length of the shell from the anterior end; external surface with about thirty obtuse, distant, rounded, divergent ribs, those upon the posterior end strongest.

Lower Oolite, Stonefield.

8. PATELLA NANUS.—The Dwarf Patella, pl. XLVIII. fig. 24, 25, 26.

Patella Nanus. Sowerby, V. p. 134, pl. 484, fig. 3. Fleming, p. 288.

Oblique, smooth, subconic; vertex obtuse, situate half way between the centre and the anterior end of the shell; both extremities equally obtuse; aperture oval. Fig. 26, the natural size of the shell.

The London Clay, Ancliffe.

9. PATELLA ANCYLOIDES.—The Ancilla-shaped Patella, pl. XLVIII. fig. 27, 28, 29.

Patella ancyloides. Sowerby, V. p. 134, pl. 484, fig. 2.

Convex, smooth, depressed; vertex slightly spiral, situate near the anterior end; the apex curved downwards, and a little to one side. Fig. 29, natural size of the shell.

The London Clay at Ancliffe.

10. PATELLA RETROSA. — The Retroflexed Patella, pl. XLVIII. fig. 30.

Patella retrosa. Phillips, II. p. 223, pl. 14, fig. 5.

Subconic, smooth, depressed; apex retroflexed, acute, placed about two-thirds towards the anterior end; with about fourteen broad, flat, divergent, undulating ribs, and shallow, broad, intermediate furrows; aperture elliptical; margin undulated.

Mountain Limestone, Bolland.

11. PATELLA ÆQUALIS.—The Equal Patella, pl. XLVIII. fig. 31, 32.

Patella æqualis. Sowerby, II. p. 87,* pl. 139, fig. 2. Fleming, p. 288.

Abruptly conical, its height and breadth being nearly equal, smooth, with a few obsolete radii; posterior end nearly perpendicular; apex obtuse; base oviform, the anterior end broadest.

In the Crag at Holywells.

12. PATELLA CURVATA.—The Curved Patella, pl. XLVIII. fig. 33.

Patella curvata. Phillips, II. p. 223, pl. 14, fig. 4.

Conical, smooth; anterior end curved; vertex inclined posteriorly, acute at the apex; aperture deep and orbicular; marginal lip plane.

The Mountain Limestone, Bolland.

13. PATELLA LATISSIMA.—The Very Broad Patella, pl. XLVIII. fig. 35.

Patella latissima. Sowerby, II. p. 85, pl. 139, fig. 1 and 5. Fleming, p. 288.

Depressed, smooth, and very thin; vertex eccentric, flat; concentrically undulated; aperture nearly orbicular, or slightly oval.

In the Slaty Clay, Lincolnshire.

14. PATELLA LATERALIS. — The Lateral Patella, pl. XLVIII. fig. 36.

Patella lateralis. Phillips, II. p. 223, pl. 14, fig. 6.

Subconic, smooth; vertex depressed; the apex acute; provided with a lateral sulcus, and posterior radiations.

The Mountain Limestone, Bolland.

GENUS X.—METOPTOMA.—*Phillips.*

Shell subconical, depressed; vertex subcentral; face under the apex truncated; general form somewhat shield-shaped.

1. METOPTOMA IMBRICATA.—The Imbricated Metoptoma, pl. XLVIII. fig. 35 and 40.

Metoptoma imbricata. Phillips, II. p. 224, pl. 14, fig. 8.

Conical, shield-shaped; apex rather obtuse; surface covered with concentric, imbricated ribs.

The Mountain Limestone at Bolland, and near Dowall, Derbyshire.

2. METOPTONA SULCATA.—The Furrowed Metoptoma, pl. XLVIII. fig. 37.

Metoptoma sulcata. Phillips, II. p. 224, pl. 14, fig. 11.

Convex; posterior side arcuated; outer surface concentrically sulcated; apex obtuse.

Mountain Limestone, Bolland.

3. METOPTOMA OBLONGA.—The Oblong Metoptoma, pl. XLVIII. fig. 38.

Metoptoma oblonga. Phillips, II. p. 224, pl. 14, fig. 10.

Oblong, cordiform; conical, rather convex; expanded anteriorly, with the margin rounded; vertex obtuse.

Mountain Limestone, Bolland.

4. METOPTOMA PILEUS. — The Bonnet Metoptoma, pl. XLVIII. fig. 39.

Metoptoma pileus. Phillips, II. p. 224, pl. 14, fig. 7. Brown, Elts. Foss. Conch. p. 67, pl. 5, fig. 18.

Shield-shaped, conical, smooth; apex obtuse.

Mountain Limestone, Bolland, and Dowall, Derbyshire.

5. METOPTOMA ELLIPTICA. — The Elliptical Metoptoma, pl. XLVIII. fig. 41.

Metoptoma elliptica. Phillips, II. p. 224, pl. 14, fig. 9.

Elliptical, subconic, smooth; vertex terminal, acute, and elongated.

Mountain Limestone, Bolland.

CLASS SECOND.

CONCHIFERA; OR BIVALVES.

Animals soft, inarticulate, destitute of a head or organs of vision, and always fixed within a bivalve shell; provided with external branchiæ, their circulation is simple, and heart unilocular.

All the species are aquatic, living either in the sea or fresh waters. None of the animals have an internal shell, the body is invariably soft, and the mouth is situate near the left side of the hinge.

Grand-Division I.

Ligament none or unknown, or in its stead a tendinous chord, which supports the shell.

ORDER I.—MONOMYARIA.

Animals provided with but one muscle of attachment, or adductor muscle, which leaves one subcentral muscular impression inside of each valve.

FAMILY I.—BRACHIOPODA.

Shell bivalve, adhering to extraneous marine bodies, either by the shell itself being in contact with them, or attached by a tendinous chord. Shells not quite equivalve, and open by a hinge.

Genus I.—LINGULA.—*Bruguière.*

Shell equivalve, equilateral, oblong-ovate, compressed, thin; acute and gaping at the umbones; slightly truncated or trilobate at the base; muscular impressions situate towards the centre of the valves; external surface covered with a glossy, thick epidermis; hinge destitute of teeth; shell suspended by a cylindrical, fleshy, tendinous pedicle, attached to the umbones.

1. Lingula ovalis.—The Oval Lingula, pl. XLIX. fig. 2.

Lingula ovalis. Sowerby, I. p. 56, pl. 19, fig. 4. Fleming, p. 368.

Oblong-oval, smooth, depressed; beaks rounded and blunt; base broad and circular. Length half an inch; breadth a quarter.

London Clay, Pakefield, Suffolk.

2. Lingula elliptica.—The Elliptical Lingula, pl. XLIX. fig. 3.

Lingula elliptica. Phillips, II. p. 221, pl. 11, fig. 15.

An elongated ellipsis, retrally acuminated; surface plane, with wide-set, slender striæ, radiating from the umbones; basal line rather acute.

Mountain Limestone, Ashford, Derbyshire.

3. Lingula squamiformis.—The Scale-shaped Lingula, pl. XLIX. fig. 4.

Lingula squamiformis. Phillips, II. p. 221, pl. 11, fig. 14.

Oblong; umbones acuminated; base truncated; superior portion of the valves inflated, compressed below; an oblong-oval depression in the centre; sides parallel; surface with longitudinal and concentric lines, and with radiating striæ at the base.

4. Lingula Mytilloides.—The Mytilus-like Lingula, pl. XLIX. fig. 6.

Lingula Mytiloides. Sowerby, I. p. 55, pl. 19, fig. 1, 2. Fleming, p. 368.

Oval, smooth, shining; umbones obtuse; narrower above, and well rounded at the base, where it is somewhat flattened.

Carboniferous Limestone of Durham, &c.

5. Lingula Beanii.—Bean's Lingula, pl. XLIX. fig. 7.

Lingula Beanii. Phillips, I. p. 128, pl. 11, fig. 24.

Oblong-ovate, smooth, glossy; somewhat narrow above, with projecting beaks, which are somewhat obtuse at the point; sides nearly parallel; base rounded; surface with delicately marked lines of growth.

Blue Wick of the Inferior Oolite.

6. Lingula parallela.—The Parallel Lingula, pl. XLIX. fig. 11 and 15.

Lingula parallela. Phillips, II. p. 221, pl. 11, fig. 17, 18, 19.

Ovate, nearly equal at both extremities, front a little more rounded than the other end; umbones a little elevated, but not projecting beyond the extremity; surface with shallow lines of growth. Fig. 11, the flatter valve; fig. 15, the deeper one.

Mountain Limestone, Northumberland.

7. Lingula marginata.—The Marginated Lingula, pl. XLIX. fig. 12.

Lingula marginata. Phillips, II. p. 221, pl. 11, fig. 16.

Much elongated, truncated in front, retrally rounded; edges of the valves turned up; sides parallel; valves flattened on their centres, with an elevated mesial ridge; whole surface covered with small, oval, hollow, fine, concentric and radiating striæ.

The Mountain Limestone at Bowes.

8. Lingula scutiformis.—The Scuttle-shaped Lingula, pl. XLIX. fig. 20.

Lingula parallela. Phillips, II. p. 221, pl. 11, fig. 18.

Scuttle-shaped; truncated behind, and produced in front; surface smooth, with nearly obsolete lines of growth; sides almost parallel.

The Mountain Limestone, Northumberland.

9. LINGULA TRUNCATA.—The Truncated Lingula, pl. LIII. fig. 4.

Lingula truncata. Sowerby, Geo. Trans. IV. 2nd series, p. 339, pl. 14, fig. 15.

Ovate, smooth, longitudinally compressed, most so in the centre of the valves; base parallel.

Lower Greensand, Kent.

10. LINGULA CORNEA.—The Horny Lingula, pl. XLIX.* fig. 1.

Lingula cornea. Murchison, Sil. Syst. p. 603, pl. 3, fig. 3.

Oblong; umbonal region subacute, gradually widening towards the centre, from whence the sides are nearly parallel; base very slightly rounded, or nearly flat.

Lowest beds of the Old Red Sandstone.

11. LINGULA MINIMA. — The Very Small Lingula, pl. XLIX.* fig. 2.

Lingula minima. Murchison, Sil. Syst. p. 612, pl. 5, fig. 23.

Oblong, somewhat elongated; beaks subacute; flat, smooth, and thin, with parallel sides, a little broader below than above; base but slightly rounded. Length four lines; width two lines and a half.

Found in the Upper Ludlow Rock at Dowton Castle and Delbury.

12. LINGULA LATA.—The Broad Lingula, pl. XLIX.* fig. 3.

Lingula lata. Murchison, Sil. Syst. p. 618, pl. 8, fig. 11.

Obovate; beaks rather produced; flat, smooth; sides and base rather rounded. Length three lines; breadth about two lines.

Lower Ludlow Rock, in escarpments, at Evenhay, Elton, &c.

13. LINGULA STRIATA.—The Striated Lingula, pl. XLIX.* fig. 4.

Lingula? striata. Murchison, Sil. Syst. p. 619, pl. 8, fig. 12.

Obovate, very much compressed, somewhat quadrangular; beaks but slightly developed; base nearly parallel; whole surface with minute, transverse striæ. Length five lines; breadth four lines.

Lower Ludlow Rock near Amestry.

14. LINGULA ATTENUATA.—The Attenuated Lingula, pl. XLIX.* fig. 5.

Lingula attenuata. Murchison, p. 641, pl. 22, fig. 13.

Elongated, compressed, smooth, acuminated above, wide below; beaks prominent and acute; sides rather flat above, somewhat rounded below; and the base slightly arcuated. Length seven lines and a half; breadth five lines.

Lower Silurian Rocks, Golden Grove, Caermarthenshire; Meadow Town and Rorington, Salop.

15. LINGULA LEWISII.—Lewis's Lingula, pl. XLIX.* fig. 6.

Lingula Lewisii. Murchison, p. 615 and 631, pl. 6, fig. 9.

Oblong, compressed, smooth; beaks very obtuse; a little flat above, and somewhat produced below; sides parallel. Length one inch and two lines; breadth nine lines and a half.

Common in the Silurian Rocks, of which it is highly characteristic; the Amestry Limestone, Ludlow promontory; at Mary Knoll; Palmer's Cairn; and Sunny Bank: it also occurs in the Wenlock Shale at Tynewydd, Wenlock, and Buildbwas.

16. LINGULA? TRUNCATA.—The Truncated Lingula, pl. XLIX.* fig. 7.

Lingula truncata. Sowerby, Geo. Trans. IV. 2nd series, p. 339, pl. 14, fig. 15.

Ovate, compressed; beaks hardly elevated above the body; sides nearly parallel; base straight.

Lower Greensand, Kent.

GENUS II.—CRANIA.—*Retzius.*

Shell inequivalve, suborbicular, mostly equilateral, slightly irregular; upper valve patelliform, very convex, interiorly provided with two projecting callosities, its umbo placed rather behind the centre; lower valve adherent, nearly flat, pierced on its end or surface with three unequal or oblique holes; each valve with four muscular impressions; two of those in the upper valve are situate near the posterior margin, the other nearer the centre, but always close to each other; in the lower valve two are almost marginal, and remote, but the other two are nearly central, and so close together that they seem united, with usually a small projection between them; destitute of a hinge.

1. CRANIA PARISIENSIS.—The Parisian Crania, pl. LIII. fig. 1, 2, 3, 4.

Crania Parisiensis. De France, Dict. des Sci. Nat. Lamarck, VI, pt. 1st, p. 259. Cuvier and Brongniarte, Geo. des Env. de Paris, Ed. 1822, p. 15, pl. 3, fig. 2. Sowerby, V. p. 3, pl. 408. *Criopus Parisiensis,* Fleming, p. 377.

Suborbicular, compressed; upper valve thin, smooth in the centre, with obscure, granulated, irregular spines round the edges; its umbo small, acute, and placed a little to one side; margin folding over, and descending beyond the elevated edge of the lower valve; lower valve thick, with a considerably elevated margin, and cellular in its structure, a few nearly obsolete, divergent striæ upon its inner surface, and attached by its whole outer surface; muscular impressions variable, sometimes exceedingly indistinct, and at others very deep; the elevation between the central ones also varies, being sometimes elevated along with it, in which case it has a strong resemblance to the human cranium.

Found attached to fragments of the shells of *Catillus,* &c., in the Chalk, particularly that of Norfolk.

GENUS III.—SPIRIFER.—*Sowerby.*

Shell transverse, equilateral, inequivalve; hinge straight, linear, widely extended equally on both sides of the umbones, which are more or less remote, being separated by an intermediate flattened area, varying considerably in breadth in different species, and consists of three triangular parts, a central and two lateral ones; this area is divided in the centre by a triangular pit, for the passage of a byssus; within the smaller valve, and near the umbo, two spiral testaceous appendages are attached, whose convolutions diminish in size as they diverge from the centre of the shell.

Section I.—CUSPIDATA.—Beaks imperforate, separated by a triangular area, the lower one not incurved; upper valve convex; hinge line generally straight, and equal to the breadth of the shell.

1. SPIRIFER CUSPIDATUS. — The Pointed Spirifer, pl. XLIX. fig. 25, 36, 37, 38.

Spirifer cuspidatus. Sowerby, II. p. 42, pl. 120. Ib. V. p. 90, pl. 461, fig. 2. Fleming, p. 371. Brown, Elts. Foss. Conch. p. 71, pl. 7, fig. 8. *Anomia cuspidata*, Martin, Linn. Trans. IV. p. 45, pl. 3, and pl. 4, fig. 5. Ib. Pet. Derb. pl. 46 and 47, fig. 3, 4, 5.

Shell inversely pyramidal, longitudinally sulcated; deeper valve nearly flat on the back, triangular, and equilateral; beak very slightly incurved, or straight in some specimens, and in some instances recurved; depth equal to its greatest width, which is occupied by the hinge line; front elevated by a semicircular sinus, corresponding to a produced, longitudinal ridge, and depression in the lower valve; opposite valve about one-third the depth of the other, its length being about equal to one-half its width; margin semicircular; on each side of the smooth, central undulation, it is provided with about fifteen sulci; surface marked with a few lines of growth, and continuing over the beak, which is covered with fine, longitudinal striæ; foramen with reflected edges.

Found in the Carboniferous Limestone of Derbyshire; Glamorganshire; near Cork, and also near Dublin, Ireland.

2. SPIRIFER INSCULPTA.—The Carved Spirifer, pl. XLIX. fig. 29, 30.

Spirifera insculpta. Phillips, II. p. 216, pl. 9, fig. 2, 3.

Cardinal area very wide, with the mesial and two or three lateral folds very large, triangular and deep, acute at the edges, and with wide-set, transverse striæ.

Mountain Limestone, Bolland, Derbyshire.

3. SPIRIFER SENILIS. — The Aged Spirifer, pl. XLIX. fig. 29.

Spirifera senilis. Phillips, II. p. 216, pl. 9, fig. 5.

Cardinal area large, transversely striated, with an indistinct mesial fold; surface rather smooth, and covered with radiating striæ.

Found in the Mountain Limestone, Bolland.

4. SPIRIFER CRENISTRIA.—The Creni-striated Spirifer, pl. XLIX. fig. 30.

Spirifera crenistria. Phillips, II. p. 216, pl. 9, fig. 6.

Cardinal area rather narrow; mesial fold nearly obsolete; surface smooth, with strong, very numerous, close-set, divaricating striæ, which are crossed by pretty strong lines of growth, giving it a crenulated aspect.

The Mountain Limestone, Bolland.

5. SPIRIFER DISTANS.—The Distant-beaked Spirifer, pl. XLIX. fig. 33, 34.

Spirifer distans. Sowerby, V. p. 153, pl. 494, fig. 3. Fleming, p. 375.

Gibbose, semicircular; sides with from ten to twelve longitudinal furrows; cardinal area broad, triangular, and curved; beaks incurved, distant; mesial ridge plain, elevated in front, with a slight hollow in its centre; in the opposite valve a furrow. Length about two-thirds of its width.

The Carboniferous Limestone, near Dublin.

6. SPIRIFER SEPTOSA.—The Diked Spirifer, pl. XLIX. fig. 35.

Spirifera septosa. Phillips, II. p. 216, pl. 9, fig. 7.

Upper valve more convex than the other, both provided with very wide, deep furrows, which in many instances become bifurcate, or trifurcate, towards the margins; with two strong, divergent, intervening ribs on each side.

Phillips remarks, "The septa in the lower valve divide it into three parts, as in *Gypidium*, to which by *this insufficient character* it would be referred. Many Spiriferæ exhibit, less distinctly, the same phenomenon."

Found in the Mountain Limestone at Burton Fell, Cumberland, and Ribblehead.

7. SPIRIFER RHOMBOIDEA.—The Rhomboidal Spirifer, pl. LI. fig. 2 and 16.

Spirifera rhomboidea. Phillips, II. p. 217, pl. 9, fig. 8, 9.

Width more than double its length; cardinal area very wide; mesial fold well defined; surface with smooth, rounded, longitudinal, divergent ribs, the intervening sulci rather deep, and quite plain. Fig. 16 is a less elongated variety of this species.

Mountain Limestone, Bolland.

This species differs from *S. fusiformis*, in the elevated ridge being much more produced beyond the base, in which character it also disagrees with *S. convoluta*.

8. SPIRIFER FUSIFORMIS.—The Spindle-shaped Spirifer, pl. LI. fig. 4, 5.

Spirifera fusiformis. Phillips, II. p. 217, pl. 9, fig. 10, 11.

Width greatly exceeding its length; mesial fold not quite central, and ill defined; cardinal area rather broad, and somewhat hollowed; surface with rather obtuse, longitudinal, divergent ribs, and shallow intervening furrows; the rounded central ridge not much produced at the base.

Mountain Limestone, Bolland.

9. SPIRIFER CONVOLUTA.—The Rolled Spirifer, pl. LI. fig. 15.

Spirifera convoluta. Phillips, II. p. 217, pl. 9, fig. 7.

Very much elongated transversely, its width being about thrice its length; cardinal area concave, with obsolete, remote striæ; central projection ill defined, as well as the mesial fold; surface with obtuse, unequal, longitudinal, divergent ribs.

10. SPIRIFER TRIANGULARIS. — The Triangular Spirifer, pl. LI. fig. 7.

Spirifer triangularis. Sowerby, VI. p. 120, pl. 562, fig. 5, 6. Fleming, p. 374. *Anomites triangularis*, Martin, Pet. Derb. pl. 56, fig. 2.

Transversely elongated, triangular, convex; cardinal area flat, with the extremities pointed; front elevation acute, and producing an angulated appearance in the valve, as well as a sharpness at the base; mesial fold narrow; surface with smooth, rounded, divergent, longitudinal ribs.

Carboniferous Limestone, Derbyshire.

11. SPIRIFER TRIGONALIS.—The Trigonal Spirifer, pl. L. fig. 1, 2, 3, 4.

Spirifera trigonalis. Sowerby, III. p. 117, pl. 265, fig. 1, 2, 3, 4. Fleming, p. 374. *Anomites trigonalis*, Martin, Pet. Derb. pl. 36, fig. 1. *Anomiæ striata*, Ure, Hist. Ruth. and Kilb. p. 314, pl. 15, fig. 1.

Gibbose; cardinal area acute at the extremities; umbones incurved, and approximate; front or upper valve semicircular, greatly rounded; surface with longitudinal, divergent ribs, the

three central ones thicker and more elevated than the others, and obscurely divided, the central into three and the others into two; back or lower valve flat, meeting the sides at an acute angle; whole surface with fine, sharp, elevated, rather distant, transverse striæ.

Figs. 3 and 4 represent the internal spiral appendages, from whence the name of this genus is derived.

Carboniferous Limestone, Derbyshire; and the Mountain Limestone in many localities.

Section II.—ANGUSTALÆ.—Cardinal line as wide as the shell; valves with incurved umbones; mesial fold defined between two deeper furrows on the upper valve.

12. SPIRIFER PYRAMIDALIS.—The Pyramidal Spirifer, pl. LI. fig. 7.

Spirifera triangularis. Phillips, II. p. 217, pl. 9, fig. 12.

Triangularly pyramidal; mesial fold narrow; umbo of lower valve greatly produced, and inflected; lower sides of the valves acutely triangular, ending in a sharp base; surface with from seventeen to nineteen longitudinal, divergent, rather flattened ribs, the central one considerably thicker than the others, the lateral ones few in number.

Mountain Limestone at Bolland, Kirby Lonsdale, and Derbyshire.

13. SPIRIFER ROTUNDATUS.—The Rounded Spirifer, pl. L. fig. 17, 18.

Spirifer rotundatus. Sowerby, V. p. 89, pl. 461, fig. 1, 1.

Globose, transversely obovate; cardinal area triangular, of medium length, and not so long as the sides; beaks incurved, and approximating, that of the lower valve pretty large; middle of the upper valve with a smooth, elevated ridge; whole surface with rather depressed, longitudinal, divergent ribs, crossed at intervals by nearly obsolete lines of growth; cavity of the lower valve with some obscure, longitudinal lines, but destitute of a central division; margins of the valves very sharp.

Found in the Black Limestone at Limerick, Ireland.

14. SPIRIFER BEANII.—Bean's Spirifer, pl. L. fig. 8.

Spirifera rotundata. Phillips, II. p. 218, pl. 9, fig. 17.

Beaks somewhat approximate; cardinal area rather contracted; hinge line quite parallel, angular at the extremities; the sides bulging considerably from below the angles; whole surface with strong, radiating sulci; mesial fold broad, nearly smooth.

Distinguished from *S. rotundatus* by the cardinal area being narrower, and its extremities more acute.

Mountain Limestone, Kildare, Bolland, and Queen's County.

15. SPIRIFER OCTOPLICATUS.—The Eight-plaited Spirifer, pl. L. fig. 9, 10.

Spirifer octoplicatus. Sowerby, VI. p. 120, pl. 562, fig. 2, 3, 4.

Transversely elongated, semicircular, inflated; beaks remote; cardinal area wide, curved, and triangular, with from eight to ten deep, angular, longitudinal ribs or plaits, producing a strongly crenulated margin; mesial fold plain.

The Mountain Limestone, Derbyshire.

16. SPIRIFER PINGUIS.—The Plump Spirifer, pl. L. fig. 13, 14.

Spirifer pinguis. Sowerby, III. p. 125, pl. 271. Fleming, p. 375.

Gibbose, nearly globular, slightly transversely obovate; beaks rather close; cardinal area shallow, not so wide as the shell; with eight or nine rounded, longitudinal ribs on each side of the mesial fold; groove in the lower side corresponding to the mesial fold, but not sulcated; intervening furrows rounded at bottom.

Black Rock Limestone of Ireland.

17. SPIRIFER WALCOTTII.—Walcott's Spirifer, pl. L. fig. 11, 12.

Spirifer Walcottii. Sowerby, IV. p. 106, pl. 377, fig. 2.

Suborbicular, both valves gibbose, smooth; cardinal area triangular, shorter than the width of the valves; umbo of the larger valve pointed and incurved; both beaks provided with an angular foramen; mesial fold wide, rounded, with four rather elevated, rounded, longitudinal ribs on each side.

Found in the Lias at Camerton.

18. SPIRIFER MINIMUS.—The Least Spirifer, pl. L. fig. 15, 16.

Spirifer minimus. Sowerby, IV. p. 105, pl. 377, fig. 1.

Transversely oblong, inflated, smooth, and subrhomboidal; umbones produced, and rather acute at the points; cardinal area long, flat; foramen between the umbones an elongated triangle; surface with fifteen flat, longitudinal ridges, the three central ones more elevated than the others, and but ill defined.

Found in the Mountain Limestone near Bakewell, Derbyshire.

19. SPIRIFER STRIATUS.—The Striated Spirifer, pl. L. fig. 19, 20.

Spirifer striatus. Sowerby, III. p. 125, pl. 270. *Anomites striata*, Martin, Pet. Derb. pl. 23. *Terebratula striata*, Sowerby, Linn. Trans. XII. p. 515, pl. 28, fig. 1, 2. Fleming, p. 375.

Transversely elongated, subcompressed; cardinal area wide, shallow, long, smooth, slightly striated, and acute at the sides; mesial sinus angular; beaks of moderate length, and incurved; whole surface with numerous, longitudinal, narrow, irregular ribs, and inequidistant lines of growth.

The Mountain Limestone of Derbyshire and Cork.

20. SPIRIFER BISULCATUS.—The Two-furrowed Spirifer, pl. L. fig. 21, 22.

Spirifer bisulcatus. Sowerby, V. p. 152, pl. 494, fig. 1, 2. Fleming, p. 375.

Gibbous, semicircular, its width but slightly exceeding its length; cardinal area long, straight, with parallel sides, caused by the edges of it upon the deeper valve being reflected; beaks rather prominent, curved, and nearly meeting; a deep furrow on each side of the mesial ridge; the whole surface with about thirty rather regular, longitudinal ribs, two on each side, near the centre, considerably deeper than the others, with the intervening spaces frequently convex, although they are flat in some.

Carboniferous Limestone, neighbourhood of Dublin.

21. SPIRIFER ATTENUATUS.—The Attenuated Spirifer, pl. L. fig. 25, 26.

Spirifer attenuatus. Sowerby, V. p. 151, pl. 493, fig. 3, 4, 5. Fleming, p. 375.

Convex, transversely elongated, its breadth more than double its length; cardinal area long, straight, with nearly parallel edges; sides produced, and acute; beaks short, and but little

elevated above the hinge line; front rounded, with an elevated mesial fold, on each side of which is a deep furrow; whole surface covered with numerous, linear furrows, which increase in number towards the margin, the spaces between the furrows in the form of thin branched ribs.

The Carboniferous Limestone near Dublin.

22. SPIRIFER UNDULATUS.—The Waved Spirifer, pl. L. fig. 27, 28.

Spirifer undulatus. Sowerby, VI. p. 119, pl. 562, fig. 1.

Convex, transversely elongated, its width being twice its length; cardinal area flat, rather narrow, with almost parallel edges, and acute at the extremities; beaks approximate, and not much elevated; mesial elevation rather inflated, and rounded; whole surface with numerous, well defined, longitudinal ribs, sixteen on each side of the mesial sinus, crossed by deep, wide-set, regular striæ, which are semicircular in passing over the ribs.

From the Magnesian Limestone at East Thickly, West Auckland, County of Durham.

23. SPIRIFER SEMICIRCULARIS.—The Semicircular Spirifer, pl. L. fig. 23, 24.

Spirifer semicircularis. Phillips, II. p. 217, pl. 9, fig. 15, 16.

Upper valve nearly semicircular; cardinal area variable in width, sharp at the extremities; beaks rather obtuse; mesial fold very broad, and sulcated; surface with smooth, radiating, longitudinal ribs, fifteen or sixteen on each side of the mesial fold, and divarigated at their base.

Subject to a little variety; some with the cardinal area rectangular, and others acute.

Mountain Limestone at Chipping; Whitewell, Queen's County, Ireland; and Isle of Man.

24. SPIRIFER PLICATUS.—The Plaited Spirifer, pl. LII.* fig. 1.

Spirifer plicatus. Murchison, p. 638, pl. 21, fig. 6.

Semicircular, convex; cardinal area long, narrow, extending to nearly double the length of the shell; whole surface with wide-set, divergent plaits; beaks approximate. Length eleven lines; breadth one inch and seven lines.

Cardoc Sandstone, Goleugoed and Llandovery, Wales.

25. SPIRIFER ALATUS.—The Winged Spirifer, pl. LII.* fig. 3, 4.

Spirifer alatus. Murchison, p. 638, pl. 22, fig. 7.

Semicircular; cardinal area long, narrow, terminating in considerably expanded, cuspidate sides; centre of the valves a little inflated; whole surface with about eighteen acute plaits. Length five lines and a half; width nine lines and a half.

Cardoc Sandstone, Pensarn and Mount Pleasant, Caermarthen.

26. SPIRIFER PINNATUS.—The Pointed Spirifer, pl. LII.* fig. 4, 5.

Spirifer alatus. Murchison, pl. 22, fig. 7, the lower figs.

Transverse, oblique, somewhat semicircular; hinge line straight, very narrow, and prolonged to an acute point at both sides, one side more lengthened than the other; beaks a little elevated; surface with numerous, divergent plaits.

This differs from *S. alatus*, in being much longer in proportion to its breadth, and in being a little oblique, with one wing longer and more acute than the other.

Cardoc Sandstone, Mount Pleasant, Caermarthen.

27. SPIRIFER HUMEROSA.—The Hooded Spirifer, pl. LI. fig. 3.

Spirifera humerosa. Phillips, II. p. 218, pl. 11, fig. 8.

Subcordiform; lower valve very large, and very turgid near the umbones, with a produced mesial fold, which receives the angular and elevated ridge of the upper valve; surface with numerous, small, longitudinal, divergent ribs.

Mountain Limestone, Greenhow Hill, Yorkshire.

Section III.—RADIATÆ.—Cardinal area not so wide as the shell; surface radiated.

28. SPIRIFER LINEATUS.—The Lineated Spirifer, pl. L. fig. 6, 7.

Spirifer lineatus. Sowerby, V. p. 151, pl. 493, fig. 1, 2. Fleming, p. 375.

Gibbose; umbones produced, somewhat remote, with their beaks approximate; cardinal area long, rounded, rather narrow, and with a triangular foramen; front semicircular, with a pretty elevated, mesial fold, ending in the beak; whole surface with numerous, divergent, sharp, granulated striæ. Breadth somewhat more than its length.

Dudley Limestone at Dudley.

29. SPIRIFER OVALIS.—The Oval Spirifer, pl. LI. fig. 1.

Spirifera ovalis. Phillips, II. p. 219, pl. 10, fig. 5.

Elliptical; cardinal area triangular; umbones produced, incurved; mesial fold large, obtusely rounded, spreading widely at the base; with six or seven pretty broad ribs on each side.

Mountain Limestone, Bolland.

30. SPIRIFER PLANATA.—The Plane Spirifer, pl. LI. fig. 6.

Spirifera planata. Phillips, II. p. 219, pl. 10, fig. 3.

Suborbicular; cardinal area rather wide; umbones obtuse, and remote; surface with numerous, flat, plain ribs; upper valve nearly plane.

Mountain Limestone, Bolland.

31. SPIRIFER TRISULCOSA.—The Three-furrowed Spirifer, pl. LI. fig. 9.

Spirifera trisulcosa. Phillips, II. p. 219, pl. 10, fig. 6.

Elongated, rather smooth; beaks produced; cardinal area subtriangular; upper valve with a pretty large, produced, mesial fold, and a lateral plait on each side.

Mountain Limestone, Bolland.

32. SPIRIFER INTEGRICOSTA.—The Inter-ribbed Spirifer, pl. LI. fig. 8.

Spirifera integricosta. Phillips, II. p. 219, pl. 10, fig. 2.

Nearly orbicular, and greatly inflated; umbones large, much curved, the beaks nearly meeting; mesial fold of medium size; longitudinal ribs few, obtuse, entire, and smooth.

Mountain Limestone, Bolland and Northumberland.

33. SPIRIFER TRIRADIALIS.—The Three-rayed Spirifer, pl. LI. fig. 10.

Spirifera triradialis. Phillips, II. p. 219, pl. 10, fig. 7.

Orbicular, smooth; beaks of under valve large, incurved; upper valve depressed, with a broad mesial fold and a lateral fold on each side.

Mountain Limestone, Bolland.

34. SPIRIFER SEXRADIALIS.—The Six-rayed Spirifer, pl. LI. fig. 17.

Spirifera sexradialis. Phillips, II. p. 219, pl. 10, fig. 8.

Oblong-ovate, rather smooth; cardinal area rather long; upper valve flattened, with a broad mesial ridge and three lateral ridges on each side.

Mountain Limestone, Bolland.

35. SPIRIFER DUPLICICOSTA.—The Double-ribbed Spirifer, pl. LI. fig. 13.

Spirifera duplicicosta. Phillips, II. p. 218, pl. 10, fig. 1.

Transversely elongated; umbones pointed; cardinal area pretty wide; mesial fold angular; surface with numerous, longitudinal, divergent ribs, which become duplicate towards the basal margin; sides of the shell rounded.

Mountain Limestone, Derbyshire, Bolland, and Northumberland.

36. SPIRIFER GLOVERI.—Glover's Spirifer, pl. LI. fig. 11, 12.

Spirifer Gloveri. Brown, Trans. Manchester Geo. Soc. I. p. 224, pl. 7, fig. 60, 61.

Nearly circular, very convex, with rounded sides; both valves with a mesial furrow, which widen as they retire from the umbones, deep in the upper valve, shallow and more effuse in the lower one; beaks produced, rounded, and rather approximate; both valves with longitudinal, divergent striæ, crossed by distinct lines of growth; lower margins of valves flexuous, the central base of the upper one terminating in a considerably produced, beak-like process, and hollow in the opposite valve; hinge line rather short.

Lower Scar Limestone Gravel at Sheden Clough, near Cleviger.

37. SPIRIFER FILARIA.—The Threaded Spirifer, pl. LI. fig. 30, 31.

Spirifer filaria. Brown, Trans. Manchester Geo. Soc. I. p. 224, pl. 7, fig. 62, 63.

Nearly orbicular, rather flat; beaks small, pointed, and contiguous, but not inflected; exterior surface covered with fine, divergent, longitudinal striæ, crossed by numerous lines of growth; inside of valves with fine, divergent striæ; hinge line very short.

Mountain Limestone near Settle, Yorkshire.

38. SPIRIFER RADIATUS.—The Rayed Spirifer, pl. LII.* fig. 6.

Spirifer radiatus. Murchison, p. 624, pl. 12, fig. 6.

Cardinal area wide; beaks produced, incurved, and pointed; mesial fold with a hollow, longitudinal groove, producing a doubly pointed base; whole surface with numerous, regular, radiating striæ.

Wenlock and Dudley Limestone at Wenlock, Dudley; Abberley Lodge and Tynewidd, Caermarthenshire.

39. SPIRIFER PTYCHOIDES.—The Bent Spirifer, pl. LII.* fig. 7, 8.

Spirifer ptychoides. Murchison, p. 603, pl. 3, fig. 13. Delthyris Dalm. Act. Holm. 1827, p. 124, pl. 3, fig. 5. Hising. Pet. Succ. p. 73, pl. 21, fig. 8.

Somewhat elongated, smooth; mesial fold longitudinally furrowed, with two rounded plaits on each side; umbo of the larger valve produced, and incurved. Length three lines and a half; width nearly the same.

Lowest beds of Old Red Sandstone at Felindre, and also in the Upper Ludlow Rocks at Abberley.

40. SPIRIFER CRISPUS?—The Curled Spirifer, pl. LII.* fig. 9.

Spirifer crispus. Murchison, p. 610 and 624, pl. 12, fig. 8. *Delthyris crispa*, Dalm. l. c. p. 122, pl. 3, fig. 6. Hist. Pet. Succ. p. 73, pl. 21, fig. 5.

Transversely elongated, gibbose; surface with five or six longitudinal plaits, crossed by elevated laminæ; cardinal area wide, obtuse at the sides; umbones remote, with incurved beaks. Length three lines and a half; width five lines and a half: sometimes found larger.

Dudley Limestone, Walsall; and Wenlock Limestone at Abberley.

41. SPIRIFER TRAPEZOIDALIS.—The Trapeziform Spirifer, pl. LII.* fig. 10, 11.

Spirifer trapezoidalis. Murchison, p. 610, pl. 5, fig. 14. *Cyrtia trapezoidalis*, Dalm. Act. Holm. 1827, p. 119, pl. 3, fig. 2. Hist. Pet. Succ. p. 72, pl. 21, fig. 1. Von Buch, pl. 1, fig. 15, 16.

Almost semicircular, transversely elongated; cardinal area large and arcuated, the foramen narrow, somewhat shorter than the diameter of the shell, with rounded extremities; a mesial, elevated rib extends from the beak to the base in the upper valve, with a corresponding furrow in the lower one.

Upper Ludlow Rock at Usk, Craig-y-garcyd, and Cornbrookdale.

42. SPIRIFER INTERLINEATUS.—The Interlined Spirifer, pl. LII.* fig. 12, 13.

Spirifer interlineatus. Murchison, p. 614, pl. 6, fig. 6.

Transversely oval, convex; cardinal area wide; umbo of the larger valve produced, and its beak so much incurved that it meets the beak of the opposite valve; rounded at the extremities; with numerous, longitndinal, rounded ribs, five on each side and a more elevated one in the middle, interlined with fine stria. Length five lines and a half; width six lines and a half.

Amestry Limestone, Amestry; and also in the Wenlock Limestone.

43. SPIRIFER SINUATUS.—The Sinuated Spirifer, pl. LII.* fig. 14, 15, 16.

Spirifer sinuatus. Murchison, p. 630, pl. 13, fig. 10. *Terebratula sinuata*, Sowerby, Linn. Trans. XII. p. 516, pl. 28, fig. 5, 6. *Delthyris cardiospermiformis*, Hist. Anteckn. IV. pl. 7, fig. 6. Dalm. l. c. p. 124, pl. 3, fig. 7. Hist. Pet. Succ. p. 74, pl. 21, fig. 9. *Spirifer cardiospermiformis*, Von Buch. Sp. et Ort. pl. 1, fig. 7.

Somewhat obtusely heart-shaped, deeply bilobate, and eared; surface with numerous, fine, longitudinal striæ; larger valve very deep, with an incurved beak; cardinal area triangular. Length and width about three lines and a half.

Wenlock Shale, Melvern and Hay Head.

Section IV.—GLABRATÆ.—Cardinal area not so wide as the shell; surface for the most part divested of rays.

44. SPIRIFER MESOLOBA.—The Middle-folded Spirifer, pl. LI. fig. 18.

Spirifera mesoloba. Phillips, II. p. 219, pl. 10, fig. 14.

Suborbicular, compressed, smooth; umbo of the larger valve produced, beak acute, inflected; cardinal area triangular; mesial fold broad.

Mountain Limestone, Bolland.

45. SPIRIFER TÆNIATA.—The Filleted Spirifer, pl. LI. fig. 19.

Spirifera tæniata. Phillips, II. p. 219, pl. 10, fig. 17. *Spirifera lineata,* Phillips, p. 219.

Nearly orbicular, smooth; cardinal area narrow, transversely filleted; mesial fold obsolete.

Mountain Limestone, Bolland and Queen's County.

46. SPIRIFER OBLATUS.—The Raised Spirifer, pl. LI. fig. 20.

Spirifer oblatus. Sowerby, III. p. 123, pl. 268.

Gibbose, transversely obovate, its width somewhat more than its length, very smooth; mesial rib rather depressed; the corresponding furrow in the other valve flattened in the middle; beaks approximate; foramen of the cardinal area triangular.

Mountain Limestone, Westmoreland, Derbyshire, and Flintshire.

47. SPIRIFER ELLIPTICA.—The Elliptical Spirifer, pl. LI. fig. 21.

Spirifera elliptica. Phillips, II. p. 219, pl. 10, fig. 16.

Transversely oval; beaks not much produced; mesial fold obtuse, and broad; surface with wide, somewhat irregular rays, and concentrically striated; cardinal area flat, smooth.

Mountain Limestone, Bolland; Queen's County, Ireland.

48. SPIRIFER OBTUSA.—The Obtuse Spirifer, pl. LI. fig. 22.

Spirifer obtusus. Sowerby, III. p. 124, pl. 269, two lower figures. Fleming, p. 375.

Gibbous, transversely ovate; with nearly obsolete, longitudinal striæ; central elevation obtuse, and rounded; beaks blunt, and distant. Width nearly double its length.

Differs from *S. glabra,* in the central elevation not being flattened along the middle, with a deeper sinus at its edge; the umbo in the lower valve also considerably more produced.

Mountain Limestone at Scaliber, near Settle, Yorkshire.

49. SPIRIFER SYMMETRICA.—The Symmetrical Spirifer, pl. LI. fig. 23.

Spirifera symmetrica. Phillips, II. p. 219, pl. 10, fig. 13.

Subquadrate, very gibbous, smooth; with a wide mesial fold, which is sometimes divided in the middle; beaks pointed, incurved, and remote; the umbo of the lower valve greatly larger than the other.

Mountain Limestone, Bolland.

50. SPIRIFER LATA.—The Broad Spirifer, pl. LI. fig. 24.

Spirifera glabra. Phillips, II. p. 219, pl. 10, fig. 12.

Gibbous, considerably elongated transversely, its breadth being more than double its length, smooth; mesial fold elevated, round, and subdepressed; with obscure, lateral radiation; umbones blunt, and short.

Mountain Limestone, Arran and Derbyshire.

51. SPIRIFER GLABRA.—The Smooth Spirifer, pl. LI. fig. 27, 28, 29.

Spirifer glabra. Sowerby, III. p. 123, pl. 269, two upper figures. Fleming, p. 375. Phillips, II. p. 219, pl. 10, fig. 10, 11. *Anomites glaber,* Martin, Pet. Derb. pl. 28, fig. 9, 10.

Gibbous, rounded, smooth; umbones subacute, approximating; mesial fold rounded, depressed in the middle; margins sharp; indistinct lines of growth.

This species is subject to variety in its form.

Mountain Limestone, Bolland, Derbyshire, Arran, Ireland, and Isle of Man.

52. SPIRIFER IMBRICATA.—The Imbricated Spirifer, pl. LI. fig. 25.

Spirifera imbricata. Phillips, II. p. 220, pl. 10, fig. 20.

A short, transverse ellipsis; mesial fold obsolete; umbones approximate; surface with strong, radiating striæ, crossed by concentric, imbricated laminæ, which interrupt the striæ.

Mountain Limestone, Derbyshire, Northumberland, and Bolland.

53. SPIRIFER DECORA.—The Adorned Spirifer, pl. LI. fig. 26.

Spirifera decora. Phillips, II. p. 219, pl. 10, fig. 9.

Almost orbicular, convex; umbones prominent; beaks rather acute; cardinal area triangular, wide; mesial fold rather indistinct, and slightly divided below; surface with obscure, nearly obsolete radiations.

Mountain Limestone, Bolland.

54. SPIRIFER LINGUIFERA.—The Tongue-shaped Spirifer, pl. LI. fig. 14.

Spirifera linguifera. Phillips, II. p. 219, pl. 10, fig. 4.

Slightly oblong longitudinally, convex, destitute of angles; mesial fold rounded, prominent; umbones produced, approximating, and with rather obtuse beaks; lateral radiations obscure; lines of growth indistinct.

Mountain Limestone, Bolland.

Section V.—TEREBRATULIFORMES.—Destitute of a cardinal area.

55. SPIRIFER SQUAMOSA.—The Scaly Spirifer, pl. LII. fig. 1.

Spirifera squamosa. Phillips, II. p. 220, pl. 10, fig. 21.

Depressed, transversely oblong-ovate; mesial fold small; smooth, with transverse imbrications; umbones approximating.

Mountain Limestone, Kendal and Florence Court.

56. SPIRIFER FIMBRIATA.—The Fringed Spirifer.

Spirifera fimbriata. Phillips, II. p. 220.

"Orbicular, depressed; beak of the lower valve prominent, but small; surface strongly radiated, and concentrically imbricated."

Mountain Limestone, Florence Court.

57. SPIRIFER PLANOSULCATA.—The Flat-furrowed Spirifer, pl. LII. fig. 4.

Spirifera planosulcata. Phillips, II. p. 220, pl. 10, fig. 15.

Somewhat pentaedral, depressed; the central furrows in each valve flattened; umbones approximate.

Mountain Limestone, Bolland and Queen's County.

58. SPIRIFER EXPANSA.—The Expanded Spirifer, pl. LII. fig. 5.

Spirifera expansa. Phillips, II. p. 220, pl. 10, fig. 18.

Transversely subovate, compressed; destitute of a mesial fold; with fine, longitudinal radiations, crossed by concentric striæ.

Mountain Limestone, Bolland.

59. SPIRIFER GLOBULARIS.—The Globular Spirifer, pl. LII. fig. 12.

Spirifera globularis. Phillips, II. p. 220, pl. 10, fig. 22.

Subglobose, smooth; umbones obtuse, approximating; mesial fold broad.

Mountain Limestone, Bolland.

60. SPIRIFER ELONGATA.—The Elongated Spirifer, pl. LII. fig. 3.

Spirifera elongata. Phillips, II. p. 220, pl. 11, fig. 9.

Elongated, somewhat pentaedral, sides nearly flat, smooth; with numerous, rather broad, depressed, longitudinal radiations; a shallow mesial furrow; base flat, and straight.

Mountain Limestone, Bolland.

Section VI.—FILOSÆ.—Surface with prominent, radiating, thread-like striæ.

61. SPIRIFER RESUPINATA.—The Resupient Spirifer, pl. LII. fig. 6.

Spirifera resupinata. Phillips, II. p. 220, pl. 11, fig. 1.

Transversely elliptical; umbones small, approximate; upper valve depressed in the middle; lower valve concave, and undulating; surface covered with numerous, fine, longitudinal, divergent striæ, which at intervals rise into prominent spinous lines.

Mountain Limestone, Dowall, near Buxton, Derbyshire; Bolland, Greenhow Hill, Hawes, and Otterburn.

62. SPIRIFER RADIALIS.—The Radiating Spirifer, pl. LII. fig. 8.

Spirifera radialis. Phillips, II. p. 220, pl. 11, fig. 5.

Semielliptical, greatly elongated transversely, its width being upwards of three times its length; hinge line nearly parallel; base semicircular; whole surface covered with strong, divergent ribs, with intervening smaller ones, crossed by imbricated lamellæ; umbones obtuse.

Mountain Limestone, Cumberland and Florence Court.

63. SPIRIFER GLABISTRIA.—The Smooth-striated Spirifer, pl. LII. fig. 7.

Spirifera glabistria. Phillips, II. p. 220, pl. 10, fig. 19.

Transversely oblong; umbones obtuse, approximating; surface with fine, longitudinal, radiating striæ; mesial fold produced.

The Mountain Limestone, Bolland.

SUPPLEMENTARY SECTION.

64. SPIRIFER HETEROCLITUS.—The Heterocitical Spirifer, pl. LII.* fig. 17, 18, 19.

Spirifer heterocliticus. Phillips, Pal. Fos. p. 72, pl. 29, fig. 125.

Acutely pyramidal, or converging on four faces to the pointed umbo of the lower valve, the widest area of the four being that under the beak; the smaller valve forming a rounded base to the shell; foramen very long, narrow, and frequently obtect; mesial fold broad, and well defined in the larger valve, with four or five lateral, obtuse, radiating plaits, provided with transverse striæ; beaks in some specimens are bent irregularly backward or forward.

Found at Barton, Newton, and South Devon.

65. SPIRIFER SPECIOSUS.—The Handsome Spirifer, pl. LII.* fig. 24, 25.

Spirifer speciosus. Schloth, pl. 16, fig. 1. *Spirifer costata,* Phillips, Pal. Fos. p. 77, pl. 30, fig. 134. Sowerby, Geo. Trans. V. 2nd series, pl. 55, fig. 5, 6.

Transversely elongated, fusiform, convex, with broad, prominent, divergent ribs, five or six on each side of the umbones, where there are two approximate and more elevated than the others; lower valve with a deep and broad depression, circumscribed by two strong ribs; cardinal area broad, with parallel margins. Length hardly a sixth of its width.

In soft Slate-stone at Fowey, and in hard Blue Slate at Looe and Tintagel, also at Hope, Ogwell, and Berry.

66. SPIRIFER BILOBA.—The Two-lobed Spirifer, pl. LII.* fig. 20, 21, 22.

Terebratula sinuata. Sowerby, Linn. Trans. XII. p. 516, pl. 28, fig. 5, 6. *Spirifer sinuatus,* Sowerby, Sil. Syst. p. 630, pl. 13, fig. 10.

Obcordate, deeply bilobate, eared, and longitudinally striated; larger valve more convex than the smaller, with an incurved beak; hinge area triangular. Length and breadth three lines and a half.

Found in the Wenlock Shale at Hay Head and Malvern.

67. SPIRIFER GIGANTEUS.—The Gigantic Spirifer, pl. LII.* fig. 23.

Spirifer giganteus. Sowerby, Geo. Trans. V. 2nd series, pl. 55, fig. 1, 2, 3, 4. Phillips, Pal. Fos. p. 219, pl. 30, fig. 130.

Convex, sides cuspidate, and with numerous, divergent, radiating ribs, emanating from the umbones, nine or ten of which are more prominent in front, which is deeply emarginated; with somewhat conspicuous, concentric lines of growth crossing the ribs. Frequently attaining nine inches in width.

Found at Tintagel and Petherwin.

68. SPIRIFER STRIATULUS.—The Striated Spirifer, pl. LII.* fig. 26.

Atrypa polygramma. Sowerby, Sil. Syst. p. 637, pl. 21, fig. 4 *a. Terebratula striatula,* Schloth, pl. 15, fig. 4.

Transversely obovate; valves unequally convex, the lower one with a wide, shallow, longitudinal canal along the middle; sides with numerous, fine, radiating striæ, increasing as they approach the sides and base of the valves. Length and breadth about an inch.

Found in the Lower Silurian Rocks at Powis Castle.

69. SPIRIFER RADIATUS.—The Rayed Spirifer, pl. LII.* fig. 27, and fig. 60, *var.*

Spirifer radiatus. Sowerby, Sil. Syst. p. 625, pl. 12, fig. 6. Ib. p. 638, pl. 21, fig. 5, *var.*

Larger valve with the umbo much produced, and an incurvected beak; hinge area subtriangular; lesser valve with a double produced rib in the centre, and an intermediate furrow; whole surface with numerous, somewhat irregular, divergent striæ. Length fourteen lines; width sixteen lines; each valve six lines in depth.

Sowerby considers this as identical with *S. lineatus,* pl. L. fig. 6, 7, but its greatly produced beak and general contour at once point it out as separate. Fig. 60 is a variety with straight beaks.

Found in the Dudley and Wenlock Limestone at Abberley Lodge, Dudley, Wenlock, and Tynewidd, Caermarthenshire.

70. SPIRIFER PHALÆNA.—The Moth-like Spirifer, pl. LII.* fig. 28.

Spirifera phalæna. Phillips, Pal. Fos. p. 71, pl. 28, fig. 123.

Transversely elongated, the sides rounded; larger valve with a deep, broad, mesial furrow; surface with regular, equidistant, small ridges, and shallow intermediate furrows; beak produced.

Found on the Devonian Shale, at Hope, near Torquay, and in South Devon.

71. SPIRIFER OBLITERATUS.—The Obliterated Spirifer, pl. LII.* fig. 29.

Spirifera obliterata. Phillips, Pal. Fos. p. 77, pl. 31, fig. 135.

Convex, semicircular, its width twice its length; cardinal area with acute terminations; surface with slightly elevated radiations, crossed by remote, well marked lines of growth; mesial furrow shallow, situate between two convex, but obtuse, nearly central radiations.

Allied to *S. speciosus*, fig. 24, 25.

Found in the Mountain Limestone, in North Devon and Brushford.

72. SPIRIFER INORNATUS.—The Unadorned Spirifer, pl. LII.* fig. 37.

Spirifera inornata. Sowerby, Geo. Trans. V. 2nd series, pl. 53, fig. 9.

Much elongated transversely, fusiform, compressed, and smooth; sides with obscure radiations; base even; beaks obscure.

Found at Ilfracombe, in the Devonian Shale.

73. SPIRIFER EXTENSUS.—The Extended Spirifer, pl. LII.* fig. 38.

Spirifera extensa. Sowerby, Geo. Trans. V. 2nd series, pl. 54, fig. 11.

Convex, greatly elongated transversely, and fusiform; with numerous radii, about seven in the middle of the upper valve being more prominent than the others, and its beak small.

Found in the Devonian Shale at Petherwood, Staunton, and Barnstaple Bridge.

74. SPIRIFER COSTATUS.—The Ribbed Spirifer, pl. LII.* fig. 35, 36.

Spirifer costata. Sowerby, Geo. Trans. V. 2nd series, pl. 55, fig. 5, 6, 7.

Convex, fusiform, much elongated transversely; surface with two approximate, central, elevated ribs, and about five or six rounded thick ones on each side of these; lower valve with a broad, deep sulcus, bounded by two strong ribs; hinge area broad, with parallel edges. Length hardly a sixth of its width.

Found in soft Slaty Stone at Fowey, and in hard Blue Slate at Tintagel and Looe.

75. SPIRIFER PTYCHODES.—The Tooth-folded Spirifer, pl. LII.* fig. 32, 33.

Spirifer ptychodes. Sowerby, Sil. Syst. p. 603, pl. 3, fig. 13.

A little elongated, smooth, with fine, rounded, longitudinal folds; beak of larger valve produced, and curved. Length and width three lines and a half.

Found in the Old Red Sandstone at Felinder, and also in the Upper Ludlow Rocks.

76. SPIRIFER PISUM.—The Pea Spirifer, pl. LII.* fig. 30, 31.

Spirifera Pisum. Sowerby, Sil. Syst. p. 630, pl. 13, fig. 9.

Convex, lenticular, smooth, indistinctly hexagonal; base even truncated; beaks small, of equal length; cardinal area small, and triangular. Length and width three lines.

Found in the Wenlock Shale at Hay Head.

77. SPIRIFER AFFINIS.—The Allied Spirifer, pl. LII.* fig. 34.

Spirifera affinis. Sowerby, Geo. Trans. V. 2nd series, pl. 57, fig. 11.

Lenticular, with numerous, longitudinal, rounded ribs, branched and crossed by thin laminæ; cardinal area flat, triangular, shorter than the breadth of the shell; beak of the lower valve produced.

Found in the Devonian Shale at Plymouth.

78. SPIRIFER SUBCONICUS.—The Subconic Spirifer, pl. LII.* fig. 59.

Spirifera subconica. Sowerby, Geo. Trans. V. 2nd series, pl. 57, fig. 10. Phillips, Pal. Fos. p. 72, pl. 29, fig. 126. *Anomites subconicus*, Martin, Pet. Derb. pl. 45, fig. 6.

Larger valve subconic, with a central, longitudinal sulcus, and several strong, rounded, divergent ribs, crossed by a few distant lines of growth; cardinal area large, triangular, and flat.

Found in the Carboniferous Limestone of Derbyshire, and the Devonian Shale at Plymouth.

79. SPIRIFER INTERLINEATUS.—The Interlined Spirifer, pl. LII.* fig. 41, 42.

Spirifer interlineatus. Sowerby, Sil. Syst. p. 614, pl. 6, fig. 6.

Convex, transversely ovate, with large, rounded ribs, five on each side of a large, prominent, central one, and fine, close-set, longitudinal striæ; beak of larger valve produced, and so greatly incurved as to meet the beak of the smaller valve. Length five lines and a half; breadth six lines and a half.

Found in the Amestry and Wenlock Limestones.

80. SPIRIFER TRAPEZOIDALIS.—The Trapezoidal Spirifer, pl. LII.* fig. 43, 44.

Spirifer trapezoidalis. Sowerby, Sil. Syst. p. 610, pl. 5, fig. 14. *Cyrtia trapezoidalis*, Von Buch, pl. 1, fig. 15.

Nearly semicircular; larger valve with a wide, deep, mesial sulcus, and a corresponding elevated ridge in the other, with fine, radiating striæ; hinge line somewhat shorter than the diameter of the shell; area large, curved, with a narrow foramen.

Found in the Upper Ludlow Rock at Usk, Craig-y-garcyd, and Iron Bridge, Coalbrook Dale.

81. SPIRIFER GRANDÆVUS.—The Aged Spirifer, pl. LII.* fig. 45, 46.

Spirifera grandæva. Phillips, Pal. Fos. p. 76, pl. 30, fig. 131.

Semielliptical; hinge line nearly straight, slightly projecting, with somewhat square terminations; lesser valve with a large, elevated, rounded, mesial ridge, with distinct furrows on either side, and about ten radiations on both sides.

Found in the Devonian Shale at Petherwin, Cornwall.

82. SPIRIFER CRISPUS.—The Curled Spirifer, pl. LII.* fig. 47.

Spirifer crispus? Sowerby, Sil. Syst. p. 624, pl. 12, fig. 8. *Delthyris crispa*, Dalm. l. c. p. 122, pl. 3, fig. 6.

Gibbose, transversely elongated; with from five to seven elevated plaits, crossed by strong laminæ; hinge line with obtuse ends; beaks remote. Length three lines and a half; breadth five lines and a half: sometines larger.

Found in the Wenlock Limestone at Dudley and Walsall.

83. SPIRIFER DISJUNCTUS.—The Disjoined Spirifer, pl. LII.* fig. 48.

Spirifera disjuncta. Sowerby, Geo. Trans. V. 2nd series, pl. 53, fig. 8, and pl. 54, fig. 12, 13.

Very convex, semicircular; base emarginate; upper valve with about twelve divergent, pretty strong ribs, raised in front, producing a rounded elevation; lower valve with numerous, rounded ribs, about twenty-five on each side of the mesial one; hinge area broad, curved, with nearly parallel edges; beaks remote.

Differs from *S. bisulcata*, pl. L. fig. 21, 22, in being less convex, and in its more numerous striæ, with its hinge line broader.

Found in the Devonian Shale at Petherwin and Barnstaple.

84. SPIRIFER PARTITUS.—The Divided Spirifer, pl. LII.* fig. 50, 51.

Spirifera partita. Portlock, Geo. Rep. p. 567, pl. 38, fig. 3.

Round; lower valve with a deep sinus, extending to the base; the opposite valve with a corresponding rib; the furrows and ribs, between which and the sides are strongly marked, vary in number from three to six.

Approaches in form to *S. speciosus*, fig. 24, 25.

Found in the Carboniferous Limestone at Kildress, Ireland.

85. SPIRIFER SIMPLEX.—The Simple Spirifer, pl. LII.* fig. 49 and 58.

Spirifer simplex. Phillips, Pal. Fos. p. 71, pl. 29, fig. 124.

Pyramidal; cardinal area very large, triangular; mesial rib with obtuse borders; triangular foramen narrow, reaching to the point of the beak in the larger valve; smaller valve convex; destitute of ribs or furrows.

Found in the Devonian Shale at Plymouth and Newton, South Devon.

86. SPIRIFER LÆVIS.—The Smooth Spirifer, pl. LII.* fig. 52.

Spirifer lævis? Sowerby, Sil. Syst. p. 638, pl. 21, fig. 12.

Transversely elongated, semicircular, smooth, compressed; a slight obsolete rib along the middle; beaks of umbones prominent, divided by a narrow area, with parallel edges. Length eight lines; breadth double its length.

Found in the Lower Silurian Rocks at Noeth-grag; Landovery; May Hill, Gloucestershire; Gullet Wood, Estnor Park, and Hope Hill, Salop.

87. SPIRIFER CALCARATUS.—The Spur Spirifer, pl. LII.* fig. 53.

Spirifer calcaratus. Sowerby, Geo. Trans. V. 2nd series, pl. 53, fig. 7. Phillips, Pal. Fos. pl. 29, fig. 128.

Transversely elongate, semicircular; sides very convex, produced, cuspidate, smooth, with longitudinal sulci; front hardly elevated; with numerous rounded ribs, about nine on the front circumscribed by two deep furrows; cardinal area very narrow. Width double its length.

Distinguished from *S. attenuata*, pl. L. fig. 25, 26, by the sudden contraction of the sides, and the very slight elevation in front.

88. SPIRIFER URII.—Ure's Spirifer, pl. LII.* fig. 54, 55.

Spirifer Urii. Fleming, Brit. An. p. 313. Ure, Ruth. and Kil. p. 313, pl. 14, fig. 12. *Spirifer Unguiculus*, Phillips, Pal. Fos. p. 69, pl. 28, fig. 119. *Atrypa Unguiculus*, Sowerby, Geo. Trans. V. 2nd series, pl. 54, fig. 8.

Hemispherical, somewhat wider than long, smooth, with the beak inflated; base emarginate; lower valve very convex, with its beak channelled; upper valve compressed, with a central impressed line.

Found in the Devonian Shale at Petherwin, near Barnstaple, Pilton, Brushford, and Rutherglen, Renfrewshire.

89. SPIRIFER NUDUS.—The Naked Spirifer, pl. LII.* fig. 56.

Spirifer nuda. Sowerby, Geo. Trans. V. 2nd series, pl. 57, fig. 8.

Semicircular, with the beaks prominent and smooth; a mesial rib, with a furrow on each side; margin obtuse.

Found in the Devonian Shale at Plymouth.

90. SPIRIFER PLICATUS.—The Plaited Spirifer, pl. LII.* fig. 57.

Spirifer plicatus. Sowerby, Sil. Syst. p. 638, pl. 21, fig. 6.

Transversely elongated, semicircular, convex; with numerous, radiating, sharp plaits, which are narrow above, and become wider towards the base; beaks contiguous; cardinal area narrow; hinge line nearly double the length of the valves. Length eleven lines; width one inch and seven lines.

Found in the Lower Silurian Rocks at Goleugoed, Llandovery.

GENUS IV.—GYPIDIUM.—*Sowerby.*

Shell inequilateral, inequivalve; the larger valve with an incurved umbo, remote from the hinge; the larger valve divided by a central suptum into two parts; the other by two parallel, approximate septa into three unequal parts; umbones imperforate, and incurved.

1. GYPIDIUM AYLESFORDII.—Aylesford's Gypidium, pl. XLIX. fig. 31, 32.

Pentamerus Aylesfordii. Sowerby, I. p. 75,* pl. 29. Fleming, p. 378.

Almost orbicular; with rather strong, longitudinal ribs, the intervening furrows narrow below; larger valve more inflated than the other, with a prominent, greatly incurved beak.

In the young condition the umbones are not so different in size, as in the adult, and they are proportionally more approximate.

Carboniferous Limestone, Colebrookdale; and in the Amestry Limestone, Croft Ambery Park, and Yeo-edge.

2. GYPIDIUM KNIGHTII.—Knight's Gypidium, pl. XLIX. fig. 2.

Pentamerus Knightii. Sowerby, I. p. 73,* pl. 28, upper figure. Fleming, p. 378. Murchison, Sil. Syst. p. 615, pl. 6, fig. 8, *a*, *b*, *c*.

Suborbicular; one valve small, the other large, with a long, considerably incurved beak; surface with numerous, strong, rounded, longitudinal ribs, crossed by inequidistant lines of growth; cardinal area smooth, and triangular.

The Amestry Limestone at View Edge, Ludlow; Amestry; Sedgeley, near Dudley; Dowton-on-the-Rock, and Yeo-edge.

3. GYPIDIUM LÆVIS.—The Smooth Gypidium, pl. XLIX. fig. 39, 40, 41, 42, 43.

Pentamerus lævis. Sowerby, I. p. 76,* pl. 28, right hand figure. Ib. Sil. Syst. p. 641, pl. 19, fig. 9. Fleming, p. 378.

Smooth, subcordiform; beaks greatly incurved; base somewhat produced.

Carboniferous Limestone, Bildwas, Shropshire.

4. GYPIDIUM GALEATUM.—The Helmet Gypidium, pl. XLIX. fig. 44, 45.

Atrypa galeata. Sowerby, Sil. Syst. p. 618, pl. 8, fig. 10, and pl. 11, fig. 4. Dalm. l. c. p. 130, pl. 5, fig. 4.

Nearly globular, longitudinally furrowed, crossed by distinct lines of growth; base somewhat depressed in the centre; larger valve very deep, with a large, rounded, incurved umbo, terminating in a blunted beak; lesser valve convex. Diameter fourteen lines; depth of each valve half an inch.

Found in the Wenlock Limestone at Westhope, Wenlock Edge, near Amestry, and Lower Ludlow Rock.

5. GYPIDIUM OBLONGUM.—The Oblong Gypidium, pl. XLIX. fig. 46, 47.

Pentameris oblongus. Sowerby, Sil. Syst. p. 641, pl. 19, fig. 10.

Depressed, oblong-ovate, smooth; beak of larger valve produced, with sometimes a few shallow furrows on the surface; margin of valve undulated by the furrows, without deviating from the same plane. Length two inches and three-quarters; width two inches and a quarter.

Found in the Cardock formation, the Hollies, Soudley and Norbury, Salop; Castell Craig-gwyddon, Llandovery.

GENUS V.—MAGUS.—*Sowerby.*

Shell inequivalve, equilateral; one valve convex, provided with an angular sinus along an incurved beak; line of the hinge and back of the other valve straight, with two projections near the centre; a partial longitudinal septum attached to the hinge within.

1. MAGUS PUMILUS.—The Dwarf Magus, pl. XLIX. fig. 5 and 13.

Magus pumilus. Sowerby, II. p. 40, pl. 119, fig. 1 to 5.

The beaked valve spherical, smooth, with its edge circular; beak small, straight, and slightly incurved at the point; flat valve quite depressed; the hinge line long, and parallel; outer surface beset with numerous, very minute punctures, disposed in a quincunx order, which, however, are indistinct without the aid of a lens.

Found in the Chalk near Maudesley, Norwich.

GENUS VI.—TRIGONOSEMUS.—*König.*

Shell inequilateral, subtrigonal; one valve generally more convex than the other; one of them prolonged into a lengthened beak, truncated at the point, and perforated for the passage of a tendon, by which the animal attaches itself to extraneous substances; hinge destitute of a ligament, but provided with two teeth in one valve, which lock into corresponding cavities in the other; two muscular impressions, situate near the centre of both valves.

1. TRIGONOSEMUS LYRA.—The Lyre-formed Trigonosemus, pl. LII.* fig. 11.

Trigonosemus Lyra. König, Icon. Foss. Sci. p. 76. *Terebratula Lyra*, Sowerby, II. p. 87, pl. 138, fig. 2.

Elongated; the upper valve equal to double the width of the shell; beak of lower valve much elongated, and containing two longitudinal septa; that of the upper valve short, and incurved; surface with divergent, furcated plaits, crossed by inequidistant, remote lines of growth.

Found in the Upper Greensand at Chute Farm, near Horningsham, Warminster, and Blackdown.

GENUS VII.—STRIGOCEPHALUS.—*Defrance.*

Lesser valve suborbicular; larger valve extending beyond it, into an elongated, acute angled, incurved beak; foramen situate on a broad, flattened, and sharply bordered area, striated lengthways and across.

In the more adult condition the triangular foramen is partially contracted with shelly matter, and presents a round perforation, which is finally closed.

1. STRIGOCEPHALUS BREVIROSTRI. — The Short-beaked Strigocephalus, pl. LII.* fig. 5.

Strigocephalus brevèrostris. Phillips, Pal. Fos. p. 80, pl. 32, fig. 143.

Tumid, smooth, suborbicular; lesser valve nearly orbicular; the larger one extending beyond it into a short, incurved umbo, ending in a tumid beak; beneath which is an acute, broad foramen, which receives the beak.

Found in the Devonian Shale, South Devon, Plymouth, and Newton.

2. STRIGOCEPHALUS PORRECTUS.—The Extended Strigocephalus, pl. LII.* fig. 6.

Terebratula porrecta. Sowerby, VI. p. 147, pl. 576, fig. 1.

Subquadrangular, convex, smooth, with rounded angles; beak of larger valve considerably produced and subacute, and slightly curved; area large, margin acute; perforation situate within the apex.

This species differs from *S. Burtini* in the beak being straighter, and the shell more quadrangular.

Found in the Carboniferous Limestone at Bradley.

3. STRIGOCEPHALUS GIGANTEUS.—The Gigantic Strigocephalus, pl. LII.* fig. 12, 13.

Strigocephalus giganteus. Sowerby, Geo. Trans. pl. 56, fig. 10, 11. Phillips, Pal. Fos. p. 80, pl. 32, fig. 142.

Smooth, convex, suborbicular; valves nearly equal; beak of larger valve straight, and pointed; beneath which is a rectangular-triangled, flat area; foramen narrow.

Found in the Devonian Shale at Plymouth and Newton Bushel.

4. STRIGOCEPHALUS BURTINI. — Burtin's Strigocephalus, pl. LII.* fig. 15, 16.

Strigocephalus Burtini. Phillips, Pal. Fos. p. 79, pl. 31, fig. 141. Defrance, Dic. des Sci. Nat. pl. 75.

Subglobose, smooth, with a few obsolete lines of growth; both valves much inflated, the lower one with a long, considerably curved, somewhat acute beak; foramen long, wide, and flat at bottom.

Found in the Devonian Shale at Combe Martin, Hagginton, Bradley, and Ogwell.

GENUS VIII.—ORTHIS.—*Dalman.*

Shell inequivalve, with a rectilinear hinge; umbones distant; larger valve with a transverse, smooth area, and a triangular pit.

Distinguished from Spirifer by the long narrow hinge, and circular flat form of the striated shells.

1. ORTHIS ARACHNOÏDEA.—The Spider's-web Orthis, pl. LII. fig. 19.

Orthis arachnoïdea. Phillips, Pal. Fos. p. 67, pl. 27, fig. 114. *Spirifer arachnoïdea,* Ib. Geo. York. II. p. 220, pl. 11, fig. 4.

Shield-shaped, much compressed; hinge line nearly parallel, and as wide as the shell; umbones very small, and blunt; upper valve a little convex; whole surface covered with fine, sharp, divergent striæ, which are crossed at intervals by remote lines of growth.

Mountain Limestone, Haltwhistle, Stradone, Allenheads, and near Hesket, Newmarket, South Devon and Hope, Torquay.

2. ORTHIS SUBARACHNOÏDEA.—The Spider Web-like Orthis, pl. LIII. fig. 27.

Orthis subarachnoïdea. Vernon, Geo. Trans. 2nd series, VI. pl. 36, fig. 3. *Orthis arachnoïdea,* Phillips, Pal. Fos. p. 67, pl. 27, fig. 114.

Elongated; hinge line nearly parallel, and equal to the width of the valves; lesser valve convex; surface with very numerous, continually subdivided and resubdivided striæ, arcuated near the hinge, and a few of which are more prominent than the others.

Devonian Shale, Hope, near Torquay.

3. ORTHIS ANOMALA.—The Anomalous Orthis, pl. LIII. fig. 28.

Orthis anomala. Sowerby, Sil. Syst. p. 638, pl. 21, fig. 10. *Anomites anomalus,* Schl. Nacht. Pet. p. 65, pl. 14, fig. 2.

Longitudinally oblong; convex; umbones obtuse; sides nearly straight; hinge line almost as wide as the valves; surface with very numerous, longitudinal striæ; base slightly rounded. Length one inch and seven lines; width one inch and five lines.

Lower Silurian Rocks, Cardock; Berwyns and Horderley.

4. ORTHIS FILIARIA.—The Thready Orthis, pl. LII. fig. 3.

Spirifera filiaria. Phillips, II. p. 220, pl. 11, fig. 3.

Slightly elongated, nearly pocket-shaped, much compressed, narrow above; hinge line short; cardinal area very narrow; umbones greatly blunted; a shallow mesial furrow; surface with rather wide-set, radiating, filamentary processes.

Mountain Limestone, Bolland, Fountains' Fell, Dowall, Derbyshire, and Otterburn.

5. ORTHIS CONNIVENS.—The Connivant Orthis, pl. LII. fig. 13.

Spirifera connivens. Phillips, II. p. 220, pl. 11, fig. 2.

Subglobose, with an undulated margin; whole surface covered with coarse, waving, divergent, longitudinal striæ.

Mountain Limestone, Bolland and Pembrokeshire.

6. ORTHIS GRANDIS.—The Great Orthis, pl. LII.* fig. 1, 2.

Orthis grandis. Sowerby, Sil. Syst. p. 638, pl. 20, fig. 12, 13.

Greatly compressed, semioval, short; with numerous internal bifurcate radiations. Length one inch and a half; breadth two inches.

Found in the Lower Silurian Limestone at the Flank of Cardoc, Horderley, and Acton Scott.

7. ORTHIS ELEGANTULA.—The Elegant Orthis, pl. LII.* fig. 3, 4.

Orthis canalis. Sowerby, Sil. Syst. p. 640, pl. 20, fig. 8.

Transversely semioval; larger valve very deep, with an acute incurved beak; smaller valve with a concave mesial furrow, and slightly convex along the sides; base somewhat pointed, and much compressed; hinge line a little shorter than the width of the valves; whole surface covered with fine radiating striæ. Length and breadth six lines and a half.

Found in the Wenlock Shale at Croft; Delves Green; Woolhope and Falfield, near Tortworth; and in the Cardoc Sandstone at Whittingslow, Horderley, &c.

8. ORTHIS VIRGATA.—The Branched Orthis, pl. LII.* fig. 7.

Orthis virgatus. Sowerby, Sil. Syst. p. 639, pl. 20, fig. 15.

Transversely obovate, with about thirty rounded, smooth radii; hinge line shorter than the breadth of the valves, and slightly arcuated. Length eight lines and a half; width eleven lines.

Found at Acton Scott; Llanwyth, Builth, and Horderley, in the Lower Silurian Rocks.

9. ORTHIS VESPERTILIO.—The Bat Orthis, pl. LII.* fig. 8, 9.

Orthis Vespertilio. Sowerby, Sil. Syst. p. 640, pl. 20, fig. 11.

Semicircular; with numerous, thin, radiating ridges; upper valve a little convex, with a broad, angular, longitudinal, central rib; lower valve convex, with a deep mesial furrow; sides angular, at the ends of the hinge line. Length three-quarters of an inch; width one inch and three lines.

Found in the Lower Silurian Rocks at Cortor, near Clunburg; Acton Burnell and Stevens Hill, in the Cambrian Packs at Bala, &c.

10. ORTHIS TRIANGULARIS.—The Triangular Orthis, pl. LII.* fig. 14.

Orthis triangularis. Sowerby, Sil. Syst. p. 640, pl. 20, fig. 17.

Triangular, rounded in front, convex; surface with numerous, fine radiations. Length four lines and a half; width five lines.

Found in Volcanic Grit, Lower Silurian Rocks at Marrington Dingle, near Chirbury.

11. ORTHIS FLABELLULUM.—The Little Fan Orthis, pl. LII.* fig. 39, 40.

Orthis Flabellulum. Sowerby, Sil. Syst. p. 639, pl. 21, fig. 8.

Transversely subovate; hinge line slightly arcuated, not so wide as the valves; one valve flat, the other convex, with a slight mesial channel; surface with about twenty-four rounded radii. Length eight lines and a half; width thirteen lines.

Found in the Cardoc Sandstone at Corton, Clunbury; and at Bala and Snowdon, in the Cambrian Rocks.

12. ORTHIS PLICATA.—The Plicated Orthis, pl. LII.* fig. 61.

Orthis plicata. Sowerby, Geo. Trans. V. 2nd series, pl. 53, fig. 10.

Transversely elongated, depressed, with numerous sharp plaits. Width twice its length.

Found in the Devonian Shales at Barnstaple.

13. ORTHIS TENUISTRIATA.—The Thin-striated Orthis, pl. LIII. fig. 11, 12.

Orthis tenuistriata. Sowerby, Geo. Trans. V. 2nd series, pl. 57, fig. 12.

Semicircular; base straight, with numerous, very fine striæ; one valve convex, the other considerably flatter; hinge area narrow and parallel.

Found in the Devonian Shales at Morebath.

14. ORTHIS ORBICULATA.—The Orbicular Orthis, pl. LIII. fig. 6, 7, 8.

Orthis orbicularis. Sowerby, Sil. Syst. p. 611, pl. 5, fig. 16.

Nearly orbicular, with fine, regular, deep, radiating striæ; the larger valve very convex, with a slightly curved beak, furnished internally with a straight, longitudinal ridge, with a curved one on either side; the other valve slightly convex, with a wide, central depression; hinge area very small. Length six lines; width seven lines.

Abundant in the Upper Ludlow Rock at Ludlow; Delbury; Sutton, near Wenlock; Dog Hill, near Ledbury; and Cwmnantgwyn, near Buleth.

15. ORTHIS CANALIS.—The Canaled Orthis, pl. LIII. fig. 34, 35, 36.

Orthis canalis. Sowerby, Sil. Syst. p. 640, pl. 20, fig. 8, and pl. 13, fig. 12 *a*.

Longitudinally semiovate; one valve very convex, beak produced, pointed, and incurved; the other rather flat, and with a broad central furrow, a little convex along the sides; base somewhat pointed, and slightly depressed; hinge line not so wide as the valves; surface with many fine, radiating striæ, which are more numerous towards the margins. Length and width six lines and a half.

Differs from *O. elegantula* in its more elongated form, and in the beak of the larger valve being longer and more incurved.

Wenlock Shale, Tame Bridge, Woolhope, and Delves Green; and also in the Cardoc Sandstone at Horderley and Whittingslow, near the Cardoc, &c.

16. ORTHIS TESTUDINARIA.—The Tortoise Orthis, pl. LII.* fig. 10.

Orthis testudinaria. Dalman, p. 115, pl. 2, fig. 4. Sowerby, Sil. Syst. p. 640, pl. 20, fig. 9.

Nearly orbicular; with numerous granulated radii of unequal length; larger or upper valve very convex, being nearly subconic, with an incurved beak; the lower valve with a mesial furrow; hinge line almost as wide as the valves. Length six lines and a half; width eight lines.

This differs from *O. elegantula* in being more convex, and in the radiations being stronger. It also differs in its internal structure.

Found in the Lower Silurian Rocks at Gaerfawr, east and south of Cardoc and Powis Castle.

17. ORTHIS LUNATA.—The Moon-shaped Orthis, pl. LIII. fig. 56, 57, 58.

Orthis Pecten? Dalman, l. c. p. 110, pl. 1, fig. 6. Hist. Pet. Suec. p. 70, pl. 20, fig. 6. Sowerby, Sil. Syst. p. 638, pl. 21, fig. 9.

Semioval, convex; with numerous, nearly equal, fine, slightly raised striæ, intercepted by almost equidistant lines of growth; hinge line almost as wide as the shell; one valve nearly flat. Length one inch and a half; width one inch and eleven lines.

18. ORTHIS PECTEN?—The Pecten-formed Orthis, pl. LIII.* fig. 1.

Orthis Pecten, var. Dalman, pl. 1, fig. 6. Hist. Pet. Suec. pl. 20, fig. 6. Sowerby, Sil. Syst. p. 614.

Transversely ovate; depressed, with many sharp, radiating sulci, with intermediate ones towards the margins. Length ten lines and a half; width one inch and four lines.

Sowerby says this is a much wider shell than the true *O. Pecten.*

Found in the Aymestry Limestone, Aymestry and Coniston.

19. ORTHIS RUSTICA.—The Rude Orthis, pl. LIII. fig. 17.

Orthis rustica. Sowerby, Sil. Syst. p. 624, pl. 12, fig. 9.

Transversely subquadrate, depressed; hinge area rather large, and triangular; surface uneven, with from forty to fifty rounded, divergent ribs, and intermediate ones as they approach the margins; base nearly straight. Length one inch and one line; width one inch and a half.

Wenlock Limestone, Wenlock and Valley of Woolhope.

20. ORTHIS ALTERNATA.—The Alternately-ribbed Orthis, pl. LIII. fig. 18, 19.

Orthis alternata. Sowerby, Sil. Syst. p. 624 and p. 638, pl. 19, fig. 6.

Transversely obovately subquadrangular; with extremely numerous, fine, unequal, raised striæ, increasing in number towards the margins; hinge line shorter than the width of the shell. Length ten lines; width thirteen lines.

Lower Silurian Rocks, Whittingslow; Cardoc, Soudley; Lower Lickey Ridge; Berwyns, &c.

21. ORTHIS PROTENSA.—The Stretched-out Orthis, pl. LIII. fig. 21.

Orthis protensa. Sowerby, Sil. Syst. p. 638, pl. 22, fig. 8, 9.

Semiovate, depressed; hinge line nearly the width of the valves; unequally thick; surface covered with sharp, linear, divergent striæ, crossed by a few remote lines of growth. Length eight lines; width seven lines.

Lower Silurian Rocks, Berwyns; Goleugoed, and Meadow Town, near Shelve.

22. ORTHIS COMPRESSA.—The Compressed Orthis, pl. LIII. fig. 20.

Orthis compressa. Sowerby, Sil. Syst. p. 38, pl. 22, fig. 12.

Semiovate, lenticular, compressed; hinge line parallel; whole surface covered with very numerous, close-set, punctated striæ. Length one inch; width fourteen lines.

Lower Silurian Rocks, Hope Quarry, near Shelve, Shropshire.

23. ORTHIS SEMICIRCULARIS.—The Semicircular Orthis, pl. LIII. fig. 30, 31.

Orthis semicircularis. Sowerby, Sil. Syst. p. 639, pl. 21, fig. 7.

Semicircular, convex; base slightly rounded; surface covered with about thirty sharp, radiating striæ, increasing in number towards the margin; umbo protruding. Length three lines and a half; width half an inch.

Lower Silurian Rocks at Hope, and near Barnstaple, Devonshire.

24. ORTHIS MULTIFURCATUS.—The Many-forked Orthis, pl. LIII. fig. 47.

Orthis flabellum? var. Sowerby, Sil. Syst. p. 639, pl. 19, fig. 8.

Fan-shaped, moderately convex; hinge line much shorter than the width of the shell; base rounded; surface with a number of radiating, strong, forked ridges. Length eleven lines; width fourteen lines.

Lower Silurian Rocks, east flank of the Caradoc.

25. ORTHIS COSTATA.—The Ribbed Orthis, pl. LIII. fig. 50.

Orthis? costata. Sowerby, Sil. Syst. p. 639, pl. 21, fig. 11.

Semicircular; one valve a little conical; hinge line slightly arcuated; umbones a little produced, with a large triangular area beneath it; sides somewhat angular; surface with about twenty sharp, radiating ribs. Length five lines and a half; width seven lines and a half.

Lower Silurian Limestone, Cefn, near Welshpool.

26. ORTHIS ACTONIÆ.—Acton's Orthis, pl. LIII. fig. 38.

Orthis Actoniæ. Sowerby, Sil. Syst. p. 639, pl. 20, fig. 16.

Transversely obovate; one valve convex, the other flat; with about fourteen large radiating ribs, quadrifed or trifid at their outer extremities. Length eight lines and a half; width eleven lines.

Closely resembling *O. flabellum*, but distinguished by its furcated ribs.

Lower Silurian Rocks, Acton Scott, Church Stretton, and in the Cambrian Rocks at Bala.

27. ORTHIS SEMILUNATA.—The Semilunar Orthis, pl. LIII. fig. 51, 52.

Orthis lunata. Sowerby, Sil. Syst. p. 603 and p. 611, pl. 5, fig. 15.

Transversely subquadrangular; finely and deeply striated longitudinally; beaks not very prominent; hinge area small; lesser valve with a slight, longitudinal, central depression; internally provided with two semicircular ridges. Length five lines; width seven lines.

This species and *orbiculata* are so similar, that unless the specimens are very perfect, it is nearly impossible to identify them; the characteristic internal ridges are the best criterion.

Found plentifully in the Upper Ludlow Rock at Delbury; also in the lowest beds of the Old Red Sandstone at Horeb Chapel.

28. ORTHIS EXPANSA.—The Expanded Orthis, pl. LIII. fig. 26.

Orthis expansa. Sowerby, Sil. Syst. p. 638, pl. 20, fig. 14.

Semicircular, compressed; hinge line parallel, internally plaited near the margin; muscular impression with deep furrows; base slightly rounded. Length one inch and seven lines; width two inches.

Lower Silurian Rocks, Moel-y-Garth and Gaerfawr, near Guilsfield.

29. ORTHIS RADIANS.—The Radiated Orthis, pl. LIII. fig. 10.

Orthis radians. Sowerby, Sil. Syst. p. 639, pl. 22, fig. 11.

Semicylindrical, compressed; base concave; with about fifteen sharp plaits; beaks produced. Length four lines and a half; width half an inch.

Lower Silurian Limestone, Goleugoed and Llandegley.

30. ORTHIS CALLACTIS, *β*?—Pl. LIII. fig. 22.

Orthis callactis. Dalman, l. c. p. 113. Sowerby, Sil. Syst. p. 639.

Nearly circular, but its width somewhat greater than its length; much compressed; hinge line as long as the breadth; with about twenty radiating, slightly elevated ribs, which are obsolete towards the beaks. Length seven lines; width nine lines.

Resembles *O. flabellum*, but the convex valve is considerably flatter.

Lower Silurian Rocks at Cardoc Hills, Hope Mill, Shropshire; and Old Storridge Hill, Worcestershire.

31. ORTHIS BILOBATA.—The Two-lobed Orthis, pl. LIII. fig. 39, 40.

Orthis bilobata. Sowerby, Sil. Syst. p. 640, pl. 19, fig. 7.

Transversely subquadrate; hinge line parallel; upper valve concave, with a broad, subangulated, longitudinal, central elevation; lower valve convex, with a deep, broad, central, longitudinal channel; sides at the hinge line produced, and somewhat rounded; surface with numerous, radiating ridges. Length one inch and two lines; width one inch and seven lines.

Nearly allied to *O. vespertilio*, but more convex.

Lower Silurian Rocks at Acton Scott, Horderley, and Upper Cambrian Rocks, Bala.

32. ORTHIS FILOSA.—The Threaded Orthis, pl. LIII. fig. 42.

Orthis filosa. Sowerby, Sil. Syst. p. 630, pl. 13, fig. 12.

Semioval, thin, much flattened; hinge line somewhat longer than the width of the shell; beaks hardly elevated; sides rather straight; surface with numerous, thread-like, radiating striæ, extending from the beaks to the margin. Length and width ten lines.

Wenlock Shale, Barrington and Oldcastle, Melvern.

33. ORTHIS ANTIQUATA.—The Antiquated Orthis, pl. LIII. fig. 24, 25.

Orthis antiquata. Sowerby, Sil. Syst. p. 630, pl. 13, fig. 13.

Semicircular, compressed; hinge area narrow, as wide as the shell; lesser valve flat; surface with numerous, radiating striæ, a few larger ones, with many lesser ones intervening, particularly towards the margins, all of which are intersected by somewhat remote lines of growth. Length six lines; width eight lines.

Wenlock Shale at Woolhope.

34. ORTHIS HYBRIDA.—The Hybrid Orthis, pl. LIII. fig. 59, 60, 61.

Orthis hybrida. Sowerby, Sil. Syst. p. 630 and p. 640, pl. 13, fig. 11.

Nearly orbicular, a little wider than long; lenticular, but thickest towards the beaks; valves equal; hinge line shorter than the width of the valves; base rather straight; surface with numerous, radiating striæ, which increase in number towards the margins. Length five lines and a half; width six lines.

The shortness of the hinge area of this species gives it the appearance of an Atrypa, with which it forms a connecting link.

Wenlock Shale at Hay Head, Walsall.

35. ORTHIS LATA.—The Wide Orthis, pl. LIII. fig. 29.

Orthis lata. Sowerby, Sil. Syst. p. 640, pl. 22, fig. 10.

Transversely semicylindrical, depressed; base somewhat straight; sides rounded; surface with linear, unequally thick, divergent striæ. Length five lines; breadth nine lines.

Nearly allied to *Leptæna lata*, but differs in both valves being convex, in being destitute of spines on the hinge, and in the unequally sized striæ.

Lower Silurian Rocks, Gorllwyn; Goleugoed and Berwyns, Caermarthenshire.

36. ORTHIS ALATA.—The Winged Orthis, pl. LIII. fig. 13, 14.

Spirifer alatus. Sowerby, Sil. Syst. p. 638, pl. 22, fig. 7, upper figures.

Semicircular; hinge line parallel, with extended, cuspidate, auriform processes, slightly inflated in the middle of the valves; surface with about eighteen acute, radiating plaits, larger in the centre of the valves, and smaller and closer towards their upper portions; sides slightly crenated. Length five lines and a half; width nine lines and a half.

Lower Silurian Rocks, Mount Pleasant and Pensarn, Caermarthen.

37. ORTHIS PENNATUS.—The Unequal-winged Orthis, pl. LIII. fig. 4, 5.

Spirifer alatus. Sowerby, Sil. Syst. p. 638, pl. 22, fig. 7, lower figures.

Longitudinally semiovate, oblique, inflated; hinge line parallel, extended on either side into long, auriform processes, one of which is considerably longer and more acute than the other; surface with numerous, acute, arcuated, radiating ribs, which are smaller and more numerous towards the margins, with two or three remote, slightly marked lines of growth; margins slightly crenated. Length six lines; width seven lines.

Lower Silurian Rocks, Mount Pleasant, Caermarthen.

38. ORTHIS INTERLINIATA.—The Interlinear Orthis, pl. LIII. fig. 1, 2, 3.

Orthis interliniata. Sowerby, Geo. Trans. V. 2nd series, pl. 53, fig. 11, and pl. 54, fig. 14. Phillips, Pal. Fos. p. 63, pl. 26, fig. 106.

Transversely elliptical, much compressed; larger valve not very convex; beak a little prominent; smaller valve with a shallow depression; hinge line little more than half the width of the valves; base nearly straight; surface with numerous, fine, filiform, radiating, unequally long striæ, which are stronger towards the margins of the valves; convex valve with nearly equal muscular impressions, and the subrostral plaits arcuated so as to include a cordiform area; impressions of the cardinal teeth in the other valve broad.

Sowerby remarks as to this species, that it forms a link serving to connect five other species. It approaches *O. lata* in its wide form, and irregularity of its striæ; it resembles *O. orbicularis* and *O. canalis* in the depression of the cardinal teeth of the flatter valves, and these species are exact analogues of *O. lunata* and *O. testudinaria*.

Abundant in the Devonian Shales at Petherwin, Croyde, and Leary, North Devon; Barnstaple, Morebath, and Landlake, Cornwall.

39. ORTHIS PARALLELA.—The Parallel Orthis, pl. LIII. fig. 9 and 16.

Orthis parallela. Phillips, Pal. Fos. p. 64, pl. 26, fig. 109, *a*, *b*, *c*, *d*.

Oblong-oval, considerably compressed; hinge line narrow, occupying about half the width of the valves; base wide; deeper valve with a slightly tumid, mesial line; flatter valve with a hollowed mesial depression; surface with numerous, sharp, unequally long and short, radiating striæ, crossed by lines of growth; subrostral ridges of the deeper valve parallel, and much lengthened, and including a long, divided area.

Devonian Shales, Pilton and Brushford, North Devon; and Petherwin, Cornwall.

40. ORTHIS GRANULOSA.—The Granular Orthis, pl. LIII. fig. 15.

Orthis granulosa. Phillips, Pal. Fos. p. 65, pl. 26, fig. 111.

Nearly orbicular, considerably compressed, and lenticular; hinge line somewhat more than half the width of the valves; surface with numerous, fine, granulated, unequally long striæ, increasing to double the number towards the margin, and producing a bordered aspect.

Devonian Shales at Hope, near Torquay, South Devon.

41. ORTHIS ARCUATA.—The Arquated Orthis, pl. LIII. fig. 23.

Orthis arcuata. Phillips, Pal. Fos. p. 64, pl. 26, fig. 107.

Transversely oblong-ovate, very much compressed; one valve uniformly convex, the other with a slight mesial furrow; whole surface with very fine, divergent striæ, arcuated towards the sides.

This species is subject to variety: var. *a* with the sulcated valve flat; var. *b*, the sulcated valve convex on both sides of the mesial furrow.

Distinguished from *O. interliniata* by its more lengthened shape, and greatly arcuated and very fine striæ.

Devonian Shales, Hope, near Torquay.

42. ORTHIS LONGISULCATA.—The Long-furrowed Orthis, pl. LIII. fig. 37.

Orthis longisulcata. Phillips, Pal. Fos. p. 62, pl. 26, fig. 105.

Transversely elliptical, compressed; sides rounded; hinge line a little arcuated; surface with very numerous, fine, divaricating striæ, which are interrupted by concentric, imbricated, distant lines of growth; internal plates divergent, situate near the beak of the lower valve.

Devonian Shales, Watersmeet; Woodabay; West Lee, and Linton, North Devon.

43. ORTHIS CONCENTRICA.—The Concentric Orthis, pl. LIII. fig. 41.

Orthis concentrica. Portlock, Geo. Rep. p. 452, pl. 37, fig. 1.

Semicircular, compressed; hinge line nearly parallel; muscular impressions deeply furrowed, internally plaited near the margins; surface with fine, divergent, filiform striæ.

Silurian Strata, Tyrone, Ireland.

44. ORTHIS UMBRACULUM.—The Shaded Orthis, pl. LIII. fig. 32, 33.

Orthis umbraculum. Portlock, Geo. Rep. p. 456, pl. 37, fig. 5.

Almost semicircular; hinge line nearly parallel; lower valve slightly convex towards the beak, but nearly flat at the margin; cardinal area low, and strongly sulcated; upper valve flat, with a low, triangular, cardinal area; surface with twelve or thirteen filiform costæ, emanating from the umbones, and radiating towards the margins, with very numerous, extremely fine, intervening striæ, the dichotomy being by insertion, and not by furcation; besides the striæ, by the aid of a lens, extremely fine, longitudinal lines are observable.

Shale of the Silurian series, Fermanagh, Ireland.

45. ORTHIS INTERCOSTATA.—The Inter-ribbed Orthis, pl. LIII. fig. 43.

Orthis intercostata. Portlock, Geo. Rep. p. 454, pl. 37, fig. 3.

Nearly orbicular; hinge area triangular, its height being equal to about a fourth of the width; surface with fine, thread-like, divergent ribs, about sixteen of which have finer intervening striæ, but with those next the umbones equal.

Silurian Strata, Desertcreat, Tyrone, Ireland.

46. ORTHIS LENS.—The Lens-shaped Orthis, pl. LIII. fig. 44, 45.

Orthis lens. Phillips, Pal. Fos. p. 65, pl. 26, fig. 110, *a*, *b*.

Suborbicular, much compressed, valves equally convex; lower valve with a mesial sulcus near the umbo, and prolonged in a shallower furrow towards the base; external surface with about twenty undulated striæ, narrower than the intervening spaces, which are striated transversely.

Devonian Shales at Hope, near Torquay.

47. ORTHIS PARALLELA.—The Parallel Orthis, pl. LIII. fig. 49.

Orthis parallela. Phillips, Pal. Fos. p. 64, pl. 26, fig. 109, *a*, *b*, *c*, *d*.

Oblong, subovate, much compressed, broadest towards the base; hinge line about half the breadth of the valves; umbones produced; deeper valve a little tumid on the mesial line, and somewhat hollowed on the other; subrostral ridges of the deeper valve much lengthened, almost parallel, and including a considerably lengthened, divided oval area; whole surface covered with numerous, sharp, radiating striæ, of unequal length and thickness, with several transverse, well-marked lines of growth.

Devonian Shales at Pilton and Brushford, North Devon; and South Petherwin, Cornwall.

48. ORTHIS CANCELLATA.—The Cancellated Orthis, pl. LIII. fig. 46.

Orthis cancellata. Portlock, Geo. Rep. p. 450, pl. 32, fig. 19.

Suborbicular, compressed; hinge line same width as the valves; umbones but slightly produced; whole surface with numerous, fine, somewhat elevated, radiating ribs, about twenty-five in number, with four or five finer intervening, longitudinal striæ; the whole surface crossed by numerous, fine, concentric striæ, producing an elegant cancellated appearance.

Silurian Strata at Desertcreat, County of Tyrone, Ireland.

49. ORTHIS INTERSTRIALIS.—The Interstriated Orthis, pl. LIII. fig. 48.

Orthis interstrialis. Phillips, Pal. Fos. p. 61, pl. 25, fig. 103.

Semicircular; hinge line parallel, and considerably broader than any other part of the valves, forming subauriform processes; one valve uniformly convex, the other depressed; whole surface with numerous, sharp, radiating striæ, of unequal length, with very numerous, much finer, intermediate ones; on the flatter valve the striæ are stronger and more elevated towards the umbo, and assume the character of furrows towards the margin.

Devonian Shales, Barton, South Devon.

50. ORTHIS CALCAR.—The Spur Orthis, pl. LIII. fig. 55.

Orthis calcar. Phillips, Pal. Fos. p. 138, pl. 58, fig. 112.**

Semicircular, a little elongated; hinge line equal to the breadth of the valves; whole surface covered with about twelve granulated, indistinct, divergent ribs, which become strongly marked towards the margins of the valves, and being regularly defined, resembles a fringe all round.

Devonian Shales at Pilton, North Devon.

51. ORTHIS PECTEN.—The Combe Orthis, pl. LIII.* fig. 1.

Orthis plicata. Sowerby, Sil. Syst. p. 53, pl. 21, fig. 9.

Somewhat elongated, compressed; hinge line flat the whole breadth of the shell; umbones not elevated; sides nearly parallel; base gently rounded; whole surface covered with numerous, radiating striæ, crossed by many, nearly equidistant, remote lines of growth.

Lower Silurian Limestone at Coniston.

GENUS IX.—LEPTÆNA.—*Dalman.*

Shell equilateral, and inequivalve; one valve being convex for the most part, and very rarely somewhat depressed; its anterior edge rounded, very thin, deflected or bent downwards, and produced into an irregularly cylindrical form, a little expanded towards its lower edge; the opposite valve is usually flat, or slightly concave on the outside, with its anterior margin reflected, so that its inner edge lies against the inside of the concave valve; the cardinal margin is transverse, parallel and linear, sometimes so much produced on both sides as to give it a winged appearance; hinge with two somewhat tooth-like processes in the upper valve, and the under valve with a crenulated, internal hinge line in most species, which is provided with two elevations, bounding the cicatrices of the muscles.

1. LEPTÆNA ANALOGA.—The Analogical Leptæna, pl. LIII.* fig. 10.

Leptæna analoga. Phillips, Geo. York. pl. 7, fig. 10. Ib. Pal. Fos. p. 56, pl. 24, fig. 93. Sowerby, Geo. Trans. V. 2nd series, pl. 56, fig. 3. Ib. Min. Conch. VII. p. 9, pl. 615, fig. 1.

Semicircular, compressed; hinge line generally straight, or sometimes slightly concave, prolonged into pointed auriform processes; lower valve slightly convex near the umbo; flattened on the disk near the base concentrically, and angularly bent towards the upper valve; surface somewhat corrugated, with flexuous, rounded wrinkles, which are somewhat irregular on the ears; the whole crossed by pretty equal, rounded, straight, radiating striæ. Length about an inch.

Found in the Carboniferous and Mountain Limestone at Bolland, Cork, Barnstaple, and Plymouth.

2. LEPTÆNA CAPERATA.—The Wrinkled Leptæna, pl. LIII.* fig. 7.

Leptæna caperata. Sowerby, Geo. Trans. V. 2nd series, pl. 53, fig. 4. Phillips, Pal. Fos. p. 58, pl. 25, fig. 98.

Semielliptical, very convex; hinge line somewhat longer than the width of the valves; margin slightly deflected; lower valve greatly and regularly convex, the other nearly equally concave; the whole surface concentrically wrinkled, but almost obsolete near the disk; with adpressed spines, those contiguous to the hinge line considerably elongated.

Found in the Devonian Shales at Petherwin, Barnstaple, and Croyde.

3. LEPTÆNA SORDIDA.—The Dilapidated Leptæna, pl. LIII.* fig. 19.

Leptæna sordida. Sowerby, Geo. Trans. V. 2nd series, pl. 53, fig. 5 and 16.

Transversely elongated, somewhat convex; hinge line not quite equal to the breadth of the valves, with rounded angles; surface irregularly striated; muscular impressions occupying nearly half the internal area. Variable in width, sometimes almost orbicular, at others its width nearly double its length.

Carboniferous Limestone, Tenby; Devonian Limestone, Linton and Torquay; and the Upper Ludlow Rocks, Westmorland.

4. LEPTÆNA FRAGARIA.—The Rough Leptæna, pl. LIV. fig. 9.

Leptæna fragaria. Sowerby, Geo. Trans. V. 2nd series, pl. 54, fig. 3, and pl. 56, fig. 5, 6. Phillips, Pal. Fos. p. 59, pl. 25, fig. 100.

Nearly hemispherical, with the sides slightly produced; beak of the convex valve subacute; hinge line somewhat shorter than the width of the valves; surface concentrically undulated, almost smooth, and pustulated.

Found in the Devonian Shales at Plymouth and Petherwin.

5. LEPTÆNA RUGOSA.—The Rugged Leptæna, pl. LIV. fig. 36.

Leptæna rugosa. Sowerby, Geo. Trans. V. 2nd series, pl. 56, fig. 4. Phillips, Pal. Fos. p. 57, pl. 24, fig. 95.

Semicircular; hinge line prolonged into two short, auriform processes; lower valve a little convex, and bent upwards on the edge to meet the upper valve; surface with regular, concentric wrinkles; border provided with rounded undulations, crossed by numerous, equal, straight, filiform striæ. Length one inch.

Found in the Devonian Shales at Plymouth and Newton Bushel; and in the Lower Silurian Rocks at Coniston.

6. LEPTÆNA PRÆLONGA.—The Lengthened Leptæna, pl. LIII. fig. 62, 63.

Leptæna prælonga. Sowerby, Geo. Trans. V. 2nd series, pl. 53, fig. 29.

Transversely obovate, convex, with a central furrow; beak of larger valve ventricose, and overhanging that of the smaller one, which is concave; margin considerably deflected; hinge line shorter than the width of the shell, from which emanate a few concentric undulations; whole surface with coarse, irregular, transverse striæ.

Found in the Devonian Shales at Croyde Bay.

7. LEPTÆNA RETICULATUS.—The Reticulated Leptæna, pl. LIII. fig. 53, 54.

Spirifera? crenistria. Sowerby, Geo. Trans. V. 2nd series, pl. 57, fig. 7.

Subovate, subcompressed; hinge line parallel, extending the entire breadth of the valves; sides nearly straight; base rounded; whole surface covered with strong, divergent striæ, and crossed by concentric, less decided striæ, giving it a finely reticulated aspect.

Mountain Limestone, Matlock, Derbyshire.

8. LEPTÆNA LEPISMA.—The Silvery Leptæna, pl. LIII.* fig. 25.

Leptæna Lepisma. Sowerby, Sil. Syst. p. 618, pl. 8, fig. 7.

Semicircular, convex, with a shining, silvery, or satin-like lustre; surface with a few obscure, slightly elevated, forked radiations, and indistinctly punctated; hinge line as wide as the shell; base moderately deflected. Length nearly three lines; breadth five lines and a half.

Lower Ludlow Rock, near Clangunford.

9. LEPTÆNA EUGLYPHA.—The Well-carved Leptæna, pl. LIII. fig. 28.

Leptæna euglypha. Dalman, Act. Holm. 1827, p. 118, pl. 1, fig. 3. Ib. Hist. Pet. Suec. pl. 20, fig. 4. Sowerby, Sil. Syst. p. 618 and 623, pl. 12, fig. 1. *Orthis euglypha*, Von Buch.

Subtriangular; base obtuse; flat above; hinge area long, straight, and narrow; surface covered with numerous, radiating, slender ridges, with intermediate, fine, elevated striæ. Length of flat space one inch; width two inches and a half; depth in front at base one inch.

This species is liable to considerable variation in form: the sides in some specimens being considerably less flattened than in our figure; the intermediate striæ sometimes as large as the ridges; and the sides at the hinge line shooting out to extended angles; the striæ are also frequently like those of *Orthis alternata*.

Wenlock Limestone at Aston, near May Hill, Daley; Fawnhope; Abberley and Wigmore.

10. LEPTÆNA DEPRESSA.—The Depressed Leptæna, pl. LIII.* fig. 29, 30, 31.

Leptæna depressa. Dalman, l. c. p. 106, pl. 1, fig. 2. Ib. Hist. Pet. Suec. p. 69, pl. 20, fig. 3. Sowerby, Sil. Syst. p. 623, pl. 12, fig. 2. *Producta depressa*, Sowerby, Min. Conch. V. pl. 459, fig. 3.

Nearly semicircular, depressed above, with strong, longitudinal striæ, which are interrupted by transverse, wide-set, narrow furrows; hinge area long, with the sides extended into auriform processes; upper valve with a rounded and somewhat produced umbo, and concave near the margin; front or basal margin abruptly curved, deflected, and descending into a very broad space, which in depth is equal to the length of the shell; lower valve concave in the centre. Length of flat portion about three-quarters of an inch; width one inch and a half; deflection one inch.

This species must not be confounded with *L. analoga*, to which it is very nearly allied. The outline of the latter approaches nearer to a semicircle, and it is usually larger than the *L. depressa*.

Very common in the Amestry and Wenlock Limestones; and is also met with, although sparingly, in the Mountain Limestone.

Its localities are Dudley, Wenlock; Amestry, May Hill; Abberley and Stourbridge.

11. LEPTÆNA PAPILIONACEA.—The Butterfly-like Leptæna, pl. LII. fig. 24.

Spirifera papilionacea. Phillips, II. p. 221, pl. 11, fig. 6.

Extremely wide, almost semielliptical; hinge line parallel; umbones very small; surface covered with very fine, longitudinal, bent, divergent striæ; crenulated in the young state.

Mountain Limestone, Bolland, Otterburn, and Kendal.

12. LEPTÆNA TRANSVERSALIS.—The Transverse Leptæna, pl. LIV. fig. 2, 3.

Leptæna transversalis. Dalman, l. c. p. 109, pl. 1, fig. 4. Ib. Hist. Pet. p. 69, pl. 20, fig. 5. Sowerby, Sil. Syst. p. 629, pl. 13, fig. 2.

Semicircular, greatly convex; lesser valve concave; hinge inflected, with its line parallel, and equal to the width of the shell; surface with wide-set, longitudinal ribs, and fine intermediate striæ. Length seven lines; width somewhat more than eight lines.

Wenlock Shale, Tame Bridge and Hay Head, near Walsall; Buildwas Bridge; Burrington; and Stumps Wood, near Ledbury.

13. LEPTÆNA MINIMA.—The Least Leptæna, pl. LIV. fig. 6, 7.

Leptæna minima. Sowerby, Sil. Syst. p. 629, pl. 13, fig. 4.

Semicircular; hinge line parallel, very greatly inflated; with numerous, sharp, alternately long and short, smooth, radiating ribs; sides a little prolonged, and auriform. Length two lines; breadth three lines.

Wenlock Shale, Burrington.

14. LEPTÆNA LÆVIGATA.—The Smooth Leptæna, pl. LIII.* fig. 35.

Leptæna lævigata. Sowerby, Sil. Syst. p. 629, pl. 13, fig. 3.

Semicircular, depressed; hinge line parallel, its sides prolonged into short, auriform processes; surface smooth, shining, with a few radiating striæ, and small, obscure, concentric undulations; base slightly depressed. Length two lines and a half; width, exclusive of the prolonged sides, four lines.

Wenlock Shale, Burrington, near Ludlow.

15. LEPTÆNA SERICEA.—The Silky Leptæna, pl. LIII.* fig. 23, 24.

Leptæna sericea. Sowerby, Sil. Syst. p. 636, pl. 19, fig. 1.
Leptæna striatella? Dalman, l. c. p. 111, pl. 1, fig. 5.

A transversely elongated semicircle; larger valve convex, the other much depressed, or nearly flat; base considerably deflected at the margin; surface with a silky lustre, and very numerous, close-set, radiating striæ, a few of which are deeper than the others; some obscure, concentric lines of growth. Length five lines; breadth ten lines.

Much resembling *L. lata*, but the striæ are finer and more regular sided, and the base more parallel.

Lower Silurian Rocks at Whittingslow; Horderley, Guilsfield, &c.

16. LEPTÆNA LATA.—The Broad Leptæna, pl. LIV. fig. 19, 20.

Leptæna lata. Von Buch. Sowerby, Sil. Syst. II. p. 603 and 610, pl. 3, fig. 10 *b* and 12 *c*, and pl. 5, fig. 13. Ure, Hist. Ruth. and Kil. p. 317, pl. 16, fig. 10, 11.

Semicircular, with a rather straight base; upper valve convex, slightly depressed in the middle; lower valve concave; covered exteriorly with fine, radiating ridges; hinge line parallel, provided with from eight to ten tubular, simple, divaricating, thin, tapering, acute spines. Length half its width.

This is one of the most characteristic and abundant species of the Upper Ludlow Rock.

Found in the Old Red Sandstone at Felindre, Horeb Chapel; in the Upper Ludlow Rock, Ludlow Promontory; Delbury; Munslow; Woolhope Valley; Bagnor Hill; Presteign; and Lawrieston, near Rutherglen, Renfrewshire.

17. LEPTÆNA COMPLANATA.—The Even Leptæna, pl. LIV. fig. 12.

Leptæna complanata. Sowerby, Sil. Syst. p. 636, pl. 20, fig. 6.

Semiovate, somewhat shorter than wide, much compressed; hinge line slightly arcuated, and rounded on both extremities; beak a little produced; surface with numerous, fine, radiating, linear striæ, which increase in number towards the margin, crossed towards the base by undulating lines of growth; base deflected. Length eleven lines; width one inch.

Lower Silurian Rocks at Acton Burnell, Shropshire.

18. LEPTÆNA DUPLICATA.—The Double-plaited Leptæna, pl. LIV. fig. 13.

Leptæna duplicata. Sowerby, Sil. Syst. p. 636, pl. 22, fig. 2.

Semicircular, transversely elongated, convex; inside of valves with longitudinal furrows, arranged in pairs. Length five lines and a half; width nine lines.

Lower Silurian Rocks, Cefn, near Welshpool; and Robeston Wathen, Pembrokeshire.

19. LEPTÆNA TENUISTRIATA.—The Thin-striated Leptæna, pl. LIII.* fig. 12.

Leptæna tenuistriata. Sowerby, Sil. Syst. p. 636, pl. 22, fig. 2 *a*.

Semicylindrical, with very numerous, close-set, longitudinal striæ, crossed by from twelve to fourteen slight, concentric, convex furrows; sides expanded.

Closely allied to *L. depressa*, but the striæ are much finer and closer.

Lower Silurian Rocks, Norbeth and Marloes Bay, Pembrokeshire; and in the Cardoc Limestone, Gaerfawr, Montgomeryshire.

20. LEPTÆNA DISTORTA.—The Distorted Leptæna, pl. LIII.* fig. 2, 3, 4.

Leptæna distorta. Sowerby, Min. Conch. VII, p. 10, pl. 615, fig. 3.

Irregularly orbicular, convex; hinge line parallel, with a triangular area; beaks prominent; concentrically undulated, with strong, longitudinal, interrupted striæ; margins flattened.

Distinguished from *L. analoga* by its prominent beak, near to which it is not compressed, and very convex valves.

Carboniferous Limestone, Isle of Man.

21. LEPTÆNA AMBIGUA.—The Ambiguous Leptæna, pl. LIV. fig. 16.

Producta depressa. Phillips, Geo. York. II. p. 215, pl. 8, fig. 18.

Compressed; hinge line nearly parallel; beaks very slightly produced; deeper valve concentrically angulated; whole surface covered with rather strong, smooth, longitudinal, divergent striæ; crossed by flexuous, rounded ribs, on the flat surface.

Mountain Limestone, Florence Court.

22. LEPTÆNA PLICATILIS.—The Plicated Leptæna, pl. LIII.* fig. 6.

Producta plicatilis. Sowerby, Min. Conch. V. p. 85, pl. 459, fig. 2. Phillips, Geo. York. II. p. 215, pl. 8, fig. 4.

Transversely elongated; hinge line nearly parallel; umbo slightly produced; a little hollow in the middle; surface with transverse, prominent, somewhat flexuous, irregular ribs, and fine, longitudinal, divergent striæ; basal line hollow in the middle.

Mountain Limestone, Castleton, Derbyshire.

23. LEPTÆNA MARGARITACEA.—The Pearly Leptæna, pl. LIII.* fig. 5.

Producta margaritacea. Phillips, Geo. York. II. p. 215, pl. 8, fig. 8.

Suborbicular, very much inflated; hinge line nearly parallel; beaks very large, and prominent; ears rounded; with numerous, rounded, smooth, radiating striæ; with two or three spines on the ears, and also on the sides.

Mountain Limestone, Florence Court.

24. LEPTÆNA SCOTICA.—The Scottish Leptæna, pl. LIII.* fig. 8, 9.

Productus Scoticus. Sowerby, Min. Conch. I. p. 158, pl. 69, fig. 3.

Semicircular; hinge line parallel, as long as the valve; umbo of larger valve large, and prominent; both valves gibbous towards the beaks; sides expanded; convex valve with the divergent striæ interrupted by nearly obsolete spines, and short intervening striæ, and remote, nearly parallel lines of growth, which produce irregular undulations, more especially towards the sides; middle somewhat depressed; shallow valve with divergent striæ, but devoid of the spines.

Carboniferous Limestone, Linlithgow and Arran, Scotland; and Cork, Ireland.

25. LEPTÆNA SPINOSA.—The Spinous Leptæna, pl. LIII.* fig. 11.

Productus spinosus. Sowerby, Min. Conch. I. p. 157, pl. 69, fig. 2.

Suborbicular, gibbous, a little wider than long; hinge line short; convex valve with many elongated, cylindrical spines, bending towards the front; concave valve destitute of spines; whole surface with numerous, longitudinal striæ.

Carboniferous Limestone, Linlithgow and Arran.

26. LEPTÆNA AURITA.—The Eared Leptæna, pl. LV. fig. 1 and 10.

Producta aurita. Phillips, Geo. York. II. p. 214, pl. 7, fig. 6, 7.

Hemispherical; sides prolonged into prominent, rounded, rugose ears, which are angular in the young condition; surface with obtuse, radiating striæ, and a few remote lines of growth.

Mountain Limestone, Ulverston, Bolland, and Kendal; and Queen's County, Ireland.

27. LEPTÆNA SCABRICULA.—The Rough Leptæna, pl. LV. fig. 2, 3.

Productus scabriculus. Sowerby, Min. Conch. I. p. 157, pl. 69, fig. 1. Phillips, Geo. York. II. p. 214, pl. 8, fig. 2, and pl. 8, fig. 20? Ib. Pal. Fos. p. 58, pl. 24, fig. 97. *Anomites scabriculus*, Martin, Pet. Derb. pl. 36, fig. 5.

Nearly orbicular; hinge line parallel, and equal to the breadth of the shell; sides rather straight, producing a somewhat quadrangular appearance; beak large, and prominent; smaller valve flat, with obscurely punctated, radiating striæ, the remains of the spines producing a concentric, reticulated appearance; larger valve with longitudinal, elongated, prominent, tuberculated, sharp pointed striæ, set in nearly quincunx order; mesial furrow broad.

Mountain Limestone, Derbyshire, Bristol, Bowes, Coalbrookdale, Harelaw, Pilton, and Brushford.

28. LEPTÆNA CONCINNA.—The Neat Leptæna, pl. LV. fig. 4.

Productus concinnus. Sowerby, Min. Conch. IV. p. 16, pl. 318, fig. 1. Phillips, Geo. York. II. p. 214, pl. 7, fig. 9.

Semicylindrical; smaller valve concave, and deeply inserted; larger one convex, concave along the middle; neatly striated, and spined longitudinally; general surface smooth, and polished.

Somewhat resembling *L. Martini*, but smaller and smoother.

Carboniferous Limestone, Derbyshire; Richmond and Bolland, Yorkshire; and Cork.

29. LEPTÆNA QUINCUNCIALIS.—The Squarish Leptæna, pl. LV. fig. 7.

Leptæna quincuncialis. Phillips, Geo. York. II. p. 214, pl. 7, fig. 8.

Suborbicular; cardinal area flat; hinge line not so wide as the valves; beak large, and prominent; sides rounded; surface with strong, longitudinal ribs, alternately elevated into oblong tubercles, and intersected by remote, nearly equidistant lines of growth.

Mountain Limestone, Bolland.

30. LEPTÆNA PUSTULOSA.—The Pustulous Leptæna, pl. LV. fig. 2.

Leptæna pustulosa. Phillips, Geo. York. II. p. 216, pl. 7, fig. 16.

Nearly orbicular, but inclining to quadrate, much inflated, with transverse, shallow furrows; hinge line not so wide as the valves; beak prominent, and acute; surface with some scattered pustule-like, flat tubercles, which become more and more addressed towards the margins; ears angular, furrowed, but destitute of spines.

31. LEPTÆNA SPINULOSA.—The Prickly Leptæna, pl. LV. fig. 6.

Productus spinulosus. Sowerby, Min. Conch. I. p. 155, pl. 68, fig. 3. Phillips, Geo. York. II. p. 216, pl. 7, fig. 14.

Semicircular, compressed; hinge line the whole width of the valves; convex valve inflated towards the beak, which is large, and produced, with numerous, short spines, arranged in quincunx order; lesser valve concave, and spinous; the whole surface longitudinally striate.

Carboniferous Limestone, Linlithgow, Bolland, and Walsingham.

32. LEPTÆNA MARTINI.—Martin's Leptæna, pl. LV. fig. 9 and 19.

Productus Martini. Sowerby, Min. Conch. IV. p. 15, pl. 317, fig. 2, 3, 4. Phillips, Geo. York. II. p. 213, pl. 7, fig. 1, and pl. 8, fig. 19. *Anomites productus*, Martin, Pet. Derb. pl. 22, fig. 1, 2, 3.

Semicylindrical; hinge line two-thirds the width of the valves, and produced; umbo very much inflated; with a flattened base, and numerous, thread-like, longitudinal, spinous striæ, which in some specimens are furcated towards the base; lesser valve nearly flat, and deeply inserted; auricles distinct, with two rows of spines.

Mountain Limestone, Castleton, Derbyshire; Bolland; High-Green-Wood; Kirby Lonsdale; Hudsewell; Harrowgate; and Northumberland; and Arran, Scotland.

33. LEPTÆNA LAXISPINA.—The Wide-spined Leptæna, pl. LV. fig. 16.

Producta rarispina. Phillips, Geo. York. p. 248, (*fimbriata?* p. 215.) Ib. Pal. Fos. p. 59, pl. 25, fig. 29.

Hemispherical; hinge line equal in length to the diameter; margin regular; lower valve regularly convex, but destitute of a mesial furrow; surface covered with unequally distributed, slender spines, with elongated bases; these are long, and incurved outwards on the hinge line.

Bolland; and South Petherwin, Devonshire.

34. LEPTÆNA LIRATA.—The Ridged Leptæna, pl. LV. fig. 5.

Producta lirata. Phillips, Geo. York. II. p. 248, (*fimbriata*, p. 215,) pl. 8, fig. 16.

Suborbicular; umbo very large, and produced; hinge line the entire width of the valves; larger valve with longitudinal sulci, and blunt ridges.

Mountain Limestone, Moulton, and Isle of Man.

35. LEPTÆNA MESOLOBA.—The Middle-lobed Leptæna, pl. LV. fig. 15.

Leptæna mesoloba? Phillips, Pal. Fos. p. 61, pl. 25, fig. 102. *Producta mesoloba*, Ib. Geo. York. II. p. 215, pl. 7, fig. 12, 13.

Subovate; hinge line the whole breadth of the valves, which are wider than long; auricles obtusely angled; a mesial ridge on the convex valve, with a corresponding furrow on the other; surface smooth, or slightly wrinkled across.

Mountain Limestone, Bolland; Derbyshire; and Codden Hill, North Devonshire; and Queen's County, Ireland.

36. LEPTÆNA SETOSA.—The Bristled Leptæna, pl. LV. fig. 17.

Producta setosa. Phillips, Geo. York. II. p. 214, pl. 8, fig. 9 and 17.

Semicircular; hinge line parallel, extending the whole width of the valves, prolonged into auriform processes; front frequently produced into a ridge; surface with strong, longitudinal striæ, and very long, needle-shaped spines, set in quincunx order.

Mountain Limestone, Rokeby and Northumberland.

37. LEPTÆNA MURICATA.—The Muricated Leptæna, pl. LV. fig. 16.

Producta muricata. Phillips, Geo. York. II. p. 214, pl. 8, fig. 3.

Nearly orbicular; umbo very large, and produced; hinge line the width of the valves; back somewhat flattened; surface with broad, strong, rounded, continuous ridges; with regular, blunt murications.

Carboniferous Limestone, Kirby Lonsdale and Harelaw.

38. LEPTÆNA SULCATA.—The Furrowed Leptæna, pl. LIII.* fig. 20.

Productus sulcatus. Sowerby, Min. Conch. IV. p. 17, pl. 319, fig. 2.

Semicylindrical, short, very convex above, with a mesial sulcus; hinge line as wide as the valves; whole surface with strong, spinose, longitudinal ridges.

Mountain Limestone, Derbyshire.

39. LEPTÆNA PECTINOIDEA.—The Pecten-shaped Leptæna, pl. LIII.* fig. 22.

Producta pectinoides. Phillips, Geo. York. II. p. 215, pl. 7, fig. 11.

Orbicular; hinge line not so wide as the valves, terminating in distinct, auricular processes; umbo large, and prominent; whole surface covered with numerous, pretty strong, smooth, longitudinal ribs, which are furcated towards the base.

Carboniferous Limestone, Bolland.

40. LEPTÆNA NODULOSA.—The Nodulous Leptæna, pl. LIII.* fig. 21.

Leptæna nodulosa. Phillips, Pal. Fos. p. 56, pl. 24, fig. 94.

Somewhat semicircular, its width greatly exceeding its length; lower valve concentrically and irregularly angulated, and somewhat nodulous near the border, where it is rectangularly reflected, and broadly undulated, its disk flat from the umbo to the border; surface with irregular, interrupted, concentric ridges and furrows; whole shell with very fine and numerous, close, flexuous, longitudinal striæ.

Devonian Limestone, Newton Bushel, and Hope, Torquay.

41. LEPTÆNA EDELBURGENSIS.—The Addleburgh Leptæna, pl. LIII.* fig. 27.

Producta Edelburgensis. Phillips, Geo. York. II. p. 214, pl. 7, fig. 5.

Semicircular; hinge line nearly parallel, and very wide; beak but slightly produced; deeper valve evenly convex; extreme sides compressed; whole surface with coarse, longitudinal striæ, which is frequently duplicate; spines few, or none.

Nearly allied to *L. latissima*, but differs in its flattened ears.

Carboniferous Limestone, Addlesburgh; Fountains' Fell; and Bolland.

42. LEPTÆNA COSTATA.—The Ribbed Leptæna, pl. LIII.* fig. 15.

Producta costata. Sowerby, Min. Conch. VI. p. 115, pl. 560, fig. 1. Phillips, Geo. York. II. p. 213, pl. 7, fig. 2.

Transversely elongated; convex valve with a deep, triangular, mesial furrow, and broad, rounded, longitudinal ribs, which are decussated above by rather strong, concentric furrows, and compressed at the base, which is deflected, the intervening furrows narrow, and deep; each side provided with two or three spines, and a small lobe.

Carboniferous Limestone, Glasgow; Bolland; Richmond, Yorkshire; and Hawes.

43. LEPTÆNA ANTIQUATA.—The Antiquated Leptæna, pl. LV. fig. 11.

Productus antiquatus. Sowerby, Min. Conch. IV. p. 15, pl. 317, fig. 1, 5, 6. Phillips, Geo. York. II. p. 213, pl. 7, fig. 3. *Anomites semistriatus*, Martin, Pet. Derb. pl. 32 and 33, fig. 1, 2, 3, 4.

Semicylindrical, or quadrato-hemispherical; hinge line somewhat shorter than the width of the shell, terminating in auriform processes; sides nearly parallel; umbo extremely large, and produced; larger valve very much inflated; lesser valve nearly flat; mesial furrow wide; whole surface with rounded, radiating ribs, reticulated at the umbo by concentric undulations, which are larger, fewer, and more spinose towards the auricles.

Young shells are plano-convex, with fine longitudinal and transverse striæ.

Carboniferous Limestone, Bolland; Coverdale; Northumberland; Derbyshire; Flintshire; and Kildare, Ireland.

44. LEPTÆNA PUGILIS.—The Fighting Leptæna, pl. LIII.* fig. 13.

Producta pugilis. Phillips, Geo. York. II. p. 215, pl. 8, fig. 6.

Semicircular; hinge line as wide as the shell, and terminating in acute, spinous, auricular processes; umbo large, and much produced; whole surface with numerous, equal, strong, radiating

striæ, and longitudinal, scattered spines; towards the sides and basal margin a series of strong, irregular ribs, with a few blunted and large spines; margin much indented, and irregular.

Carboniferous Limestone, Kirby Lonsdale.

45. LEPTÆNA FIMBRIATA.—The Fringed Leptæna, pl. LIV. fig. 8.

Producta fimbriata. Sowerby, Min. Conch. V. p. 85, pl. 459, fig. 1. Phillips, Geo. York. II. p. 215, pl. 8, fig. 11, 12.

Oblong, nearly hemispherical; umbo large, and produced; mesial furrow slight, or none; with from six to eight transverse, crenated furrows, the ridges spinose on their superior margin; lesser valve concave, and similar to the large one.

Carboniferous Limestone, Derbyshire; Bolland; Greenhow Hill; Moulton; and Isle of Man.

46. LEPTÆNA COMOÏDES.—The More-handsome Leptæna, pl. LIII.* fig. 16.

Productus comoïdes. Sowerby, Min. Conch. IV. p. 31, pl. 329. Phillips, Geo. York. II. p. 213, pl. 7, fig. 4.

Semicircular; globose near the beak; disk much inflated; surface with fine, undulating striæ, and some large, shallow, longitudinal furrows; hinge area flat; substance of the shell very thick, and rough within.

Carboniferous Limestone, Llangaveni and Conishead, Wales; and Bolland, Yorkshire.

47. LEPTÆNA MEMBRANACEA.—The Membranous Leptæna, pl. LIII.* fig. 17.

Leptæna membranacea. Phillips, Pal. Fos. p. 60, pl. 25, fig. 101.

Semicircular, very flat, and thin; hinge line parallel, extending the whole width of the shell, and produced, with spines; concentrically striated; with undulating lines, among which are some irregular, small spines.

Phillips mentions two varieties, viz., *a*, pl. 25, fig. 101 *a*, with numerous transverse lines; and *b*, fig. 101 *b*, with few transverse lines.

Devonian Limestone, Pilton, North Devon; and South Petherwin, Cornwall.

48. LEPTÆNA ACULEATA.—The Spined Leptæna, pl. LIII.* fig. 36, 37.

Productus aculeatus. Sowerby, Min. Conch. I. p. 156, pl. 68, fig. 4. *Conchiliolithus (Anomites) aculeatus,* Martin, Pet. Derb. pl. 37, fig. 9, 10.

Orbicular; hinge line half the breadth of the shell; concave valve smooth; convex valve gibbous, with adpressed, reflected spines, most numerous towards the sides, and a few obscure, concentric undulations; base slightly indented.

Carboniferous Limestone, Bakewell, Derbyshire.

49. LEPTÆNA LONGISPINA.—The Long-spined Leptæna, pl. LIV. fig. 62, 63.

Productus longispinus. Sowerby, Min. Conch. I. p. 154, pl. 68, fig. 1. *Productus Flemingii,* Ib. p. 155, pl. 68, fig. 2.

Semicircular, broader than long; hinge line extending the whole width of the valves, and prolonged into large, auricular processes, somewhat blunted at their termination; convex valve with a mesial furrow; smaller valve concave; one very long, round, tubular, horizontal spine, and several smaller ones, placed near each side in the convex valve.

Carboniferous Limestone, Kilbride, Lanarkshire; and Mountain Limestone, Linlithgowshire, Scotland; and North Sunderland.

50. LEPTÆNA SARCINULATA.—The Little-truss Leptæna, pl. LIII.* fig. 40.

Leptæna sarcinulata. Sowerby, Sil. Syst. p. 610, pl. 3, fig. 10 *b* and 12 *c*, and pl. 5, fig. 13. Ure's Rutherglen, p. 317, pl. 16, fig. 10, 11.

Semicircular; hinge line parallel; provided with eight or ten long, divaricating, simple, tubular spines; upper valve convex, somewhat depressed in the middle; lower valve concave; surface covered with numerous, very fine, radiating ribs. Length about half its breadth.

This is one of the most characteristic species of the Upper Ludlow Limestone.

Lower Silurian Limestone, Horderley; Cardoc, Bala, Coniston, Felindre, Horeb Chapel, &c.

51. LEPTÆNA LATISSIMA.—The Very-broad Leptæna, pl. LIII.* fig. 38.

Productus latissimus. Sowerby, Min. Conch. IV. p. 32, pl. 330. Phillips, Geo. York. II. p. 214, pl. 8, fig. 1.

Much elongated transversely, fusiform, or convoluted; hinge line whole width of valves, and partially concealed by the beak; umbo much incurved; entire surface with coarse, longitudinal striæ, and many small, bristle-like spines.

This has somewhat the appearance of *L. comoïdes*, but is much shorter than that species, with the cardinal area considerably narrower.

Carboniferous Limestone, Kirby Lonsdale; Fountains' Fell; Otterburn, Northumberland; Anglesea, Wales; and the Island of Arran, Frith of Clyde, Scotland.

52. LEPTÆNA CONVOLUTA.—The Convoluted Leptæna, pl. LIII.* fig. 39.

Leptæna convoluta. Phillips, Pal. Fos. p. 57, pl. 24, fig. 96.

Somewhat semicircular; hinge line the whole width of the valves, and extended into rounded, auriform processes; middle of lower valve regularly convex, with a depression between it and the auricles; surface with fine, rounded, numerous, longitudinal, divergent striæ.

Devonian Limestone, Croyde Bay, North Devon.

53. LEPTÆNA GIGANTEA.—The Gigantic Leptæna, pl. LV. fig. 12.

Productus giganteus. Sowerby, Min. Conch. IV. p. 19, pl. 320. Phillips, Geo. York. II. p. 215, pl. 8, fig. 5, reduced.

Transversely elongated, much inflated; hinge line nearly parallel, and extended into auriform processes; surface with irregular, undulating, radiating, obtuse ribs, covered with waved, unequal striæ.

This species attains the size of nine inches in diameter.

Carboniferous Limestone of Derbyshire; Hawes; Dent Dale; Northumberland; and Fifeshire.

54. LEPTÆNA PUNCTATA.—The Punctured Leptæna, pl. LV. fig. 20, 21, 22, and 24.

Productus punctatus. Sowerby, Min. Conch. IV. p. 22, pl. 323. Phillips, Geo. York. II. p. 215, pl. 8, fig. 10. *Anomites punctatus,* Martin, Pet. Derb. pl. 37, fig. 6, 7, 8.

Obovate; hinge line about a third less than the width of the shell; larger valve gibbose, with a deep mesial furrow; surface with concentric, wide, imbricated, laminar ridges, and furrows; and numerous, minute, short spines; lesser valve nearly flat, with shallow concentric furrows, and flattened ridges.

Mountain Limestone, Derbyshire; Bolland; Settle; Buxton; Otterburn; and Cork, Ireland.

55. LEPTÆNA OVALIS.—The Oval Leptæna, pl. LV. fig. 23.

Producta ovalis. Phillips, Geo. York. p. 216, pl. 8, fig. 14.

Oblong; hinge line slightly arcuated; larger valve very gibbose; umbo very large, and much produced; mesial furrow slight, with nearly obsolete, concentric furrows; provided with numerous, spinulose puncta; lesser valve very flat, with a few slight, concentric furrows.

Mountain Limestone, Bolland.

56. LEPTÆNA HEMISPHÆRICA.—The Hemispherical Leptæna, pl. LV.* fig. 16.

Producta hemisphærica. Sowerby, Min. Conch. VI. p. 117, pl. 561.

Orbicular; larger valve inflated, with numerous, fine, longitudinal, irregular striæ, and wide, concentric, slightly developed ridges; hinge line parallel, occupying about two-thirds of the width of the shell; lesser valve flat, and longitudinally striated.

This species has been found five inches in diameter.

Carboniferous Limestone, Coalbrook Dale.

57. LEPTNÆA INTERRUPTA.—The Interrupted-striæ Leptæna, pl. LIII.* fig. 34.

Leptæna interrupta. Sowerby, Geo. Trans. V. 2nd series, pl. 56, fig. 7.

Semicircular, very gibbose; hinge line about equal to the width of the shell; umbo but little produced; larger valve with longitudinal striæ, interrupted by concentric ribs.

Nearly allied to *L. punctata.*

Devonian Limestone, Petherwin and Plymouth.

58. LEPTÆNA LOBATA.—The Lobed Leptæna, pl. LIII.* fig. 41, 42.

Productus lobatus. Sowerby, Min. Conch. IV. p. 16, pl. 318, fig. 1 to 6. Phillips, Geo. York. II. p. 214, pl. 8, fig. 7.

Oblong, gibbose; beak much incurved; larger valve divided into two lobes, by the deep and wide mesial furrow; surface with numerous, deep, longitudinal, coarse, spinous striæ.

Distinguished from *L. concinna*, by the more deep mesial furrow and coarser striæ.

Carboniferous Limestone, Derbyshire; Clifton; the Island of Arran, Frith of Clyde; and Cork.

59. LEPTÆNA HARDRENSIS.—The Hardren's Leptæna, pl. LIII.* fig. 32, 33.

Orthis Hardrensis. Phillips, Pal. Fos. p. 138, pl. 58, fig. 104, *a*, *b*, *c*, *d*, and pl. 60, fig. 104.*

Semicircular, almost twice as wide as long; hinge line straight, spinous, with acute and spined terminations; smaller valve a little concave; surface with numerous, very fine, radiating striæ, minutely crossed by lines of growth; internal surface minutely punctated, with cordiform, muscular depressions.

Devonian Limestone, Westleigh, North Devon.

60. LEPTÆNA ANOMALA.—The Anomalous Leptæna, pl. LIV. fig. 10, 11, and pl. LXVII. fig. 12.

Leptæna anomala. Sowerby, Min. Conch. VII. p. 9, pl. 615, fig. 1. *Pinna inflata*, Phillips, Geo. York. II. p. 211, pl. 6, fig. 1. *Mytilus striatus*, Fischer, Orgoht. Mosc. p. 181, pl. 19, fig. 4.

Elongated, irregularly triangular; hinge area long, large, triangular, and acute; beak much produced, with spinose sides; compressed, and longitudinally striated.

This species is generally very irregular, and distorted; the spines near the hinge are small.

Mountain Limestone, Bolland.

61. LEPTÆNA CALVA.—The Smooth Leptæna, pl. LV. fig. 13, 14.

Producta calva. Sowerby, Min. Conch. VI. p. 115. *Productus horridus*, Ib. IV. p. 17, fig. 1.

Subquadrangular; hinge line nearly parallel, with a row of spines on each side; beak large, much incurved; larger valve greatly inflated, with a deep and wide mesial furrow; surface smooth, with nearly equidistant, slightly marked lines of growth; lesser valve smooth, a little raised in the centre, with transverse lines of growth.

Magnesian Limestone, Humbleton; Derbyshire; Middleridge; and Glucksbrunn, Ireland.

62. LEPTÆNA HUMEROSUS.—The Shouldered Leptæna, pl. LIII.* fig. 43.

Productus humerosus. Sowerby, Min. Conch. IV. p. 21, pl. 322.

Oblong, somewhat square, compressed; hinge line not equal to the width of the valves; larger valve with two deep cavities near the beak, and a third connected with the beak; smaller valve rather flat; surface with fine, longitudinal striæ.

Carboniferous Limestone, Breden, near Derby; and Yorkshire.

63. LEPTÆNA PERSONATA.—The Masque Leptæna, pl. LIII.* fig. 44.

Productus personatus. Sowerby, Min. Conch. IV. p. 20, pl. 321.

Hemispherical; hinge line arcuated; larger valve with three deep cavities, one connected with the beak, and two others remote; surface smooth, irregularly striated longitudinally.

Carboniferous Limestone, Derbyshire.

64. LEPTÆNA DECEPTA.—The Deceptious Leptæna, pl. LIII.* fig. 26.

Leptæna sericea, var. Sowerby, Sil. Syst. pl. 19, fig. 2.

Subtriangular; hinge line parallel, extending into auriform processes; base rather pointed; surface with remote, nearly equidistant, divergent, narrow ribs.

Lower Silurian Rocks at Cefn, Rhyddan, and Llandovery, Wales.

GENUS X.—ATRYPA.—*König.*

Shell longitudinal, equivalve, equilateral; hinge line slightly curved; umbones small, and not incurved.

This genus is distinguished from its congeners by its short hinge line, and in being destitute of a large area, and also in having no foramen, or only a small triangular one. The shells are rounded, and without furrows; they have acute beaks, without a perforation.

1. ATRYPA DIDYMA.—The Spread Atrypa, pl. LIII.* fig. 45, 46.

Atrypa didyma. Dalman, Act. Holm. 1827, p. 146, pl. 6, fig. 7. Hisinger, Pet. Suec. p. 77, pl. 22, fig. 7. Sowerby, Sil. Syst. p. 610 and 614, pl. 6, fig. 4.

Nearly globular; umbones small; base emarginate; each valve provided with a central furrow, emanating from a little way below the beaks, and terminating at the base. Length and breadth five lines.

Found in the Aymestry Limestone at Wallsgrove quarry; Sunny Hill Bank, Ludlow; and also in the Upper Ludlow Rock, Fownhope; and Dog Hill, Ledbury.

2. ATRYPA AFFINIS.—The Allied Atrypa, pl. LIV.* fig. 1, 2.

Atrypa affinis. Sowerby, Sil. Syst. p. 610 and 614, pl. 6, fig. 5. *Atrypa reticularis*, Dalman, Act. Holm. 1827, p. 127, pl. 4, fig. 2. Hisinger, Pet. Suec. p. 75, pl. 21, fig. 11. *Terebratula affinis*, Sowerby, Min. Conch. IV. p. 24, pl. 324, fig. 2. *Terebratula priscus*, Von Buch, p. 71. Schl. pl. 17, fig. 2.

Orbicular, with strong, deep, regular, radiating striæ; upper valve gibbous, with an obtuse, elevated sinus in front, filled at the base with the longer-shaped sinus of the opposite valve; lower valve nearly flat.

Found in the Carboniferous Limestone at Horncastle; the Melvern Hills; very common in the Upper Silurian Rocks; occurs in the Aymestry Limestone at Ludlow and Aymestry, and many other places; and in the Wenlock Limestone at May Hill, Eastnor Park; Abberley Lodge; and Malvern Hills.

3. ATRYPA ASPERA.—The Rough Atrypa, pl. LIV. fig. 49, 50.

Atrypa aspera. Dalman, l. c. p. 128, pl. 4, fig. 3. Hist. Pet. Suec. p. 75, pl. 21, fig. 12. Sowerby, Sil. Syst. p. 623, pl. 12, fig. 5. *Terebratula asper*, Schloth, Nat. Pet. 1822, p. 68, pl. 18, fig. 3.

Orbicular; valves equally convex; with the base slightly truncated; surface covered by numerous, radiating furrows, increasing in number by intermediate ones as they approach the margins, these are crossed by undulating laminæ. Diameter half an inch.

Very closely allied to *A. affinis*, but distinguished from it by the valves being equally convex, and their form being more orbicular.

Found in the Wenlock Limestone, Wenlock Edge.

4. ATRYPA TENUISTRIATA.—The Thin-striated Atrypa, pl. LIV. fig. 80.

Atrypa tenuistriata. Sowerby, Sil. Syst. p. 623, pl. 12, fig. 3. *Terebratula obtusa*, Ib. Linn. Trans. XII. p. 516, pl. 28, fig. 3, 4.

Slightly ovate transversely, gibbose; beaks small, a little prominent, considerably waved, bent, and close to each other; base with a narrow protrusion; surface with fine, longitudinal striæ. Diameter one inch and three-quarters.

Nearly allied to *A. oblata*, but will be distinguished by the position of the beaks.

Wenlock Limestone, Dudley, Wenlock, Abberley, Aymestry; May Hill and the Lye, near Stourbridge.

5. ATRYPA COMPRESSA.—The Compressed Atrypa, pl. LIV. fig. 44, 45.

Atrypa compressa. Sowerby, Sil. Syst. p. 629, pl. 13, fig. 5.

Slightly transverse, ovate, somewhat compressed, smooth; base with a very slight indentation; beaks small, and a little produced; sides rounded. Length five lines; breadth six lines.

Wenlock Shale, Nash and Woodside, near Presteign.

6. ATRYPA LINGUIFERA.—The Tongue-shaped Atrypa, pl. LIV. fig. 21, 22.

Atrypa linguifera. Sowerby, Sil. Syst. p. 629, pl. 13, fig. 8.

Orbicular, nearly globular, very convex, smooth; beaks large, unequal, that of the larger valve considerably produced; base elevated, tongue-shaped. Length seven lines; depth of valves united seven lines and a half.

Wenlock Shale, Stumps Wood; Delves Green; and Valley of Woolhope.

7. ATRYPA DEPRESSA.—The Depressed Atrypa, pl. LIV. fig. 78, 79.

Atrypa depressa. Sowerby, Sil. Syst. p. 629, pl. 13, fig. 6.

Transversely obovate, compressed, smooth; sides depressed; base much elevated, the elevated portion square; beaks unequal; with three or four, nearly obsolete, longitudinal furrows along the middle. Length four lines; width five lines.

Wenlock Shale, Delves Green and Stumps Wood.

8. ATRYPA ROTUNDA.—The Rounded Atrypa, pl. LIV. fig. 64, 65.

Atrypa rotunda. Sowerby, Sil. Syst. p. 629, pl. 13, fig. 7.

Almost orbicular, very convex, and smooth; base elevated; beaks small, equal; surface with fine, longitudinal, obscure furrows towards the base. Length seven lines; width seven lines and a half.

Wenlock Shale, Escarpments of Wenlock Edge.

9. ATRYPA CASSIDEA.—The Little-helmet Atrypa, pl. LIV. fig. 53.

Atrypa cassidea. Dalman, pl. 5, fig. 5. Phillips, Pal. Fos. p. 83, pl. 34, fig. 148, *a*, *b*, *c*.

Oblong-ovate, ventricose, smooth; beak large; sides and base rounded; a few indistinct lines of growth on both valves.

Devonian Limestone, South Devon and Newton.

10. ATRYPA CUBOIDES.—The Slightly-cubular Atrypa, pl. LIV. fig. 4, 5.

Atrypa cuboides. Sowerby, Geo. Trans. V. 2nd series, pl. 56, fig. 24. Phillips, Pal. Fos. p. 84, pl. 34, fig. 150.

Subglobose; base elevated, and very flat on the surface; margin with a deep square sinus; beak small, acute; lower valve small, almost flat, with a large, produced, square appendage, filling the sinus in the upper one; surface with numerous, narrow ribs, emanating from the beaks, with about fifteen on the mesial sinus, more elevated than the others, those on the sides greatly curved, and on the base parallel.

Devonian Limestone, Plymouth; and Hope, near Torquay.

11. ATRYPA EXPANSA.—The Expanded Atrypa, pl. LIV. fig. 70, 71, and pl. LII. fig. 5, *Spirifer expansa.*

Atrypa expansa. Sowerby, Min. Conch. VII. p. 14, pl. 617, fig. 1. *Spirifera expansa*, Phillips, Geo. York.

Transversely subovate, somewhat inflated; base nearly straight; destitute of a mesial fold; surface covered with broad, striated, imbricated fringes; beak small, produced, and incurved.

When this species is deprived of its fringes, it presents the appearance and answers to the description which I have given of it, p. 112, pl. LII. fig. 5, under the name of *Spirifer expansa*. It is distinguished from *A. fimbriata* by its even and inflated surface.

Mountain Limestone, Bolland.

12. ATRYPA PLANOSULCATA.—The Flat-furrowed Atrypa, pl. LIV. fig. 81, 82, and pl. LII. fig. 4.

Atrypa planosulcata. Sowerby, Min. Conch. VII. p. 15, pl. 617, fig. 2. *Spirifera planosulcata*, Phillips, Geo. York. II. p. 220, pl. 10, fig. 15. See also p. 112.

Pentraedral; sides rounded; depressed; the mesial furrow in both valves flattened; surface covered with broad, undulating fringes, the external or marginal one very greatly expanded.

Mountain Limestone, Bolland.

13. ATRYPA FIMBRIATA.—The Fringed Atrypa, pl. LIV. fig. 72, 73.

Atrypa fimbriata. Sowerby, Min. Conch. VII. p. 16, pl. 617, fig. 4. *Spirifera fimbriata*, Phillips, Geo. York. II. p. 220. See also p. 112.

Transversely subovate, subcompressed; centre of each valve somewhat longitudinally depressed; surface uneven, with imbricated and striated fringes.

Mountain Limestone, Kendal, Westmorland.

14. ATRYPA PROTRACTA.—The Continued Atrypa, pl. LIV. fig. 55, 56.

Atrypa protracta. Sowerby, Geo. Trans. V. 2nd series, pl. 56, fig. 16.

Transverse, triangular; lateral angles rounded; beak produced, and acute; sides flattened; seam undulating; base elevated, with about four plaits, its sides smooth.

Devonian Limestone, Plymouth.

15. ATRYPA OBLONGA.—The Oblong Atrypa, pl. LIV. fig. 47, 48.

Atrypa oblonga. Sowerby, Min. Conch. VII. p. 16, pl. 617, fig. 3.

Oblong-oval, very convex; base hollowed; beak small, pointed, and incurved; sides obtuse; centre of each valve with a plain, shallow, mesial furrow.

There are some slight indications of its being fimbriated.

Mountain Limestone, Queen's County, Ireland.

16. ATRYPA CRENULATA.—The Crenulated Atrypa, pl. LIV. fig. 34, 35.

Atrypa crenulata. Sowerby, Geo. Trans. V. 2nd series, pl. 56, fig. 17. Phillips, Pal. Fos. p. 85, pl. 34, fig. 152.

Pentagonal, compressed; surface smooth; beak very small; base broadly and suddenly elevated; with numerous, small, lengthened crenulations near the margins; sides smooth.

Devonian Limestone, Barton and Plymouth, Devonshire.

17. ATRYPA PECTINIFERA.—The Comb-like Atrypa, pl. LIV.* fig. 3, 4.

Atrypa pectinifera. Sowerby, Min. Conch. VII. p. 14, pl. 616.

Transversely obovate, equally convex, subcompressed; beak small; surface covered with concentric, ciliated fringes; the external one with a rather lengthened fringe.

Plentiful in the Magnesian Limestone, Humbleton Hill, near Sunderland.

18. ATRYPA DESQUAMATA.—The Peeled Atrypa, pl. LVI.* fig. 1, 2, 3, 4.

Atrypa desquamata. Sowerby, Geo. Trans. V. 2nd series, pl. 56, fig. 19, 20, 21, 22. Phillips, Pal. Fos. p. 82, pl. 33, fig. 146.

Oblong, gibbous; base obtuse, gently and broadly raised at the edge, without elevating the surface; smaller valve deeper than the other; surface deeply striated longitudinally, increasing in number towards the margin; internal surface striated, or punctated.

This shell is liable to considerable variety in size, convexity, and coarseness of striæ. In the young condition specimens are found nearly globular, while others are lenticular and compressed.

Devonian Shales, Devonshire and Cornwall.

A variety of this species is called by Sowerby *Atrypa desquamata compressa*, fig. 21, 22. It is suborbicular, compressed, the valves equal, with nearly rectangular sides.

19. ATRYPA FALLAX.—The False Atrypa, pl. LIV. fig. 18.

Atrypa fallax. Sowerby, Geo. Trans. V. 2nd series, pl. 54, fig. 15. *Terebratula pleurodon*, Phillips, Geo. York. II. p. 222, pl. 12, fig. 25, 26.

Transversely ovate; rather inflated, with many strong, elevated, sharp ribs, and deep intervening furrows, producing a strongly crenulated margin.

Devonian Shale at Petherwin and Barnstaple.

20. ATRYPA HISPIDA.—The Bristly Atrypa, pl. LIV. fig. 1.

Atrypa hispida. Sowerby, Geo. Trans. V. 2nd series, pl. 54, fig. 4.

Transversely oval, compressed; beak but slightly produced; surface with concentric fringes of spines.

Devonian Limestone, Petherwin.

21. ATRYPA IMPLETA.—The Filled-up Atrypa, pl. LIV. fig. 32, 33.

Atrypa impleta. Sowerby, Geo. Trans. V. 2nd series, pl. 57, fig. 2.

Transversely elongated, its width considerably more than its length, ventricose; sides rounded; beaks slightly produced; base elevated, with six furrows; whole surface with radiating flattened ribs and shallow furrows.

Devonian Limestone at Plymouth.

22. ATRYPA IMPLEXA.—The Plaited Atrypa, pl. LIV. fig. 83, 84.

Atrypa implexa. Sowerby, Geo. Trans. V. 2nd series, pl. 57, fig. 4.

Transversely obovate; base straight, flat; margin of the base and sides broad; surface with numerous, acute plaits, producing a toothed margin, with the edges of the valves deeply locked into each other.

Devonian Limestone, Plymouth.

23. ATRYPA TRILOBA.—The Three-lobed Atrypa, pl. LIV. fig. 27.

Atrypa triloba. Sowerby, Geo. Trans. V. 2nd series, pl. 56, fig. 14.

Tetrahedral, with rounded angles, three lobed; upper valve much inflated; lower one nearly flat; base much elevated, with about twelve plaits, its sides smooth; lateral lobes reflexed, and obscurely plaited; whole surface with broad, flat, radiating ribs, and shallow intervening furrows.

Devonian Limestone, Plymouth.

24. ATRYPA TRIANGULARIS.—The Triangular Atrypa, pl. LIV.* fig. 9.

Atrypa triangularis. Sowerby, Geo. Trans. V. 2nd series, pl. 54, fig. 9.

Triangular; base with two folds; beaks hardly produced beyond the circumference of the valves.

Ferruginous Soft Devonian Limestone, Plymouth.

25. ATRYPA SUBDENTATA.—The Half-toothed Atrypa, pl. LIV. fig. 36, 37.

Atrypa subdentata. Sowerby, Geo. Trans. V. 2nd series, pl. 54, fig. 7. *Terebratula subdentata*, Phillips, Pal. Fos. p. 90, pl. 35, fig. 164. *Terebratula rotunda*, Münster, Beit. 3, pl. 14, fig. 15.

Orbicular, somewhat longer than wide, a little convex, smooth; beak very small, but prominent; base three-plaited, and raised.

Plentiful in the Devonian Limestone at Petherwin.

26. ATRYPA INDENTATA.—The Indented Atrypa, pl. LIV. fig. 23, 24.

Atrypa indentata. Sowerby, Geo. Trans. V. 2nd series, pl. 54, fig. 6.

Transversely obovate, with an indented base; beak small, and produced; edge of the lower valve elevated.

Devonian Limestone, Petherwin and Barnstaple, where it is very abundant.

27. ATRYPA JUVENIS.—The Young Atrypa, pl. LIV. fig. 74, 75.

Atrypa juvenis. Sowerby, Geo. Trans. V. 2nd series, pl. 56, fig. 8. Phillips, Pal. Fos. p. 90, pl. 35, fig. 165.

Longitudinally ovate, slightly convex, smooth, curved; base a little pointed; valves nearly equal, the lower curved upwards, with a small beak.

Devonian Limestone, Plymouth.

28. ATRYPA LACHRYMA.—The Tear Atrypa, pl. LIV. fig. 30, 31.

Atrypa lachryma. Sowerby, Geo. Trans. V. 2nd series, pl. 56, fig. 9.

Longitudinally subglobose, smooth; beak hardly prominent; sides rounded, and nearly equal; base straight, or slightly waved, scarcely raised, except at the edge, which is deeply sinuated by the projection of the inferior valve; mesial furrow broad, flat, and bounded by two sharp ridges.

Devonian Limestone, Plymouth.

29. ATRYPA STRIATULA.—The Finely-striated Atrypa, pl. LIV. fig. 46.

Atrypa striatula. Sowerby, Geo. Trans. V. 2nd series, pl. 54, fig. 10.

Suborbicular, convex; surface with fine, close-set, longitudinal, divergent striæ.

Devonian Limestone, Petherwin, Barnstaple, and Fowey.

30. ATRYPA PLEBEIA.—The Common Atrypa, pl. LIV. fig. 51, 52.

Atrypa plebeia. Sowerby, Geo. Trans. V. 2nd series, pl. 56, fig. 12, 13. *Spirifera plebeia,* Phillips, Pal. Fos. p. 70, pl. 28, fig. 121.

Transversely obovate, smooth, and but slightly convex; beak hardly protruding; base produced, and but little turned up; lower valve with a very slight depression.

Devonian Limestone, Mount Wise, Plymouth, and Barton.

31. ATRYPA SPHÆRICA.—The Spherical Atrypa, pl. LIV. fig. 57, 58.

Atrypa sphærica. Sowerby, Geo. Trans. V. 2nd series, pl. 57, fig. 3.

Ventricose, nearly spherical, slightly wider than long; beak small, adpressed; surface with large, longitudinal, rounded ridges, and shallow intervening furrows; base deeply sinuated, with five elevated ribs.

Devonian Limestone, Plymouth.

32. ATRYPA HEMISPHÆRICA.—The Hemispherical Atrypa, pl. LIV. fig. 14, 15.

Atrypa hemisphærica. Sowerby, Sil. Syst. p. 637, pl. 20, fig. 7.

Nearly orbicular, fan-shaped; valves unequal, the one hemispherical, the other almost flat; with a nearly straight back, and about twelve angular radii. Length four lines; breadth five lines.

Lower Silurian Rocks, Ansterdine Hill; Worcestershire; Damory Hill, Michaelwood Chace, Gloucestershire.

33. ATRYPA LATISSIMA.—The Very Broad Atrypa, pl. LIV. fig. 16, 17.

Atrypa latissima. Sowerby, Geo. Trans. V. 2nd series, pl. 56, fig. 25.

Transversely oblong-ovate; beak short, and nearly straight; one valve gradually rounded, the other with the centre of the base suddenly reflected, and slightly hollowed, with a corresponding ridge in the other; a series of radiating ribs invest the margins of the valves, producing a crenulated edge; upper portion of the valves smooth, with a few lines of growth.

Devonian Shales, Plymouth.

34. ATRYPA GLOBOSA.—The Globular Atrypa, pl. LIV. fig. 25, 26.

Atrypa globosa. Sowerby, Sil. Syst. p. 637, pl. 22, fig. 2 *b.*

Globular, smooth, with obscure channels. Diameter about six lines.

Lower Silurian Rocks, Castell Craig; Gwyddon; and Gorllwyn; Caermarthenshire.

35. ATRYPA GIBBERA.—The Gibbous Atrypa, pl. LIV. fig. 42, 43.

Atrypa gibbosa. Portlock, Geo. Rep. p. 460, pl. 38, fig. 1.

General form nearly orbicular; both valves convex, the ventral one remarkably so, having a haunch-backed aspect, with a faint mesial ridge, corresponding to the tongue in the other valve; dorsal valve depressed for nearly half its length, from whence it suddenly descends, and contracts in the centre into a small tongue-shaped process, which protrudes into the ventral valve; beaks distant; when viewed through a lens the surface presents a finely radiated appearance.

Carboniferous Limestone, Tyrone, Ireland.

36. ATRYPA DECUSSATA.—The Decussated Atrypa, pl. LIV. fig. 54.

Atrypa decussata. Sowerby, Geo. Trans. V. 2nd series, pl. 54, fig. 5. *Spirifera decussata,* Phillips, Pal. Fos. p. 70, pl. 28, fig. 120,* *b, c, d.*

Circular; both valves uniformly convex; beaks incurved, approximate; whole surface with rather sharp, concentric striæ, and very fine, equal, interrupted, radiating lines, which give it a slightly crenulated appearance.

In some specimens every third or fourth of the concentric striæ are larger than the others.

Devonian Shales, Brushford; Boggy Point; Pilton; and Petherwin.

37. ATRYPA LINEATA.—The Lineated Atrypa, pl. LIV. fig. 60, 61.

Terebratula lineata. Sowerby, IV. p. 39, pl. 334, fig. 1, 2. *Spirifera lineata,* Phillips, Pal. Fos. p. 70, pl. 28, fig. 120, *a. Anomites lineatus,* Martin, Pet. Derb. pl. 36, fig. 3.

Transversely oval, gibbose; umbones rather produced, incurved, and approaching, the intervening area with an angular sinus; whole surface with transverse, rather distant sulci, and very minute, close, longitudinal striæ.

Carboniferous Limestone, Kirby Lonsdale; Castleton, Derbyshire; South Petherwin; and Ireland.

38. ATRYPA IMBRICATA.—The Imbricated Atrypa, pl. LIV. fig. 66, 67.

Terebratula imbricata. Sowerby, IV. p. 40, pl. 334, fig. 3, 4. *Spirifer imbricata,* Phillips, Geo. York. II. pl. 10, fig. 20.

Transversely oval, gibbous; beaks produced, and incurved; hinge line short; surface with about twelve sulcated, laminæ thin edges, lying close upon each other, and having longitudinal furrows.

Carboniferous Limestone, Derbyshire; and at Settle, Yorkshire.

39. ATRYPA ORBICULARIS.—The Orbicular Atrypa, pl. LIV. fig. 29.

Atrypa orbicularis. Sowerby, Sil. Syst. p. 637, pl. 19, fig. 3, 4.

Suborbicular; valves equal; a little wider than long, with a slight sinus in the base, and numerous forked furrows, the intervening ridges not scaly. Length seven lines; width eight lines.

Somewhat like *Atrypa aspera*, but smoother.

Lower Silurian Rocks, Gorllwynfach; Conygree Coppice; Woodford Hill; Abberley; and Melvern Ridge, End Hill.

40. ATRYPA UNDATA.—The Waved Atrypa, pl. LIV. fig. 76, 77.

Atrypa undata. Sowerby, Sil. Syst. p. 637, pl. 21, fig. 2.

Transversely elliptical, inflated, and smooth; one valve with a central elevation leading to a tongue-shaped sinus in the edge; and with a corresponding projection in the other. Length ten lines; width one inch and four lines.

Lower Silurian Limestone, Cefn Rhyddan, Llandovery; and Robeston, Walthen, Pembrokeshire.

41. ATRYPA LENS.—The Lens-formed Atrypa, pl. LIV. fig. 68, 69.

Atrypa lens. Sowerby, Sil. Syst. p. 637, pl. 21, fig. 3.

Suborbicular, compressed, smooth, with obscure radiations; the upper valve elevated along the middle. Length about two inches and three-quarters; width nearly two inches.

Lower Silurian Rocks, north end of Snead's Heath, Mundinam, and Cefn Rhyddan, Llandovery.

42. ATRYPA CRASSA.—The Thick Atrypa, pl. LIV. fig. 38, 39.

Atrypa crassa. Sowerby, Sil. Syst. p. 636, pl. 21, fig. 1.

Spherical, smooth, very thick; with three very deep, muscular impressions, the central one tongue-shaped, and striated; the lateral ones with five or six more or less deep furrows.

Lowest Silurian beds, Cefn, Rhyddan, Caermarthenshire.

43. ATRYPA OBOVATA.—The Obovate Atrypa, pl. LIV. fig. 40, 41.

Atrypa obovata. Sowerby, Sil. Syst. p. 618, pl. 8, fig. 8, 9.

Transversely obovate, convex, smooth; beaks small, contiguous; base with a marginal elevation in one valve, producing a rounded sinus in the edge of the other. Length five lines; width five lines and a half.

Lower Ludlow Rocks, Mathon Lodge, Malvern Hills.

GENUS XI.—COMPOSITA.—*Brown.*

Shell somewhat pentangular; hinge line very short; beak of the larger valve produced, with a small circular perforation; inside furnished with spiral appendages.

This genus is founded upon the *Spirifer ambiguus* of Sowerby, and is intermediate between that genus and *Terebratula*. The perforated beak removes it from *Spirifer*, and the internal spiral appendages never exist in the genus *Terebratula*, but are peculiar to the genus *Spirifer*.

1. COMPOSITA AMBIGUA.—The Ambiguous Composita, pl. LIV.* fig. 6, 7.

Spirifer ambiguus. Sowerby, IV. p. 105, pl. 376.

Subpentangular; beak considerably produced, and perforated; hinge line extremely short; sides slightly rounded; a wide mesial furrow in the larger valve, with a corresponding ridge in the other; base three-sided; whole surface smooth.

Mountain Limestone, Derbyshire, Northumberland, and Pembrokeshire.

GENUS XII.—TEREBRATULA.—*Bruguière.*

Shell inequivalve, equilateral, generally trigonal and gibbous; attached by a short peduncle to extraneous marine bodies; the larger or upper valve with a projecting umbo, frequently bent, and perforated at its apex, or notched at its inner edge, and having a small curved tooth on each side of its hinge, which fits into a corresponding pit in the opposite valve; the inside of the smaller valve is provided with two slender testaceous processes, which are sometimes simple, short, and recurved; at others considerably elongated, branched, bent in various directions, and anastomosing for the most part; sometimes they are situate near the centre of the valve, and in other instances are united by their points to the shell; these usually emanate from each side of the hinge; both valves provided with two nearly obsolete, muscular impressions, but sometimes they are strongly developed; those of the larger or perforated valve are oblong, central, and close to each other; in the smaller valve they are triangular, with their angles rounded, also nearly central, but more distant than in the other valve.

DIVISION I.—GENERALLY OBLONG, AND SMOOTH; THE MIDDLE OF THE FRONT EVEN, OR DEPRESSED.

1. TEREBRATULA HASTATA.—The Spear-shaped Terebratula, pl. LII. fig. 9, 10, and pl. LIV.* fig. 24.

T. hastata. Sowerby, V. pl. 446, fig. 2, 3. Phillips, Geo. York. II. pl. 12, fig. 1. Ib. Pal. Fos. p. 91, pl. 35, fig. 168.

Elongated, elliptical, semicompressed; valves nearly equal; base truncated, and indented, in which situation it is a little concave; edges sharp. Width about two-thirds its length.

Subject to considerable variety in its outline. Var. *b* obovate, edges blunt, smaller, deeper, and less concave towards the base.

Carboniferous Limestone, Bolland, Derbyshire, Otterburn, and Bristol; and Queen's County, Ireland.

2. TEREBRATULA INDENTATA.—The Indented Terebratula, pl. LII. fig. 11, 14, and 20.

T. indentata. Sowerby, V. p. 65, pl. 445, fig. 2. Zeit. pl. 39, fig. 8, and pl. 44, fig. 3.

Elliptical, its length a half more than its width, smooth, more or less inflated; valves equally convex; beak small, and much incurvated; base with a deep, obtuse-angular notch; each valve with rather broad furrows, extending into about a third their length; the two sides not always equal.

Found in the Fullers' Earth, Banbury, in Oxfordshire.

3. TEREBRATULA KLEINII.—Kline's Terebratula, pl. LII. fig. 17, 18.

T. globata. Sowerby, V. pl. 436, fig. 1.

Subglobular; both valves considerably inflated; umbo small, and incurvated; lesser valve with a double sinus, for the reception of the elevated front of the other, and with slightly produced ridges, extending a little way towards the centre, which is provided with obtuse angles, and hardly any furrows from the sinuses; surface covered with minute punctures.

Fullers' Earth at Nanney, near Frome, and the Inferior Oolite at Cotswold Hills.

4. TEREBRATULA PEROVALIS.—The Somewhat Oval Terebratula, pl. LII. fig. 16, 16.

T. perovalis. Sowerby, V. p. 54, pl. 436, fig. 2, 3.

Subovate; both valves equally convex; smooth; beak incurved, and acute; margin obtuse; base with two elevated sinuses, and an intervening depression; these sinuses produce three very obtuse ridges, two in the upper and one in front of the lower valve.

Distinguished from *T. biplicata* by its regular oval form and rather acute beak.

Inferior Oolite, Dundry and Cotswold Hill.

5. TEREBRATULA MAXILLATA.—The Combe Terebratula, pl. LII. fig. 29, 30.

T. maxillata. Sowerby, V. p. 52, pl. 436, fig. 4.

Subquadrangular, rather convex; umbo large, and considerably incurvated; base with two acutely elevated sinuses, and one obtuse sinus on each side; upper valve with three well-marked furrows, extending half way to the beak, and two in the lower; base rounded.

Distinguished from *T. intermedia* by the depth of the sinuses.

Great Oolite, Stonesfield; and Inferior Oolite, Nanney.

6. TEREBRATULA EMARGINATA.—The Emarginate Terebratula, pl. LII. fig. 22, 23.

T. emarginata. Sowerby, V. p. 50, pl. 435, fig. 5.

Subrhomboidal; the larger valve convex; the smaller one nearly flat; base emarginate, or having two angles; the edge becomes blunt when old.

Inferior Oolite at Nunney and Cotswold Hills.

7. TEREBRATULA LÆVIUSCULA.—The Very Smooth Terebratula, pl. LVI.* fig. 5.

T. lævіuscula. Sowerby, Sil. Syst. p. 631, pl. 13, fig. 14.

Somewhat rhomboidal, a little convex, and smooth; base rounded; sides angular. Diameter three lines.

Wenlock Shale, Tynewidd and Llandovery.

8. TEREBRATULA CANALIS.—The Canaled Terebratula, pl. LV.* fig. 33.

T. canalis. Sowerby, Sil. Syst. p. 611, pl. 5, fig. 18.

Elongated, elliptical, smooth; beak slightly incurved; a narrow, longitudinal, central furrow; base emarginate. Length half an inch; width four lines and a half.

Lower Ludlow Rocks, near Usk.

9. TEREBRATULA NAVICULA.—The Little Ship Terebratula, pl. LIV.* fig. 39, 40.

T. navicula. Sowerby, Sil. Syst. p. 611 and 615, pl. 5, fig. 17.

Oblong, boat-shaped, smooth; beak short, incurved; upper valve almost flat, with its sides elevated and its base depressed; lower valve with an obtuse keel. Length 7 lines; width 5 lines.

Upper Ludlow Rock, Ludlow promontory; Clyro Hills, Radnorshire, and several places in Brecon, Yeo Edge, &c.

10. TEREBRATULA TRIQUETRA.—The Triangular Terebratula, pl. LII. fig. 14 and 21.

T. triquetra. Sowerby, V. p. 65, pl. 445, fig. 1.

Suborbicular; valves equally convex; beak produced, incurved, and obtusely keel-shaped; with a carina on each side; perforation triangular; base a little indented, producing a slight concavity on the surface; upper valve of equal length and breadth, its edge level and sharp; surface very smooth.

Great Oolite, Felmersham, Bedfordshire.

11. TEREBRATULA BULLATA.—The Swelled Terebratula, pl. LII. fig. 25, 26.

T. bullata. Sowerby, V. p. 49, pl. 435, fig. 4.

Orbicular, very ventricose, depth greater than its width; beak considerably produced, and incurved; base indented, from which an obscure furrow ascends a little way upwards; edges regularly level; surface minutely punctated, which, however, is only observable by the aid of a strong lens.

Distinguished from the inflated variety of *T. digona* by its base being narrow.

Coral Rag, Nunney; the Cornbrach, Atford; the Fullers' Earth, Cold Ashton.

12. TEREBRATULA OBTUSA.—The Obtuse Terebratula, pl. LII. fig. 27, 28.

T. obtusa. Sowerby, V. p. 53, pl. 437, fig. 4.

Suborbicular, somewhat depressed; lesser valve a little wider than long; surface of both valves equally and regularly convex, except near the edges, where they are abruptly bent, and form a rather square, obtuse margin; base broad, and elevated.

Gault, Cambridgeshire.

13. TEREBRATULA BUCCULENTA.—The Full-cheeked Terebratula, pl. LII. fig. 37, 38.

T. bucculenta. Sowerby, V. p. 54, pl. 438, fig. 2.

Somewhat square; valves nearly equal; very convex; beak short, incurved; sides convex; edges nearly level, and not sinuated; base considerably produced, and truncated.

Some authors think this a variety of *T. bullata*, but I am of a different opinion, judging from a series of specimens.

Coral Rag, Malton.

14. TEREBRATULA SELLA.—The Saddle-formed Terebratula, pl. LII. fig. 31, 32.

T. Sella. Sowerby, V. p. 53, pl. 437, fig. 1.

Subquadrangular, or trigonal, convex; length and breadth nearly equal; beak obtuse, slightly curved; sides compressed, and a little rounded; base considerably elevated, and narrow; a depression in its centre, from whence it becomes suddenly produced, and occasions a hollow on each side.

Lower Greensand, Maidstone, and Chart, near Ashford, Kent.

15. TEREBRATULA BIPLICATA.—The Two-plaited Terebratula, pl. LIV.* fig. 25.

T. biplicata. Sowerby, I. p. 201, pl. 90.

Oblong, gibbose; beak large, prominent, very slightly incurved; sides rounded; base rather parallel, from which emanate in the lower valve two large, distant, well defined plaits or obtuse ribs, ascending two-thirds the length of the valve.

In the young condition the plaits are hardly visible.

This species is common to various beds, as the Lower Chalk, Warminster; the Upper Greensand, Shute Farm, Cambridgeshire, and Lyme; the Gualt, Folkstone; Lower Greensand, Kent; and the Red Chalk, Hunstanton, Blackdown.

16. TEREBRATULA SOWERBII.—Sowerby's Terebratula, pl. LII. fig. 35, 36.

T. biplicata. Sowerby V. p. 53, pl. 437, fig. 2, 3.

Oblong-ovoid, inflated; both valves equally convex; beak obtuse, very little incurved; sides straight, and obtuse; base a little hollowed; smaller valve with two large, flat, rounded plaits, gently merging into a flat furrow on both sides; surface very smooth.

Upper Greensand, Cambridgeshire.

17. TEREBRATULA ELONGATA.—The Elongated Terebratula, pl. LII. fig. 33, 34.

T. elongata. Sowerby, V. p. 49, pl. 435, fig. 1.

Oval; valves equally, regularly, and moderately convex; beak small, acute, and slightly incurved; surface smooth.

Distinguished from *T. carnea* by its length.

Lower Greensand, Court-at-Street, and the Chalk at Norwich.

18. TEREBRATULA CARNEA.—The Flesh-coloured Terebratula, pl. LIV.* fig. 30, 31, 32, 33.

T. carnea. Sowerby, I. p. 45, pl. 15, fig. 5. Brongniart, Env. de Paris, pl. 4, fig. 9.

Subrotund, obtusely pentangular, depressed; valves equally convex, slightly flattened along the middle, smooth; beak small, flat; base flat, and short; sides plain. Diameter one inch.

The Upper Chalk, near Norwich, contains specimens of a fine flesh-colour; also at Warminster, Devizes; Northfleet, Lewis, and Yorkshire.

19. TEREBRATULA SACCULUS.—The Little Bag Terebratula, pl. LII. fig. 39, 40, and pl. LV.* fig. 31.

T. Sacculus. Sowerby, V. p. 65, pl. 446, fig. 1. Phillips, Geo. York. II. p. 221, pl. 12, fig. 2. Ib. Pal. Fos. p. 91, pl. 35, fig. 166. *Anomites Sacculus,* Martin, Pet. Derb. pl. 46, fig. 1, 2.

Obovate, gibbose; with a broad and deep central furrow, which divides the larger valve into two lobes; the smaller valve has also a shallow space near the edge, from whence proceeds an elevation, emanating from a minute sinus in the edge; beak small, and sharp.

Carboniferous Limestone, Limerick, Dublin; Bolland, Bristol, Rutherglen, and Orton.

20. TEREBRATULA LATA.—The Broad Terebratula, pl. LIV.* fig. 14.

T. lata. Sowerby, I. p. 227, pl. 100, lower figure.

Suborbicular, smooth, subdepressed; length and width of smaller valve about equal; larger valve subcarinated; beak prominent, and nearly straight; base rounded.

Inferior Oolite, Cheltenham.

21. TEREBRATULA OVOIDES.—The Oval Terebratula, pl. LIV.* fig. 34.

T. ovoides. Sowerby, I. p. 227, pl. 100, upper figure.

Oblong-ovate, smooth; beak produced; larger valve gibbous, and subcarinated; lesser valve convex; base a little produced; sides obtusely angled, at about a third from the beak. Length a half more than its width.

Calcareous Grit, Suffolk, Scarborough, and Gristhorpe.

22. TEREBRATULA TRILINEATA.—The Three-lined Terebratula, pl. LIV.* fig. 15.

T. ornithocephala. Young and Bird, p. 229, pl. 8, fig. 14.

Ovate-rhomboidal, subdepressed; margin very faintly undulated; both valves with two or three striæ; beak moderately convex, and nearly straight; base slightly produced.

Inferior Oolite, Glazdale and Coldmoor; Lias, Whitby.

23. TEREBRATULA VARIABILIS.—The Variable Terebratula, pl. LIV.* fig. 19, 20, 21, 22.

T. variabilis. Sowerby, VI. p. 148, pl. 576, fig. 2, 3, 4, 5.

Oblong, or suborbicular, rather convex, and smooth; beak considerably produced, and truncated, with the perforation round, large, straight, and truncated; internal area with a large sinus.

Common in the Red Crag, Sutton; and the Coralline Crag, Ramshot.

24. TEREBRATULA OBESA.—The Swollen Terebratula, pl. LIV.* fig. 28, 29.

T. obesa. Sowerby, V. p. 54, pl. 438, fig. 1.

Ovate, globose; both valves regularly convex, their width and depth equal to about two-thirds of the length of the shell; larger valve regularly convex to the margin; beak short, very obtuse, and incurved; base rather obtuse, and elevated, with a shallow, broad sinus in the middle; smaller valve somewhat depressed on each side of the produced base, and also near the edge into the central sinus.

Gault, Cambridgeshire.

25. TEREBRATULA INTERMEDIA.—The Intermediate Terebratula, pl. LIV.* fig. 35.

T. intermedia. Sowerby, I. p. 48, pl. 15, fig. 8.

Obscurely-pentangular, somewhat depressed, smooth; larger valve with two depressions, and more convex than the smaller one, which has three depressions; base with moderately deep undulations, which extend half way along the valves, from which they are regularly convex.

Coral Rag, Malton; the Calcareous Grit, Castle Howard; and the Great Oolite, Weston.

26. TEREBRATULA SUBUNDATA.—The Half-waved Terebratula, pl. LIV.* fig. 43, 44.

T. subundata. Sowerby, I. p. 47, pl. 15, fig. 7. Phillips, Geo. York. I. p. 94, pl. 2, fig. 25, 26.

Nearly circular, rather depressed, smooth; valves equally convex; base straight, or slightly depressed in the centre, with a single undulation on each side of it.

Upper and Lower Chalk, Norfolk and Suffolk; Danes Dyke and Speeton, Yorkshire.

27. TEREBRATULA RESUPINATA.—The Back-lying Terebratula, pl. LIV.* fig. 41, 42.

T. resupinata. Sowerby, II. p. 116, pl. 150, fig. 3, 4. Phillips, Geo. York. I. p. 134, pl. 13, fig. 23.

Oblong-ovate; beak small, slightly incurved; lower valve obtusely carinated; base depressed by a large plait, rounded in the middle; sides elevated; lower valve with an obtuse, broad and rounded keel, and a longitudinal ridge on each side.

Inferior Oolite, Ilminster, and the Lias, Wilton Castle.

28. TEREBRATULA SEMIGLOBOSA.—The Nearly-globular Terebratula, pl. LIV.* fig. 45, 46.

T. semiglobosa. Sowerby, I. p. 48, pl. 15, fig. 9. Brongniart, Env. de Paris, pl. 9, fig. 1.

Nearly globular, very much inflated, smooth; larger valve deepest, and uniformly gibbous; smaller valve with two slight elevations; base undulated.

Upper Greensand, Warminster and Tetsworth; and Upper Chalk, Danes Dyke.

29. TEREBRATULA PRÆLONGA.—The Prolonged Terebratula, pl. LIV.* fig. 8 and 10.

T. prælonga. Sowerby, Geo. Trans. IV. 2nd series, p. 339, pl. 14, fig. 14.

Ovate, greatly elongated, gibbose; base a little elevated, with a depression in its centre; beak large, and prominent; surface smooth.

Lower Greensand, near Sandgate, Kent.

30. TEREBRATULA SUBLOBATA.—The Sublobate Terebratula, pl. LIV.* fig. 11, 12, 13.

Atrypa sublobata. Portlock, Geo. Sur. p. 567, pl. 38, fig. 2, *a, b, c.*

Elongated; dorsal valve generally grooved from the beak to the base; smaller valve also grooved, extending to the margin, and more or less trilobate; lines of growth crossing the valves.

In some instances this shell is pentahedral; and the longitudinal groove line as in the upper valve, and frequently not extending to the margin; the trilobate form frequently disappears; and in some cases the transverse lines of growth are strongly imbricated.

Carboniferous Strata, in the gritty bed at Hartness House, Parish of Kildress, Tyrone, Ireland.

31. TEREBRATULA TAMARINDA.—The Tamarind Terebratula, pl. LIV. fig. 37, 38.

T. Tamarindus. Sowerby, Geo. Trans. V. 2nd series, p. 338, pl. 14, fig. 8.

Almost orbicular, smooth; margin very obtuse; disk rather depressed; beaks slightly curved, with an angular, flat ridge on each side, passing down the margin of the valves.

Lower Greensand near Hythe, County of Kent.

32. TEREBRATULA COARCTATA.—The Straitened Terebratula, pl. LV.* fig. 3, 4.

T. coarctata. Sowerby, IV. p. 7, pl. 312, fig. 1, 2, 3, 4. *T. reticulata,* Smith, Strat. Syst. p. 83. Strata Identified, p. 30, fig. 10. *Terebratulites coarctatus,* Parkinson, III. p. 229.

Subheptagonal, gibbose; length exceeding the width; larger valve biplicated, with a deep sulcus between the plates; lesser valve convex, subtrilobated; beak produced; whole surface decussated with longitudinal, elevated striæ, and transverse striæ, which cut the longitudinal ones, and with numerous minute, tubular bristles, which are situated upon the angles of intersections of the striæ.

Great Oolite, Hinton, near Bath, &c.

33. TEREBRATULA DECUSSATA.—The Decussated Terebratula, pl. LV.* fig. 21, 22.

T. decussata. Lamarck, VI. p. 344. Ency. Meth. pl. 245, fig. 4. Sowerby, IV. p. 8, pl. 312, fig. 5, 6.

Obovate, gibbose; base obscurely three-sided; larger valve obtusely biplicated, with a shallow groove between the ridges; lesser valve convex; whole surface with longitudinal and transverse striæ, producing a beautiful reticulated appearance, and with blunt, rather obscure spines, which scarcely rise above the surface, and appear as if pressed into it.

Great Oolite, Hampton Cliff, Bradford, and the Forest Marble, Pickwick and Frome.

34. TEREBRATTLA CORNUTA.—The Horned Terebratula, pl. LV.* fig. 10.

T. cornuta. Sowerby, V. p. 66, pl. 446, fig. 4.

Irregularly pentagonal, short, convex, edges obtuse, four-lobed, the central ones considerably produced, the others short; beak short, incurved, with a sharp carina on each side; whole surface smooth, and shining.

Inferior Oolite, Ilminster.

35. TEREBRATULA DIGONA.—The Digonal Terebratula, pl. LV. fig. 11, 12, 13.

T. digona. Sowerby, I, p. 217, pl. 96, fig. 1 to 5. Ency. Meth. pl. 240, fig. 3. Phillips, I. pl. 6, fig. 7.

Triangular, oblong, gibbous; beak produced; sides rounded; base convex in some specimens, and concave in others; bounded by two prominent angles in the adult condition; surface minutely punctated, which is only conspicuous by the aid of a lens.

This species is liable to considerable variety of form.

Cornbrash, Scarborough.

36. TEREBRATULA LAMPAS.—The Lamp-shaped Terebratula, pl. LV. fig. 10.

T. lampas. Sowerby, I. p. 228, pl. 101, fig. 3.

Oval, subrhomboidal, gibbous; base parallel, produced; sides of larger valve slightly concave; lesser valve considerably depressed.

Lias, Lyme Regis.

37. TEREBRATULA ORNITHOCEPHALA.—The Bird's Head Terebratula, pl. LV. fig. 5.

T. ornithocephala. Sowerby, I. p. 227, pl. 101, fig. 1, 2, 4.

Ovate, somewhat rhomboidal, elongated, gibbous; base straight, bounded by two obtuse lateral depressions, alike in both valves; beak with a large perforation; the sides being depressed, give an angular aspect to the base.

Inferior Oolite, Limpley; Lias, Lyme Regis.

38. TEREBRATULA AMBIGUA.—The Ambiguous Terebratula, pl. LV.* fig. 16.

T. ambigua. Phillips, II. p. 221, pl. 11, fig. 21.

Pentagonal; base deeply undulated; beak produced, with a large circular aperture; lesser valve with two longitudinal, central ridges; surface smooth.

Carboniferous Limestone, Northumberland, Derbyshire, and Pembrokeshire.

39. TEREBRATULA FIMBRIA.—The Fringed Terebratula, pl. LV.* fig. 25, 26.

T. fimbriata. Sowerby, IV. p. 27, pl. 326.

Orbicular, gibbose; beak much rounded, with a pretty full and round perforation; margin with a series of undulating plaits, which occupy about a fifth part of the diameter of the valves, from whenre the disk of the valves become suddenly inflated.

Inferior Oolite, Charlton and Cheltenham.

40. TEREBRATULA PUNCTATA.—The Punctured Terebratula, pl. LV. fig. 27, 28.

T. punctata. Sowerby, I. p. 46, pl. 15, fig. 4.

Oblong-ovate, subcompressed; valves equally convex; margin straight at the base; whole surface with fine punctures, arranged in undulating lines.

Lias, Horton and Yorkshire.

41. TEREBRATULA OVATA.—The Ovate Terebratula, pl. LV.* fig. 34, 35.

T. ovata. Sowerby, I. p. 46, pl. 15, fig. 3. Nilsson, Pet. Suec. pl. 4, fig. 3.

Ovate, or oblong-oval, compressed; lesser valve slightly pentangular, and subdepressed; beak considerably produced; whole surface smooth.

Upper Greensand, Chute Farm; Gault, Cackerton and Huntstanton; Lower Greensand, Parham and Sandgate.

42. TEREBRATUUA SPHÆROIDALIS.—The Spæroidal Terebratula, pl. LV.* fig. 36, 37.

T. sphæroidalis. Sowerby, V. p. 49, pl. 435, fig. 3.

Nearly sphæroidal, very slightly compressed; beak produced, and incurved; edges of valves even; surface smooth.

Inferior Oolite, Dundry, Somersetshire.

43. TEREBRATULA SUBROTUNDA.—The Subrotund Terebratula, pl. LV.* fig. 40, 41.

T. subrotunda. Sowerby, I. p. 45, pl. 15, fig. 1, 2.

Nearly circular, compressed; both valves regularly and equally convex; beak short, very slightly curved, and angular on each side; surface smooth.

In some specimens the larger valve is a little deeper than the other.

Upper and Lower Chalk, Norfolk, Lewis, and Hamsey.

44. TEREBRATULA OBOVATA.—The Obovate Terebratula, pl. LV. fig. 43.

T. obovata. Sowerby, I. p. 228, pl. 101, fig. 5.

Obovate; sides slightly rounded; subdepressed; margin rather flat; base nearly parallel, bounded by two nearly obsolete plaits; beak rather produced.

Lias, Chatley, Somersetshire.

45. TEREBRATULA PROAVA.—The Great-Grandfather Terebratula, pl. LV.* fig. 52.

T. proava. Phillips, II. p. 223, pl. 12, fig. 37.

Oblong; larger valve with the beak considerably produced; having a square mesial fold; valves with numerous, rather obtuse, and large radiating ribs.

Carboniferous Limestone, Bolland, Yorkshire.

46. TEREBRATULA BIDENTATA.—The Two-toothed Terebratula, pl. LVI. fig. 31, 32.

T. bidentata. Sowerby, Sil. Syst. p. 625, pl. 12, fig. 13 *a*. Dalman, l. c. p. 142, pl. 6, fig. 5. Hist. Act. Holm. 1826, pl. 7, fig. 5.

Triangular, smooth, depressed; strongly and acutely plaited, about eight of which in the front are raised. Length three lines; width three lines and a half.

Wenlock Limestone, Dudley and Abberley.

47. TEREBRATULA CUNEATA.—The Wedge-shaped Terebratula, pl. LV.* fig. 1, 2.

T. cuneata. Sowerby, Sil. Syst. p. 625, pl. 12, fig. 13. Dalmain, Act. Holm. pl. 6, fig. 3. Hist. Pet. Suec. p. 81, pl. 23, fig. 5.

Triangular, its length exceeding its width; beak of the larger valve straight, and produced; surface with from ten to twelve plaits, of which a few in the front are elevated. Length half an inch; depth of each valve two lines.

Wenlock Limestone, Wenlock; Dudley, Lincoln Hill, and Abberley.

48. TEREBRATULA BIFERA.—The Double Terebratula, pl. LVI. fig. 76, 77.

T. bifera. Phillips, Pal. Fos. p. 84, pl. 34, fig. 154.

Tetrahedral, with four of the angles rounded, two of the sides almost straight, the other two concave; beak acute; upper valve trilobate, the middle one longest, and elevated towards the base; surface with numerous, fine, radiating striæ, which are bifurcate, at unequal distances from the beaks, particularly towards the margins, where they are from 50 to 60 in number.

Devonian Shales, Hope, near Torquay.

49. TEREBRATULA DEFLEXA.—The Bending Terebratula, pl. LV.* fig. 81, 82.

T. deflexa. Sowerby, Sil. Syst. p. 625, pl. 12, fig. 14.

Transversely obovate, gibbose; lower valve with a sinus; beaks small, and adpressed; with about twenty-four sharp plaits, of which the four or five central ones in front are turned downwards. Length nearly five lines; width six lines; depth four lines and a half.

A peculiarity in this species is the sinus being in the larger valve.

Wenlock Limestone, Wenlock Edge.

50. TEREBRATULA GALLINA.—The Fowl Terebratula, pl. LVI. fig. 78, 79.

T. Gallina. Brongniart, Env. de Paris, pl. 9, fig. 2. Woodward, Geo. Nor. p. 49, pl. 6, fig. 12.

Transversely obovate; moderately convex; lower valve with a wide, central furrow; beak rather acute, and small; both valves with wide, pretty large, numerous, longitudinal, divergent ribs.

Under-Chalk formation, Harford Bridge, Norfolk.

51. TEREBRATULA WILSONI.—Wilson's Terebratula, pl. LV.* fig. 90, 91.

T. Wilsoni. Sowerby, II. p. 38, pl. 118, fig. 3. Ib. Sil. Syst. p. 615, pl. 6, fig. 7 *a*. *T. lacunosa*, Wahl. Dalman, l. c. cil. p. 139, pl. 6, fig. 1. Hisinger, Pet. Suec. p. 80, pl. 23, fig. 3.

Circular, plaited; valves compressed near the beaks; base cylindrical, the seven central plaits elevated, margin acutely dentated, and with nine or ten plaits on each side; front sinus deep.

This species is highly characteristic of the central Ludlow Rock, Aymestry Limestone, Salop; Radnor, Hereford; Aymestry, and Eastnor Park.

52. TEREBRATULA UNGUIS.—The Cloven Terebratula, pl. LVI. fig. 36.

T. Unguis. Sowerby, Sil. Syst. p. 640, pl. 21, fig. 13.

Orbicular, much inflated; beak incurved; with about twelve large, sharp plaits. Length 5½ lines; width 5 lines.

Caradoc Sandstone, Horderley and Welshpool.

53. TEREBRATULA PUSILLA.—The Slender Terebratula, pl. LVI. fig. 18.

T. pusilla. Sowerby, Sil. Syst. p. 641, pl. 21, fig. 18.

Almost globose, with about fourteen sharp plaits, four of them elevated on the base. Diameter nearly four lines.

Lower Silurian Rocks, Cefn, Rhyddan, Llandovery.

54. TEREBRATULA TRIPARTITA.—The Three-parted Terebratula, pl. LVI. fig. 29.

T. tripartita. Sowerby, Sil. Syst. p. 641, pl. 21, fig. 15.

Transversely oval, convex; with from fifteen to twenty rough plates, frequently furcated; centre much elevated, so as to divide the surface into three nearly equal parts. Length half an inch; width one inch and two lines.

Caradoc Sandstone, Goleugoed, Llandovery.

55. TEREBRATULA DECEMPLICATA.—The Ten-plaited Terebratula, pl. LV.* fig. 88.

T. decemplicata. Sowerby, Sil. Syst. p. 641, pl. 21, fig. 17.

Almost globular; beaks small, rather acute; with ten angular plaits, two of them much elevated on the base. Length four lines; width four lines and a half.

Caradoc Sandstone, Eastnor Park; Ankerdine Hill; May Hill; Prescoed Common, Usk.

56. TEREBRATULA NEGLECTA.—The Neglected Terebratula, pl. LVI. fig. 37.

T. neglecta. Sowerby, Sil. Syst. p. 641, pl. 21, fig. 14.

Orbicular, convex; beaks small; with seventeen acute plaits.

Caradoc Sandstone, Mondinam, Llandovery.

57. TEREBRATULA FURCATA.—The Forked Terebratula, pl. LVI. fig. 47, 48, 49.

T. furcata. Sowerby, Sil. Syst. p. 640, pl. 21, fig. 16.

Orbicular, very smooth; beak of one valve greatly curved; interior with several furrows, and a furcate channel in the middle. Diameter four lines.

Caradoc Sandstone, Corndon Hills.

58. TEREBRATULA BOREALIS.—The Northern Terebratula, pl. LVI.* fig. 40, 41.

T. borealis. Schloth. *T. lacunosa*, Sowerby, Sil. Syst. p. 611, pl. 5, fig. 19. *T. plicatella*, Dalman, pl. 6, fig. 12.

Obovate, gibbose, obscurely three-lobed; beak small, pointed, slightly incurved; with about sixteen acute plaits, four or five middle ones much elevated at the base. Length seven lines; width eight lines.

Upper Ludlow Rocks, Ludlow promontory, and Delbury, Salop; Abberley Hills; Aram, near Newnham, &c.

59. TEREBRATULA BREVIROSTRA.—The Short-beaked Terebratula, pl. LVI. fig. 3, 4.

T. brevirostra. Sowerby, Sil. Syst. p. 631, pl. 13, fig. 15.

Transversely elliptical; valves very convex, and nearly equal; beaks large, and short; with about twenty-five sharp plaits. Length four lines; width six lines.

Wenlock Shale, Croft Valley and Woolhope.

60. TEREBRATULA STRICKLANDII.—Strickland's Terebratula, pl. LVI.* fig. 28, 29.

T. Stricklandii. Sowerby, Sil. Syst. p. 631, pl. 13, fig. 19.

Transversely obovate, ventricose; the upper valve more convex than the other; beaks small, adpressed, and pointed; close to that of the upper valve is a longitudinal canal; with about thirty sharp plaits, five of them elevated on the base, producing a broad projection in the upper valve, and a corresponding canal in the under valve; contiguous to the beaks the sides are smooth. Length eleven lines; width thirteen lines.

Wenlock Shale, Longhope.

61. TEREBRATULA CREBRICOSTA.—The Many-plaited Terebratula, pl. LVI.* fig. 31, 32.

T. crebricosta. Sowerby, Sil. Syst. p. 631, pl. 13, fig. 18.

Transversely obovate, subcylindrical, depressed; beaks small, acute; with about thirty rather sharp plaits, six or eight of them elevated into a deep sinus on the edge of the upper valve. Length seven lines; width eight lines.

Wenlock Shale, Tynewidd, Llandovery.

62. TEREBRATULA CRISPATA.—The Curled Terebratula, pl. LVI. fig. 80.

T. crispata. Sowerby, Sil. Syst. p. 624, pl. 12, fig. 11.

Rhomboidal, convex, transverse; beaks small, subtrilobate; with about eighteen acute plaits, all of them terminating on the base, about six of them elevated in the middle; sides smooth. Length ten lines; width eleven lines.

Wenlock Limestone, Nath Scar.

63. TEREBRATULA IMBRICATA.—The Imbricated Terebratula, pl. LV. fig. 89, and pl. LVI.* fig. 16, 17, *var.*

T. imbricata. Sowerby, Sil. Syst. p. 624, pl. 12, fig. 12, and p. 634, pl. 13, fig. 27.

Transversely obovate, trilobate; with many bifurcated and trifurcated plaits, crossed by imbricating scales, more especially near the edge; base much elevated. Diameter eight lines.

Wenlock Limestone, Wenlock Edge.

The variety, pl. LVI.* fig. 16, 17, is shorter, and generally much more ventricose, and is from the Wenlock Shale, Woolhope; Stumps Wood; Hay Head; Tame Bridge; and Croft.

64. TEREBRATULA INTERPLICATA.—The Interplaited Terebratula, pl. LVI. fig. 7, 8.

T. interplicata. Sowerby, Sil. Syst. p. 631, pl. 13, fig. 23.

Transversely obovate; valves nearly equal, and very convex; beaks short, and almost equal in length; with many plaits, and about fourteen principal ones, the four central ones depressed on the base, and between each of the lateral ones is an intervening shorter plait; sides near the beaks smooth, with their edges prominent. Length 5 lines; width 5½ lines; depth 3 lines.

Wenlock Shale, Woolhope and Delves Green.

66. TEREBRATULA SPHÆRICA.—The Spherical Terebratula, pl. LV.* fig. 86, 87.

T. sphærica. Sowerby, Sil. Syst. p. 631, pl. 13, fig. 17.

Orbicular, ventricose; beaks equal; with about fourteen rather obtuse, and frequently forked plaits, the three or four central ones much depressed on the base, forming a longitudinal canal; sides concave. Diameter about six lines.

Wenlock Shale, Tame Bridge.

66. TEREBRATULA NUCULA.—The Kernel Terebratula, pl. LVI. fig. 1, 2.

T. Nucula. Sowerby, Sil. Syst. p. 603 and 611, pl. 5, fig. 20.

Globose, obscurely trilobate; lower valve slightly flattened; beak small, adpressed; with about fifteen sharp plaits, three or four of which are prominent, and elevated in the centre of the base. Diameter five lines.

Upper Ludlow Rock at Ludlow; Delbury; Presteign, and a number of other localities; also in the Old Red Sandstone at Horeb Chapel.

67. TEREBRATULA CONCINNA.—The Neat Terebratula, pl. LV.* fig. 55.

T. concinna. Sowerby, Min. Conch. I. p. 192, pl. 83, fig. 6.

Almost globose; width somewhat more than its length; beak projecting, and very sharp-pointed; centre elevated by seven plates, with twelve or more uniform, well-defined, sharp plaits, which are well defined and acute to the very beaks; length and depth nearly equal.

Great Oolite, Aynhoe.

68. TEREBRATULA PULCHRA.—The Beautiful Terebratula, pl. LVI. fig. 35.

T. pulchra. Sowerby, Sil. Syst. p. 612, pl. 5, fig. 21.

Globose, somewhat triangular; beak small, produced; obscurely trilobate; with about twenty sharp plaits, the five central ones elevated at the base. Diameter four lines.

This resembles *T. Nucula*, but is more angular, with smaller and sharper plaits, differing from the more clumsy aspect of that species.

Upper Ludlow Rock, Delbury; Bagbarrow Hill; and Melverns.

69. TEREBRATULA ROSTRATA.—The Beaked Terebratula, pl. LV.* fig. 46, 47.

T. rostrata. Sowerby, VI. p. 71, pl. 537, fig. 1, 2. *T. pectunculata*, Schloth, Min. Tosch. VII. pl. 1, fig. 3.

Suborbicular; beak large and projecting, with its inner surface more convex than in most species, slightly incurved, and rather acute at the point; surface with nearly thirty rounded plaits; front a little elevated, but irregular.

In the immature state the elevation in front is hardly perceptible.

Chalk Marl, Hamsey.

70. Terebratula pentagona.—The Pentagonal Terebratula, pl. LVI. fig. 33, 34.

T. pentagona. Sowerby, Sil. Syst. p. 612, pl. 5, fig. 22.

Pentagonal, depressed; its width exceeding its length; beak very small; obscurely trilobate; with about twenty-five rounded plaits, but not extending to the beaks; the nine or ten central ones elevated at the base. Length six lines; breadth six and a-half lines.

Upper Ludlow Rock, Delbury, Salop.

71. Terebratula oblonga.—The Oblong Terebratula, pl. LV.* fig. 53, 54.

T. oblonga. Sowerby, VI. p. 68, pl. 535, fig. 4, 5, 6.

Oblong, gibbose; beak large, broad, and slightly curved, its length once and a-half its width, with sixteen or more forked plaits, with their edges rounded; hinge line broad; front even.

Lower Greensand, Hythe, Lockswell, and Farringdon.

72. Terebratula orbicularis.—The Orbicular Terebratula, pl. LV.* fig. 58, 59.

T. orbicularis. Sowerby, VI. p. 68, pl. 535, fig. 3.

Uniformly convex; lesser valve orbicular, the larger with a large incurved beak; surface minutely punctated with about fifteen angular simple plaits; but sometimes furcated near their commencement.

Lias, Weston, near Bath.

73. Terebratula angulata.—The Cornered Terebratula, pl. LV.* fig. 48.

T. excavata. Phillips, II. p. 223, pl. 12, fig. 24. *Anomia angulata.* Linn. Syst. p. 1154.

Oblong, compressed; beak small, incurved; surface with seven or eight very large angular flat-sided plaits, and deep furrows; somewhat excavated on their sides near the beak; base deeply indented.

Carboniferous Limestone, Cork, Dublin, and Isle of Man.

74. Terebratula Martini.—Martin's Terebratula, pl. LV.* fig. 79, 80.

T. Martini. Mantell, Geo. Sus. p. 131. *T. pisum.* Sowerby, VI. p. 70, pl. 536, fig. 6, 7.

Suborbicular; somewhat quadrangular, thick and compressed; beak small, incurved; surface frequently granulated with numerous simple plaits; base slightly elevated.

Chalk Marl, Hamsey and Folkstone, and the Under Greensand, Isle of Wight and Blackdown.

75. Terebratula flabellulum.—The Fan Terebratula, pl. LV.* fig. 63, 64.

T. flabellula. Sowerby, VI. p. 67, pl. 535, fig. 1.

Depressed; beak straight, rectangular, and projecting; lesser valve transversely obovate; surface with about sixteen simple rounded plaits.

Great Oolite, Ancliff, Wiltshire.

76. Terebratula pugnus.—The Fist-like Terebratula, pl. LV. fig. 49.

T. pugnus. Sowerby, V. p. 155, pl. 497. Phillips, Geo. York. II. p. 223, pl. 12, fig. 17. Ib. Pal. Foss. p. 87, pl. 35, fig. 156. Conch. *Anomites pugnus;* Martin, Pet. Derb. pl. 22, fig. 4, 5. *Atrypa pugnus;* Sowerby, Geo. Tran. 2d Ser. V. pl. 56, fig. 15, 18.

Obovate-deltoidal, somewhat compressed; beaks very short and nearly straight; sides of the valves convex, with several plaits on their edges, from whence a few furrows emanate, and extend a considerable way into the shell, nearly reaching the beaks in some instances; base considerably elevated, with from four to six short rather obtuse plaits in the middle of the sinus; surface striated, but hardly visible to the naked eye.

Carboniferous Limestone, Bolland, Derbyshire, Ireland. Devonian Series, Plymouth.

This species is liable to great variety.

77. Terebratula acuminata.—The Acuminated Terebratula, pl. LV.* fig. 66 to 74.

T. acuminata. Sowerby, IV. p. 23, pl. 324, fig. 1. Phillips, Geo. York. II. p. 222, pl. 12, fig. 4 to 9. Ib. Pal. Foss. p. 88, pl. 35, fig. 159.

Heart-shaped, gibbose; beaks very small; one valve with a deep and wide central sinus, nearly dividing it into two lobes, the other elevated; surface with numerous nearly obsolete divergent striæ.

Carboniferous Limestone, Yorkshire, Derbyshire, and Cork, Ireland.

This species is so variable, that no single specific character will apply to these. It also varies considerably in its progress from the young to the adult condition. Professor Phillips arranges them thus:—

Variety 1.—Front angular. *a.* No mesial plaits; with or without lateral plaits, fig. 66, 67, 68; the young, fig. 72.
b. Mesial plaits variable; with or without lateral plaits; whole surface sharply pointed.

Variety 2.—Front arched, with mesial plaits, fig. 69; young of the same, 70, 71, 73.

Variety *Plicata*, fig. 74. — With from three to five plaits; from Ireland and near Clitheroe.

Variety *Sulcata*, fig. 67. — From the Carboniferous Limestones, Clitheroe, Lancashire.

78. Terebratula tetrahedra.—The Four-sided Terebratula, pl. LV.* fig. 85, and pl. VI. fig. 45, 46.

Terebratula tetrahedra. Sowerby, I. p. 191, pl. 83, fig. 4, and *T. media*, fig. 5, Linn. Pet. pl. 41, fig. 1.

Obtusely deltoidal, gibbose; general form a tetraedon, with rounded edges; beaks a little incurved; front with a central elevation, provided with four or five sharp plaits on each side, which emanate from the beak, and terminate on the sides; the distance between the lateral and central plaits about three-fourths the length of the valves.

The variety *T. media*, fig. 83, is more rounded, and the plaits six in number.

Kelloway's Rock, Kelloway; Oxford Clay, Wheatley; the Fuller's Earth, Aynhoe and Banbury; Inferior Oolite, Somersetshire and Hebrides; and the Lias, Yorkshire.

79. Terebratula cordiformis.—The Heart-shaped Terebratula, pl. LV.* fig. 92, 93, 94.

T. cordiformis. Sowerby, V. p. 154, fig. 2, 4.

Heart-shaped; front greatly elevated, with a deep marginal sinus; sides rather convex, with sharp edges; centre with three or more acute angular furrows, emanating near the beaks and reaching to the base; exceedingly variable in size.

Carboniferous Limestone, Cork and Connaught, Ireland.

80. Terebratula crumena.—The Pocket-shaped Terebratula, pl. LV.* fig. 96, 97.

T. crumena. Sowerby, I. p. 190, fig. 2, 2*, and 3.

Anomites crumena. Martyn. Pet. Derbs. pl. 36, fig. 4.

Deltoidal, gibbose; beak prominent; centre of the front elevated, with three long plaits emanating near the beak; sides with four or more plaits below the middle.

Carboniferous Limestone, Winster and Ardconnaught, Ireland.

81. TEREBRATULA LATISSIMA.—The Very Broad Terebratula, pl. LVI. figs. 86, 87.

T. lata. Sowerby, V. p. 165, pl. 502, fig. 1.

Transversely elongated, convex; larger valve the flattest, with a produced beak; front elevated; surface with forty regular divergent narrow ribs, ten or twelve of which are raised with the front.

Upper Greensand, Warminster and Devizes; Lower Greensand, Athenfield and Parham.

82. TEREBRATULA DEPRESSA.—The Depressed Terebratula, pl. LVI. figs. 9, 10.

T. depressa. Sowerby, V. p. 165, pl. 502, fig. 2.

Triangular, depressed; front elevated, with about eight plaits; beaks produced; lateral angles rounded; whole surface with about twenty regular divergent ribs.

Upper Greensand, Isle of Wight and Blackdown, and Lower Greensand, Pulborough.

83. TEREBRATULA NUCIFORMIS.—The Nut-Shaped Terebratula, pl. LVI.* fig. 13.

T. nuciformis. Sowerby V. p. 166, pl. 502, fig. 3.

Transversely elongated; globose; front elevated; beak produced; surface with thirty rounded, regular, narrow, divergent ribs, many of which have a slight groove near the front, their edges plain and rounded.

Upper Greensand, Rowde Hill, and Lower Greensand, Shanklin and Pulborough.

84. TEREBRATULA ACUTA.—The Acute Terebratula, pl. LVI. fig. 82, 83.

T. acuta. Sowerby, II. p. 115, pl. 150, fig. 1, 2. Phillips, Geo. York. I. p. 134, pl. 13, fig. 25.

Triangular, a little transverse; middle elevated, with one very large acutely angular plait; sides slightly rounded, with one large and several small lateral plaits, on each seldom exceeding two, the first large and sharp, extending nearly to the obtuse beak, the others merely undulations; front sinus almost an equilateral triangle.

Inferior Oolite, Ilminster and Cheltenham, and the Lias, Wilton Castle, and Bilsdale.

85. TEREBRATULA ACUTA-PLICATA.—The Acute-Plaited Terebratula, pl. LV.* fig. 98, 99.

T. acuta. Sowerby, V. p. 166, pl. 502, fig. 4.

Transversely elongated; somewhat pocket-shaped; gibbose; beak a little produced, but small, and slightly curved; front elevated, with six plaits, the lateral ones being largest, the whole surface with many sharp plaits.

Inferior Oolite, Bilsdale and Cheltenham.

86. TEREBRATULA PLICATELLA.—The Folded Terebratula, pl. LVI. fig. 68, 69.

T. plicatella. Sowerby, V. pl. 503, fig. 1.

Elongated, somewhat quadrangular, inflated; beak small, incurved, with an ovate concave depression on each side under it; surface provided with about forty rounded plaits, sometimes furcated near the beaks, ten or twelve of which are gradually elevated with the front; sides descending in a rather straight line from the umbones.

Found very sparingly in the Inferior Oolite, Bridport.

87. TEREBRATULA SERRATA.—The Serrated Terebratula, pl. LVI.* fig. 24, 25.

T. serrata. Sowerby, V. p. 168, pl. 503, fig. 2.

Suborbicular, subtriangular, inflated, with an obtuse margin; beak small, incurved, with a large, concave, ovate space on each side beneath it; surface with about eleven sharp plaits, of which five are somewhat elevated in front.

Lias, Lyme Regis.

88. TEREBRATULA TRUNCATA.—The Truncated Terebratula, pl. LVI. fig. 20, 21.

T. truncata. Sowerby, VI. p. 71, pl. 531, fig. 3.

Slightly ovate; hinge line nearly straight, and extending the whole width of the valves; larger valve subconical, with a large, short, straight beak, flattened in front, and provided with an ample round aperature; surface with about twenty sharp, sometimes furcated plaits; front with from two to five elevated ones; lesser valve much flattened.

Lower Greensand, Farringdon.

89. TEREBRATULA MANTELLIANA.—Mantell's Terebratula, pl. LVI. fig. 53, 54.

T. Mantelliana. Sowerby, VI. p. 72, pl. 537, fig. 5.

Transversely obovate, and inflated, with a small produced slightly incurved beak; with about sixteen large, sharp, simple plaits, from four to six of which are considerably elevated in front.

Chalk Marl, Hamsey.

90. TEREBRATULA GIBBSIANA.—Gibb's Terebratula, pl. LVI. fig. 66, 67.

T. Gibbsiana. Sowerby, VI. p. 72, pl. 537, fig. 4.

Suborbicular, somewhat triangular, and inflated; beak small, acute, and incurved; lesser valve more convex than the other; surface with numerous rounded simple plaits; front greatly elevated, with about ten or twelve flattened plaits.

Lower Greensand, Folkstone, Sandgate, Boughton, and Isle of Wight.

91. TEREBRATULA INCONSTANS.—The Inconstant Terebratula, pl. LVI. fig. 11, 12, 13.

T. inconstans. Sowerby, III. p. 137, pl. 277, fig. 3, 4.

Phillips, Geo. York. I. p. 94, pl. 2, fig. 24.

Globular, beak small, acute, and incurved; one-half of the margin turned up and the other down, but sometimes in the right, and at others the left; a medial depression in the larger valve; surface with from twenty-four to twenty-six angular plaits, half of them on one side elevated.

Speeton Clay, Speeton and Knapton, and the Oxford Clay, Heddington and Osmington.

92. TEREBRATULA OBLIQUA.—The Oblique Terebratula, pl. LVI.* fig. 8.

T. obliqua. Sowerby, III. p. 137, pl. 277, fig. 2.

Subcompressed and transversely obovate; beak produced and slightly incurved; surface with about fifteen angular plaits, on one side five, central ones elevated, and turned downwards.

Upper Chalk, Norwich and Ramsgate.

93. TEREBRATULA MANTIÆ.—Mant's Terebratula, pl. LVI.* fig. 13.

T. Mantiæ. Sowerby. III. p. 137, pl. 277, fig. 1.

Subcompressed and subtrigonal, with the beak prominent and slightly incurved, and forming nearly an equilateral triangle; front rounded; surface with about sixteen angular plaits, half of them on one side elevated; upper valve convex.

Carboniferous Limestone, Ireland; Devonian Shales, Plymouth and Newton.

94. Terebratula dimidiata.—The Divided Terebratula, pl. LVI.* fig. 22, 23.

T. dimidiata. Sowerby, III. p. 138, pl. 277, fig. 5.

Transversely obovate, and subcompressed, and wider than long; beak straight, a little produced; upper valve convex; surface with about thirty plaits, the half of which on one side elevated, producing the appearance of being medially divided.

Its straight beak and greater width than length distinguish it from *T. inconstans.*

Greensand, Haldon.

95. Terebratula pectita.—The Little-Comb Terebratula, pl. LVI. fig. 88, 89.

T. pectita. Sowerby, II. p. 87, pl. 138, fig. 1. Brongniart Env. de Paris, pl. 9, fig. 3.

Suborbicular; gibbose; with a medial hollow, extending from the beaks to the base; beak considerably produced and slightly incurved; surface with very numerous longitudinal rounded striæ, which are frequently furcated towards the base.

Under Greensand, Warminster and Swanage Bay.

96. Terebratula seminula.—The Little Seed Terebratula, pl. LV.* fig. 6, 7.

T. seminula. Phillips, II. p. 222, pl. 12, fig. 21, 22, 23.

Nearly orbicular; beak rather pointed, perforation very small; surface smooth, with one lateral plait.

Carboniferous Limestone, Bolland.

98. Terebratula antiquata.—The Ancient Terebratula, pl. LV.* fig. 17, 18.

T. antiquata. Phillips, II. p. 223, pl. 11, fig. 20.

Oblong-oval, beak prominent; hinge line nearly parallel; base rounded; upper valve plane, with two ribs emanating from the combs, and divergent; lower valve convex; surface smooth.

Carboniferous Limestone, Bolland.

99. Terebratula pentædra.—The Pentagonal Terebratula, pl. LV.* fig. 19, 20.

T. pentædra. Phillips, II. p. 221, pl. 12, fig. 3.

Pentagonal; compressed; beak rather large, the perforation minute; front and sides emarginate; surface undulated.

Carboniferous Limestone, Bolland.

100. Terebratula lentiformis. — The Lens-shaped Terebratula, pl. LV.* fig. 23, 24.

T. lentiformis. Woodward, Geo. Nor. pl. 6, fig. 11.

Nearly orbicular, slightly lenticular; beak small, perforation minute; surface smooth.

Upper Chalk, Norwich.

101. Terebratula rhomboidea.—The Rhomboidal Terebratula, pl. LV.* fig. 29, 30, 38, 39.

T. rhomboidæ. Phillips, II. p. 222, pl. 12, fig. 18, 19, 20. Ib. Pall. Foss. p. 88, pl. 35, fig. 158.

Subrhomboidal; beak large and rounded, perforation minute, destitute of lateral plaits.

Carboniferous Limestone, Bolland and Whitehall.

102. Terebratula obsoleta.—The Obsolete Terebratula, pl. LVI. fig. 90.

T. obsoleta. Sowerby, I. p. 192, pl. 83, fig. 7.

Almost orbicular, gibbose; centre of the front a little elevated by seven plaits; beak produced; sides with from seven to eleven sharp plaits; depth about two-thirds the length.

103. Terebratula pentagonalis.—The Pentagonal Terebratula, pl. LV.* fig. 14, 15.

T. pentagonalis. Phillips, I. p. 91, pl. 1, fig. 17. *T. pentangulata.* Woodward, Geo. Nor. p. 54, pl. 6, fig. 10.

Pentagonal; beak but slightly produced; sides nearly parallel; a shallow mesial furrow, extending from the beak of the larger valve to the base; small valve depressed in the centre; base concave in the centre; surface smooth.

Under Chalk, Dane's Dike and Hartford. Red Chalk, Hunstanton.

104. Terebratula lineolata.—The Lined Terebratula, pl. LV.* fig. 32.

T. lineolata. Phillips, I. p. 95, pl. 2, fig. 27.

Subquadrate, beak considerably produced; slightly incurved, sides moderately rounded; base with a broad central projection; surface with rather wide divergent striæ or lineations.

Specton Clay, Specton and Knapton.

105. Terebratula convexa.—The Convex Terebratula, pl. LV.* fig. 50, 51.

T. concexa. Sowerby, Geo. Tr., 2d Ser. IV. p. 339, pl. 14, fig. 12.

Subtriangular, sacculiform; beak large, considerably produced and slightly incurved; angles rounded; valves regularly convex; front a little elevated; surface with numerous divergent slightly rounded ribs.

Lower Greensand, near Hythe.

106. Terebratula elegans.—The Elegant Terebratula, pl. LV.* fig. 75, 76.

T. elegans. Sowerby, Geo. Trans. 2d Ser. IV. p. 338, pl. 14, fig. 11.

Transversely obovate, or nearly orbicular; beak prominent, acute, almost straight; front a little elevated and straight surface with numerous sharp, divergent, narrow ribs.

Lower Greensand, Lympne, Kent.

107. Terebratula faba.—The Bean-shaped Terebratula, pl. LIV.* fig. 20, 21.

T. faba. Sowerby, Geo. Tr. 2d Ser. IV. p. 338, pl. 14, fig 10.

Longitudinally elliptical, narrow, gibbose; beak short but prominent; front concave, but not elevated; surface smooth.

Lower Greensand, near Folkstone.

108. Terebratula parvirostris.—The Short-Beaked Terebratula, pl. LV.* fig. 83, 84.

T. parvirostris. Sowerby, Geo. Tr. 2d Ser. IV. p. 339, pl. 14, fig. 13.

Slightly tetrahedral, orbicular; beak small and acute; sides angular, and slightly produced; surface with numerous angular divergent ribs, eight or nine of them considerably elevated in front.

Lower Greensand, East of Shanklin.

109. Terebratula dilatata.—The Enlarging Terebratula, pl. LVI. fig. 70, 71.

T. dilatata. Sowerby, Geo. Trans. 2d Ser. IV. p. 343, pl. 18, fig. 2.

Transversely elliptical, imperfectly trilobate; central lobe elevated; beak of the larger valve short and large, with the point considerably incurved and sharp; surface with about fifty sharp divergent plaits, giving the whole external margin a serrated appearance.

This species bears a resemblance to the *Terebratula vespertilio* of Brocci, but is not so wide, nor so distinctly trilobate.

Greensand, Blackdown.

110. TEREBRATULA MEGATREMA?—The Largely-Perforated Terebratula, pl. LV.* fig. 100.

T. megatrema. Sowerby, Geo. Tr. 2d Ser. IV. p. 343, pl. 18, fig. 3.

Transversely obovate, moderately convex; beak large, rounded and produced, with a very ample perforation; surface with a few large, distant, rounded divergent ribs.

Greensand, Blackdown.

111. TEREBRATULA PSITTACUS.—The Parrot-beak Terebratula, pl. LV.* fig. 56, 57.

T. psittacea. Bruguiere, Ency. Meth pl. 244, fig. 3. Turton, Conch. Dict. pl. 11, fig. 42. Brown, Illust. Conch. Brit. p. 68, pl. 46, fig. 2, 3, 4.

Convex, nearly globose; beaks greatly produced and curved; sides abruptly turned inwards, and provided with a few longitudinal striæ; front margin somewhat indented on both sides, and produced in the middle, invested with five longitudinal divergent striæ; perforation subtriangular.

Pleistocene Marine Formation, Ayrshire, Scotland; and Mammaliferous Crag, Bramerton.

112. TEREBRATULA TRIPLICATA.—The Three-plaited Terebratula, pl. LV.* fig. 60.

T. triplicata. Phillips, Geo. York. I. p. 134, pl. 13, fig. 22.

Transversely elongated; much inflated; beak short and obtuse; upper valve convex, with three large and deep longitudinal folds; under valve concave, with three large and deep plaits.

Lias, Yorkshire.

113. TEREBRATULA TUMIDA.—The Tumid Terebratula, pl. LV.* fig. 65.

T. tumida. Phillips, II. p. 222, pl. 12, fig. 35.

Obovate, tumid; beak indistinct; lower valve flatter than the other; surface with rather large longitudinal ribs, stronger and rounded in the centre, smaller and curved on the sides.

Carboniferous Limestone, Bolland.

114. TEREBRATULA BIDENS.—The Two-toothed Terebratula, pl. LV.* fig. 95.

T. bidens. Phillips, I. p. 134, pl. 13, fig. 24.

Suborbicular; beaks small; upper valve convex, lower one concave, each provided with two very large central and deep plaits, with two tooth-like plaits in the sides.

Lias, Wilton Castle, and Staithes.

115. TEREBRATULA COMTA.—The Elegant Terebratula, pl. LV.* fig. 77, 78.

T. comta. Phillips, Pal. Foss. p. 89, pl. 35, fig. 161.

Oblong, convex, pentahedral; beak long, nearly straight; surface with numerous rounded ribs; front elevated.

Devonian Shales, Newton and Barton.

116. TEREBRATULA FERITA.—The ——— Terebratula, pl. LVI. fig. 5, 6.

T. ferita. Phillips, Pal. Foss. p. 89, pl. 35, fig. 163. Von Buch, pl. 2. fig. 37, *a*, *b*, *c*.

Subtriangular; beak long, straight, and acute; lateral angles truncated, depressed; surface with a few very large ribs, and deep intermediate furrows, curved on the sides, and transversely striated; hinge line very short and straight; space under the beak of lower valve depressed.

Devonian Shales, Barton, Plymouth, and Newton.

117. TEREBRATULA PROBOSCIDALIS.—The Trunked Terebratula, pl. LVI. fig. 22, 23.

T. proboscidalis. Phillips, Pal. Foss. p. 84, pl. 34, fig. 149, *a*, *b*.

Elongated; beak prominent; front margin broad and protruding; middle of the valves uniformly convex in the centre; surface with numerous equal striæ, which are most conspicuous near the edges.

Devonian Limestone, Hope, near Torquay.

118. TEREBRATULA RADIALIS.—The Radiating Terebratula, pl. LVI. fig. 16, 17.

T. radialis. Phillips, II. p. 223, pl. 12, fig. 40, 41.

Orbicular, destitute of a mesial fold; beak slightly elevated, straight; surface with many equal rounded radiating ribs.

Carboniferous Limestone, Bolland.

119. TEREBRATULA QUADRATA.—The Square-shaped Terebratula, pl. LVI. fig. 24, 25.

T. quadrata. Sowerby, Geo. Tr. 2d Ser. IV. p. 338, pl. 14, fig. 9.

Oblong-ovate, gibbose; beak large; base nearly parallel; both valves with eight or nine large, rounded, longitudinal ribs.

Lower Greensand, Hythe.

120. TEREBRATULA SUBPLICATA.—The Half-plaited Terebratula, pl. LVI. fig. 27, 28.

T. subplicata. Mantell, Geo. Suss. p. 211, pl. 26, fig. 5, 6, 11.

Transversely ovate; gibbous, nearly smooth; beak very slightly produced; upper valve convex, lower valve depressed; margin serrated; front sinuate, with three or four sharp plaits.

Upper Chalk, near Lewis.

121. TEREBRATULA HEMISPHERICA.—The Hemispherical Terebratula, pl. LVI. fig. 41, 42.

T. hemispherica. Sowerby, VI. p. 69, pl. 536, fig. 1.

Hemispherical; beak produced, incurved; lesser valve nearly flat, with numerous longitudinal granulated ribs; margin toothed.

Great Oolite, Ancliff, Wiltshire.

122. TEREBRATULA RIGIDA.—The Rigid Terebratula, pl. LVI. fig. 43, 44.

T. rigida. Sowerby, VI. p. 69, pl. 536, fig. 2.

Orbicular; beak small; lesser valve nearly flat; larger valve very convex; surface with numerous, granulated plaits, increasing in number towards the margin; front even.

Upper Chalk, Trimmingham.

123. TEREBRATULA STRIATULA.—The Finer-Striated Terebratula, pl. LVI.* fig. 36, 27, and 38 Var.

T. striatula. Sowerby, VI. p. 69, pl. 536, fig. 3, 4, 5. Mantell, Geo. Suss. p. 131, pl. 25, fig. 7, 8, and 12. Phillips, I. pl. 2, fig. 28.

Longitudinally oblong-ovate, compressed; beak large, but short, with a large circular aperture; front truncated, sometimes furnished with a sinus; surface with numerous very fine granulated striæ, many of which are forked.

This species is liable to considerable variety of form, some specimens being nearly orbicular.

London Clay, Isle of Skepey; Upper Chalk at Norwich;

Lower Chalk, Hamsey, Leeds, and Dorking, and the upper Greensand, Warminster and Blackdown.

124. TEREBRATULA PLICATILIS.—The Fine-plaited Terebratula, pl. LVI. fig. 51, 52, and 62, 63.

T. plicatilis. Sowerby, II. p. 37, pl. 118, fig. 1; and *T. octoplicata*, ib. fig. 2; Brongniart, Env. Paris, pl. 4, fig. 5, 8.

Gibbose, transversely obovate, length somewhat more than its depth, width about one-third greater than the length; beak rather short, and slightly incurved; larger valve less inflated than the other; centre elevated by twelve obtuse plaits, with fifteen or more on each side. Fig. 62 and 63, a variety differing from the other in being somewhat longer, and in having from seven to nine plates only on the sinus.

Upper Chalk, Gravesend and Norwich.

125. TEREBRATULA PLEURODON.—The Side-toothed Terebratula, pl. LVI. fig. 57 and pl. LVI.* fig. 2 to 7.

T. pleurodon. Phillips, II. p. 222, pl. 12, fig. 16, 25, 26, 27, 28, 29, and 30. Ib. Pall. Foss. p. 86, pl. 35, fig. 155.

Transversely ovate; beak prominent; hinge line arcuated; surface with large prominent ribs, emanating from the umbones, and terminating on the base; the intermediate furrows wide; sides very deeply reflexo-dentate.

The species is subject to much variety, and are thus defined by Professor Phillips, viz.—

a. The mesial portion elevated, large; sides much reflexed, with very acute ribs, as in fig.

b. Raricosta—The ribs few.

c. Poliodonta—Mesial ribs numerous; margin squared.

Fig. 57, pl. LVI. is a gigantic specimen.

Carboniferous Limestone, Bolland, Orton, and Ireland; Devonian Limestone, Pilton and Petherwin.

126. TEREBRATULA ANGULARIS.—The Angular Terebratula, pl. LVI. fig. 14, 15.

T. angularis. Phillips, Pal. Foss. p. 89. pl. 35, fig. 162. *Atrypa principilaris.* Sowerby, Geo. Trans. 2d Ser. V. pl. 57, fig. 5, 6, and pl. LV.* fig. 61, 62, the young shell.

Pentagonal, convex; beak prominent; front elevated, with three or four plaits; margin compressed; a deep angular furrow emanates from the centre of the lower valve, and is bounded by two angular ridges, terminating on the base.

Devonian Limestone, Plymouth, Barton, and Eifel.

127. TEREBRATULA LATERALIS.—The Broad Terebratula, pl. LVI.* fig. 30.

T. lateralis. Sowerby, I. p. 189, pl. 83, fig. 1.

Semiovate, gibbose, its breadth exceeding its length; beak a little elevated and curved; front greatly elevated in the centre, with three deep short plaits, producing three very deep angular notches, filled by sharp teeth in the opposite valve; each side furnished with two plaits, which extend considerably below the centre; perforated or longer valve flatter than the other; there is a great length in the edge, between the central and lateral plaits.

Carboniferous Limestone, Cork, Ireland, and Bolland, Yorkshire.

128. TEREBRATULA RENIFORMIS.—The Kidney-shaped Terebratula, pl. LVI. fig. 40, 55, 56, and 38, 39.

T. reniformis. Sowerby, V. p. 154, pl. 496, fig. 1, 2, 3, 4.

Reniform, bilobate, rounded, and inflated; middle provided with three or four longitudinal rounded ridges, terminated by acute plaits in the frontal margin; sides inflated; the ridges and intermediate furrows are rounded; the corresponding notches in the margin acutely angular.

This shell is liable to considerable variety in the general contour and in the number of its ridges.

VARIETY 1.—Destitute of a mesial ridge.

VARIETY 2.—With from three to five obtuse mesial ridges.

VARIETY 3.—From three to five acute mesial ridges.

Carboniferous Limestone, Dublin and Cork.

129. TEREBRATULA PLATYLOBA.—The Flat-lobed Terebratula, pl. LVI. fig. 30 and 50.

T. platyloba. Sowerby, V. p. 155, pl. 496, fig. 5, 6.

Transversely ovate, considerably compressed, its width being nearly double its length; umbo obtuse; base with seven or eight rather obtuse ridges, which extend upwards two-thirds the length of the valves; several of the central ones somewhat acute; sides with one or two nearly obsolete plaits on their edges.

Carboniferous Limestone, Clithero.

130. TEREBRATULA BOREALIS.—The Northern Terebratula, pl. LVI. fig. 26.

T. borealis. Schloth, Nac. pl. 20, fig. 6. *T. plicatella.* Dalmain, pl. 6, fig. 12. *T. lacunosa.* Sowerby, Sil. Syst. p. 611, pl. 5, fig. 19.

Obovate, gibbose, obscurely trilobate, and provided with about sixteen acute longitudinal plaits, four or five of the middle ones in front considerably more elevated than the others; beak small, acute, and slightly incurved. Length seven lines, width eight lines.

Devonian Shales, Ogwell and Plymouth; Upper Ludlow Limestone, Ludlow and Braubach, and the Wenlock Limestone, Wenlock and Presteign.

131. TEREBRATULA CHRYSALIS.—The Chrysalid Terebratula, pl. LVI. fig. 60, 61.

T. chrysalis, T. Gereillii. Woodward, pl. 6, fig. 14, Schloth, M.G.S. Fr. pl. 16, fig. 9. Faugas, Mt. St., pl. 26, fig. 9.

Oblong-ovate, sub-compressed; beak extremely long, acute, and slightly incurved; hinge line of lesser valve straight, with small auriform processes; whole surface with pretty large but not deep divergent ribs, producing a slightly crenulated margin.

Woodward supposes it possible that this may be the young of *Trigonosecinus lyra*; but it is totally distinct from that species.

The Upper Chalk, Norwich.

132. TEREBRATULA FLEXISTRIA. — The Waved Striate Terebratula, pl. LVI. fig. 64, 65.

T. flexistria. Phillips, II. p. 222, pl. 12, fig. 33, 34.

Oblate, sub-depressed; beak very small, hardly protruding beyond the hinge line; mesial elevation rounded; lower valve somewhat smaller and flatter than the other, with an inconspicuous beak; sides considerably curved; surface with many flexous obtuse striæ or small ribs.

Carboniferous Limestone, Bolland and Newton.

133. TEREBRATULA MESOGONIA.—The Interangular Terebratula, pl. LVI. fig. 72, 73.

T. mesogona. Phillips, II. p. 222, pl. 12, fig. 10, 11, 12.

Tetrahedral, frontal elevation single or cleft; sides provided with one or two ribs.

Carboniferous Limestone, Bolland.

134. TEREBRATULA CRENULATA.—The Crenulated Terebratula, pl. LVI. fig. 74, 75.

T. crenulata. Phillips, Pal. Foss. p. 85, pl. 34, fig. 152.

Pentagonal; beaks very obtuse and rounded, compressed; sides and base nearly parallel; whole surface, except near the umbonal regions, covered with fine numerous deep furrows, with rather flat intermediate ribs.

Devonian Shales, South Devon and Barton.

135. TEREBRATULA VENTILABRUM.—The Bellied Terebratula, pl. LVI. fig. 84, 85.

T. ventilabrum. Phillips, II. p. 223, pl. 12, fig. 36, 38, 39.

Rhomboideo-deltoidal; margins sharp, with obtuse ribs; upper valve sulcate near the beak, which is obtuse; sides nearly obliquely parallel, with five or six mesial ribs.

Carboniferous Limestone, Bolland.

136. TEREBRATULA ANISODONTA.—The Unequal-notched Terebratula, pl. LVI. fig. 58, 59.

T. anisodonta. Phillips, Pal. Foss. p. 86, pl. 34, fig. 154.

Transversely oval, depressed; beak somewhat prominent; front straight, with a large angular elevation raised to a straight mesial edge, which is deeply indented by six narrow rounded ribs; sides rather reflected towards the deeper valve; broadly and deeply notched by short considerably elevated ridges.

Devonian Shales, Barton, South Devonshire.

137. TEREBRATULA SOCIALIS.—The Social Terebratula.

T. socialis. Phillips, I. p. 112, pl. 6, fig. 8.

Transversely oblong-ovate; beak short; mesial elevation with four prominent ribs; sides slightly rounded; whole surface with very strong and rather acute ribs.

Calcareous Grit, and Kelloway's Rock, Scarborough and Hackness.

138. TEREBRATULA SPINOSA.—The Spinous Terebratula, pl. LVI.* fig. 1.

T. spinosa. Smith, p. 108; Knorr, Tet. Dil. 2 pl. B. 4, fig. 4. Phillips, Geo. York. I. p. 123, pl. 9, fig. 18. *T. aspira.* König, Icon, fig. 219.

Subtriangular; beaks rather obtuse; sides gradually rounded; surface with rather broad longitudinal ribs, provided with obtuse, somewhat distant spines.

Great Oolite Cave, and Bath, and the Inferior Oolite, Dundry; Cheltenham, Bayeux, and Bole.

139. TEREBRATULA AMBLIGONIA.—The Obtuse-angled Terebratula, pl. LVI.* fig. 33.

T. ambligona. Phillips, Pal. Foss. p. 88, pl. 35, fig. 160.

Pentrahedral, oblong, a little convex, with the surface slightly elevated; umbones somewhat produced, from whence a mesial furrow proceeds, and terminates on the basal margin, on each side of which are five rather large and rounded divergent ribs; mesial furrow on the deep valve bounded by two ribs, which are shorter than the others.

Devonian Shales, South Devon, Barton, and Babbacombe.

140. TEREBRATULA SULCIROSTRIS.—The Furrowed-beaked Terebratula, pl. LVI.* fig. 9 and 12.

T. sulcirostris. Phillips, Geo. York. II. p. 222, pl. 12, fig. 31, 32.

Rhomboideo-deltoidal; beaks slightly developed; central area with from five to nine pretty deep divergent furrows, with intermediate ribs, and producing a square projection on the base; ribs on the sides flat, and slightly defined; edge sharp; upper valve with the furrows reaching the beak.

This species is subject to two varieties, one of which has numerous ribs, and the other with fewer.

Carboniferous Limestone, Bolland.

141. TEREBRATULA LATICOSTA.—The Broad-ribbed Terebratula, pl. LVI.* fig. 10, 11, 63, 64.

T. laticosta. Phillips, Pal. Foss. p. 85, pl. 34, fig. 153.

Transversely elliptical; beaks small, slightly produced, and angulated, with a very small perforation; front provided with a mesial sinus; about twenty obtuse, almost equal, prominent ribs cover the surface; these are more enlarged towards the borders, which are obtuse, and crossed by distinct lines of growth.

There are two varieties of this species. Fig. 63 and 64 are the ordinary form, and 10 and 11 the variety; the former is from the Limestone at Boggy Point, North Devon, and the latter from Barton, North Devon.

142. TEREBRATULA LACUNOSA, pl. LVI.* fig. 15.

T. lacunosa. Sowerby, Sil. Syst. p. 624, pl. 12, fig. 10.

Transversely elliptical, with a projecting sinus; surface with numerous divergent rounded ribs, which project beyond the edges; larger valve with the beak considerably incurved, and both of them obtuse.

Wenlock Limestone, Wenlock Edge; Nash Lime Scar, and Wallsall.

GENUS XIII. ORBICULA.—*Cuvier.*

Shell inequivalve, nearly orbicular, compressed, generally irregular in form, adherent, flat, and attached by means of a fibrous substance passing through an orifice near the centre of the lower valve. Upper valve patelliform, its vertex posterior or nearly central; each valve provided with four muscular impressions, two of which are large, approximate, and situate near the centre; two smaller and more distinct ones placed near the posterior margin; those of the lower valve not so well defined as the others; near the inner extremity of the orifice there is an obtuse testaceous process, destitute of hinge—teeth, or ligament.

1. ORBICULA PUNCTATA.—The Punctured Orbicula, pl. LVI.* fig. 54.

O. punctata. Sowerby, Sil. Syst., p. 636, pl. 20, fig. 5.

Lenticular, much compressed; apex submarginal; surface with fine granulations, each of which is punctured. Diameter half an inch.

Lower Silurian Rocks, Chatwall, Caradoc.

2. ORBICULA RUGATA.—The Rough Orbicula, pl. LVI.* fig. 57, 58.

O. rugata. Sowerby, Sil. Syst., p. 608, pl. 4, fig. 47, 48, and p. 610, pl. 5, fig. 11.

Almost orbicular; upper valve a much depressed cone, with the surface concentrically wrinkled; lower valve nearly flat. Diameter six lines, height two lines.

Upper Ludlow Rock, Ludlow, Promontory, Richard's Castle, and many other localities.

3. ORBICULA STRIATA.—The Striated Orbicula, pl. LVI.* fig. 61, 62.

O. striata. Sowerby, Sil. Syst., p. 610, pl. 5, fig. 12.

Orbicular, very convex; apex deflected, marginal, covered with minute radiating striæ. Diameter seven lines, height three lines.

Upper Ludlow Rock, Delbury and Ludlow Hills.

4. Orbicula granulata.—The Granulated Orbicula, pl. XLIX. fig. 16 and 26.

O. granulata. Sowerby, VI. p. 6, pl. 506, fig. 3, 4. Brown's Elements Fossil. Conch. p. 75, pl. 9, fig. 10.

Nearly orbicular; conical, patelliform, with a rather acute apex, and sides a little rounded; surface with numerous granulated radiating striæ, crossed by many lines of growth.

Great Oolite, Ancliff, Wiltshire.

5. Orbicula Humphriesiana.—Humphrie's Orbicula, pl. XLIX. fig. 8, 9.

O. Humphriesiana. Sowerby, VI. p. 5, pl. 506, fig. 2.

Conical, orbicular; conical, depressed; apex eccentric, and rather obtuse; surface with many divergent striæ.

Kimmeridge Clay, Shotover Hill, Oxfordshire.

6. Orbicula reflexa.—The Reflexed Orbicula, pl. XLIX. fig. 17, 18, 19.

O. reflexa. Sowerby, II. p. 4, pl. 506, fig. 1. Ib. Zool. Jour. II. 321.

Somewhat elliptical; thin, surface smooth, polished; upper valve convex, covering the reflex edge of the lower valve; apex eccentric, placed very near to one end, lower valve flat, with the vertex nearly central, and a reflexed margin in consequence of the disc behind the apex being concave; byssal sinus large and elongated.

7. Orbicula latissima.—The very Broad Orbicula, pl. XLVIII. fig. 35. *Patella latissima*, p. 105.

Patella latissima. Sowerby, II. p. 88, pl. 139, fig. 1 and 5.

Depressed, smooth, slightly ovate, and very thin; vertex eccentric; surface concentrically undulated.

Oxford Clay, Scarborough and Elberston.

8. Orbicula nitida. The Shining Orbicula, pl. XLIX. fig. 10, 21, and 22.

O. nitida. Phillips, Geo. York. II. p. 221, pl. 11, fig. 10, 11, 12, 13.

Slightly ovate; upper valve conico-lenticular; apex obtuse, situate near the narrow end; surface covered with fine wide-set striæ, radiating from the apex to the sides.

Carboniferous Limestone, at Bowes, Pateley Bridge, Lee, Harelaw, and Otterburn, Coalbrookdale.

9. Orbicula mutabala.—The Changeable Orbicula, pl. XLIX.* fig. 1.

O. nitida. Portlock, Geo. Rep. p. 446, pl. 32, fig. 14, variety.

Slightly ovate, glabrous, with somewhat irregular and faintly defined lines of growth, and extremely fine radiating striæ, which can only be seen by the aid of a lens; beak remote, distant about one-fourth of the diameter from the margin, its elevation being about one-third of its diameter; in most instances, however, only about a fourth.

Distinguished from *O. nitida* by the nearly obsolete very faint radiating striæ.

Carboniferous Strata, in Shale, at Benburb, Ireland.

10. Orbicula cincta.—The Girdled Orbicula, pl. XLIX.* fig. 9.

O. cincta. Portlock, Geo. Rep. p. 446, pl. 32, fig. 15.

Nearly circular, with fine concentric lines of growth; apex not a third of the diameter from the margin, and elevated about a third; lower valve also convex, with a truncated apex.

Carboniferous Limestone Shale, Benburb and Tyrone, Ireland.

11. Orbicula lævigata.—The Smooth Orbicula, pl. XLIX. fig. 10.

O. lævigata. (Münster.)—Portlock, Geo. Rep. p. 445, pl. 32, fig. 11, 12.

Circular, highest towards the beak, which is only slightly arched, short, and at the outer margin depressed; shell smooth, the lines of growth hardly visible.

Silurian, gritty coarse Schists, Tyrone, Ireland.

12. Orbicula oblongata.—The Oblong Orbicula, pl. XLIX.* fig. 12.

O. elongata. Portlock, Geo. Rep. p. 445, pl. 32, fig. 13.

Elongated, greatly flattened, and smooth; beak slightly raised, and situate near the margin.

Differs from *O. lævigata* in the beak not being so close to the margin.

Silurian, gritty Schists, Tyrone, Ireland.

13. Orbicula radiata.—The Rayed Orbicula, pl. LXIX.* fig. 13.

O. radiata. Phillips, Geo. York. I. p. 101, pl. 4, fig. 12.

Slightly ovate; apex placed near the narrow end; general surface smooth; with a series of radiating striæ round the margin.

Coral Crag, Malton, Yorkshire.

14. Orbicula subrotunda.—The Half-round Orbicula, pl. XLIX.* fig. 14.

O. subrotunda. Portlock, Geo. Rep. p. 445, pl. 32, fig. 10.

Slightly oval; apex situate one-fourth the diameter from the margin.

Silurian Schists, Tyrone, Ireland.

15. Orbicula Norvegica.—The Norwegian Orbicula, pl. XLIX.* fig. 11.

O. Norvegica. Lamarck, An. San. Vert. VI. pt. I. p. 242. Brown's Illustrations of Recent Conchology of Brit. p. 6, pl. 20, fig. 21, 22, and pl. 22, fig. 9.

Form irregular; margin ruggid, upper valve pattelliform, a little convex, with concentric lines of growth; vertex a little off the centre; under valve quite flat, adhering its whole circumference to other bodies; provided with four muscular impressions.

Coral Crag, Sutton.

Tribe II.—RUDISTA.

Animal unknown, as are also the ligament and hinge; shel with very unequal valves, and destitute of distinct umbones.

Genus XIV. HIPPONYX.—*Defrance.*

Generic Character.—Shell bivalve, adherent, inequivalve, irregular; muscular impressions in both valves horse-shoe shaped; lower valve affixed to marine bodies, orbicular, much compressed, and considerably thickened in some instances, with its margins always elevated, particularly in front, its muscular impression consisting of two contiguous semilunar portions, which are distant, broad, and rounded in front, nearly confluent and narrow behind; upper valve patelliform, generally subconic, in some instances compressed, with a posteriorly submarginal umbo pointing backwards; muscular impressions situate near the posterior margin, with its two lobes considerably more remote, and obliquely truncated in

front, but entirely confluent behind; hinge destitute of a ligament or teeth.

1. HIPPONYX CORNUCOPIÆ.—The Horn of Plenty Hipponyx, pl. LVI.* fig. 41, 42, 43, 44, 45.

Piliopsis cornucopæ. Lamarck, An. San. Vert. VI. pt. 2, p. 19. Desheyes, 609; Foss. pl. 2, fig. 13, 14, 15, 16.

Lower valve a depressed cone, with the vertex nearly central, and slightly inclining, crossed by rugose lines of growth; upper valve very conical, with its apex inclining considerably; surface girdled by many irregular rugose lines of growth, with numerous slightly undulating divergent longitudinal striæ.

The London Clay, Bracklesham, and Grignon, France.

2. HIPPONYX LÆVIS.—The Smooth Hipponyx, pl. LVI.* fig. 46, 47, 48, 49, 50, 51. *H. lævis.* Sowerby, Gen. Rec. and Foss. Shells, No. I.

Lower valve nearly flat; upper valve oblique, extremely conical, and the whole surface smooth, with a few regular lines of growth.

Loudon Clay, Barton, Hampshire.

GENUS XV. CALCEOLA.—*Lamarck.*

Generic Character.—Shell equilateral, inequivalve, triangular; umbones separated by a large, depressed, irregularly and transversely striated, trigonal area in the lower valve, which is the larger of the two, and very deep, funnel-shaped, and obliquely truncated at its upper side; hinge margin transversely straight, linear, notched, and slightly toothed in the centre; the upper edge arcuated; upper or smaller valve semiorbicular, semicircularly striated, and serving as a lid to the lower valve; internal cardinal edge furnished with two lateral tubercles, a central pit and smaller plate.

1. CALCEOLA SANDALINA.—The Sandal-shaped Calceola, pl. LVI.* fig. 52, 53.

C. calceola. Phillips, Pal. Foss. p. 137, pl. 60, fig. 102.*

Devonian Shales, Chircombe Bridge, near Newton, South Devon.

SUB-DIVISION II.

Ligament not marginal, but placed in a short hollow under the beak, always perceptible, and not forming a tendinous cord beneath.

FAMILY I. OSTRACEA.

Ligament placed either interiorly or nearly so; shell irregular in form, foliaceous and sometimes papyraceous.

SUB-DIVISION I.

Ligament placed interiorly; shell thin, papyraceous.

GENUS XVI. ANOMIA.—*Linnæus.*

Generic Character.—Shell inequivalve, irregular, operculated; under valve flattened, with a large circular or ovate perforation near the hinge, and its edges turned back, through which protrudes a testaceous or bony, straight, elliptical operculum or plug, with a dilated base, by which the shell adheres to extraneous bodies; upper valve the larger, concave and entire; ligament large, transverse, internal, placed within the upper valve, at the umbo, and attached to a prominent, expanding appendage in the depressed valve; lower valve with a single, orbicular, nearly central muscular impression; upper valve with three impressions, situated contiguous to each other, the largest is next the base of the shell, which is connected, by means of its muscle, with the plug, and the other two are also connected, by the medium of their muscle, with the single impression in the lower or flattened valve.

1. ANOMIA LINEATA.—The Lineated Anomia, pl. LVII. fig. 5, 6, 7, 8.

A. striata. Sowerby, V. p. 32, pl. 425.

Suborbicular, convex; surface with fine numerous distinct radiating striæ.

In the adult condition it is contracted towards the beak.

Loudon Clay, Barton and Bagnor.

2. ANOMIA SEMISTRIATA.—The Semistriated Anomia, pl. LVI. fig. 23.

A. semistriata. Bean, Mag. Nat. Hist. New Series, III. p. 61, fig. 21.

Elliptical, a little convex, and thick, with concentric lines of growth, and numerous longitudinal undulating striæ, which are only visible from about the centre of the valve to the margin; umbo small and acute, situate nearly central. Length one inch, breadth three quarters.

Cornbrash, Scarborough.

3. ANOMIA ACULIATA.—The Spined Anomia, pl. LVII. fig. 17.

A. aculiata. Brown, Illust. Rec. Conch. Brit. p. 70, pl. 22, fig. 6.

Orbicular, compressed, with numerous raised divergent striæ, surmounted by concave obtuse murications, or spines; umbones small, inclined; under valve flat and smooth. Diameter three-eights of an inch.

Pleistocine Marine Formation, Ayrshire, and Ireland.

4. ANOMIA EPHIPPIUM.—The Saddle-shaped Anomia, pl. LIX. fig. 13.

A. ephippium. Brown, Illust. Rec. Conch., Brit. p. 69, pl. 22, fig. 1 and 4.

Suborbicular, irregularly waved and wrinkled; one valve convex, the other flat; perforation rather large.

Pleistocine Marine Formation, England and Suffolk Crag.

5. ANOMIA CONVEXA.—The Convex Anomia, pl. LVII. fig. 18, 19.

A. convexa. Sowerby, Geo. Trans. 2d Ser. IV. p. 338, pl. 14, fig. 7.

Remarakably convex; beak large and prominent; surface smooth.

Lower Greensand, Shanklin, Isle of Wight.

6. ANOMIA LÆVIGATA.—The Smooth Anomia, pl. LVII.* fig. 20, 21.

A. lævigata. Sowerby, Geo. Trans. 2d Ser. IV. p. 338, pl. 14, fig. 7.

Nearly circular, very thin and flat; surface smooth; umbo hardly elevated.

Lower Greensand, Sandgate.

7. ANOMIA UNDULATA.—The Waved Anomia, pl. LIX. fig. 14.

A. undulata. Brown, Illust. Rec. Conch. Brit. p. 69. pl. 22, fig. 2, 3.

Strong, flat, and suborbicular, with numerous strong, elevat-

ed divergent striæ ; umbo flat ; part of the sides slightly crenulated ; perforation very large.

Pleistocene Marine Formation, Ayr and Suffolk Crag.

8. Anomia radiata.—The Rayed Anomia, pl. LXVI.* fig. 22.

A. radiata. Sowerby, Geo. Trans. 2d Ser. IV. p. 338, pl. 4, fig. 5.

Flat, irregularly orbicular, with fine radiating striæ.

Lower Greensand, Sandgate.

9. Anomia squamula.—The Scaled Anomia, pl. LVII.* fig. 16.

A. squamula. Brown, Illust. Rec. Conch. Brit. p. 69, pl. 22, fig. 5.

Suborbicular, very thin and flat, with indistinct concentric wrinkles.

Pleistocene Marine Formation, Ireland, and Coral Crag, Malton.

Genus XVII.—OSTREA.—*Linnæus.*

Shell inequivalve, irregular, and foliaceous ; umbones somewhat separated, and of unequal size ; lower valve largest, concave, and often adherent ; upper valve smallest, and somewhat plain ; hinge destitute of teeth, but sometimes slightly crenated on the anterior side near the beaks ; ligament partly external ; the facet to which it is attached subtrigonal and tripartite, and divided by two elevated lines which divaricate from the umbo ; each valve provided with two muscular impressions, the one large, suborbicular, and nearly central ; the other very small and situate near the hinge.

1. Ostrea acuminata.—The Acuminated Oyster, pl. LVII. fig. 2, 3.

O. acuminata. Sowerby, II. p. 81, pl. 35, figs. 2, 3.

Much elongated, depressed, and incurved ; upper valve a little concave, and rather smooth ; distinctly eared, and with rather acute umbones ; base acuminated ; surface with large subimbricated transverse undulating laminæ.

Fuller's Earth, Bathford Hill, Great Oolite, Stonesfield and Cain's Cross ; Inferior Oolite, Limpley Stoke.

2. Ostrea canaliculata.—The Canaled Oyster, pl. LVII. fig. 9.

O. canaliculata. Sowerby, II. p. 81, pl. 35, fig. 1.

Depressed, much elongated, curved, slightly and equally eared ; one or two descending sinuses in the anterior margin near the base ; sides almost parallel, posterior side fequently gaping ; near the beak a few concentric laminæ, and two or more canaliculated projections in the lower valve, which is more convex than the other ; upper valve flat.

Upper Chalk, Lewes and Norwich.

3. Ostrea Bellovacina.—The Bellovian Oyster, pl. LVII. fig. 1.

O. Belovacina. Lamarck, An. du Mus. VIII. pl. 159, and XIV. pl. 20, fig. 1. Deshayes, Coq. Fos. pl. 48, fig. 12. Ib. Ann. San. Vert. VI. pt. 1, p. 228. Sowerby, IV. p. 121, pl. 388, figs. 1, 2.

Oblong ; form irregular, somewhat orbicular or wedge-shaped, thick ; lower valve convex, composed of undulating, subimbricated laminæ ; beak considerably produced, and straight on each side ; ligamental area, a little elevated above the surface of the shell ; in the hollow valve it is curved and acute, with a deep canal in the middle.

Plastic Clay, Plumstead, Woolwich, Reading, Headley, &c.

4. Ostrea edulina.—The Small Edible Oyster, pl. LVII. fig. 15.

O. edulina. Lamarck, An. San. Vert. VI. pt. 1, p. 218. Sowerby, IV. p. 122, pl. 388, figs. 3, 4.

Suborbicular, or subovate ; moderately thick ; lower valve convex, composed of undulating laminæ ; upper valve very smooth and depressed ; beak curved and pointed ; but destitute of straight lines on its sides.

Plastic Clay, Charlton and New Cross.

5. Ostrea læviuscula.—The Very Smooth Oyster, pl. LVII. fig 13.

O. læviuscula. Sowerby, V. p. 143, pl. 488, fig. 1.

Depressed, rounded, or somewhat triangular, beak subacute and retroflected ; scales distant ; surface smooth and obscurely imbricated ; lower valve destitute of ribs.

Kimmeridge Clay, Aylesbury and Bedford.

6. Ostrea costata.—The Ribbed Oyster, pl. LVIII. fig. 9.

O. costata. Sowerby, V. p. 143, pl. 488, fig. 3.

Suborbicular, lower valve with numerous furcated and doubly furcated divergent ribs ; upper valve flat, with an undulated margin ; beak obscure.

Great Oolite, Hampton and Ancliff.

7. Ostrea obscura.—The Obscure Oyster, pl. LIX. figs. 3, 4. Sowerby, V. p. 143, pl. 488, fig. 2.

Oblong ; irregular ; beak obtuse and curved ; hinge area large, triangular ; lower valve very deep, the other flat.

Great Oolite, Ancliff, Wiltshire.

8. Ostrea dorsata.—The Backed Oyster, pl. LIX. fig. 2.

O. dorsata. Sowerby, V. p. 144, pl. 489, figs. 1, 2. Deshayes, Coq. Fos. I. pl. 53, figs. 9, 10, 11, and pl. 64, figs. 1, 2, 3, 4.

Oblong ; form variable ; convex ; beaks blunt ; upper valve very convex, with numerous longitudinal subimbricated, many-branched striæ ; inner margin toothed.

London Clay, Barton.

9. Ostrea semiplana.—The Half-plain Oyster, pl. LIX. fig. 7.

O. semiplana. Sowerby, V. p. 144, pl. 489, fig. 3, Mantill, Geo. Suss. p. 207, pl. 25, fig. 4.

Oval ; depressed ; surface largely foliated ; valves flat in the middle ; edges free from deep sinuations.

Upper Chalk, Gravesend, Lewes, and Wiltshire.

10. Ostrea deltoidea.—The Deltoidal Oyster, pl. LIX. fig. 10.

O. deltoidea. Lamarck, Env. de Paris, p. 265. Sowerby, IV. p. 111, pl. 148.

Equivalve, thin, flat, much compressed, triangular ; laminar ; beaks equal, much produced, and straight, and pointing on one side ; one side with a deep sinus ; edges extending considerably beyond the enamelled surface of the interior, giving the external contour a more rounded aspect than the internal.

Kimmeridge Clay, Portland, Weymouth, and counties of Buckingham, Bedford, and York.

11. Ostrea expansa.—The Expanded Oyster, pl. LVIII. fig. 7.

O. expansa. Sowerby, III. p. 65, pl. 238, fig. 1.

Broad; length and breadth nearly equal; deltoidal, with obtuse angles; beaks obscure, hinge area wide, flat; slightly elevated, and nearly straight; cicatrix broad, with a sinus at the beak; margin with large undulations, surface laminar; muscular impressions very large and deep.

Portland Sand, Whitchurch; Quainton, Buckinghamshire; Wiltshire and Bedfordshire.

12. Ostrea undulata.—The Waved Oyster, pl. LVIII. fig. 6.

O. undulata. Sowerby, III. p. 65, pl. 238, fig. 2.

Subtriangular, recurved, convex, and rounded posteriorly; thick; beaks blunt; surface with many longitudinal depressed ribs, and shallow intervening furrows, with numerous distant, undulating, imbricated laminæ; cicatrix elongated, ovate, and oblique; hinge pit slightly elevated.

Portland Sand, Vale of Wardour.

13. Ostrea flabellula.—The Little Fan Oyster, pl. LVII. figs. 11, 12.

O. flabellula. Sowerby, III. p. 97, pl. 253. *O. cymbula.* Lamarck, An. San. Vert. VI. pt. 2, p. 215. *O. chama plicata.* Brander, p. 36, pl. 7, fig. 84, 85. Deshayes, pl. 63, figs. 5, 6, 7.

External form very variable, oblong, and always subarcuated; beaks prominent, that of the larger valve much curved; larger valve deep, longitudinally and irregularly curved and plaited, with the margin dentated; smaller valve flat, smooth, with remote imbricated lamina; margin plain; the lateral crenulations are well marked, on the sides and margin of the flat valve near the hinge.

London Clay, Barton and Bracklesham.

14. Ostrea tenera.—The Tender Oyster, pl. LVII. fig. 14.

O. tener. Sowerby, III. p. 95, pl. 252, figs. 2, 3.

Much elongated, slightly curved, thin, depressed; beak of the upper valve acute, and included in the frequently curved beak of the under valve, and canaliculated; surface almost plain and smooth, with obsolete imbricated laminæ.

Plastic Clay, Woolwich.

15. Ostrea Meadii.—Meade's Oyster, pl. LVIII. fig. 3.

O. Meadii. Sowerby, III. p. 95, pl. 252, figs. 1—4.

Much elongated, thick; hinge area large, the pit wide; beaks projecting; attached valve very deep, and longitudinally rugged and undulated; the other plain and flat, with lateral crenulations near the hinge; edges very irregular.

Great Oolite, Somersetshire.

16. Ostrea gigantea.—The Gigantic Oyster, pl. LVII. fig. 4.

O. gigantea. Brander, p. 37, pl. 8, fig. 88. Sowerby, I. p. 143, pl. 64.

Slightly elongated, very thick, irregular in form, umbo short, very little incurved; hinge-pit large, tripartite, situated upon a slightly oblique elevation, with its sides flat and striated, and its internal end perpendicular to the surface of the valves, and not gradually curved into the sides of the shell, as in other species.

This shell is very large, frequently measuring upwards of seven and a half inches, and weighing two to three pounds.

London Clay, Barton and Bognor.

17. Ostrea pulchra.—The Fine Oyster, pl. LIX. fig. 12.

O. pulchra. Sowerby, III. p. 141, pl. 279.

Nearly orbicular, compressed; one valve convex, with an obscure beak, and numerous radiating flat ribs and shallow furrows, crossed by wide-set undulating laminæ; the other valve almost flat, with a short, blunted, slightly incurved beak; hinge-line parallel.

Plastic Clay, Woolwich and Sundridge.

18. Ostrea solitaria.—The Solitary Oyster, pl. LIX. figs. 8 and 11.

O. solitaria. Sowerby, V. p. 105, pl. 468, fig. 1. *O. pulligera.* Goldfuss, pl. 72, fig. 11 ?

Obovate, thick; sometimes incurved; beaks short; surface with many divergent strong and frequently furcated ribs, and deep intervening furrows, crossed by elevated rugged imbricated laminæ; one valve flatter than the other.

Portland Stone, Dunton, Bucks; and the Coral Rag, Malton.

19. Ostrea macroptera.—The Long Winged Oyster, pl. LVIII. figs. 1, 2.

O. macroptera. Sowerby, V. p. 105, pl. 468, figs. 2, 3. Parkinson, III. pl. 14, figs. 4.

Falciform, compressed, with a large rectangular wing within the curve; surface with irregular, undulating, deep plaits; deeply furrowed and acutely ribbed towards the margin of the valves, producing a series of deep and sharp tooth-like processes, locking into each other; hinge area wide, triangular, the pit for the ligament broad and much incurved; beaks long, incurved and pointed.

Gualt, Folkstone, and Lower Greensand, Atherfield and Berehead.

20. Ostrea carinata.—The Keeled Oyster, pl. LIX. fig. 6.

O. carinata. Lamarck, VI. pt. I. p. 216, Ency. Meth. pl. 187, figs. 3, 4, 5. Goldfuss, Pet. pl. 74, fig. 6. Sowerby IV. p. 89, pl. 365.

Elongated, arcuated, irregular and much inflated, and pointed at both extremities; sides flattened; whole surface with numerous transverse deep furrows, and strong elevated angular sharp ribs; the centre with a keel; margin with strong deep tooth-like processes locking into each other.

Chalk Marl, Dover and Lyme Regis; Upper Greensand, Chute Farm, and Southbourn; Lower Greensand, Kent and Isle of Wight.

21. Ostrea Marshii. — Marsh's Oyster, pl. LIX. fig. 10.

O. Marshii. Sowerby, I. p. 103, pl. 48. Goldfuss, pl. 73. *O. diluviana.* Parkinson, III. pl. 15, fig. 1.

Longitudinal, oblique, compressed, beak obscure; obscurely cared, 7 or 8 angular, large, obliquely longitudinal ribs and furrows, crossed by concentric, zigzag, undulating laminæ; edge thick, with strong and very deep-set triangular tooth-like processes locking into each other.

Middle Oolite, Yorkshire and Wiltshire; the Inferior Oolite, Yorkshire and Gloucestershire.

22. Ostrea gregaria.—The Gregarious Oyster, pl. LVII. fig. 10.

O. gregaria. Sowerby, II., p. 19, pl. III. fig. 1.

Clustered, oblong, generally curved; substance of the shell thin, especially towards the edges; beaks long, very slightly

incurved; hinge-pit with a central cavity in the lower valve and a corresponding projection in the upper one; one valve considerably deeper than the other; surface with a broken longitudinal plait or furrow, from which diverge numerous irregular sharp, frequently furcated or branched ribs, crossed by imbricated laminæ.

Coral Rag, Malton, Wiltshire, and Calcareous Grit, Scarborough and Upware.

23. Ostrea duriuscula.—The Ragged Ostrea, pl. LIX. fig. 1.

O. duriuscula. Phillips, Geo. York, I. p. 101, pl. 4, fig. 1.

Obliquely ovate; hinge with a produced auriform process on one side; surface with rude irregular longitudinal wrinkles and concentric lines of growth. Length 2 inches.

Coral Rag, Malton; and near Scarborough, Yorkshire.

24. Ostrea inæqualis.—The Unequal Oyster, pl. LIX. fig. 5.

O. inæqualis. Phillips, Geo. York, I. p. 109, pl. 5, fig. 13.

Surface extremely rugged, and the margins irregularly undulated; lines of growth waved.

Oxford Clay, Scarborough, Yorkshire.

25. Ostrea undosa.—The Waved Oyster, pl. LVIII. fig. 4.

O. undosa. Phillips, Geo. York, I. p. 112, pl. 6, fig. 4.

Obliquely ovate, umbones nearly central; sides near the hinge almost even, on one side an indistinct longitudinal furrow reaching two-thirds of the length from the basal margin; the other side with a series of obliquely transverse, pretty strong, nearly equidistant undulations.

Kelloways Rock, Scarborough, Yorkshire.

26. Ostrea archetypa.—The Original Ostrea, pl. LVIII. fig. 5.

O. archetypa. Phillips, Geo. York, I. p. 112, pl. 6, fig. 9.

Umbo placed near to one side, and somewhat obtuse; a large wide furrow emanating from the disc, increasing as it descends to the base; and a narrower one in front, general contour of the shell oblique, with the margins undulated.

Kelloways Rock, Scarborough and Wheatcross.

27. Ostrea palmetta.—The Palmated Ostrea, pl. LXI.* figs. 3, 4.

O. palmetta. Sowerby, II. p. 20, pl. 111. fig. 2.

Oblong-ovate, depressed; umbo straight, nearly central, slightly turned to one side, and a little curved; with a single obscure ear; a longitudinal space running from the umbo to the base, from which diverge numerous blunt, oblique ribs; margins plaited.

Differing from *O. gregaria* in being flatter, with the plates fewer and more irregular.

Great Oolite, Marston, near Oxford.

28. Ostrea alæformis.—Wing-shaped Ostrea, pl. LXI.* figs. 1, 2.

O. alæformis. Woodward, Geo. Nor. p. 48, pl. 6, figs. 1, 2, 3. *O. serrata.* Brongniart, Env. de Paris, pl. 3, fig. 10.

Wing-shaped; umbo situate near one side, which is very short, the other side extending laterally, and is five times the dimensions of the other side; a nearly central space from the umbones, from which diverge numerous ribs; margins with numerous plaits, and with a horizontal frill extending to a considerable extent, valves very irregular in form.

Upper Chalk, Norwich.

29. Ostrea distorta.—The Distorted Ostrea, pl. LXVI.** figs. 23, 24.

O. distorta. Sowerby, Geo. Trans. 2d Ser. IV. p. 346, pl. 22, fig. 2, Ann. of Phil. N. S. VIII. p. 376.

Elongated, narrow towards the hinge; one valve quite flat; surface of both valves smooth.

Purbeck, Lowth, Wiltshire, and Portland Sand, Buckingham.

30. Ostrea edulis.—The Edible Ostrea.

O. edulis. Brown, Ill. Rec. Conch., p. 71, pl. 30,* figs. 6, 7.

Form variable, generally roundish oval, upper valve flat, with transverse scaley foliations; the under valve convex, and the inner margin entire.

The Pleistocene Marine Formation, Renfrewshire, and the Coral Rag, Ramshot, and common many other places.

31. Ostrea falcata.—The Hooked Ostrea, pl. LXVI.** 6, 7, fig. 27.

O. falcata. Sowerby, Geo. Trans. 2d Ser. IV., p. 347, pl. 23, fig. 1.

Considerably elongated and curved towards the posterior side; one valve flat and thick, surface with numerous foliations, the characters of the other valve unknown.

Portland Sand, Chicksgrove and Swindon.

32. Ostrea inæquicostata.—The Unequal-ribbed Ostrea, pl. LXI.* fig. 13.

O. inæquicostatus. Woodward, Geo. Nov. p. 68, pl. 6, fig. 4.

Obliquely quadrangular, umbo placed much to one side; hinge-line nearly parallel; surface with many unequal ribs; margins plicated.

Upper Chalk, Harford Bridge, Norfolk.

33. Ostrea lateralis.—The Lateral Ostrea, pl. LXI.* figs. 5–8.

O. lateralis. Goldfuss, pl. 82, fig. 1.

Oblong-ovate, incurved, anterior beak involute; the upper valve with concentric lineations; the lower valve plain, with deep foliations attached by the beak.

The Chalk, Norfolk.

34. Ostrea lunata.—The Crescent-shaped Ostrea, pl. LXI.* figs. 20, 21.

O. lunata. Goldfuss, pl. 75, fig. 2.

Equivalve, oblong, crescent-shaped, with the surface and margins undulating and smooth; posterior side triangular.

In the chalk?

35. Ostrea retusa.—The Blunt Ostrea, pl. LXVI.** fig. 28.

O. retusa. Sowerby, Geo. Trans., 2d Ser. IV. p. 328, pl. 14, fig. 4.

Form exceedingly variable, but for the most part orbicular and greatly curved; moderately thick, plain in the middle, but furnished with angular plaits on the margin. It occurs in masses.

Lower Greensand, Artherfield, Isle of Wight.

36. Ostrea sulcifera.—The Furrowed Ostrea, pl. LXI.* figs. 30, 31.

O. sulcifera. Phillips, Geo. York, I. p. 123, pl. 9, fig. 35.

Oblong-ovate, inflated, umbones nearly central, from whence emanates a broad central furrow in both valves, which terminate at the base of the valves; several indistinct oblique

undulations diverge from the central furrow; margins slightly foliated.

Great Oolite, Western Yorkshire.

37. OSTREA INDISTINCTA.—The Indistinct Ostrea, pl. LVIII. fig. 8.

Ostrea? Geo. York, I. p. 109 and 180, pl. 5, fig. 12.

Oblong, obliquely triangular, surface smooth.

The Oxford Clay, Scarborough.

38. OSTREA TRIANGULARIS.—The Triangular Ostrea, pl. LXI.* figs. 9, 10.

O. triangularis. Woodward, pl. VI. fig. 6, 7.

Triangular, oblong, oblique, with acute beaks; surface rather smooth.

In the Chalk, Norfolkshire.

GENUS XVIII.—GRYPHÆA.—*Lamarck.*

Shell free, inequivalve, upper valve small, flat, and acting apparently as a lid to the under one, which is large, concave, and arcuated, with an incurved prominent umbo; hinge destitute of teeth, with a curved depressed area; provided interiorly with one muscular impression in each valve.

1. GRYPHÆA INCURVA.—The Incurved Gryphæa, pl. LX. fig. 1.

Gryphæa incurva. Sowerby, II. p. 23, pl. 112, figs. 1, 2. Parkinson, p. III. 209, pl. 15, fig. 3. Goldfuss, pl. 84, fig. 1.

Elongated; larger valve greatly incurved, the point of the beak frequently concealed; when visible, it is usually sharp, seldom exhibiting any impression; lesser valve a little oblong, in the form of a lid, narrow towards the inner side, and gradually widening outwards, and externally concave; surface considerably undulated concentrically; sometimes laminated; sides straight, gradually widening towards the rounded front.

The Lias, of which it is a highly characteristic fossil, in England, Germany, and France.

2. GRYPHÆA BULLATA.—The Gem Gryphæa, pl. LX. fig. 2.

Gryphæa bullata. Sowerby, IV. p. 93, pl. 368. Phillips, Geo. York, I. p. 4, fig. 36.

Transversely obovate, irregular, thin, smooth, and compressed; upper valve considerably less than the other, which is undulated, concave, with concentric irregular lines of growth; beaks very small, that of the lower valve much incurved; lateral lobe small and obscure; point of attachment very small.

Kimmeridge Clay, Bedford and Norfolk, the Middle Oolite, Wiltshire and Yorkshire.

3. GRYPHÆA MACULLOCHII.—Maculloch's Gryphæa, pl. LX. fig. 19.

Gryphæa] Macullochii. Sowerby, VI. p. 89, pl. 547. Goldfuss, pl. 64, fig. 4.

Longitudinal, obovate, gibbose, and oblique; beaks much produced and incurved; base rather angular; posterior lobe more or less distinct; surface strong, with curved lines of growth.

This fossil is intermediate between *G. incurva* and *G. dilatata*, but is much shorter than the latter and greatly thicker.

Lias, at Pabba and Scalpa, Hebrides, and Robin Hood's Bay.

4. GRYPHÆA COLUMBA.—The Pigeon Gryphæa, pl. LXI. fig. 15.

G. Columba. Sowerby, IV. p. 113, pl. 383, figs. 1 and 2. *Exogyra Columba.* Goldfuss, pl. 86, fig. 9.

Ovate; rounded; beak nearly central, much attenuated; incurved obliquely; posteriorly expanded; surface smooth; upper valve slightly striated near the hinge, and more or less quadrangular; largely undulated; its posterior margin thick and flattened; opposite valve obtusely carinated.

Greensand, Lyme and Devonshire.

5. GRYPHÆA DEPRESSA.—The Depressed Gryphæa, pl. LXI. figs. 19.

G. depressa. Phillips, I. p. 134, pl. 14, fig. 7.

Ovate, oblique; beaks obtuse, turned to one side; margins and surface smooth, with distinct lines of growth; flat valve nearly plain.

Lias, Bilsdale, Yorkshire.

6. GRYPHÆA DILATATA.—The Extended Gryphæa, pl. LXI, fig. 1, 6, 7.

G. dilatata. Sowerby, II. p. 113, pl. 149, figs. 1, 2, variety Phillips, I. p. 112. pl. 6, fig. 1.

Orbicular, obscurely lobed, upper valve compressed, quite flat, with an obtuse umbo; under valve hemispherical, with its umbo rather large and incurved, remote from that of the other valve.

The variety, fig. 1. has a distinct lobe, and longitudinal furrow on the narrow side of the deeper valve.

Portland Sand, Langcomb, Oxon; Kimmeridge Clay, Bedford; Kelloways Rock; Scarborough and Hackness, and the inferior Oolite, near Cheltenham.

7. GRYPHÆA GIGANTEA.—The Gigantic Gryphæa, pl. LXI. fig. 5.

Gryphæa gigantea. Sowerby, IV. p. 127, pl. 391. Goldfuss, pl. 85, fig 5.

Nearly orbicular; upper valve thin and concave; lower valve convex, with a small, sharp, incurved umbo; hinge small; surface rather smooth, with imbricated laminæ, which in the lesser valve are but slightly developed, even, and situate at regular intervals; anterior lobe separated by a small sinus in the edge of the laminæ; depth about a fifth of its length.

It is probable that *G. bullata* and *dilatata* are only varieties of this species.

Great Oolite, White Nab; Inferior Oolite, Ilminster and Lias, Prees.

8. GRYPHÆA GLOBOSA.—The Globular Gryphæa, pl. LXI. fig. 2.

G. globosa. Sowerby, IV. p. 127, pl. 392. *Ostrea fascicularis*, Brongniart, Env. de Paris, pl. 3, fig. 5.

Obliquely subglobose, thin and smooth; beak much truncated; upper valve concave; hinge-line straight; anterior lobe very conspicuous; a small additional muscular impression situate near the hinge.

Upper Chalk, Gravesend and Sussex; and the Red Chalk Hunstanton.

9. GRYPHÆA NANA.—The Dwarf Gryphæa, pl. LXI. figs. 3, 4.

G. nana. Sowerby, IV. p. 114, pl. 383, fig. 3.

Oblong-ovate, inflated; surface rugged; umbo pointed, obliquely incurved; upper valve acute and thick; variable in

form, but always longer than wide; hinge-pit narrow and much curved.

Portland Sand, Dinton, Buckinghamshire. The Kimmeridge Clay, Aylesbury, and Oxford Clay, Dorsetshire.

10. Gryphæa minuta.—The Minute Gryphæa, pl. LXI. figs. 10, 11, 12.

G. minuta. Sowerby, VI. p. 90, pl. 547, fig. 4.

Orbicular; shell thin; gibbose; beak spiral; the lobe obscure; much compressed.

Great Oolite, Ancliff, Wiltshire.

11. Gryphæa obliquata.—The Oblique Gryphæa, pl. LXI. figs. 16, 17.

G. obliquata. Sowerby, II. p. 24, pl. 112, fig. 3, Goldfuss, pl. 85, fig. 2.

Obliquely oblong-ovate; a little involute; an obscure lobe on the right side; smaller valve irregularly ovate, and externally concave; beak pointing to the right side.

Lias, Gloucestershire.

12. Gryphæa sinuata.—The Bent Gryphæa, pl. LX. fig. 5.

G. sinuata. Sowerby, IV. p. 43, pl. 336, Phillips, I. p. 94, pl. 2, fig. 23.

Obliquely ovate; larger valve very concave, much bent, with one side completely flattened, towards which the umbo is inclined, curved, and very small; lesser valve quite flat and triangular; surface rather smooth, with numerous equidistant lines of growth; hinge-pit marginal, long, narrow, and curved.

Lower Greensand, Kent and Sussex; Speeton Clay, Speeton, Yorkshire.

13. Gryphæa vesiculosa.—The Bladder Gryphæa, pl. LXI. figs. 8, 9.

G. vesiculosa. Sowerby, IV. p. 93, pl. 369.

Sub-rhomboidal, oblong, deep; lesser valve concave, small, and curved; composed of various distant laminæ; beaks pointed, and the hinge small; width and depth nearly equal; lobe distinct, but not sharply defined; surface smooth.

Chalk at Lyme Regis.

14. Gryphæa Phillipsii.—Phillips' Gryphæa, pl. LXI. figs. 13, 14.

Gryphæa ——— ? Phillips, Geo. York, I. pl. 9, fig. 26.

Longitudinal, incurved; beaks rather large; and both valves inflated.

Upper Lias Shale, Yorkshire.

15. Gryphæa haliotoidea.—The Haliotis-formed Gryphæa, pl. LX. figs. 6, 7, 8, 9.

Exogyra Haliotoidea. Goldfuss, pl. 88, fig. 1. *Chama Haliotoidea.* Sowerby, I. p. 67, pl. 25, fig. 2.

Oval, compressed; one valve deeper than the other, and provided internally with a deep curved groove, extending from below the beak on one side; the other parts of the valve very shallow; margin thin, broad, and slightly fringed externally, and crenated internally, with a large muscular impression; surface transversely wrinkled; beaks slightly involute; nearly the whole surface of the under valve attached; length about 1½ inch.

Upper Greensand, Warminster and Blackdown.

16. Gryphæa recurvata.—The Recurved Gryphæa, pl. LX. fig. 4.

Chama recurvata. Sowerby, I. p. 69, pl. 26, fig. 2.

Sub-rotund; one valve very convex and conical, with its apex curved, the other shallow and lid-shaped; beak subinvolute, hinge indistinct, and the surface smooth.

The Upper Greensand, Halldown, near Exeter.

17. Gryphæa conica.—The Conical Gryphæa, pl. LX. figs. 3, 11, 12, 13.

Chama conica. Sowerby, I. p. 69, pl. 26, fig. 3, and pl. 605, figs. 1, 2, 3.

Oblong, curved; the convex and larger valve considerably longer than the other, with a conical obtuse beak, and a small wing-like process; lesser valve oval, flat, with the margin and wing crenated; hinge formed like a ball and socket.

The Upper Chalk, Charlton; the Under Greensand, Dorsetshire and Wiltshire; the Gault, Hythe and Cambridgeshire; and the Greensand, Dorset and Devonshires.

18. Gryphæa plicata.—The Plaited Gryphæa, pl. LXI.* figs. 26, 27, 28.

G. plicata. Goldfuss, pl. 87, fig. 5.

Oblong-ovate, much arcuated; beaks much incurved, surface very rugged, with transverse and longitudinal, irregular, strong, waved, striated ridges and furrows; margins scolloped, inside deep, with a very large, well-defined muscular impressions under the beak.

In the Chalk, Sussex.

19. Gryphæa digitata.—The Fingered Gryphæa, pl. LX. fig. 16.

Chama digitata. Sowerby. II. p. 165, pl. 174.

Obliquely elongated, curved, and gibbose; with five or six marginal, elongated, canaliculated, finger-like processes; surface smooth; deeper valve with several ridges.

The Greensand, Lyme Regis.

20. Gryphæa lævigata.—The Smooth Gryphæa, pl. LX. fig. 17.

Exogyra lævigata. Sowerby, VI. p. 220, pl. 605, fig. 4.

Slightly elongated, curved, and smooth; deeper valve somewhat inflated, and obtusely carinated near the hollow side; flat valve semicircular, with a small pointed beak.

The Upper Greensand, Worbarrow Bay, and the Lower Greensand, Sandgate and Berehead.

21. Gryphæa undata.—The Waved Gryphæa, pl. LX. figs. 14, 15.

Exogyra undata. Sowerby, VI. p. 220, pl. 605, figs. 5, 6, 7.

Elongated, convex; deeper valve carinated along the centre; with a series of branching ribs, that diverge from the keel; flat valve smooth and plain.

Upper Greensand, Western Lines, Isle of Wight, and Blackdown.

22. Gryphæa bulla.—The Vesicular Gryphæa, pl. LXVI.** fig. 22.

Exogyra bulla. Sowerby, Geo. Trans. 2d. Ser. IV. p. 346, pl. 22, fig. 1.

Oblong, convex; beaks short, and laterally curved; surface nearly smooth; form in general extremely variable.

The Purbeck, Durlestone, Dorsetshire.

23. Gryphæa canaliculata.—The Canaled Gryphæa, pl. LXI. fig. 18.

Chama canaliculata. Sowerby, I. p. 68, pl. 26, fig 1.

Oblong-oval, rather depressed, transversely and concentrically furrowed; deeper valve with a wing-shaped, lateral,

canaliculated appendage; and with its umbo curved towards the wing; beak of the opposite valve rather short.

The Upper Greensand, Western Lines, Isle of Wight, and the Greensand, Blackdown and Lyme Regis.

24. GRYPHÆA MIMA.—The Mimic Gryphæa.

Gryphæa mima. Phillips, Geo. York, I. pl. 4, fig. 6.

The Coralline Oolite, Malton, and Calcareous Grit.

25. GRYPHÆA SUILLA. The Swine Gryphæa, pl. LXI.* fig. 14.

G. suilla. Goldfuss, p. 30, pl. 85, fig. 4.

Sub-orbicular, with concentric striated laminæ; the superior valve plain; the inferior one with a short blunt oblique beak; the lateral edges of the lips turned much inwards.

The Lias, near Cheltenham.

26. GRYPHÆA VIRGULA.—The Fallen Gryphæa, pl. LXVI.** figs. 25, 26.

Exogyra virgula. Sowerby, Geo. Tr. 2d Ser. IV. pl. 23, fig. 10. Goldfuss, pl. 86, fig. 3.

Greatly elongated and arcuated; one valve convex, with elevated lines, the other flat.

The Kimmeridge Clay, Aylesbury, Buckinghamshire.

27. GRYPHÆA INHÆRENS.—The Inherent Gryphæa.

G. inhærens. Phillips, Geo. York, I. p. 163.

The Coral Rag and Calcareous Grit, Malton, &c.

28. GRYPHÆA CYMBIUM.—The Boat Gryphæa, pl. LXI.* figs. 22, 23.

G. cymbium. Goldfuss, p. 29, pl. 85, fig. 1.

Oblong-ovate; the superior valve concave, concentrically striated; the lower valve boat-shaped, and concentrically lineated and striated; beak acute and turned to one side; length 5½ inches; breadth 3¼.

Inferior Oolite, Cotswold Hills.

29. GRYPHÆA DECUSSATA.—The Decussated Gryphæa, pl. LXI.* figs. 15, 16.

G. decussata. Goldfuss, II. p. 35, pl. 86, fig. 11.

The lower valve oblong-oval, convex, with the apex laterally attached; surface with decussated waved striæ.

The Chalk, Northfleet.

30. GRYPHÆA AQUILA. The Eagle-beaked Gryphæa, pl. LXI.* figs. 17, 18, 19.

G. aquila. Goldfuss, pl. 87, fig. 3.

Obliquely sub-triangular, larger valve deep, with an undulated ridge, emanating from the beak and ending on the base, from whence the side is abruptly flattened, and wrinkled obliquely, with an undulating margin; from the ridge to the posterior side the valve gradually slopes, and its surface is transversely waved and wrinkled longitudinally towards the base; beak large, and much turned to one side; upper valve flat, with an obtuse beak; smooth and uneven in the centre, and the other portion with many concentric broad striæ.

This is a large species, measuring 4½ inches in length and 3½ in breadth.

The Lower Chalk, Sussex.

FAMILY II.—PECTINIDES.

Ligament placed interiorly, or partly so; shell in general irregular, compact, and not foliaceous.

GENUS XIX.—PLICATULA.—*Lamarck.*

Shell irregular, inequivalve, and destitute of ears, attenuated at the base, rounded and plaited at the upper margin; umbones unequal and entire; hinge with two strong, generally perpendicularly grooved teeth in each valve, with their points recurved, and a central cavity or pit for the reception of the ligament, which is internal; under valve generally more convex than the upper one; muscular impressions strong, orbicular, and situate near the centre of the valves.

1. PLICATULA SPINOSA.—The Spinous Plicatula, pl. LXII. figs. 1, 2.

P. spinosa. Sowerby, III. p. 79, pl. 245. Phillips, I. p. 134, pl. 14, fig. 15. Goldfuss, pl. 107, fig. 1.

Obliquely-ovate, compressed, with an angle at the beaks; deeper valve, with radiating undulations, and numerous sharp spines; opposite valve externally concave, and destitute of undulations, but with irregular sharp hollow spines, which are frequently hooked; margins entire.

Lias, Lyme Regis, and Vale of Gloucestershire, Yorkshire, and Hebrides.

2. PLICATULA PECTINOIDES.—The Pectinated Plicatula, pl. LXII. 3, 4.

P. pectinoides. Sowerby, V. p. 5, pl. 409, fig. 1. *P. radiata.* Goldfuss, pl. 107, fig. 7 (?)

Oblong-ovate, curved and depressed; beaks curved and projecting; surface with numerous longitudinal, divergent ridges, surmounted by many depressed irregular spines; free valve externally concave. When old this shell is frequently sub-globose.

Chalk Marl, Cambridge, Dover, &c.; Lower Greensand, Court-at-Street, and Broughton.

3. PLICATULA INFLATA.—The Inflated Plicatula, pl. LXII. fig. 5.

P. inflata. Sowerby, V. p. 6, pl. 409, fig. 2. *P. spinosa.* Mantell, Geo. Suss. pl. 26, figs. 16, 17. Goldfuss, pl. 107, fig. 6.

Sub-orbicular, gibbose; both valves convex; beaks nearly central, and rather obtuse; surface rather smooth, and provided with a few longitudinal ridges, mostly emanating from the disc, and terminating on the base, each furnished with a few depressed spines.

Chalk Marl, Cambridge and Sussex; Upper Greensand, Petersfield and Isle of Wight.

GENUS XX.—PLAGIOSTOMA.—*Lluyd.*

Shell inequilateral, sub-equivalve, oblique, and provided with small ears, mostly higher than long; generally covered with grooves or striæ diverging from the umbones, and passing to the basal margin; hinge-line transverse, straight, oblique, and destitute of teeth; umbones remote; depression for the ligament either straight or slightly angular.

1. PLAGIOSTOMA GIGANTEUM.—The Gigantic Plagiostoma, pl. LXVI. fig. 10.

P. gigantea. Sowerby, I. p. 176, pl. 77. Goldfuss, pl. 101, fig. 1.

Obliquely-oblong, sub-compressed, and deltoidal, with the posterior side rounded into the front; umbones, nearly

straight and obtuse; auricles small, the anterior one longest, situated in a large, broad, deep furrow; surface smooth, with obscure longitudinal divergent striæ; and crossed by a few hollow lines of growth.

Inferior Oolite, Glaizdale and Cotswold, and the Lias, Weston and Lyme Regis.

2. PLAGIOSTOMA SPINOSUM.—The Spinous Plagiostoma, pl. LXVI.* fig. 4.

P. spinosa. Sowerby, I. p. 177, pl. 78. Spondylus, Goldfuss, pl. 105, fig. 5.

Obovate; umbones nearly central and rather blunt; sides nearly equal, and not much arched; one valve flat and the other more inflated; surface with numerous flat ribs and deep intermediate furrows, which extend to the inside of the valves, terminating in regular crenulations on the margins; the convex valve provided with irregularly set, somewhat distant, curved, and long spines, each of which has a dorsal ridge and a furrow beneath; some of those nearest the base of the shell are equal to half the length of the valve, whole surface covered with very fine, raised, transverse striæ.

Upper Chalk, Northfleet, Lewis, Norfolk, and Wiltshire.

3. PLAGIOSTOMA PUNCTATUM.—The Punctured Plagiostoma, pl. LXVI. fig. 19.

P. punctata. Sowerby, II. p. 25, pl. 113, figs. 1, 2. *Lima.* Goldfuss, p. 81, pl. 101, fig. 2.

Obliquely obovate, compressed; anterior side long and nearly straight; ears nearly equal; whole surface covered with numerous, nearly regular, longitudinal coarse striæ, and very fine transverse striæ, which produces a somewhat punctated appearance.

Inferior Oolite, Cotswold Hills, Lias, Weston, and Pickeridge Hill.

4. PLAGIOSTOMA ELONGATUM.—The Elongated Plagiostoma, pl. LXVI. fig. 4.

Modiola parallela. Sowerby, I. p. 31, pl. 9. Upper right-hand figure, *Ib.* VI. p. 113, pl. 559, fig. 2.

Transversely elongated, nearly twice as broad as long, acutely convex, anterior and posterior sides parallel; beaks rather sharp; lower margin straight, short, and nearly at right angles with the sides, which are almost straight and parallel; surface with a few transverse furrows.

The Gualt, Folkstone and Ridge; the Lower Greensand, Artherfield Point, Isle of Wight, and Court-at-Street.

5. PLAGIOSTOMA CONCENTRICUM.—The Concentric Plagiostoma, pl. LXVI. fig. 2.

P. concentrica. Sowerby, VI. p. 113, pl. 559, fig. 1.

Avicula ovalis. Phillips, Geo. York, I. pl. 3, fig. 36 (?)

Obliquely elliptical, convex, most so towards the beaks, hinge-line short and oblique; surface with numerous longitudinal divergent striæ, and a few concentrical lines of growth; beaks slightly produced; shell thick.

The Lias, Ethie, Cromarty.

6. PLAGIOSTOMA DUPLICATUM.—The Double-Plaited Plagiostoma, pl. LXVI. fig. 6.

P. duplicata. Sowerby, pl. 559, fig. 3, Phillips, Geo. York, I. pl. 6, fig. 2.

Obliquely oboval, convex; beaks rather produced; surface with numerous sharp, divergent ribs, with a sharp elevated line intervening between each. The ribs are about twenty-five in number.

The Coral Rag, Malton and Scarborough, the Kelloways Rock, Hackness, and the Lias, Bredon and Weston.

7. PLAGIOSTOMA HOPERI.—Hoper's Plagiostoma, pl. LXVI. fig. 18.

P. Hoperi. Sowerby, IV. p. 111, pl. 380.

Transversely and obliquely ovate; convex; almost smooth; surface with very slender, nearly obsolete, divergent, obscurely puntated striæ, which are strongest at the sides; anterior side straight and a little concave, ears unequal, small, with longitudinal striæ.

The Chalk, Lewis and Norwich, and the Upper Greensand, Isle of Wight.

8. PLAGIOSTOMA RUSTICUM.—The Rude Plagiostoma, pl. LXVI. fig. 1.

P. rusticum. Sowerby, IV. p. 111, pl. 381.

Transversely oblong-ovate, oblique, smooth, convex, hinge-line very short, ears obscure and very short, the anterior side straight, convex along the middle, surface with about twenty-five deep, irregular, strong, somewhat waved, divergent, longitudinal furrows; beak a little prominent.

The Portland Stone, Great Hazely, Oxfordshire, and the Coral Rag, Malton and Shotover.

9. PLAGIOSTOMA LÆVIUSCULUM.—The Smooth Plagiostoma, pl. LXVI. fig. 17.

P. læviusculum. Sowerby, IV. p. 112, 382.

Subtriangular, oblique, its length exceeding its breadth, hinge-line oblique, short, and intercepted; ears small, unequal, longitudinally furrowed; anterior side straight, whole surface covered with many large, slightly elevated, longitudinal, divergent ribs, and numerous irregularly elevated concentric lines of growth; margin slightly scolloped.

The Coral Rag, Malton, Yorkshire.

10. PLAGIOSTOMA RIGIDUM.—The Rigid Plagiostoma, pl. LXVI. fig. 5.

P. rigidum. Sowerby, II. p. 27, pl. 114, fig. 1.

Inflated, obliquely obovate; hinge-line rather long, and considerably oblique, ears narrow and nearly equal; anterior side long, straight, and a little concave; posterior side rounded, beaks obtuse, surface with numerous, sharp, irregularly undulating thread-like, longitudinal, divergent ribs, with very minute, intervening striæ, which cannot be discerned without the use of a lens; beaks rather produced.

The Lower Greensand, North Wiltshire, and the Coral Rag, Malton and Shotover.

11. PLAGIOSTOMA OVALE.—The Oval Plagiostoma. pl. LXVI. fig. 13.

P. ovalis. Sowerby, II. p. 27, pl. 114, fig. 3.

Somewhat ventricose, elongated, moderately oblique; sides nearly equal, the anterior one a little concave, and slightly recurved, ears rather large; surface with numerous small rounded, equidistant, divergent ribs, and the intervening spaces, with minute, transverse striæ.

The Great Oolite, near Bath.

12. PLAGIOSTOMA OBSCURUM.—The Obscure Plagiostoma, pl. LXVI. fig. 3.

P. Obscura. Sowerby, II. p. 28, pl. 114, fig. 2.

Somewhat gibbose, obliquely sub-ovate; anterior side a little flattened below the beaks, ears unequal, beaks produced; surface smooth, with numerous fine divergent ribs, and a few concentric distinct lines of growth.

The Kelloways Rock, Kelloways.

13. Plagiostoma pectinoides.—The Pectinated Plagiostoma, pl. LXVI. fig. 9.

P. pectinoides. Sowerby, II. p. 28, pl. 114, fig. 2.

Oblong-ovate, considerably oblique, compressed, back somewhat angular; beaks acute; hinge-line long, ears nearly equal, and rather large; both sides a little straight, the anterior one considerably exceeding the posterior; surface with twenty or more carinated, slightly divergent ribs, and the intervening furrows transversely striated; margin scolloped; inside, plane.

The Lias, Pickeridge, Yorkshire.

14. Plagiostoma cardiiforme.—The Cardium-shaped Plagiostoma, pl. LXVI. fig. 14.

P. cardiiformes. Sowerby, II. p. 26, pl. 113, fig. 3.

Nearly circular, inflated; anterior side short and straight; ears equal; beaks prominent; surface smooth, with numerous longitudinal divergent furrows, crossed by nearly obsolete transverse striæ, which are hardly visible but in the furrows, where they have the appearance of minute punctures.

The Oxford Clay, Cambridge, Kelloways Rock, Gloucestershire, and the Inferior Oolite, Cotswold.

15. Plagiostoma Brightonense.—The Brighton Plagiostoma, pl. LXI.** fig. 26.

P. Brightonenses. Mantell, Geo. Sussex, p. 204, pl. 25, fig. 15.

Obovate, compressed, posterior side with an ear; anterior side concave, lunulate, small and acuminated; surface with numerous divergent rounded ribs; the margin crenulated.

The Upper Chalk, Brighton.

16. Plagiostoma asperum.—The Rough Plagiostoma, pl. LXI.* fig. 11.

P. aspera. Mantell, p. 129, pl. 26, fig. 18.

Obovate, sub-compressed, with numerous flat ribs, the edges of which are fringed with minute sharp prickles; lines of growth few.

The Gray Chalk Marl, Hamsey, Sussex.

17. Plagiostoma interstinctum.—The Divided Plagiostoma, pl. LXVI. fig. 11.

P. interstinctum. Phillips, Geo. York, I. pl. 7, fig. 14.

Obliquely obovate, sides straight about half way below the hinge; beaks produced; ears indistinct; surface with many sharp, somewhat irregular divergent ribs; margin crenated.

The Great Oolite, Whitwell, Yorkshire.

18. Plagiostoma rigidulum.—The Rigid Plagiostoma, pl. LXVI. fig. 7.

P. rigidulum. Phillips, Geo. York, pl. 7, fig. 13.

Elongated, sub-triangular, considerably oblique; anterior side elongated and concave; posterior side short and rounded; ears unequal; that of the posterior side very small, anterior one extending a considerable way down the side; beak large and obtuse; surface smooth, with many oblique divergent rounded ribs.

The Cornbrash, Scarborough.

19. Plagiostoma obliquatum.—The Oblique Plagiostoma.

P. obliquatum. Sowerby, Geo. Tr. 2d Ser. II. p. 319.

The Portland Stone, Thame and Brora.

20. Plagiostoma Hermani?—Herman's Plagiostoma, pl. LXVI. fig. 12.

Plagiostoma Hermani. Phillips, Geo. York, I. pl. 14, fig. 18.

Sub-rotund, slightly oblique; anterior side straight, and a little concave below the beaks; posterior side shorter than the other; ears unequal, of medium size; beaks slightly produced, surface smooth, with about 15 very flat longitudinal ribs, and a few remote lines of growth.

In the Marlestone and Calcareous Nodules, Upper Lias, Yorkshire.

21. Plagiostoma ambiguum.—The Ambiguous Plagiostoma, pl. LXVI. fig. 8.

Plagiostoma. Phillips, Geo. York, pl. 6, fig. 23.

Sub-triangular, sides nearly equal, hinge-line short, slightly oblique; beaks acute and produced; surface with about twenty-three rounded divergent ribs, crossed by a few distant lines of growth; margins scolloped.

The Mountain Limestone, Yorkshire.

22. Plagiostoma Mantelli(?)—Mantell's Plagiostoma, pl. LXI.* fig. 41.

P. Mantelli. Goldfuss, II. pl. 104, fig. 9.

Obliquely semicircular; right side truncated; surface with radiating striæ, and a few concentric ones, which become obsolete on the back; the lunule hollow and lineated.

The Upper Greensand, Lyme Regis.

23. Plagiostoma dubium.—The Doubtful Plagiostoma, pl. LXVI. fig. 16.

Plagiostoma (?) Phillips, Geo. York, I. pl. V. 10.

Obliquely ovate, anterior side nearly straight; posterior side rounded; beaks obtuse; surface with numerous flat, divergent ribs, which are obsolete towards the apex; with a few remote lines of growth.

The Oxford Clay, Yorkshire.

Genus XXI.—DIANCHORA.—*Sowerby.*

Shell inequivalve, sub-triangular, oblique, adherent; attached valve provided with an angular hiatus instead of an umbo; the other valve auriculated, and with an obtuse umbo; hinge destitute of teeth.

1. Dianchora striata.—The Striated Dianchora, pl. LXVI.* figs. 1, 2.

D. striata. Sowerby, I. p. 183, pl. 80, fig. 1.

Triangularly-ovate, oblique, length and breadth nearly equal; beak prominent; free valve obscurely ribbed; ears small, and continuous along the sides of the valves.

Greensand, near Warminster, Dane's Dyke, Wiltshire and Blackdown.

2. Dianchora lata.—The Broad Dianchora, pl. LXVI.*, fig. 3.

D. lata. Sowerby, I. p. 184, pl. 80, fig. 2.

The attached convexity moderate; semicircular; beak of valve produced; free valve plain; surface with obscure lines of growth, and provided with a few obsolete striæ; edge very sharp.

Chalk, near Lewes, Sussex.

Genus XXII.—HINNUS.—*Defrance.*

Shell inequivalve, nearly equal sided; valves eared; the area of the hinge quadrangular; tripartite; the cartilage sunk in a deep longitudinal pit in the centre; the lateral portions striated, supporting the ligament; sinus for the byssus small, provided with one large muscular impression, connected with the pallial impressions.

1. Hinnus Dubissoni.—Dubisson's Hinnus, pl. LX. fig. 18.

H. Dubissoni. Sowerby, VI. p. 210, pl. 601, Defrance, Dict. des Sci. Nat. XXI. p. 170.

Oblong; shell rather thick; surface with numerous, narrow, distant, divergent ribs, with short intervening ones towards the base of the valves; the whole of the ribs are a little imbricated towards the lower part of the valves, and with remote irregular lines of growth; ears nearly equal, with a few longitudinal shallow furrows; umbo obtuse.

The Coral Crag, Ramshot.

Genus XXIII. PECTEN.—*Bruguiére.*

Shell inequivalve; the under valve generally more convex than the upper; sub-equilateral, with many grooves or ribs diverging from the umbones to the margins; provided with two ears, which are usually unequal in size; close below one of them, in the upper valve, is a small notch for the passage of a byssus; muscular impression large, placed somewhat to one side; pallial impressions destitute of a sinus; hinge linear, without teeth; ligament consisting of three portions, of which the two lateral parts are elongated, and follow the hinge line, the third portion thick and triangular, and fitted into a central, triangular, shallow pit within the hinge.

1. Pecten grandis.—The Great Pecten, pl. LXIII. fig. 2.

P. grandis. Sowerby, Min. Conch., VI. p. 163, pl. 585, figs. 1 & 2.

Shell sub-orbicular, somewhat broader than long; the convex valve provided with thirteen greatly elevated, rounded, more or less compound, divergent ribs, most of which with a central sulcus, and between each is a single secondary rib; one valve rather convex, towards the umbones somewhat concave, and the other very convex; ears square, almost equal, and longitudinally striated; whole surface of the convex valve covered with very irregular, slightly raised, concentric striæ, upon the other they are regular, close-set, and elevated, approaching to the form of sharp laminæ.

Found in the Crag at Newbourn, Ramshot, and Suffolk.

2. Pecten quadricostatus.—The Four-Ribbed Pecten, pl. LXV. fig. 2.

P. quadricostata. Sowerby, I. p. 121, pl. 56, figs. 1, 2.

Triangular; length somewhat more than the width; posterior auricle large; nearly even; front semicircular; margin notched; convex valve with six large ribs, and three smaller ones intervening between each: making five series of four ribs each; towards the sides the ribs are less regular and smaller.

The Upper Greensand, Isle of Wight, Dorsetshire, and Wiltshire; and the Greensand, Parham and Haldon Hill.

3. Pecten quinquecostatau.—The Five-Ribbed Pecten, pl. LXV. fig. 3.

Pecten quinquecostatu. Sowerby, I. p. 122, pl. 56, figs. 5 to 8.

Sub-triangular, somewhat oblique, length a little exceeding its width; front semicircular, toothed; convex valve gibbose; with five or six principal ribs, and four lesser intervening ones; upper valve flat, toothed; whole surface with minute transverse striæ, and intersected by deep lines of growth, which give the surface a fringed appearance.

The Chalk, Lewes, Gravesend, and Antrim, Ireland; the Upper Greensand, Petersfield; the Gualt, Isle of Wight; and the Lower Greensand, Sandgate, Sussex, Haldon, and Staple Hill, Devises.

4. Pecten Flemingi.—Fleming's Pecten, pl. LVI.* fig. 40.

Convex, with numerous elevated, slightly undulating ribs between each, one or more smaller, less elevated ones; in many of the interstices, towards the base, the intermediate ribs are superseded by six or seven longitudinal striæ; base and sides crossed by numerous, irregular lines of growth and striæ, producing a denticulated appearance.

Found by my esteemed friend Dr Fleming of Pendleton, Manchester, in the Great Oolite, Melton, and in his cabinet.

5. Pecten asper.—The Rough Pecten, pl. LXV. fig. 23.

P. asper. Sowerby, IV. p. 95, pl. 370, fig. 1.

Nearly orbicular; slightly oblique; both valves convex; ears nearly equal; surface with about seventeen ribs, arranged in series of from five to seven, which are rendered very rough by a series of sub-tubular, imbricated scales, the centre of each set being provided with larger scales; margin crenated, and presenting a fringed appearance; inside plain, with a fringed margin.

The Upper Greensand, Petersfield and Wiltshire, and the Greensand, Blackdown and Lyme Regis.

6. Pecten obliquus.—The Oblique Pecten, pl. LXIV. f. 19.

P. obliquus. Sowerby, IV. pl. 370, fig. 2.

Obliquely oval, its breadth about two-thirds its length; both valves convex, but unequally so; ears large; surface with numerous ribs, roughened by semicircular imbricated scales, every third rib being larger than the intermediate ones, altogether amounting to about twenty.

The Upper Greensand, Hythe, Parham, and Isle of Wight; the Great Oolite, Stonesfield.

7. Pecten cinctus.—The Girdled Pecten, pl. LXII. fig. 7.

P. cinctus. Sowerby, IV. p. 96, pl. 371.

Almost circular, gibbose, valves nearly equally convex; ears small, and covered with close ridges; longitudinally striated, the striæ covered with thin erect concentric laminæ, becoming very numerous towards the edges, which are entire; substance of the shell thick, especially towards the beaks.

The Inferior Oolite, Horncastle.

8. Pecten barbatus.—The Bearded Pecten, pl. LXIV. f. 7.

P. barbatus. Sowerby, III. p. 53, pl. 231.

Orbicular, compressed; the spinous valve flatter than the opposite; ears nearly equal; surface with about fourteen flattened divergent ribs; those upon one valve beset with spines and transverse striæ, which are sharp and considerably elevated upon the sides of the ribs, from whence they curve into the bases of the spines, there being about five on each rib; ribs upon the opposite valve convex, and equal in width to the intervening spaces, and crossed by less elevated striæ; sides of both valves pectinated near the ears.

The Inferior Oolite, Dundry and the Lias, Weston.

9. PECTEN BEAVERI.—Beaver's Pecten, pl. LXII. fig. 12.

P. Beaveri. Sowerby, II. p. 131, pl. 158.

Orbicular, compressed; general surface smooth, with irregular longitudinal ribs, sometimes with one or two smaller costæ between the larger ones; ears nearly equal, and as wide as the shell; the substance of the shell thin.

The Chalk, Norwich and Sussex, the Red Chalk, Hunstanton, and the Under Greensand, Hants.

10. PECTEN CORNEUS.—The Horny Pecten, pl. LXII. fig. 6.

P. cornea. Sowerby, III. p. 1, pl. 204.

Orbicular, much compressed, smooth, and shining; beaks prominent, and well marked; ears small, nearly equal; two obtuse teeth in each valve near the ears; substance of the shell thin and fragile.

The London Clay, Stubbington.

11. PECTEN DENTATUS.—The Toothed Pecten, pl. LXIV. fig. 16.

P. dentatus. Sowerby, VI. p. 143, pl. 574, fig. 1.

Almost orbicular, convex; ears small, unequal; surface with about twenty close, large, angular, obtuse, longitudinal ribs, crossed by minute, concentric, regular striæ; margin deeply toothed.

The Inferior Oolite, Dundry.

12. PECTEN RECONDITUS.—The Recondite Pecten, pl. LXIII. fig. 12.

P. reconditus. Sowerby, VI. p. 146, pl. 575, figs. 5, 6.

Orbicular, oblique; valves unequally convex; ears unequal, obliquely ribbed; surface with about twenty rounded, longitudinal ribs, the intermediate surface destitute of striæ, and covered with concentric lines of sharp scales; ribs with three rows of scales; the interstices have only one; internal surface furrowed.

The London Clay, Barton and Stubbington.

13. PECTEN ÆQUIVALVES.—The Equal-valved Pecten, pl. LXV. fig. 6.

P. equivalvis. Sowerby, II. p. 83, pl. 136, fig. 1.

Lenticular; valves equally convex, the lower one smoothest; ears equal, rather large; surface with about twenty rounded longitudinal ribs, crossed by numerous acute concentric striæ, which are more or less inconspicuous as they pass over the ribs, and the intervening spaces rather concave.

The Inferior Oolite, Ilminster and Cotswold, and the Lias, Prees and Yorkshire.

14. PECTEN FIBROSUS.—The Fibrous Pecten, pl. LXIV. fig. 21.

P. fibrosus. Sowerby, II. p. 85, pl. 136, fig. 2.

Orbicular, somewhat longer than broad, compressed; ears equal; rectangular; surface with nine or ten longitudinal, broad, divergent furrows, and numerous deep concentric striæ; beak rectangular; margin internally and rather deeply undulated.

The Middle Oolite, Yorkshire, Wiltshire, and Oxfordshire.

15. PECTEN GRANOSUS.—The Granulated Pecten, pl. LXV. fig. 16.

P. granosus. Sowerby, VI. p. 144, pl. 517, fig. 2.

Nearly orbicular, somewhat wider than long; oblique, a little convex, ears unequal, undefined, extending nearly the whole breadth of the shell; surface with about thirty granulated longitudinal ribs, with intervening smooth ones.

The Carboniferous Limestone, Bolland, Kildare, and Cork.

16. PECTEN PLICATUS.—The Plicated Pecten, pl. LXIII. fig. 1.

P. plicatus. Sowerby, VI. p. 144, pl. 574, fig. 3.

Almost orbicular, somewhat oblique and convex; ears undefined, extending the whole width of the shell; surface with numerous irregular, smooth, elevated striæ.

The Carboniferous Limestone, Ardconnaught, Ireland, and the Devonian Shales, Plymouth.

17. PECTEN DUPLICATUS.—The Double-plaited Pecten, pl. LXIV. figs. 4, 5.

P. duplicatus. Sowerby, VI. p. 145, pl. 575, figs. 1, 2, 3.

Orbicular, compressed; ears small, defined; surface with one valve nearly smooth, the other very rough, and with many distant, thin, rounded, longitudinal ribs, which become more numerous towards the margin, numbering about ten near the beak, and amounting to about forty at the basil margin; also covered with minute sharp scales.

The London Clay, Hamstead and Primrose Hill.

18. PECTEN CARINATUS.—The Keeled Pecten, pl. LXIV. fig. 1.

P. carinatus. Sowerby, VI. p. 145, pl. 575, fig. 4.

Orbicular, somewhat elongated, convex; ears rather large and smooth, square and defined; surface with about seventeen longitudinal, distant, rounded ribs, with a sharp keel along the middle of each, and a broad, flat, smooth, intervening space, with a sharp line along its middle.

The London Clay, Barton.

19. PECTEN COMPLANATUS.—The Plain Pecten, pl. LXIII. fig. 10.

P. complanatus. Sowerby, VI. p. 164, pl. 586.

Sub-orbicular; its width exceeding its length; one valve nearly flat, concave near the beak; ears square and equal; surface with thirteen or fourteen broad, elevated, flattened ribs, with nearly perpendicular sides.

The Coral Crag, Aldborough.

20. PECTEN LAMELLOSUS.—The Plated Pecten, pl. LXII. fig. 9.

P. lamellosus. Sowerby, III. p. 67, pl. 239.

Orbicular, both valves convex, the lower more so than the other; ears large, distant; beaks rectangular; surface with concentric imbricated laminæ, and divergent small striæ near the beaks, which are gradually lost towards the front.

Portland Stone, Portland, Wiltshire, Oxfordshire, and Buckinghamshire.

21. PECTEN OBSCURUS.—The Obscure Pecten, pl. LXII. fig. 8.

P. obscurus. Sowerby, III. p. 3, pl. 205, fig. 1.

Nearly orbicular, a little longer than wide; compressed; ears rather large; nearly parallel above; surface smooth, with obsolete, longitudinal, divergent furrows; edge thick.

The Upper Greensand, Hythe, Parham, and Isle of Wight; and the Great Oolite, Stonesfield.

22. PECTEN LENS.—The Lens-shaped Pecten, pl. LXII. fig. 11.

P. lens. Sowerby, III. p. 3, pl. 205, figs. 2, 3.

Orbicular, convex, and nearly lenticular, but deepest near the beaks; surface with divergent, arcuated, deeply punctured striæ; substance of the shell thin.

The Kimmeridge Clay, Brick Hill, Bedfordshire; the Middle Oolite, Yorkshire and Brora; the Inferior Oolite, Glaizedale and the Blue Wick.

23. PECTEN LAMINATUS.—The Laminated Pecten, pl. LXII. fig. 14.

P. laminata. Sowerby, III. p. 4, pl. 205, fig. 4.

Sub-orbicular, compressed; ears unequal, triangular, the larger plaited; surface with arcuated, slightly undulating striæ.

The Cornbrash, Chatley Lodge, Somersetshire.

24. PECTEN ARCUATUS.—The Arcuated Pecten, pl. LXII. fig. 15.

P. arcuata. Sowerby, III. p. 4, pl. 205, figs. 5 and 7.

Orbicular, compressed; ears large, dissimilar, the larger quadrangular and punctated; side of the shell below arcuated; surface with arched, punctated, divergent striæ, and sometimes with forked furrows.

The Kimmeridge Clay, Aylesbury, and the Coral Crag, Calne.

25. PECTEN OBSOLETUS.—The Obsolete Pecten, pl. LXIII. figs. 4, 5, 6, & 7.

P. obsoletus. Sowerby, VI. p. 79, pl. 541.

Obovate; ears very unequal; surface with many divergent ribs, varying considerably in number and development; in some there are five or six broad obtuse ribs, with the intervening furrows longitudinally striated; others have furrows with the flat parts striated; while some are plain, with very minute, nearly obsolete, longitudinal striæ; in some specimens the lower margin is considerably inflected.

The Mammiferous Crag, Bramerton, and Red Crag, Sutton.

26. PECTEN ANNULATUS.—The Ringed Pecten, pl. LXIII. fig. 9.

P. annulatus. Sowerby, VI. p. 80, pl. 542, fig. 1.

Orbicular, convex; surface with numerous thin, erect, concentric laminæ, about a line apart, crossed by many fine, close-set, longitudinal striæ, also passing over the ears, which are rather large.

This species has a considerable resemblance to *P. cinctus*, but is much less inflated.

The Oxford Oolite, Osmington, Dorsetshire, and the Cornbrash, Felmersham Bedfordshire.

27. PECTEN GRACILIS.—The Slender Pecten, pl. LXIII. fig. 11.

P. gracilis. Sowerby, IV. p. 129, pl. 393, fig. 2.

Orbicular, a little longer than wide, convex; very thin and slender; with numerous small longitudinal ridges, every fourth one being a little more elevated than the others, and these internally produce grooves which are more conspicuous than the rest; these are crossed by numerous close, elevated, sharp, uniform, concentric striæ, which are strongest near the margins; ears unequal, and the margin entire.

The Red Crag, Sutton.

28. PECTEN VIMINEUS.—The Wicker Pecten, pl. LXIII. fig. 8.

P. vimineus. Sowerby, VI. p. 81, pl. 543, figs. 1 & 2.

Convex, somewhat longer than wide; with about twenty prominent longitudinal ribs, some of which are obscurely tripartite towards the edge, all of them provided with close-set, thick, elevated scales, which are less numerous on the left valve.

Some specimens are furnished with small intervening ribs.

The Oxford Clay, Upware, Cambridgeshire, and in the Coral Crag, Malton and Brora.

29. PECTEN INÆQUICOSTATUS.—The Unequal-ribbed Pecten, pl. LXIII. fig. 3.

P. inæquicostatus. Phillips, Geo. York, I. p. 101, pl. 4, fig. 10.

Nearly orbicular, smooth, with nine broad, flat, divergent, unequal ribs, the four central ones considerably larger than the others; ears moderate, and nearly equal.

The Coralline Oolite, Malton.

30. PECTEN NITIDUS.—The Shining Pecten, pl. LXIV. fig. 2.

P. nitidus. Mantell, Geo. Sus. pl. 26, figs. 4, 9. Sowerby, IV. p. 130, pl. 394, fig. 1.

Obovate, shining, one valve convex, with numerous crenulated ridges; the other nearly flat, with as many almost smooth ridges, with the interstices minutely striated transversely; ears nearly equal, and the margins entire.

The Under Chalk, Lewis and Gravesend.

31. PECTEN JACOBÆUS.—The Jacobean Pecten, pl. LXIV. fig. 3.

P. jacobæus. Sowerby, VI. p. 164. Brown, Recent Conch. Brit. p. 71, pl. 25, fig. 5.

Upper valve flat, depressed towards the beak, with about sixteen longitudinally grooved, decussated, quadrangular, elevated ribs; lower valve with sixteen rounded, grooved ribs, and the interstices transversely striated; ears equal, rectangular, with decussated striæ.

The Coral Crag, Aldborough.

32. PECTEN MAXIMUS.—The Great Pecten, pl. LXIV. fig. 17.

P. maximus. Sowerby, VI. p. 164. Brown, Recent Conch. Brit. p. 71, pl. 25, fig 1.

Upper valve flat, depressed towards the beak, with from fourteen to seventeen rounded longitudinally striated, or grooved ribs; lower valve very convex, and longitudinally striated; the interstices between the ribs of both valves striated; ears rectangular, with decussated striæ.

The Coral Crag, Aldborough, and Pleistocene Marine Formation, Ayrshire.

33. PECTEN SIMILIS.—The Similar Pecten, pl. LXIV. fig. 11.

P. similis. Sowerby, III. p. 5, pl. 205, fig. 6.

Sub-orbicular, compressed, with longitudinal arched striæ; one ear larger than the other, with the side straight beneath it; sides nearly straight.

The Coral Crag, Shotover, Oxfordshire.

34. PECTEN RIGIDUS.—The Rigid Pecten, pl. LXII. fig. 10.

P. rigida. Sowerby, III. p. 5, pl. 205, fig. 8.

Orbicular, compressed; hinge-line triangular; ears unequal, large; surface with strong longitudinal striæ, and slender, irregular, concentric striæ.

The Forett Marble, Castle Combe, Wiltshire.

35. PECTEN OPERCULARIS.—The Lid-shaped Pecten, pl. LXIV. fig. 15.

P. sulcatus. Sowerby, IV. p. 129, pl. 393, fig. 1.

Orbicular, both valves convex, somewhat oblique, with from eighteen to twenty obscurely tripartite ribs; the whole surface rough with small scales; and the intercostal sulci longitudinally striated; margins scolloped; ears nearly equal.

The Pleistocene Marine Formation, Paisley, Ayrshire; Mammiferous Crag, Southwold, the Red Crag, Sutton, and the Coral Crag, Ramshot.

36. Pecten striatus.—The Striated Pecten, pl. LXIV. fig. 18.

P. striatus. Sowerby, IV. p. 130, pl. 394, figs. 2, 3, 4.

P. limatus. Goldfuss, p. 59, pl. 94, fig. 6.

Oval, both valves nearly equal and convex, with smooth, irregular, scaly ridges; margins entire; ears rather large and unequal, substance of the shell thick.

The Red Crag, Sutton, and Coral Crag, Ramshot.

37. Pecten vagans.—The Wandering Pecten, pl. LXIV. fig. 20.

P. vagans. Sowerby, VI. p. 82, pl. 543, fig. 3, 4, 5.

Ovate, a little longer than wide, convex; with about eleven large, convex ribs, provided with large, erect, concave scales, which are close upon the right, but distant upon the left valve; ears nearly equal, crossed by scales. Sometimes obscure furrows appear between the ribs.

The Middle Oolite, Yorkshire and Wiltshire.

38. Pecten princeps.—The Emperor Pecten, pl. LXII. fig 13.

P. princeps. Sowerby, VI. p. 80, pl. 542, fig. 2.

A little ovate, compressed; ears large, unequal, and squamose; surface with numerous divergent, narrow ribs; thickly covered with erect, equidistant concave scales; margins crenated by the projecting ribs.

In the Coral Crag, Ramshot.

39. Pecten orbicularis.—The Orbicular Pecten, pl. LXIV. fig. 6.

P. orbicularis. Sowerby, II. p. 193, pl. 186.

Orbicular; greatly compressed; one valve smooth, with wide-set, equidistant, elevated, sharp, concentric striæ; ears nearly equal, rather large, and broadest at the base; shell rather tender.

The Upper Greensand, Devizes and Hamsey, and the Lower Greensand, Maidstone and Pulborough.

40. Pecten abjectus.—The Abject Pecten, pl. LXV. fig. 9.

P. abjectus. Phillips, Geo. York, I. pl. 9, fig. 37.

Nearly orbicular, hinge-line oblique, ears small; surface with numerous longitudinal, divergent, narrow ribs; crossed by indistinct concentric striæ; margin slightly crenulated.

The Great Oolite, or Gray Limestone, Malton and Whitwell, Yorkshire.

41. Pecten anisotus.— ———— pl. LXV. fig. 24.

P. anisotus. Phillips, Geo. York, II. p. 212, pl. 6, fig. 22.

Oblong-oval, oblique; ears unequal, one very large and the other very small, both longitudinally and transversely striated; surface with obscure divergent striæ, with distant lines of growth.

Carboniferous Limestone, Yorkshire.

42. Pecten arenosus.—The Sandy Pecten, pl. LXV. figs. 10, 11.

P. arenosus. Phillips, Geo. York, II. p. 212, pl. 6, fig. 20.

Equal sided, body abruptly increasing; ears small, unequal, and square; surface with numerous radiating striæ, alternately larger and smaller; crossed by many minutely crenulated striæ.

The Carboniferous Limestone, Closterdale, Bolland, and Derbyshire; and Kildare and Kulkeah, Ireland.

43. Pecten cingillatus.—The Banded Pecten, pl. LXIV. fig. 8.

P. cingillatus. Phillips, Geo. York, I. pl. V. fig. 11.

Elongated; ears very small and nearly equal: surface crossed by many wide set, equidistant, transverse ribs.

Cornbrash, Scarborough.

44. Pecten concentricus.—The Concentric Pecten, pl. LXI.** fig. 18.

P. concentricus. Woodward, Geo. Nor. pl. 5, figs. 27, 28.

Elongated, smooth, with irregularly placed, concentric ribs, and depressed, divergent ribs; ears unequal; sides even.

Upper Chalk, Hartford Bridge, Norfolkshire.

45. Pecten demissus.—The Humble Pecten, pl. LXV. fig. 15.

P. demissus. Phillips, Geo. York, I. pl. 6, fig. 5.

Elongated, sides finely rounded; ears equal and small.

The Kelloways Rock, Scarborough; the Coral Crag, Malton; the Cornbrash, Gristhorpe, Yorkshire; and the Great Oolite, Cloughton.

46. Pecten deornatus.—Unadorned Pecten, pl. LXV. fig. 25.

P. deornatus. Phillips, Geo. York, I. p. 213, pl. 6, fig. 26.

Nearly orbicular and smooth, with small, nearly equal ears; surface with numerous equidistant, smooth, concentric furrows.

The Carboniferous Limestone, Yorkshire.

47. Pecten dissimilis.—The Dissimilar Pecten, pl. LXV. figs. 20, 21.

P. dissimilis. Phillips, Geo. York, II. p. 212, pl. 6, fig. 17.

Sub-orbicular, slightly elongated; the right or lower valves with numerous longitudinal, slightly scaled ribs; ears nearly equal, slightly ribbed; transversely and longitudinally striated; upper valve concave, with flat, nearly obsolete, concentric ribs.

Carboniferous Limestone, Bolland.

48. Pecten ellipticus.—The Elliptical Pecten, pl. LXV. fig. 19.

P. ellipticus. Phillips, Geo. York, II. p. 212, pl. 6, fig. 15.

Elliptical, compressed, smooth; ears unequal, short; sides not much rounded.

The Carboniferous Limestone, Bolland.

49. Pecten fimbriatus.—The Fringed Pecten, pl. LXV. fig. 22.

P. fimbriatus. Phillips, Geo. York, II. p. 213, pl. 6, fig. 28.

Ovate; compressed; ears small and plain; surface with numerous imbricated, radiating ribs and furrows; margin slightly crenulated.

The Carboniferous Limestone, Castleton, Derbyshire.

50. Pecten interstitiales.—The Interstriate Pecten, pl. LXV. fig. 28.

P. interstitiales. Phillips, Geo. York, II. p. 212, pl. 6, fig. 24.

Oblong, oblique, with medium-sized, acute ears; surface with about sixteen longitudinal, sharp, radiating ribs; the intervening furrows with three finer ribs or striæ.

The Carboniferous Limestone, Hawes and Bolland.

51. PECTEN OTTONIS.—The Ottonian Pecten, pl. LXI.** fig. 6.

P. Ottonis. Portlock, Geo. Report, p. 436, pl. 36, fig. 10.

Sub-orbicular; a little convex, oblique; surface with numerous longitudinal, sharp, radiating ribs, decussated by fine concentric striæ; ears unequal; hinge-line a little triangular; margin crenated.

The Carboniferous Limestone, Fermanagh, Ireland.

52. PECTEN SEMICOSTATUS.—The Semi-ribbed Pecten, pl. LXI.** fig. 4.

P. semicostatus. Portland, Geo. Report, p. 436, pl. 36, fig. 9.

Nearly orbicular, convex; ears almost equal, the posterior one square, the anterior somewhat more pointed; surface with numerous rounded ribs, extending from the base about halfway to the beak.

The Carboniferous Limestone, Tyrone.

53. PECTEN SEXCOSTATUS.—The Six-Ribbed Pecten, pl. LXI.* fig. 7, 8. Woodward, Geo. Nor. pl. 5, fig. 29.

Triangular, convex, with small, nearly equal ears; beak of the larger valve incurved, and receiving the smaller flat valve, both valves with six pretty large, longitudinal, divergent ribs; margins deeply crenated.

The Upper Chalk, Harford Bridge, Norfolkshire.

54. PECTEN STELLARIS.—The Little Star Pecten, pl. LXV. fig. 7.

P. stellaris. Phillips, Geo. York, II. p. 212, pl. 6, fig. 18.

Sub-orbicular, with about fifteen strong, smooth, longitudinal, divergent ribs.

The Carboniferous Limestone, Yorkshire.

55. PECTEN SUBLÆVIS.—The Half-smooth Pecten, pl. LXV. fig. 14.

P. sublævis. Phillips, Geo. York, I. pl. 14, fig. 5.

Shell convex, nearly orbicular; ears unequal, blunt; surface with about nineteen rounded, smooth, longitudinal ribs; margins crenulated.

The Lias, Bilsdale, Yorkshire.

56. PECTEN DISCREPANS.—The Discrepant Pecten, pl. LXV. fig. 17.

P. fibrosus. (A large variety.) Phillips, Geo. York, I. p. 112, pl. 6, fig. 3.

Sub-orbicular; ears nearly equal, with obliquely longitudinal ribs, which render the hinge-line uneven; surface with about twelve large, rounded, longitudinal, divergent, sub-imbricated ribs; margins scolloped.

In the Kelloways Rock, Scarborough and Hackness.

57. PECTEN VALONIENSIS.—The Valonian Pecten, pl. LXI.** fig. 12.

P. Valoniensis. Portlock, Geo. Report, p. 126, pl. 25 A, figs. 14, 15.

Sub-orbicular; ears nearly equal and blunt; the larger one with radiating, small ribs, crossed by numerous close-set, longitudinal striæ; surface with numerous rounded, longitudinal irregular ribs, and sharp towards the edge; part of the posterior and anterior margin is finely striated obliquely over the ribs with obsolete lines of growth.

The Oolite, Aghanloo, Ireland.

58. PECTEN VIRGUILIFERUS.—The Whitish Pecten, pl. LXV. fig. 18.

P. virguiliferus. Phillips, Geo. York, I. p. 11, fig. 20.

Oblong, rather flat; ears unequal; surface with numerous longitudinal, divergent striæ, which are covered with short slightly imbricated scales.

The Inferior Oolite and Blue Wick, Yorkshire.

59. PECTEN SIMPLEX.—The Simple Pecten, pl. LXV. figs. 26, 27.

P. simplex. Phillips, Geo. York, II. p. 212, pl. 6, fig. 27.

Oblong-ovate, oblique; lower valve tumid, with strong, radiating, arched ribs; upper valve considerably flatter, with the furrows corresponding, but flatter; ears of medium size; hinge-line oblique.

The Carboniferous Limestone, Bolland.

60. PECTEN CALVAS.—The Bald Pecten, pl. LXI.** fig. 17. *P. calvas.* Goldfuss, p. 74, pl. 99, fig. 1.

Orbicularly ovate, equilateral; convexo-plano, pellucid, shining, with nearly obsolete radiating striæ; ears obtusely angular, the anterior the largest.

The Oolite, Ballentoy, Ireland.

61. PECTEN GENTILIS.—The Kindred Pecten, pl. LXI.** fig. 2.

P. gentilis. J. C. Sowerby, Geo. Tr. V. 2d Ser. pl. 39, fig. 19.

Ovate, convex, smooth, with fifteen slightly elevated, longitudinal, divergent ribs, which are alternately long and short; ears equal and of medium size.

The Coal Measures, Coalbrook Dale.

62. PECTEN SCALARIS.—The Ladder Pecten, pl. LXI.** fig. 3.

P. scalaris. J. C. Sowerby, Geo. Trans. 2d Ser. V. pl. 39, fig. 20.

The Coal Measures, Coalbrook Dale.

63. PECTEN TRANSVERSUS.—The Transverse Pecten, pl. LXI.** fig. 13.

P. transversus. Sower. Geo. Tr. 2d Ser. V. pl. 53, fig. 3. Phillips.

Transversely obovate, very slightly convex; ears large, and nearly equal; surface with numerous longitudinal ribs, set in threes, and crossed by numerous regular lines of growth.

64. PECTEN NEXILIS.—The Wreathed Pecten, pl. LXI.** fig. 10.

P. nexilis. J. C. Sowerby, Geo. Trans. 2d Ser. V. pl. 53, figs. 1, 2.

Sub-orbicular, slightly convex, somewhat inequilateral; ears large, nearly equal, radiated; the anterior one less so than the other; whole surface with very fine longitudinal divergent ribs.

Devonian Shales, Barnstaple.

65. PECTEN COMPOSITUS.—The Composite Pecten, pl. LXIV. figs. 12, 13, 14.

P. compositus. Sowerby, Geo. Trans. 2d Ser. IV. p. 342, pl. 17, fig. 20.

Oblong, with about twenty sharp, radiating ribs; and two rows of scales in each of the intervening furrows.

The Greensand, Blackdown.

66. PECTEN MILLERII.—Miller's Pecten, pl. LXIV. figs. 9, 10.

P. Milerii. Sowerby, Geo. Trans. 2d Ser. IV. p. 342, fig. 19.

Oblong oval, rather inflated; sides nearly straight half their distance from the beaks; ears unequal and small; surface with many smooth, sharp, divergent ribs, which become more numerous towards the margins by intervening ones.

The Greensand, Blackdown.

67. Pecten Stutchburiensis.—Stutchbury's Pecten, pl. LXV. fig. 1.

P. Stutchburiensis. Sowerby, Geo. Trans. 2d Ser. IV. p. 342, pl. 18, fig. 1.

Sub-triangular, elongated, compressed, with upwards of sixty irregularly larger and smaller, close-set, scaly ribs; the intervening furrows with oblique striæ.

The Greensand, Blackdown.

68. Pecten islandicus.—The Islandic Pecten.

P. islandicus. Brown, Recent Conch. Brit. p. 72, pl. 24, fig. 3.

Rather elongated, ears unequal, the larger one with oblique ribs, crossed by concentric striæ; surface with numerous flat, divergent, irregularly grouped, rough ribs, varying from seventy to one hundred, and which appear internally; the intervening furrows are reticulated.

The Pleistocene Marine Formation, Dalmuir and Ardincaple, Renfrewshire, Bute, and Ayrshire.

69. Pecten sinuosus.—The Distorted Pecten.

P. sinuosus. Brown, Recent Conch. Brit. p. 73, pl. 24, f. 4.

Sub-orbicular, variously distorted, one valve convex, and the other rather flat; irregularly and longitudinally ribbed, which in some shoot into foliations and spines; ears unequal, the larger one foliated.

The Pleistocene Marine Formation, Ireland, and Dalmuir, Renfrewshire.

70. Pecten varius.—The Variable Pecten.

P. varius. Brown, Recent Conch. Brit. p. 72, pl. 24, f. 4.

Oblong, nearly equivalve, with from twenty-six to thirty acute, divergent, spined ribs; the intervening furrows finely reticulated.

The Pleistocene Marine Formation, Dalmuir, Renfrewshire, and Ayr.

71. Pecten subulatus.—The Elongated Pecten, pl. LXI.* figs. 24, 25.

P. subulatus. Goldfuss, pl. 98, fig. 12. Portlock, Geo. Rep. p. 128.

Somewhat elongated, large and subovate; hinge-line straight, ears unequal, one very small, the other large, with a hiatus at its lower angle in the deep valve; whole surface of the upper valve with very slightly raised longitudinal ribs, which, as well as the intervening furrows, are crossed by extremely minute undulating, concentric striæ, quite invisible except by the aid of a lens; lower valve smooth.

The Oolite, Magilligan, Ireland.

72. Pecten textilis.—The Woven Pecten, pl. LXI.* figs. 30, 31.

P. textilis. Goldfuss, pl. 89, fig. 3. Portlock, Geo. Rep. p. 129.

Orbicular, hinge-line oblique, ears nearly equal and obtuse; deeper valve with numerous narrow, radiating ribs, with wide intervening furrows, crossed by fine concentric striæ; upper valve nearly flat, with close-set radiating striæ, crossed by numerous exceedingly fine concentric striæ, giving the surface a fine embroidered appearance; margin slightly crenated.

The Oolite, Magilligan, Ireland.

Genus XXIII.—LIMA.—*Bruguière.*

Shell longitudinal, equivalve, inequilateral; sides somewhat thickened and gaping; umbones divergent, their internal facets inclined outwards; hinge provided with two lateral teeth, one on each side in both valves, which become nearly obsolete in adult shells; area between the beaks, to which the ligament is attached, divided; tripartite; the middle or hinge pit is rounded above, and contains the chief portion of the ligament, the remaining portions are attached to the somewhat elongated linear divisions; muscular impression lateral, sub-orbicular, from the inner margin of which the muscular impression of the mantle emanates, and, traversing the other side of the valves in a circuitous form, appears to terminate near the beak; external surface covered with a very thin epidermis.

1. Lima gibbosa.—The Gibbose Lima, pl. LXVII. figs. 8, 9.

L. gibbosa. Sowerby, II. p. 120, pl. 152.

Elongated, gibbose, slightly oblique, nearly twice as long as wide; ears undefined; surface smooth, with a series of radiating furrows in the centre of the valves.

The greatest depth of the shell is near the beaks, where it is nearly as deep as wide.

The Inferior Oolite, Cotswold and Dundry.

2. Lima proboscidea.—The Proboscis Lima, pl. LXVII. fig. 20.

L. proboscidea. Sowerby, III. p. 115, pl. 244.

Sub-ovate, hardly oblique, broad, convex; ears small; surface with about twelve elevated, rounded ribs, each furnished with several large tubular processes, with a funnel-shaped termination; variously bent and pressed to the surface.

The Inferior Oolite, Weymouth; Glaizedale, and Antrim, Ireland.

3. Lima rudis.—The Rugged Lima, pl. LXVII. fig. 11.

L. rudis. Sowerby, III. p. 25, pl. 214, fig. 1.

Obovate, oblique, inflated, somewhat longer than wide; anterior ear open, with thickened lobes; the other small, with thick inflated edges to the valves; surface with about seven large, convex, rugged, longitudinal ribs; edges of valves thick and reflected.

The Middle Oolite, Yorkshire and Wiltshire.

4. Lima antiquata.—The Antiquated Lima, pl. LXVII. f. 7.

L. antiquata. Sowerby, III. p. 25, pl. 214, fig. 2.

Elliptical, depressed; anterior ear deeply wrinkled and open; smaller ear striated; surface with numerous coarse, longitudinal, irregular striæ.

The Lias, Weston; Frethern, Vale of Evesham, and Gloucestershire.

5. Lima sub-ovalis.—The Sub-oval Lima, pl. LXVII. figs. 3, 4.

L. sub-ovalis. Sowerby, Geo. Trans. 2d Series, IV. p. 342, pl. 17, fig. 21.

Somewhat quadrangular, elongated, with very numerous, divergent, rounded ribs, each of which is furnished with rather distant, regularly-set, obtuse scales; the intervening furrows equal in breadth to the ribs.

The Greensand, Blackdown.

6. LIMSA SEMISULCATA.—The Half-Furrowed Lima, pl. LXVII. figs. 13, 14.

L. semisulcata. Sowerby, Geo. Trans. 2d Series, IV. pl. 11, fig. 10.

Plagiostoma semisulcatum. Nilsson, Petrif. Suec. XXV. pl. 11, fig. 3.

Oblong-ovate, very convex, auricles small, nearly equal; beaks incurved and short; disk with a series of twelve to sixteen radiated rounded ribs, extending from the beaks to the base; where the lines of growth cross these, they assume the form of short granular scales; sides smooth.

The Lower Greensand, Hythe, Blackdown, and Pulborough.

7. LIMA EXILIS.—The Small Lima.

L. exilis. Wood, Mag. Nat. Hist. 1839, p. 234, pl. 3, fig. 1.

Inequilateral, oblique, slender, gaping at the sides; somewhat inflated; hinge-line a little oblique, and sloping slightly on both sides of the beaks, which are distant; ligamental area large, with a rectangular central pit; lunule smooth surface with numerous, fine, radiating, irregular ribs, which project a little over the margins; the interstices with many very fine concentric striæ; length and breadth about an inch and a half.

The Coralline Rag, Ramshot, and the Red Crag, Walton, Essex.

8. LIMA OBLONGA.—The Oblong Lima.

L. oblonga. Wood, Mag. Nat. Hist. 1839, p. 234, pl. 3, fig. 2.

Inequilateral, oblique, sub-compressed, gaping at both sides; hinge-line oblique, sloping on both sides of the beaks, which are prominent and distant; ligamental area broad, with a pretty large rectangular pit; auricles with a notch below each; surface with many slightly waved, longitudinal, divergent ribs, projecting a little beyond the margins; length one inch, breadth six-tenths.

The Coralline Crag, Ramshot.

9. LIMA FRAGILIS.—The Fragile Lima.

L. fragilis. Wood, Mag. Nat. Hist. 1839, p. 253, pl. 3, fig. 3. Brown's Rec. Conch. Brit. p. 74, pl. 23, figs. 6, 7, 7.*

Inequilateral, sub-ovate, very convex, fragile; one side straight, the other arcuated; hinge-line oblique; ligamental area broad, with a large sub-triangular pit for the reception of the cartilage; auricles small, imperfectly defined; beaks prominent; whole surface with numerous, slightly undulating, longitudinal striæ, with two or three exceedingly minute intermediate ones; length three-fourths of an inch, breadth about one-half inch.

The Coralline Crag, Sutton, and the Red Crag, Walton, Essex.

10. LIMA PLICATULA.—The Plicated Lima, pl. LXI.* f. 33.

L. plicatula. Wood, Mag. Nat. Hist. 1839, p. 235.

Convex, inequilateral, obliquely ovate, orbicular; anterior side truncated; posterior side much produced; beaks projecting; hinge-line a little oblique; ligamenal area small; lunule transversely crenulated; surface with fourteen or sixteen rather strong, divergent punctated ribs, which project beyond the margin; the intervening furrows slightly striated concentrically; length two-tenths of an inch.

The Coralline Crag, Sutton.

SUB-GENUS.—LIMATULA.—*S. Wood.*

Shell longitudinal, equivalve, equilateral; sub-auriculated; umbones rather large and prominent; ligamental area broad, with a triangular pit for the reception of the cartilage; sides of the valves close.

1. LIMATULA OVATA.—The Ovate Limatula, pl. LXI.* fig. 35.

L. ovata. Wood, Mag. Nat. Hist. 1839, p. 235, pl. 3, f. 5.

Equilateral, oblong-ovate, convex; ligamentary area large, with a sub-triangular cartilage pit; hinge-line nearly straight; beaks projecting; surface with from six to eight rounded, divergent ribs occupying the centre of the disk, emanating from the beaks, and terminating on the basal margin, beyond which they project; sides bulging considerably in the centre; length three-tenths of an inch, breadth two-tenths.

The Coralline Crag, Sutton.

2. LIMATULA SUB-AURICULATA.—The Sub-auricled Limatula, pl. LXI.* fig. 34.

L. sub-auriculata. Wood, Mag. Nat. Hist. 1839, p. 236, pl. 3, fig. 6. *Lima sub-auriculata.* Brown, Rec. Conch. Brit. p. pl. 23, fig. 45.

Equilateral, oblong-ovate, convex; hinge-line sloping on both sides of the beaks; surface with many longitudinal divergent striæ, the two central ones opaque, larger, and more conspicuous than the others, and visible internally; the basal margin finely crenulated; length half an inch, breadth one-fourth.

The Coralline Crag, Sutton and Ramshot.

GRAND DIVISION III.

Shells with an elongated marginal ligament.

TRIBE I.—MALLACEA.

Shells foliaceous, more or less inæquivalve, with the ligament marginal, partly linear, and either simple or interrupted by crenulations.

GENUS XXIV.—AVICULA.—*Lamarck.*

Inequilateral, inequivalve, foliaceous, sub-quadrate, and oblique; hinge rectilinear, and produced on each side into straight auriform appendages, with a small indistinct tooth in both valves; an elongated, marginal, ligamentiferous area, widened near its centre; inside pearlaceous, with one sub-central muscular impression, and a series of smaller ones in a line towards the umbo.

1. AVICULA PAPYRACEA.—The Papyraceous Avicula, pl. LXI.** fig. 11.

Pecten papyraceus. Sowerby, IV. p. 75, pl. 354.

Obliquely sub-ovate, much compressed; valves nearly equal and flat; ears large, unequal, rectangular, with broad, divergent striæ, and rather close, longitudinal striæ on the larger ear; surface with numerous elevated striæ, which are crossed by rather distant lines of growth.

This is not *Avicula papyracea* of Goldfuss, which I have in plate LXI.* fig. 11, and named *A. tenuissima*, nor is it *A. papyracea* of J. D. C. Sowerby, Geo. Trans. 2d Ser. V. p. 136, pl. 8, fig. 16, as I consider that a *Posidonomya*, and have named it *papyracea*, see pl. LXI.** fig. 23.

The Coal Measures, Bradford, Leeds, and Coalbrook Dale.

2. AVICULA OWENI.—Owen's Avicula, pl. LXV. fig. 13.

Nearly orbicular, very much compressed, with large unequal ears, which are destitute of striæ; surface with numerous, rather close, divergent striæ, and a few distant, distinct lines of growth; sides plain.

Differs from the preceding in the valves being perfectly straight. In the Museum of the Manchester Natural History Society, and named in honour of its Secretary.

The Coal Measures, Vale of Todmorden.

3. AVICULA SIMILI.—The Similar Avicula, pl. LXV. fig. 12.

Nearly orbicular; ears very large, with transverse oblique radiated striæ, and longitudinal, nearly obsolete ones; hinge-line a little triangular; surface smooth, with divergent striæ, and remote indistinct lines of growth, one side with the ear and margin straight.

The Coal Measures, Vale of Todmorden.

4. AVICULA PLICATA.—The Plicated Avicula, pl. LXV. fig. 8.

Nearly orbicular; somewhat oblique; the valves much compressed; hinge-line somewhat triangular; ears large, unequal, with divergent, transverse, distinct striæ, crossed by wider curved striæ; one ear concave on the side; whole surface with numerous radiating striæ, crossed by remote, indistinct ones; margins even.

The Coal Measures, Middleton, near Leeds.

5. AVICULA HEMISPHÆRICA.—The Hemispherical Avicula, pl. LXV. fig. 5.

Pecten hemisphærica. Phillips, Geo. York, II. p. 212, pl. 6, fig. 16.

Nearly orbicular; the lower valve circular and very convex, with the sides gradually passing into the undefined ears; hinge-line straight and a little oblique; surface with squamose striæ.

The Carboniferous Limestone, Bolland.

6. AVICULA RETROFLEXA.—The Bent-back Avicula, pl. LXVI.* fig. 17.

A. retroflexa. Sowerby, Sil. Syst. II. p. 609, pl. 5, fig. 9.

Short, very broad, semicircular, oblique, somewhat convex, transversely wrinkled; anterior ear very small, length 10 lines, breadth 1¾ inch.

The Upper Ludlow Rock, Hale-end, Melverns, near Usk.

7. AVICULA COSTATA.—The Ribbed Avicula, pl. LXVI.* figs. 7, 8, 9.

A. costata. Sowerby, III. p. 77, pl. 244, fig. 1.

Deeper valve transversely ovate; auricles nearly equal; surface with eight smooth, longitudinal, curved, divergent ribs, with internal furrows corresponding to the external ribs, which project beyond the margin; shallow valve nearly flat, with numerous external rays, the posterior auricle of which is separated from the shell by a deep narrow sinus, and provided with a few sharp teeth on the sides under the auricle, the opposite auricle large, much elongated and acute, extending considerably beyond the body of the shell.

The Cornbrash, Stoney Stratford.

8. AVICULA INÆQUIVALVIS.—The Unequal-valved Avicula, pl. LXVI.* figs. 5, 6.

A. inæquivalvis. Sowerby, III. p. 78, pl. 244, fig. 2.

Deeper valve obliquely elliptical, convex, enveloping the smaller valve, and furnished with a large projecting auricle, which is a little rounded at the point; surface with thirteen narrow, divergent, rounded ribs, projecting beyond the margin, and striated in the interstices; flatter valve a little convex, smooth, with divergent furrows; posterior auricles of both valves very small; substance of the shell extremely thin.

There are two varieties of this fossil, the one with strong and the other with slender striæ.

The Kelloways Rock, Kelloways; the Inferior Oolite, Dursley and Blue Wick; and the Lias in many localities.

9. AVICULA OBLIQUA.—The Oblique Avicula, pl. LXVI.* fig. 23.

A. obliqua. Sowerby, Sil. Syst. pt. II., p. 635, pl. 20, fig. 4.

Elongated, obliquely ovate, convex, smooth; hinge-line rather short, auricles undefined. Length 1¾ inch.

This species occurs in clusters in the Caradoc Sandstone, Soudley, near Acton Scott, east flank of Cuer Caradoc.

10. AVICULA ECHINATA.—The Spinous Avicula, pl. LXVI.** figs. 9, 10, 11.

A. echinata. Sowerby, III. p. 75, pl. 243.

Obovate, gibbose, a little longer than wide, deeper valve with numerous muricated ribs, and unequal auricles, the anterior one is nearly rectangular; flatter valve generally wider than long, smooth, with the anterior auricle acute.

The Cornbrash, Atford, and Chippenham, the Great Oolite, Bath, and the Lias, Yorkshire.

11. AVICULA LANCEOLATA.—The Lanceolate Avicula, pl. LXIX. fig. 3.

A. lanceolata. Sowerby, VI. p. 17, pl. 512, fig. 1.

Extremely lengthened transversely, very flat; obliquely linear, lanceolate, and compressed; its width about six times its length; posterior auricle large and obtusely angled, extending to about one-third the breadth of the shell; the anterior auricle minute and pointed; beaks placed near the anterior extremity.

The Lias, Lyme Regis, Dorsetshire.

12. AVICULA OVATA.—The Ovate Avicula, pl. LXVI.** fig. 18.

A. ovata. Sowerby, VI. p. 18, pl. 512, fig. 2.

Convex, transversely ovate; posterior side elongated and obtuse; hinge-line long, occupying more than half of the shell, forming part of the posterior wing, which is somewhat obscure.

The Great Oolite, Stonesfield.

13. AVICULA MEDIA.—The Medium Avicula, pl. LXXXIII. figs. 19, 20.

A. media. Sowerby, I. p. 13, pl. 2.

Ovate, compressed; auricles large, unequal, one large and acute; hinge-line lengthened and parallel; surface smooth.

The London Clay, Highgate and Sheppy.

14. AVICULA LINEATA.—The Lineated Avicula, pl. LXVI.* fig. 10.

A. lineata. Sowerby, Sil. Syst. pt. II. p. 610, pl. 5, fig. 10.

Obliquely ovate, compressed, surface with many radiating elevated lines; anterior auricle minute, posterior one well marked, triangular, half as long as the posterior side. Length nine lines; width one inch and two lines.

The Upper Ludlow Rock, near Ludlow.

15. AVICULA RETICULATA.—The Reticulated Avicula, pl. LXVI.* fig. 20.

A. reticulata. Sowerby, Sil. Syst. pt. II. p. 614, pl. 6, fig. 3.

Oblong ovate, oblique, one valve rather convex, and the other nearly flat; both pointed towards the beaks, and broad at the base; surface with numerous, longitudinal, divergent ribs, decussated by rather strong lines of growth; auricles unequal; one hardly developed, the other very large and rectangular.

Aymestry Limestone, Croft Valley, Aymestry; Lower Ludlow, Myddleton Hall, Wenlock Limestone, Falfield and Totworth.

16. AVICULA ORBICULARIS.—The Orbicular Avicula, pl. LXVI.* fig. 21.

A. orbicularis. Sowerby, Sil. Syst. pt. II. p. 635, pl. 10, fig. 2.

Nearly orbicular, convex, and almost smooth; with a few almost obsolete lines of growth; beaks produced; auricles small, the anterior one round, the posterior not protruding beyond the margin; hinge-line straight; length and breadth nearly equal.

The Caradoc Sandstone, Acton Scott, near Caradoc; Honderly and Cheney Longville.

17. AVICULA MURCHISONI. — Murchison's Avicula, pl. LXVI.* fig. 18.

A. orbicularis. Sowerby, Sil. Syst. pt. II. p. 635, pl. 20, fig. 3.

Obliquely elongated, rather inflated, smooth, or with nearly obsolete lines of growth, and very obtuse, imperfectly developed, concentric ridges; beaks small, acute; anterior auricle very small, its outline undulous; posterior auricle not protruding beyond the margin; with a very slight obtuse flexure beneath it.

The Caradoc Sandstone, Acton Scott.

18. AVICULA RECTANGULARIS.—The Rectangular Avicula, pl. LXVI.* fig. 11.

A. rectangularis. Sowerby, Sil. Syst. pt. II. p. 603, pl. 3, f. 2.

Smooth, obliquely sub-triangular, and very convex; hinge-line long, straight; anterior side almost straight; posterior side produced, in the form of a lobe; front rounded; beaks rather acute and slightly turned downwards; auricles not defined.

The Old Red Sandstone, Horeb Chapel, in the Cwm-dwr, between Trecastle and Llandovery, Wales.

19. AVICULA HUMATA.—The Buried Avicula, pl. LXVI.** fig. 1.

A. obliqua. Brown, Trans. Manch. Geo. Soc. I. p. 225, pl. 7, fig. 64.

Sub-depressed, valves very oblique; hinge-line long, nearly straight; surface with numerous elevated, divergent, longitudinal ribs, emanating from the slightly protruding beaks, and terminating a little beyond the margin, producing a crenulated edge, crossed by many fine lines of growth; auricles of medium size, the anterior one only defined; length and breadth about half an inch.

The Coal Shale, Crimsworth and Vale of Todmorden.

20. AVICULA SAMUELSII.—Samuels' Avicula, pl. LXVI.** fig. 29.

A. Samuelsii. Brown, Trans. Manch. Geo. Soc. I. p. 225, pl. 7, fig. 65.

Semicircular, wider than long; hinge-line straight; the auricles undefined; beaks small, pointed, and not much produced beyond the hinge-line; surface covered with rounded, longitudinal, divergent ribs, which emanate from the beaks and pass over the margin, giving a fine pectinated appearance, crossed by numerous distinct lines of growth. Length upwards of a quarter of an inch; breadth, a third more.

The Coal Shale, High-Green Wood, Vale of Todmorden.

Named in honour of my friend John Samuels, Esq., of Barton House, Manchester, Vice-President of the Manchester Natural History Society.

21. AVICULA BINNEYI.—Binney's Avicula, pl. LXVI.** figs. 5, 6.

A. Binneyi. Brown. Trans. Manch. Geo. Soc. I. p. 65, pl. 6, figs. 27, 28.

Smooth, oblique, beaks prominent, acute; larger auricle nearly parallel with the hinge-line and undefined; the other small; hinge-line straight; posterior side abruptly contracted; interior side very broad; centre of the valves considerably ventricose. Length three-sixteenths of an inch; breadth nearly a quarter of an inch.

The New Red Sandstone, Newtown, Lancashire.

22. AVICULA INFLATA.—The Inflated Avicula, pl. LXVI.** figs. 4 and 8.

A. inflata. Brown, Trans. Man. Geo. Soc. I. p. 65, pl. 6, figs. 25, 26.

Oblique, inflated, transversely oblong-ovate; hinge placed much to one side, where it is narrow and subcompressed, with a small and acute auricle, widening rapidly towards the opposite side. Length three-sixteenths of an inch, breadth a quarter of an inch.

The New Red Sandstone, Newtown, Lancashire.

23. AVICULA TENUA.—The Thin Avicula, pl. LXVIII. fig. 9.

P. Brown, Trans. Man. Geo. Soc. I. pl. 5, fig. 23.

Oblique, compressed; hinge-line slightly oblique; anterior side nearly straight, with the auricle undefined; posterior side with a considerable curvature under the ear, beneath which it is produced and rounded; surface smooth, with irregular inequidistant, concentric, slight wrinkles.

In the Black Bass, Pendleton Coal Mine, near Manchester.

24. AVICULA SQUAMULA. — The Scale Avicula, pl. LXVIII. fig. 10.

Oblique, compressed; hinge-line slightly oblique; anterior side nearly straight; posterior side very slightly curved; surface smooth, with a few nearly obsolete concentric wrinkles.

The Coal Shale, Vale of Todmorden.

25. AVICULA ANOMALA.—The Anomalous Avicula, pl. LXVI.* fig. 22.

A. anomala. Sowerby, Geo. Tr. 2d Ser. IV. p. 342, pl. 17, fig. 18.

Very obliquely elongated, imperfectly five angled, disk flattened; beaks acute, protruding beyond the hinge-line, which is greatly obliqued; surface with many longitudinal narrow elevated ridges, crossed by slightly defined lines of growth; valves very deep, together measuring about one and a half inch, with a square section; basal line sub-triangular.

The Greensand, Blackdown.

26. Avicula modioliforme.—The Modiolaformed Avicula, pl. LXVI.* fig. 19.

A. modiola. Rhind, Age of the Earth, p. 167, pl. 2, fig. 5.

Much elongated transversely; umbones placed near one side, gradually widening towards the opposite side; hinge-line not defined, a triangular small ear on one side; surface transversely wrinkled.

The Coal Shale, Woodhall, on the River Leith, near Edinburgh.

27. Avicula novemcostae.—The Nine-Ribbed Avicula, pl. LXVI.** fig. 12.

A. inæquivalvis. Phillips, Geo. York, I. p. 133, pl. 14, fig. 4.

Obliquely oval; hinge-line slightly oblique; one ear very small, the other large; surface smooth, with nine longitudinal rounded, divergent ribs, gradually thickening from the beaks to the basal margin.

The Marlstone, in many localities.

28. Avicula expansa.—The Expanded Avicula, pl. LXVI.** fig. 13.

A. expansa. Phillips, Geo. York, I. pl. 3, fig. 35.

Oblong-ovate, very oblique; the posterior side extremely produced; anterior side short and gently curved; auricles well defined, very unequal; the anterior one very small, and the posterior one large, curved on the side; hinge-line a little oblique; surface smooth, with about sixteen rounded, divergent, longitudinal ribs.

The Coral Rag, Malton, the Kelloways Rock, South Cove, and Oxford Clay, Scarborough.

29. Avicula ovalis.—The Oval Avicula, LXVI.** fig. 14.

A. ovalis. Phillips, Geo. York, I. pl. 3, fig. 36.

Oblong-ovate; ears unequal, the anterior one about half the size of the other; hinge-line considerably oblique and straight; beaks produced; sides a little unequal, gently rounded; surface with numerous, divergent, shallow, longitudinal furrows, and a few concentric, shallow lines of growth.

The Coral Rag, Yorkshire.

30. Avicula decepta.—The Deceptive Avicula, pl. LXXXIII. fig. 18.

Obliquely transverse; hinge-line nearly straight; auricles undefined; the anterior one acute; lower part of the dorsal side produced; umbones obsolete; surface transversely wrinkled.

The Coal Shale, Vale of Todmorden.

31. Anomia gryphoides.—The Graphite Avicula, pl. LXVI.** fig. 19, 20.

A. gryphoides. Sowerby, Geo. Tr. 2d Ser. IV. p. 335, pl. 11, fig. 3.

Obliquely elongated; the convex valve ovate, with a produced, incurved beak, and two small nearly equal auricles; upper valve nearly flat, suborbicular, and furnished with a single auricle.

The Upper Greensand, near Petersfield.

32. Avicula elegantissima.—The Very Elegant Avicula, pl. LXVI.** fig. 21.

A. elegantissima. Phillips, Geo. York, I. pl. 4, fig. 2.

Transversely elongated; its breadth twice and a half its length; hinge-line a little hollowed; beaks produced, large, rounded, and situate near the anterior side, which is extremely short, and almost straight; posterior side much elongated, with a large auricle, nearly equal to half the breadth of the shell; surface smooth, and provided with from seven to nine divergent, longitudinal, smooth ribs in the centre of the valves.

The Coral Rag, Malton.

33. Avicula radiata.—The Rayed Avicula, pl. LXVI.** fig. 30.

A. radiata. Phillips, Geo. York, II. p. 211, pl. 6, fig. 8.

Sub-orbicular; hinge-line straight; beaks nearly central; auricles unequal, acute, and extending beyond the sides of the valves; surface with many radiating, rather broad ribs, and narrow intervening furrows; base rounded.

The Carboniferous Limestone, Bolland.

34. Avicula cycloptera.—The Cyclops Avicula, pl. LXVI.** fig. 34.

A. cycloptera. Phillips, Geo. York, II. p. 211, pl. 6, fig. 5.

Sub-quadrangular; hinge-line sloping downwards from both sides of the beak; sides a little conical; surface smooth, with four or five radiating ridges, arising a little below the beaks, and terminating on the rounded and scolloped basal margin; lines of growth slightly imbricated on the disk of the valves.

The Carboniferous Limestone, Bolland.

35. Avicula tessellata.—The Tessellated Avicula, pl. LXVI.** fig. 31.

A. tessellatta. Phillips, Geo. York, II. p. 211, pl. 6, fig. 6.

Sub-quadrangular; hinge-line slightly curving downwards from the beak, and extending beyond the sides; auricles very large, unequal, and subacute; surface with from eight to fifteen radiating rounded ridges, extending beyond the basal margin, producing a scolloped edge.

The Carboniferous Limestone, Bolland and Colster Dale.

36. Avicula sublobata.—The Half-lobed Avicula, pl. LXVI.** fig. 32.

A. sublobata. Phillips, Geo. York, II. p. 211, pl. 6, fig. 25.

Oval, slightly oblique; hinge-line short, straight, with a small auricle on one side; surface with numerous divergent, flat, narrow ribs, the intermediate furrows with fine concentric striæ.

The Carboniferous Limestone, Castleton, Derbyshire.

37. Avicula Bramburiensis.—The Brambury Avicula, pl. LXVI.** fig. 33.

A. Bramburiensis. Phillips, Geo. York, I. pl. 6, fig. 6.

Ovate, slightly oblique; hinge-line oblique, auricles a little unequal; surface with many longitudinal, divergent ribs, which are furnished with numerous imbricated scales; basal margin a little scolloped; beaks obtuse, extending a trifle beyond the hinge-line.

The Great Oolite, Cloughton and Brora.

38. Avicula Modiolaris.—The Modiola-like Avicula, pl. LXI.** figs. 23, 24.

A. modiolaris. Sowerby, Geo. Tr. 2d Ser. V. pl. 39, fig. 18.

Obliquely and transversely elongated; compressed; keeled towards the beaks; auricles undefined; hinge-line straight.

The Coal Measures, Coalbrook Dale.

39 Avicula quadrata.—The Squarish Avicula pl. LXI.** 27, 28.

A. quadrata. Sowerby, Geo. Tr. 2d Ser. V. pl. 39, fig. 17.

Sub-quadrangular, convex; hinge-line straight; anterior auricle small, rounded; posterior auricle not defined; a keel extending from the beak to the basal margin, which is rounded.

The Coal Measures, Coalbrook Dale.

40. Avicula discors.—The Discordant Avicula, pl. LXVI.** fig. 3.

A. discors. Brown, Trans. Manch. Geo. Soc. I. p. 56, pl. VI. fig. 28.

Smooth, oblique; anterior side short acute, posterior side broad; superior auricle large; the inferior one small and parallel with the hinge-line; beaks small and prominent; length a quarter of an inch; breadth nearly three-eighths.

The New Red Sandstone, Newton, near Manchester.

41. Avicula antiqua.—The Ancient Avicula, pl. LXI.** fig. 5.

A. antiqua. Goldfuss, pl. 160, fig. 9.

Obliquely sub-orbicular; hinge-line straight; auricles rather large; the anterior slightly defined; the posterior one large; concave on the edge; whole surface with numerous, longitudinal, oblique, divergent strong ribs, with from one to three smaller intervening ones; crossed by many concentric, broad, shallow lines of growth.

Upper Silurian Limestone, Westmoreland.

42. Avicula lunulata.—The Crescent-shaped Avicula, pl. LXVII. fig. 17.

Gervillia lunulata. Phillips, Geo. York, II. p. 211, pl. 6, fig. 12.

Very oblique, and much arcuated; hinge-line greatly oblique; auricles unequal; the anterior one short and blunt; the posterior very long, and acute at the upper angle; posterior side much lengthened, and with pretty strong concentric ridges; anterior side short; the beaks obtuse; surface with slight imbricated striæ.

The Carboniferous Limestone, Bolland.

43. Avicula Neptune.—Neptune's Avicula, pl. LXI.** f. 21.

Sub-orbicular, sub-compressed; hinge-line horizontal; auricles unequally undefined; anterior one short; posterior projecting, in a line with the side, and acute; whole surface with numerous, divergent, rounded, narrow ribs, with sometimes smaller intervening ones; crossed by very close, numerous concentric, raised striæ; anterior side rounded; posterior side rather straight.

The Upper Silurian Limestone, Westmoreland.

44. Avicula tenera.—The Tender Avicula, pl. LXI.** f. 11.

A. papyracea. Goldfuss, pl. CXVI. fig. 5.

Sub-orbicular, oblique; hinge-line nearly horizontal; auricles unequal; the anterior small and well defined; the posterior large and undefined; concave on the edge; whole surface covered with numerous oblique, divergent, somewhat unequal ribs, most of them with a central groove, the ribs as well as the intervening furrows crossed by numerous close-set, strong striæ; sides and base rounded.

The Coal Measures, Bradford.

45. Avicula pectinata.—The Pectinated Avicula, pl. LXVI.** fig. 2.

A. pectinata. Sowerby, Geo. Trans. 2d. Ser. IV. p. 338. pl. 14, fig. 3.

Obliquely-elongated, slightly arcuated, and a little convex; hinge-line straight and horizontal; beaks obtuse and produced above the hinge area; auricles large; the posterior one concave on the margin, as well as on the side of the valve; anterior side convex and rounded, and surface with alternately long and short linear ridges.

The Lower Greensand, Risborough, Kent.

46. Avicula simplex.—The Simple-ribbed Avicula, pl. LXV. figs. 26, 27.

Pecten simplex. Phillips, Geo. York, II. p. 212, pl. 6, fig. 27.

Obliquely-elongated; hinge-line straight and oblique; auricles nearly equal; lower valve tumid; the surface with strong divergent ribs and furrows; upper valve rather flat, with the furrows and ribs corresponding to the other, but shallower and flatter.

The Carboniferous Limestone, Bolland.

47. Avicula sub-radiata.—The Sub-rayed Avicula, pl. LXI.** fig. 29.

A. sub-radiata. Sowerby, Geo. Tr. 2d Ser. V. pl. 34, fig. 1. Phillips, Pal. Foss. pl. 23, fig. 86.

Obliquely and transversely elongated; breadth extending the whole length of the shell; hinge-line horizontal; one valve flat, the other convex; auricles not defined, the posterior one smooth, with a few concentric lines, with radiations along the middle; anterior side narrow and pointed; posterior side broad, and a little concave; surface with remote radiating lines, crossed by raised concentric lines of growth.

The Devonian Shales, Petherwin.

48. Avicula cygnipes.—The Swan's-foot Avicula, pl. LXVI.** fig. 17.

A. cygnipes. Phillips, Geo. York, I. p. 134, pl. 14, fig. 3. *Pecten cygnipes.* Young and Bird, Geo. Sur. York, Coast, p. 235, pl. 9, figs. 4 and 6.

Sub-quadrate, oblique; lower valve convex, the other flat; hinge-line straight, oblique; umbo of the convex valve rounded and obtuse, projecting above the hinge area; auricles very unequal, the anterior one exceedingly small and pointed; the posterior one very large, concave on the edge, the point obtuse, and protruding beyond the side; surface with from four to five longitudinal, divergent, curved ribs, inclining posteriorly, and extending half an inch beyond the margins, terminating in acute points; the intercostal spaces covered with fine longitudinal striæ; lower margin concave between the ribs; flat valve with furrows corresponding in number to the ribs of the other valve, and with rather coarser, longitudinal striæ between the furrows, and with a few concentric lines of growth towards the base, the auricles and hinge-line corresponding with the under valve.

The Ironstone Bands in the Aluminous Strata, near Whitby, and in the Lias at Bilsdale and Wilton Castle, Yorkshire.

49. Avicula longicostata.—The Long-Ribbed Avicula, pl. LXVI.** figs. 15, 16.

A. longicostata. Stutchbury, Mag. Nat. Hist. 1839, p. 163, fig. 28.

Ovate, inequivalve, the lower one convex and the upper flat; lower valve with the hinge-line horizontal, and a little curved; ears very unequal, the anterior one extremely small and obtuse, the posterior very large, somewhat rounded

above, protruding in a lengthened sharp point, and considerably concave on the margin; surface with six elevated, narrow, longitudinal, divergent ribs, extending beyond the margins, and acutely pointed; the central, second, and sixth ribs being higher than the others, which are intermediate ones; the rib next the larger ear is invariably tripartite; the intercostal spaces with fine, irregular, longitudinal striæ; crossed towards the base with lines of growth; margins between the ribs convex; flat valve, with the hinge-line quite straight, the anterior auricle corresponding with that of the lower valve; the larger one undefined, acute above, and much less concave on the margin than that of the other valve; surface with five or six longitudinal divergent furrows, corresponding with the ribs in the opposite valve, the intermediate spaces with numerous, fine, longitudinal striæ; margins plain and quite circular.

The Lias, Saltford, near Bath.

Although Mr Stutchbury's figure is scarcely two inches in length, the ribs protrude six-eighths of an inch beyond the margins.

Genus XXV.—PTERINEA.—*Goldfuss.*

Shell equivalve, inequilateral, both sides furnished with lateral auricles; the anterior one short; the posterior distinctly defined; hinge area broad and lengthened, its superior margin straight, and the surface generally with a series of parallel lines; ligament internal; hinge with several oblique cardinal teeth, situate below the beaks, and with one or more lateral, very oblique, remote teeth, sloping considerably downwards from the umbones to the anterior side, with one large muscular impression in each valve.

The shells of this genus may easily be mistaken for those of *Avicula*, where the inside of the valves are hidden from view.

1. Pterinea ventricosa.—The Inflated Pterinea, pl. LXI.** figs. 16, 17.

P. ventricosa. Goldfuss, pl. 119, fig. 2. Phillips, Pal. Fos. p. 49, pl. 22, fig. 82.

Much and obliquely elongated, its length more than double its breadth; ventricose; hinge-line straight and slightly oblique; auricles unequal, the anterior ones very small and acute, the other very large, extending below the centre of the side; beaks obtuse; hinge with oblique narrow teeth, gradually lengthening posteriorly, forming a triangular series, with a series of shorter teeth behind them; surface smooth.

The Devonian Shales, Newton Bushel.

2. Pterinea radiata.—The Rayed Pterinea, pl. LXI.** fig. 22.

P. radiata. Goldfuss, pl. 119, fig. 7.

Transversely oblong; surface with a series of wide-set longitudinal, rounded, divergent ribs, with one or two intervening ones between each, the whole surface crossed by numerous waved striæ; margin scolloped.

The Devonian Shale, Newton Bushel.

3. Pterinea spinosa.—The Spinous Pterinea.

P. spinosa. Phillips, Pal. Fos. p. 48, pl. 22, fig. 8.

Oblique; deeper valve very convex along the middle, as well as the anterior, which is small, rounded, and separated from the middle by a deep, broad sinus, and depression; anterior side expanded and flattened; whole surface with large, longitudinal, wide-set, oblique ribs, which are provided with imbricated, distant spines, and crossed by fine concentric striæ; on the disks the intercostal spaces are flat, longitudinally striated, as also the posterior wing.

Devonian Shale, Petherwin.

4. Pterinea Thompsoni.—Thompson's Pterinea.

P. Thompsoni. Portlock, Geo. Rep. p. 431, pl. 25 A, fig. 10.

Much elongated transversely; convex; body of the shell oblique; hinge-line quite sharp and horizontal, extending the entire length of the valve, terminating on both sides with lengthened acute auricles, with a slight contraction under the anterior one; the posterior margin sigmoidal; beak not extending beyond the hinge-line.

The Carboniferous Limestone, Tyrone, Ireland.

Figs. 36 and 37 represent *Pterinea lævis*, to shew the teeth of another division of the genus.

Genus XXVI.—MONOTIS.—*Bronn.*

Sub-equivalve, inequilateral sub-orbicular; compressed; close; anterior auricle small, with a larger continuous one on the posterior side; hinge-line straight, thick, and destitute of teeth; beaks depressed and sub-medial, with a canal below them in front, inclining in the right valve, and a plait within. Muscular impressions unknown.

1. Monotis decussata.—The Decussated Monotis, pl. LXI.** figs. 18, 19.

M. decussata. Goldfuss, pl. 120, fig. 8.

Sub-orbicular; under valve convex, the other rather flat; hinge-line straight and horizontal; auricles not refined; umbo rounded and blunt; surface with numerous fine, divergent ribs, thickly beset with imbricated spines, the intercostal spaces with fine longitudinal striæ, crossed by numerous flat, broad striæ; margins scolloped; upper valve with a large posterior auricle, hollowed on the side, and defined by four radiating ribs; the anterior side with a small acute ear, separated below by a notch; from the umbo emanate numerous undulating, divergent, irregularly-set ribs, which occupy the central portion of the valve, leaving a space destitute of ribs on both sides; the intercostal spaces with numerous shallow, concentric grooves, which cover the whole surface. Length six-eighths of an inch; breadth somewhat less.

The Lias, Gloucestershire.

Fig. 20 repsesents the hinge of *Monotis subcostata.*

Genus XXVII.—GERVILLIA.—*Defrance.*

Shell oblong, nearly equivalve, greatly inequilateral, and oblique; hinge-line rather long, linear and nearly straight, with several irregular, somewhat transverse, small pits, for the reception of the ligament; teeth numerous, more or less lamelliform, interlocking, variable in direction and size, situate below the dorsal edge; each valve with one muscular impression.

1. Gervillia solenoides.—The Solen-shaped Gervillia, pl. LXIX. fig. 6.

G. solenoides. Sowerby, VI. p. 14, pl. 510, figs. 1, 2, 3, 4.

Greatly elongated transversely, its width being nearly eight

times its length; depressed, slightly curved, and smooth; anterior extremity truncated, open; teeth of the hinge variously disposed, irregular, and linear, those of the exterior extremity are most produced, and placed perpendicular to the hinge-line; the others lie in the same direction with it, and are frequently curved, with about four depressions.

The Lower Greensand, Sussex; Isle of Wight; Dorset and Devonshires.

2. GERVILLIA ACUTA?—The Acute Gervillia, pl. LXIX. f 5.

G. acuta. Sowerby, VI. p. 15, pl. 510, fig. 5.

Ovate and lanceolate, its width four times its length; oblique, narrow, somewhat depressed, and a little curved; substance of the shell very thin; anterior portion greatly attenuated, the opposite extremity rounded; teeth of the hinge variously disposed.

In the Great Oolite, Collyweston.

3. GERVILLIA AVICULOIDES.—The Birds-Wing Gervillia, pl. LXIX. figs. 7, 8, 9.

G. aviculoides. Sowerby, VI. p. 16, pl. 511. *Perna aviculoides.* Ib. I. p. 147, pl. 66.

Obliquely ovate, and lance-shaped, somewhat curved, with both extremities acute; hinge-line occupying nearly half the length of the shell; teeth few, all similarly disposed.

Greensand, Blackdown and Lyme Regis; Lower Greensand, Sandgate; the Portland Sand, Langcombe; and the Oxford Clay, Osmington and Upware.

4. GERVILLIA LANCEOLATA.—The Lance-shaped Gervillia, pl. LXIX. fig. 4.

G. lanceolata. Goldfuss, p. 123, pl. 115, fig. 9. *G. acuta.* Phillips, Geo. York, I. pl. 9, fig. 36.

Much elongated transversely, its breadth being five times its length; the hinge-line long, nearly half the width of the shell, nearly straight and oblique, tapering to a point, the opposite side a little narrowed from the hinge, with a rounded, blunt termination; surface nearly smooth, with a few nearly regular, faint lines of growth.

The Great Oolite, Collyweston, Brandsby, and Cloughton.

5. GERVILLIA INCONSPICUA.—The Inconspicuous Gervillia.

G. inconspicua. Phillips, Geo. York, II. p. 212, pl. LXI.** fig. 30.

Transversely elongated; hinge-linge extending the whole length of the valve; anterior side short, rounded; posterior side truncated; surface with concentric wrinkles.

Carboniferous Limestone, Castleton, Derbyshire.

6. GERVILLIA LAMINOSA.—The Laminated Gervillia, pl. LXVII. figs. 10, 16.

G. laminosa. Phillips, Geo. York, II. p. 212, pl. 6, fig. 10.

Very oblique inflated hinge-line, extending the whole length of the shell, with auriform processes on both sides of the beaks, the anterior one short and blunt; the posterior lengthened and acute; surface smooth, with concentric lines of growth; base rounded.

Fig. 16 is a cast of the inside.

The Carboniferous Limestone, Bolland, Colsterdale.

7. GERVILLIA MINOR.—The Small Gervillia, pl. LXI** f. 31.

G. minor. Brown, Trans. Manchester Geo. Soc. I. p. 227, pl. 7, fig. 70.

Very oblique; umbones flat, placed much to one side; hinge-line long, straight; surface with numerous concentric, strong, rude wrinkles, with lesser intermediate ones. Length three-eighths of an inch, breadth three-fourths of an inch.

Carboniferous Limestone Shale, High-Green Wood, Vale of Todmorden.

8. GERVILLIA SQUAMOSA.—The Scaly Gervillia, pl. LXVII. fig. 18.

G. squamosa. Phillips, Geo. York, II. p. 212, pl. 6, fig. 9.

Greatly oblique; hinge-line nearly straight; one ear large, the other small; posterior side ridged; surface with scaly striæ.

The Carboniferous Limestone, Bolland.

9. GERVILLIA LATA.—The Broad Gervillia, pl. LXIX. figs. 1, 2.

G. lata. Phillips Geo. York, I. pl. 11, fig. 16.

Obliquely transverse, much inflated, hinge-line long, oblique, anterior side short, posterior side very large, beaks obtuse; surface smooth, with many equidistant concentric lines of growth.

The Inferior Oolite and Blue Wick, Glaize Dale.

GENUS XXVIII.—CRENATULA.—*Lamarck.*

Shell sub-equivalve, compressed, inequilateral, oblique: somewhat distorted and lamellar; hinge-line lateral, linear, nearly straight, marginal, and internally crenulated; the crenulæ formed in a continuous series along the hinge, each of them presenting a small rounded callosity, and excavated for the reception of part of the cartilage, the intervening ridges covered with a true ligament; muscular impressions almost obsolete, of an oblong form, and situate near the anterior margin of the pearlaceous substance.

1. CRENATULA VENTRICOSA.—The Bellied Crenatula, pl. LXI.*** fig. 4.

C. ventricosa. Sowerby, V. p. 64, pl. 443.

Ovate, elongated, gibbose, ventricose, and carinated; hinge-line short, posterior side much compressed, with its edges a little produced, but not lobate; front and anterior side rounded; inside pearlaceous.

In the Lias, Bosworth, Leicestershire, Yorkshire, and Vale of Gloucester.

2. CRENATULA LISTERI.—Lister's Crenatula, pl. LXI.*** fig. 5.

C. Listeri. Parkinson, Org. Rem. III. p. 220, pl. 15, f. 5.

Elongated; hinge-line oblique; crenulations large; valves narrow above and wide below.

The Great Oolite, Shotover.

3. CRENATULA PRODUCTA.—The Produced Crenatula, pl. LXI.*** fig. 6.

C. producta. Parkinson, Org. Rem. III. p. 221, pl. 15, figs. 6, 7.

Much elongated; hinge-line considerably oblique, with four large crenulations; beaks rather prominent, and a little turned to one side; basal margins of the valves much produced, and extending considerably below the body of the shell; external surface with concentric laminæ.

The Oolite, Shefford, Bedfordshire.

GENUS XXIX.—CATILLUS.—*Brongniart.*

Shell thick, inequivalve, inequilateral; triangular, deep,

with incurved umbones; hinge linear, consisting of a series of transverse grooves, and extending on one side of the beaks only, its direction, as regards the transverse diameter of the shell, being generally oblique; cartilage partly external.

1. Catillus Cuvieri.—Cuvier's Catillus, pl. LXVII. fig. 21.

Inoceramus Cuvieri. Sowerby, V. p. 59, pl. 441, fig. 1.

Convex ovate, curved, generally one-third longer than wide, and rather shallow; anterior side concave, with a small, almost smooth lobe near the beak; beaks short, and rather acute, hardly raised above the hinge-line, which is long; surface with transverse, distant, waved, shallow furrows; the laminated lines of growth are nearly equidistant, with the surface between them smooth.

This is a gigantic species, sometimes being found from four to five feet in length.

The Lower Chalk, Lyme Regis, Lewes, Royston, and Petersfield.

2. Catillus Brongniartii.—Brongniart's Catillus, pl. LXVIII. figs. 4, 5, 6.

Inoceramus Brongniartii. Sowerby, V. p. 60, pl. 441, f. 2, 3.

Oblong, gibbose, its length not quite double its breadth; posterior side cordiform, angular, and lobed; anterior side truncated, flat, and smooth; beaks small, curved, and acute; surface with large transverse undulations.

This species grows to a large size.

The Chalk, Lewes and Dover.

3. Catillus cordiformis.—The Heart-shaped Catillus, pl. LXVIII. fig. 15.

Inoceramus cordiformis. Sowerby, V. p. 61, pl. 440.

Equivalved, heart-shaped, width and depth nearly equal, and its length a little more than the breadth; anterior side angular; posterior side not defined, but emanates gradually from a hollow beneath the beaks, which are large and incurved; surface transversely and interruptedly waved.

In the Chalk, Gravesend, Lewes, and Norfolk.

4. Catillus mytiloides.—The Mytilus-shaped Catillus, pl. LXVII. fig. 5.

Inoceramus mytiloides. Sowerby, V. p. 62, pl. 442.

Equivalved, depressed, and elongated; convex and obtuse towards the beaks, which are short and sharp-pointed; posterior side produced; hinge-line oblique; surface with slight irregular undulations.

In the Chalk, Norwich, Gravesend; the Lower Chalk, Lewes, Warminster, Petersfield, and Lyme Regis.

5. Catillus latus.—The Broad Catillus, pl. LXVIII. fig. 8.

Inoceramus latus. Sowerby, VI. p. 159, pl. 572, fig. 1.

Depressed, ovate-rhomboidal; valves equal; anterior side concave; posterior side broad and expanding towards the hinge-line, which is very oblique; beaks small and short; surface with slightly elevated concentric undulations and sharp striæ.

The Chalk, Brighton and Norfolk, and the Lower Greensand, Brasted, Kent.

6. Catillus striatus.—The Striated Catillus, pl. LXVIII. fig. 3.

Inoceramus striatus. Sowerby, VI. p. 160, pl. 582, fig. 2.

Sub-globose, plain, anterior side concave and smooth; beaks very short and obtuse; surface with shallow concentric furrows, and striated.

Lower Chalk, Haytesbury and Lewes.

7. Catillus involutus.—The Involute Catillus, pl. LXVIII. figs. 12, 13.

Inoceramus involutus. Sowerby, VI. p. 160, pl. 583.

Somewhat globular, valves very unequal, one of them considerably inflated and even, with a large incurved beak, and its side very concave, the other valve nearly flat, with deep, concentric undulations; its margin very thick and deflected; hinge-line placed upon an elevated narrow lobe.

The Chalk, Lewes and Norfolk.

8. Catillus gryphæoides.—The Gryphæ-formed Catillus, pl. LXVIII. fig. 16.

Inoceramus gryphæoides. Sowerby, VI. p. 161, pl. 584, fig. 1.

Ventricose, ovate; inequivalve, the smaller globose; beaks incurved, acute, and approximating; surface concentrically undulated.

The Lower Greensand, West of Lyme Regis, and at Ringmer, &c.

9. Catillus dubius.—The Doubtful Catillus, pl. LXVIII. fig. 2.

Inoceramus dubius. Sowerby, VI. p. 162, pl. 584, fig. 3.

Concave, ovate, pointed; valves unequal; beaks short and pointed; surface concentrically striated and indistinctly undulated.

Lias, Whitby, Yorkshire, and Vale of Gloucester.

10. Catillus pictus.—The Painted Catillus, pl. LXVIII. fig. 7.

Inoceramus pictus. Sowerby, VI. p. 215, pl. 594, fig. 1.

Convex, oblong, valves equal; anterior side somewhat flattened and smooth; surface a little wavy, almost covered with small concentric furrows, and generally with longitudinal stripes of brown colour.

In the Chalk Marl, Guildford.

11. Catillus digitatus.—The Fingered Catillus, pl. LXVIII. fig. 14.

Inoceramus digitatus. Sowerby, VI. p. 215, pl. 594, fig. 2.

Shell very large, covered with large longitudinal furrows, with the intervening ribs round and equal to the furrows, crossed by distinct lines of growth.

The Chalk, Debden, Essex.

12. Catillus concentricus.—The Concentric Catillus, pl. LXVIII. fig. 11.

Inoceramus concentricus. Sowerby, III. p. 183, pl. 305.

Ovate, inequivalve, length nearly double its width, one valve deeper than the other, with the beaks much produced and incurved; beak of the shallower valve very short; both are transversely undulated and striated, the striæ being the edges of distant, imbricated plates or laminæ; hinge-line containing about twelve grooves for the reception of the ligament.

The shell consists of two coats, the outer one of a fibrous structure, and brown coloured; the inner pearlaceous.

The Chalk Marl, Lyme Regis and Warminster; the Gault, Folkestone and West Malling; the Red Chalk, Hunstanton; and the Lower Greensand, Pinbay, Devonshire, and Isle of Wight.

13. Catillus sulcatus.—The Furrowed Catillus, pl. LXVIII. fig. 1.

Inoceramus sulcatus. Sowerby, III. p. 184, pl. 306.

Oblong, inequivalve, beaks prominent, that of one valve incurved and acute; surface with about nine large longitudinal plaits.

The Chalk Marl, Cambridge and Beerhead; and the Gault, Folkstone, Ringmer, Maidstone, and Vale of Wardour.

14. Catillus obliquatus.—The Oblique Catillus, pl. LXVII. fig. 23.

C. obliquatus. Brown, Trans. Manch. Geo. Soc. I. p. 226, pl. 7, fig. 69.

Ovate, smooth; umbones rather large, and placed considerably to one side; surface with several distinct lines of growth; sides unequal, one considerably produced, the other short and nearly straight.

Carboniferous Limestone Shale, High-Green Wood, Vale of Todmorden.

15. Catillus lævis.—The Smooth Catillus, pl. LXVII. f. 22.

C. lævis. Brown, Trans. Manch. Geo. Soc. Trans. I. p. 226, pl. 7, fig. 67.

Oblong-ovate, smooth; with numerous concentric, nearly obsolete wrinkles; umbones small, rounded, and but slightly produced. Length nearly three-fourths of an inch; breadth half an inch.

The Carboniferous Limestone Shale, High-Green Wood, Vale of Todmorden.

16. Catillus Kirkmani.—Kirkman's Catillus, pl. LXVII. fig. 24.

C. Kirkmani. Brown, Trans. Manch. Geo. Soc. I. p. 225, pl. 7, fig. 66.

Oblong-ovate, convex, smooth; sides nearly equal, marked with four concentric lines of growth; umbones prominent, central, and rounded, with several inequidistant, concentric lines of growth; margins sharp and even.

The Carboniferous Shale, High-Green Wood, Vale of Todmorden.

17. Catillus costatus.—The Ribbed Catillus, pl. LXVII. fig. 25.

C. costatus. Brown, Trans. Manch. Geo. Soc. I. p. 226, pl. 7, fig. 68.

Oblong-ovate; with numerous very flat, longitudinal, divergent small ribs emanating from the umbones and terminating on the margins; these are crossed by numerous distinct lines of growth. Length half an inch; breadth, three-eighths.

18. Catillus Kellyii.—Kelly's Catillus, pl. LXVIII. fig. 17.

C. Kellyii. Brown, Trans. Manch. Geo. Soc. I. p. 226, pl. 7, fig. 73.

Mytilliform, elongated, smooth, with concentric lines of growth; umbones small, rounded, and considerably turned to one side; valves narrow above, wide and rounded towards the base.

The Carboniferous Limestone Shale, High-Green Wood, Vale of Todmorden.

19. Catillus minutus.—The Minute Catillus, pl. LXVIII. figs. 18, 19.

C. minutus. Brown, Trans. Manch. Geo. Soc. p. 226, pl. 7, figs. 71, 72.

Modioliform, much elongated, smooth, with distinct, concentric lines of growth; umbones small, rounded, and placed to one side. Length about one line; breadth two-thirds its length.

The Carboniferous Limestone Shale, High-Green Wood, Vale of Todmorden.

20. Catillus Crispii.—Crisp's Catillus, pl. LXI. *** f. 8, 9.

C. Crispii. Mantell, Geo. Sus. I. p. 133, pl. 27, fig. 11.

Obovate, greatly compressed, with numerous transverse ridges; beaks acuminated; posterior side small, depressed; anterior side expanded; hinge-line oblique.

In the Red Chalk, Hunstanton, and the Gault, Folkstone and Hamsey.

21. Catillus Lamarckii.—Lamarck's Catillus, pl. LXI.***

Inoceramus Lamarckii. Mantell, Geo. Suss. p. 214, pl. 27, fig. 1.

Valves equal, very convex, with a few obscure longitudinal undulations, and distant transverse ridges; surface covered with numerous concentric striæ; posterior side sub-compressed or slightly concave; anterior side lobate and expanded, separated from the body of the valve by a deep furrow; hinge-line nearly transverse.

In the Chalk, Lewes and Norfolkshire.

22. Catillus trigonus.—The Trigonal Catillus.

Inoceramus trigonus. Portlock, Geo. Sur. p. 422, pl. 33, f. 4.

Much elongated, nearly three-sided, compressed; the flattened arch strongest at the beak; beaks rather sharp, and reflected towards the hinge-line; surface with irregular, concentric wrinkles, between each a series of fine striæ; hinge-line greatly oblique and extending downwards, being equal to nearly half the length of the shell, and broadest at the end of the hinge-line.

Silurian Limestone, Tyrone, Ireland.

23. Catillus contortus.—The Contorted Catillus.

Inoceramus contortus. Portlock, Geo. Sur. p. 422, pl. 33, fig. 5.

Elongated; hinge-line short; beaks incurved; the entire shell much arcuated, giving it a twisted appearance; surface with fine concentric wrinkles and striæ.

Silurian Limestone, Tyrone, Ireland.

24. Catillus tenuis.—The Thin Catillus.

Inoceramus tenuis. Mantell, Geo. Suss. p. 132.

Both valves regularly convex and deepest in the middle; beaks convex, incurved; hinge-line short, rather oblique; posterior side small and lunulate; surface with numerous lamellated, concentric wrinkles, generally about four inches long, and three wide; substance of the shell thin.

25. Catillus transversus.—The Transverse Catillus.

Inoceramus transversus. Portlock, Geo. Sur. p. 423, pl. 33, fig. 11.

Transversely elongated, considerably flattened, but more inflated towards the beaks; hinge-line long, straight, horizontal; beaks placed towards the end, and rather indistinct; surface with shallow concentric undulations.

Silurian Limestone, Tyrone, Ireland.

26. Catillus pernoides.—The Perna-like Catillus.

Inoceramus pernoides. Portlock, Geo. Sur. p. 567, pl. 38, f. 5.

Elongated; hinge-line considerably oblique, forming an angle of thirty degrees; beaks acute, and slightly curved, smooth.

The Carboniferous Limestone, Derryloran, Ireland.

GENUS XXX.—POSIDONIA.—*Bronn.*

Shell free, roundish oval, inequilateral, both sides with rudimentary, rounded, not well defined auricles; cardinal area linear, thick, and toothless, with a fusiform, striated canal below the beaks, anteriorly extended; beaks equal, sub-medial, generally obtuse, and sub-depressed; interior with one muscular impression.

1. POSIDONIA COMPLANATA.—The Compressed Posidonia, pl. LXI.** fig. 33.

P. complanata. Portlock, Geo. Rep. p. 472, pl. 34, fig. 12.

Inequivalve, transverse, oblong-ovate, one valve a little convex, the other quite flat, and enveloped by the opposite one; hinge-line nearly straight; beaks nearly obsolete; surface with fine concentric lines of growth; breadth not an eighth of an inch.

The Carboniferous Limestone, Ballynascreen, Derry, Ireland.

2. POSIDONIA TRANSVERSA.—The Transverse Posidonia, pl. LXI.** fig. 25.

P. transversa. Portlock, Geo. Rep. p. 745, pl. 38, fig. 9.

Transverse, slightly oblique, and compressed; beaks obtuse and rounded, placed near the anterior margin; surface with strong, transverse folds.

The Carboniferous Limestone, Fermanah, Ireland.

3. POSIDONIA VENUSTA.—The Handsome Posidonia, pl. LXI.** fig. 38.

P. venusta. Portlock, Geo. Rep. p. 424, pl. 25 A, fig. 4.

Transversely oval, frequently oblique, generally concentrically wrinkled, and striate; the ear large, separated from the rest of the shell by a slight bend; umbo short, projecting a little beyond the hinge-line.

Silurian Limestone, Tyrone, Ireland.

4. POSIDONIA MINUTA.—The Small Posidonia, pl. LXI.** fig. 32.

P. minuta. Sowerby, Geo. Trans. 2d Ser. V. pl. 28, fig. 4.

Sub-triangular, rather inflated; umbo large, obtuse; surface with transverse wrinkles.

This is not *Posidonia minuta* of Bronn and Goldfuss. Their shell is obliquely orbicular, pl. LXI.** fig. 40.

The Keuper Sandstone, Bunge Hill Quarries.

5. POSIDONIA LATERALIS.—The Lateral Posidonia, pl. LXI.*** fig. 2.

P. lateralis. Sowerby, Geo. Tr. 2d Ser. V. pl. 52, fig. 1. Phillips, Pal. Foss. p. 45, pl. 20, fig. 74.

Transversely elongated, oblong-ovate, oblique, and compressed; beaks situate near the anterior extremity; surface with concentric angular ridges.

The Carboniferous Limestone, Venn, Barnstaple, Swimbridge, and Brampton, North Devon, and Lew Trenchard, South Devon.

6. POSIDONIA BECHERI.—Becher's Posidonia, pl. LXI.** fig. 35.

P. Becheri. Sowerby, Geo. Tr. 2d Ser. V. pl. 52, fig. 3. Phillips, Pall. Foss. p. 45, pl. 20, fig. 73.

Obliquely sub-triangular, compressed, with numerous concentric ridges, and very fine concentric striæ, which are hardly visible without the aid of a lens; posterior slope straight; umbones nearest the anterior side.

The Carboniferous Limestone, Venn, Swimbridge, &c., and the Devonian Shales, Herborn.

7. POSIDONIA ANODONTOIDEA.—The Anodon-shaped Posidonia, pl. LXI.*** fig. 1.

P. Becheri. Sowerby, Geo. Tr. 2d Ser. V. pl. 52, fig. 2.

Transversely oblong-ovate; posterior slope lengthened, oblique, and narrowed at the termination; hinge-line curved; umbones obtuse; anterior side short and obtuse; whole surface covered with numerous, rather close, very narrow, concentric ridges, separated by a narrow groove; towards the margins the ridges become mere striæ, which is a characteristic of most of the shells of this genus.

This species might easily be mistaken for an Anodon.

The Carboniferous Limestone, Venn.

8. POSIDONIA TRUNCATA.—The Truncated Posidonia, pl. LXI.** fig. 26.

P. Becheri. Var. Sowerby, Geo. Tr. V. 2d Ser. pl. 52, 4.

Sub-quadrate, a little oblique; hinge-line nearly straight and horizontal; anterior side very short, and considerably narrower than the posterior, which is large, sloping obliquely from the hinge-line, and obtuse below; umbones obtuse; surface with many close-set concentric ridges, with very narrow furrows; and also with very minute concentric striæ.

I agree with Mr Sowerby that this surely cannot be the *P. Becheri.*

The Carboniferous Limestone.

9. POSIDONIA TUBERCULATA.—The Tuberculated Posidonia, pl. LXI.** fig. 34.

P. tuberculata. Sowerby, Geo. Tr. 2d Ser. V. pl. 52, fig. 5. Phillips, Pall. Foss. p. 44, pl. 25 A, fig. 4.

Sub-triangular, compressed, somewhat elongated; umbones nearly central; surface with many concentric ridges, and three or four longitudinal slight ribs, which produce a tuberculated appearance, as they cross the ribs.

Carboniferous Limestone, Budle, Northumberland, and Venn, Swimbridge.

10. POSIDONIA VETUSTA.—The Ancient Posidonia, pl. LXVII. fig. 15.

Inoceramus vetustus. Sowerby, VI. p. 162, pl. 584, fig. 2.

Sub-ovate, rather convex; beaks prominent; both slopes considerably oblique; sides a little straight, and rounded below; surface smooth, with broad concentric ribs, and shallow furrows; anterior side with a concave space resembling a lunette.

The Carboniferous Limestone, Castleton and Settle, Yorkshire.

GENUS XXXI.—PERNA.—*Bruguiere.*

Shell sub-equivalve, flattened, and somewhat irregular, a little distorted, thickish, and externally lamellar; the laminæ composed of minute perpendicular fibres; beaks small, nearly equal, and situate at the posterior extremity of the hinge margin; hinge linear, marginal, with numerous transverse, parallel, opposite grooves, which, together with flattened ridges between them, are destined for the reception of the ligament; the anterior extremity of the hinge is narrower than its posterior termination; situate immediately under the extremity of the hinge margin is a posterior sinus, for the passage of the byssus; with a parietal callosity, which is more distinct in the

right hand valve than in the opposite ; the interior pearlaceous substance of the shell is spread out almost in the same form as the exterior fibrous and more extended portion ; one distinct, somewhat oblique and irregular muscular impression, and a series of small dots, are placed at the posterior side, near the sinus for the byssus, which answer as points of attachment for a part of the mantle.

1. PERNA ALÆFORMIS.—The Wing-shaped Perna, pl. LXXI. fig. 20.

Modiola (?) alæformis. Sowerby III. p. 93, pl. 251.

Triangular ; length nearly twice its breadth, producing a wing-like appearance ; ventricose ; anterior lobe somewhat compressed ; posterior lobe very small ; back parallel ; disk convex ; beaks produced, between one and the other a concave space intervenes ; surface rough and somewhat imbricated ; thickness of the united valves equal to the width of the shell.

The Lower Greensand, Court-at-Street.

2. PERNA MYTILOIDES.—The Mytilus-formed Perna, pl. LXVII. figs. 1, 2.

P. mytiloides. Phillips, Geo. York, I. pl. 9, fig. 21.

Mytiliform, elongated ; posteriorly incurved ; hinge-line slightly curved and considerably oblique ; ligamentary grooves, seven or eight, elongated ; beaks rather obtuse, pointing posteriorly ; surface smooth, with shallow, concentric lines of growth.

The Cornbrash, Bullwick ; the Great Oolite, White Nab, Cloughton Wyke, and the Inferior Oolite, Cheltenham.

3. PERNA QUADRATA. — The Squarish Perna, pl. LXIX. fig. 11.

P. quadrata. Sowerby, V. p. 149, pl. 492.

Elongated, somewhat square ; valves with one side shorter than the other, gibbose and unequal ; hinge-line a little curved ; the cartilage pits large and few ; beak rather pointed, that of the larger valve prominent, the other somewhat shorter ; surface smooth, with a few indistinct, shallow lines of growth.

The Portland Stone, Swindon and Garsington.

4. PERNA ROSTRATA.—The Beaked Perna, pl. LXIX. figs. 14, 15.

P. rostrata. Sowerby, Geo. Tr. 2d Ser. IV. p. 342, pl. 17, fig. 17.

Ovate, compressed ; hinge-line straight and horizontal ; lesser wing produced and well defined ; base rounded ; beaks rather obtuse and not protruding ; substance of the shell thin.

In the Greensand, Blackdown.

5. PERNA RUGOSA.—The Rugged Perna, pl. LXI.*** f. 3.

P. rugosa. Goldfuss, pl. 108, fig. 2.

Sub-quadrate ; hinge-line lengthened, oblique ; area with eighteen or nineteen oblong parallel grooves ; beaks acute, considerably turned to one side, with a lunular excavation under them ; surface with many irregular, raised, concentric rough lines of growth.

The Great Oolite, Scarborough.

TRIBE II.—MYTILACEA.

Hinge with the ligament sub-anterior, marginal, linear, very entire, occupying a great portion of the anterior border ; shell rather foliaceous.

GENUS XXXII.—PINNA.—*Linnæus.*

Shell equivalve, longitudinal, oblique, wedge-shaped ; beaks forming an elongated point ; posterior side generally truncated, and always gaping ; the anterior margin nearly a straight line, and a little open in the centre for the passage of the byssus ; hinge without teeth ; ligament margin greatly lengthened and linear ; ligament partly internal, and continuing along the whole dorsal margin ; two muscular impressions in each valve, the posterior one very large, almost central, the anterior one terminal, and sometimes double ; muscular impressions of the mantle destitute of a sinus.

1. PINNA AMPLA.—The Spacious Pinna, pl. LXXI. fig. 19.

Mytilus amplus. Sowerby, I. p. 27, pl. 7.

Triangular, compressed ; posterior side straight, slightly undulous ; base gradually curved to the back ; length nearly twice its breadth, somewhat compressed ; surface with rather wide, longitudinal, undulating striæ, which proceed from the beaks and back near to the base, the posterior side not striated ; substance of the shell thin.

The Great Oolite, Bath and Malton, and the Inferior Oolite, Somersetshire and Yorkshire.

2. PINNA FLABELLIFORMIS.—The Fan-shaped Pinna, pl. LXVII. fig. 19.

P. costata. Phillips, Geo. York, II. p. 211, pl. 6, fig. 2.

Much elongated, narrow, nearly straight ; beaks acute, middle of the valves with many longitudinal, narrow, deep grooves, crossed by remote, concentric lines of growth ; towards the beaks the valves are destitute of grooves.

The Carboniferous Limestone, Ashford, Bakewell, Boland and Moulton.

3. PINNA GRACILIS.—The Slender Pinna, pl. LXIX. fig. 12.

P. gracilis. Phillips, Geo. York, I. pl. 2, fig. 22.

Much elongated, slender, slightly arcuated ; beaks rather obtuse ; anterior side with longitudinal shallow furrows ; and remote, shallow, transverse lines of growth.

The Specten Clay, Speeton, Yorkshire.

4. PINNA LANCEOLATA.—The Spear-shaped Pinna, pl. LXIX. fig. 10.

P. lanceolata. Sowerby, III. p. 145, pl. 281.

Lanceolate, much elongated, its length being equal to four times its breadth ; and a little arcuated, section quadrangular ; each valve being divided into two flat sub-triangular parts by a mesial line ; surface with some longitudinal wide-set striæ at the beaks, and extending downwards for some inches, with transverse, shallow wrinkles.

The Coral Rag, Scarborough, Malton, and Magilligan, Ireland.

5. PINNA INFLATA.—The Inflated Pinna, pl. LXVII. fig. 12.

P. inflata. Phillips, Geo. York, II. p. 211, pl. 6, fig. 1.

Conical, inflated ; beaks nearly central ; surface with many small, close-set, equal furrows.

The Carboniferous Limestone, Bolland, Yorkshire.

6. PINNA CUNEATA.—The Wedge-shaped Pinna, pl. LXIX. fig. 13.

P. cuneata. Phillips, Geo. York, I. pl. 9, fig. 17.

Conical, wedge-shaped; umbones obtuse; surface smooth, with a few transverse shallow wrinkles.

The Cave Oolite, Cloughton, Yorkshire.

7. Pinna arcuata.—The Arcuated Pinna, pl. 70, fig. 1.

P. arcuata. Sowerby, IV. p. 10, pl. 313, fig. 3.

Short, somewhat equilateral; arcuated and ventricose; beaks obtuse, and considerably curved; hinge-line gently bent: depth and length nearly equal; anterior half with wide, shallow, longitudinal striæ or narrow furrows, separating the narrow flattened ribs; opposite side smooth, with some nearly equidistant, transverse lines of growth.

The London Clay, Highgate.

8. Pinna folium.—The Leaf Pinna, pl. LXX. fig. 2.

P. folium. Phillips, Geo. York, I. pl. 14, fig. 17.

Elongated, slightly curved; sub-quadrate; one side with oblique, transverse folds, the other with curved shallow folds; valves separated by a longitudinal ridge.

The Lower Lias Shale, Robin Hood's Bay, and Boulby Cliffs.

9. Pinna tetragona.—The Tetragonal Pinna, pl. LXX. fig. 3.

P. tetragona. Sowerby, IV. p. 9, pl. 313, fig. 1.

Abruptly conical, narrow above and wide beneath; a little arcuated; smooth, with obscure, longitudinal, slightly elevated ribs, occupying more than half of the surface, with a suture in the middle; section generally square.

The Lower Greensand, Lympne and Pulborough, and the Greensand, Blackdown and Isle of Wight.

10. Pinna mitis.—The Buried Pinna, pl. LXX. fig. 4.

P. mitis. Phillips, Geo. York, I. pl. 5, fig. 7.

Elongated, nearly straight; beaks acute; surface with concentric ridges.

The Oxford Clay, Scarborough, and Inferior Oolite, Cheltenham.

11. Pinna affinis.—The Allied Pinna, pl. LXX. fig. 6.

P. affinis. Sowerby, IV. p. 10, pl. 313, fig. 2.

Nearly equilateral, ventricose, straight, wedge-shaped, smooth, with irregular, longitudinal, divergent ribs, which, however, only occupy the anterior portion of the valves, and disappear near the edge.

The London Clay, Highgate and Bognor.

12. Pinna granulata.—The Granulated Pinna, pl. LXX. fig. 5.

P. granulata. Sowerby, IV. p. 65, pl. 347.

Broad, conical, nearly equilateral, convex; anterior side rounded, with a rounded elevation near the posterior side; edge very thick towards the anterior side; surface obscurely decussated; length about eight inches, breadth six inches.

The Kimmeridge Clay, Weymouth and Pabba.

13. Pinna Hartmanni.—Hartmann's Pinna.

P. Hartmanni. Goldfuss, pl. 127, fig. 3.

Longitudinal, conical; surface with numerous, divergent, narrow, obtuse ribs, with close-set transverse striæ; a sharp ridge rises from the beaks, and is lost about half-way down the valve; section of the shell lozenge.

The Oolite, Magilligan, Ireland.

14. Pinna sulcata.—The Furrowed Pinna.

P. sulcata. Woodward, Geo. Nor. pl. 5, fig. 23.

Considerably elongated, club-shaped; anterior side with longitudinal, narrow furrows; posterior side large, expanding longitudinally; furrowed and ribbed.

The Upper Chalk, Harford Bridge, Norfolk.

Genus XXXIII.—DREISSINA.—*Van Beneden.*

Shell boat-shaped, or mytiliform; valves carinated; ligament internal, except in a little fissure in both valves; externally, a rude cardinal tooth is situate under the umbo in the right valve, which locks into a corresponding cavity in the left valve; in the umbonal angles of both valves are placed transverse partitions, for sustaining a closing muscle; anterior marginal seam with a fissure near its centre, for the passage of the byssus.

1. Dreissina Brardii.—Brard's Dreissina, pl. LXXI. figs. 3, 4.

M. Brardii. Sowerby, VI. p. 60, pl. 532, fig. 2.

Convex, straight, fusiform, elongated; beaks acute, within each of which there is a transverse plate for the tendon; beneath is a flat angular process towards the beak; the valves are somewhat arcuated.

Lower Fresh-water Formation, Hordwell.

Genus XXXIV.—MYTILUS.—*Linnæus.*

Shell equivalve, regular, longitudinal, somewhat wedge-shaped, with the beaks terminating in a pointed summit; posterior side rounded and closed; base forming a continuous line with the interior margin, in a direction oblique to the hinge-line; anterior margin gaping slightly in the centre for the passage of the byssus; hinge destitute of teeth; ligament marginal, linear, greatly elongated, and sub-internal; outside covered with a strong horny epidermis; two muscular impressions, the posterior one large and irregular, the anterior very small and terminal; muscular impressions of the mantle irregular; destitute of a sinus.

1. Mytilus affinis.—The Allied Mytilus, pl. LXXI. f. 16.

M. affinis. Sowerby, VI. p. 59, pl. 532, fig. 1.

Obliquely elongated; sides parallel, straight; anterior margin reflected; arcuated; surface smooth, destitute of teeth. Posterior side arcuated in the young shell.

The Upper Marl, Colwell Bay, Isle of Wight.

2. Mytilus antiquorum.—The Ancient Mytilus, pl. LXXI. fig. 17.

M. antiquorum. Sowerby, III. p. 133, pl. 275, figs. 1, 2, 3.

Oblong-ovate; length somewhat more than twice its width; gibbose; beaks obtuse, nearly meeting when the valves are closed; hinge with three or four slight teeth; surface smooth.

The Mammiferous Crag, Bramerton.

3. Mytilus edulis.—The Edible Mytilus, pl. LXXI. fig. 11.

M. alæformis. Sowerby, II. p. 133, pl. 275, fig. 4.

Obovate; beak acuminated, curved, smooth; hinge with three teeth; side deeply indented, and forms a regular curve.

The Mammiferous Crag, Norwich, and the Red Crag, Bawdsey.

4. Mytilus edentulus.—The Toothless Mytilus, pl. LXXI. fig. 1.

M. edentulus. Sowerby, V. p. 55, pl. 439, fig. 1.

Elongated; beak sharp, below which the shell is deep; disk obtusely carinated; posterior side nearly straight; front

rounded and obtuse; surface smooth; hinge destitute of teeth.

The Lower Greensand, Pulborough and Blackdown.

5. The Mytilus lanceolatus. — Spear-shaped Mytilus, pl. LXXI. fig. 2.

M. lanceolatus. Sowerby, V. p. 55, pl. 439, fig. 2.

Lanceolate, a little curved, smooth; beaks acute; disk carinated, smooth; posterior side flat; anterior side sweeping regularly from the beaks to the front; within each beak a lamellar tooth.

Greensand, Parkham and Lyme Regis.

6. Mytilus sublævis.—The Half-smooth Mytilus, pl. LXXI. fig. 26.

M. sublævis. Sowerby, V. p. 56, pl. 439, fig. 3.

Oblong, triangular, somewhat arcuated; beaks acute; disk obscurely carinated; front straight; hinge-line parallel, extending to half the length of the shell, where it is a little flattened; surface with pretty strong lines of growth.

The Cornbrash, Felmersham, Bedfordshire.

7. Mytilus pectinatus.—The Toothed Mytilus, pl. LXXI. fig. 18.

M. pectinatus. Sowerby, III. p. 147, pl. 282.

Rather quadrangular, slightly arcuated; oblong and gibbose; beaks produced; front straight; surface with longitudinal, rather deep, very regular striæ, which increase in number as they diverge towards the front or base of the valves, from which two obtuse angles emanate, giving a quadrangular form to the shell.

The Kimmeridge Clay, Weymouth.

8. Mytilus inæquivalvis.—The Unequal-valved Mytilus, pl. LXXI. figs. 6, 7.

M. inæquivalvis. Sowerby, Geo. Trans. 2d Series, IV. p. 342, pl. 17, fig. 16.

Sub-triangular; beaks nearly central, broad, sub-compressed; one valve considerably flatter than the other; surface smooth, with faint concentric lines of growth.

The Greensand, Blackdown.

9. Mytilus prælongus.—The Lengthened Mytilus, pl. LXXI. figs. 9, 10.

M. prælongus. Sowerby, Geo. Tr. 2d Ser. IV. p. 342, pl. 17, fig. 15.

Considerably elongated, narrow, a little arcuated and carinated; hinge-line nearly straight and rather long, destitute of teeth; surface smooth; substance of the shell very thick.

The Greensand, Blackdown.

10. Mytilus tridens.—The Three-toothed Mytilus, pl. LXXI. figs. 7, 8.

M. tridens. Sowerby, Geo. Tr. 2d Ser. IV. p. 342, pl. 17, fig. 14, Ib. Min. Conch. p. 55, pl. 439, fig. 1.

Elongated, convex; carinated; beaks acute; hinge-line nearly straight; hinge with three unequal teeth; posterior side almost even; surface very smooth.

The Greensand, Blackdown.

11. Mytilus Lyellii.—Lyell's Mytilus, pl. LXXI. f. 27.

M. Lyellii. Sowerby, Geo. Tr. 2d Ser. IV. p. 346, pl. 21, fig. 18.

Oblong-ovate; a little flattened, especially towards the front; much narrowed above and expanded below; beaks very sharp, beneath which the valves are inflated.

The Weald, Battle and Pounceford.

12. Mytilus cuneatus.—The Wedge-shaped Mytilus, pl. LXXI. fig. 14.

M. cuneatus. Phillips, Geo. York, I. pl. 11, fig. 21.

Somewhat wedge-shaped, short; posterior side nearly straight, anterior side much produced; beaks obtuse; surface smooth, with rather wide striæ occupying the lower half of the valves.

The Inferior Oolite, Glaizedale, Yorkshire.

13. Mytilus cinctus.—The Girdled Mytilus.

M. cinctus. Portlock, Geo. Rep. p. 426, pl. 25, figs. 5, 6.

Considerably elongated, narrowed above, with rather acute beaks, and expanded and rounded below; hinge-line a little curved; surface smooth, with "fine thread-like striæ, proceeding from the apex, first straight, and then curving back over the back concentrically to the rounded front, proceed straight up to the levelled line of the apex, or upper line of the wing."

The Silurian Strata, Fermanagh and Lisbellaw Schists, Tyrone.

14. Mytilus semi-rugatus.—The Semi-ragged Mytilus.

M. semi-rugatus. Portlock, Geo. Rep. p. 430, pl. 25 A, f. 7.

"Wide, rudely trigonal; beak sharp, front wide, and usually more or less twisted or distorted; for about one-third of the length from the beak transversely wrinkled; longitudinally striated or very finely costated. In some specimens the shell is much more contorted or arched."

Silurian Strata, Fermanagh, Tyrone, Ireland.

15. Mytilus triangularis.—The Triangular Mytilus.

M. triangularis. Sowerby, Geo. Tr. 2d Ser. V. pl. 39, fig. 16.

Elongated, sub-triangular, slightly oblique; sub-compressed; a flat oblique ridge running from the apex to nearly the basal margin; beaks obtuse, surface smooth.

The Coal Measures, Coalbrook Dale.

16. Mytilus Danmoniensis.—The Devonshire Mytilus.

M. Danmoniensis. Phillips, Pal. Fos. p. 37, pl. 17, fig. 61.

Much elongated and oval; hinge-line short, straight, and prominent; base broad and flat.

Devonian Shales, Newton Bushel.

17. Mytilus æquilatus.—The Equal-sided Mytilus, pl. LXXI. fig. 15.

M. antiquorum. Young shell, Sowerby, III. pl. 275, f. 3.

Oblong-oval, sub-compressed; sides broad, nearly equal; hinge-line occupying almost half the length of the shell, and nearly straight; beaks obtuse, nearly central; surface smooth, with remote, slightly-marked lines of growth.

The Suffolk Crag, Ipswich.

Genus XXXV.—MODIOLA.—*Lamarck.*

Shell sub-transverse, equivalve, regular, oblique; form oblong, somewhat wedge-shaped, and generally inequilateral; anterior side very small and obtuse; posterior side rounded and closed; anterior margin slightly gaping for the passage of the byssus, and forming, with the base, a line oblique to the dorsal one; beaks nearly lateral; outside covered with a strong horny epidermis; hinge without teeth; ligament elongated, and sub-external; two muscular impressions, the posterior one large, sub-lateral, elongated, and irregular; the

anterior one small and terminal; the mantle muscular impression irregular, and destitute of a sinus.

1. MODIOLA SEMI-SULCATA.—The Semi-furrowed Modiola, pl. LXXII.* fig. 17.

M. (?) *semi-sulcata.* Murchison, Silur. Syst. pt. II. p. 617, pl. 8, fig. 6. *Cypricardia semi-sulcata.* Phillips, Pal. Foss. pl. 17, fig. 57.

Shell transversely ovate, convex, sub-bilobate; anterior considerably smaller than the other; beaks prominent, near the anterior extremity; surface covered with transverse, irregular, concentric furrows; length one inch, width two inches.

Found in the Lower Ludlow Rock at Shelderton Hill, and near Aymestry.

2. MODIOLA ANTIQUA.—The Ancient Modiola, pl. LXXII.* fig. 8.

M. antiqua. Murchison, Silur. Syst. pt. II. p. 628, pl. 13, fig. 1.

Shell obliquely ovate, somewhat convex, almost smooth, with a few nearly obsolete concentric wrinkles; anterior lobe rather indistinct; beaks small, placed near the anterior side; length three-eighths of an inch, breadth six-eighths.

Found in the Wenlock Shale, at Glass-House Hill, east flank of May Hill.

3. MODIOLA FUNATA.—The Buried Modiola, pl. LXXI. figs. 12, 13.

M. arcuata. Williamson's MSS.

Transversely oblong-ovate; hinge-line arcuated; beaks very blunt; surface with wrinkled lines of growth.

Coal Shale, Wakefield.

4. MODIOLA WILLIAMSONI.—Williamson's Modiola, pl. LXXI. figs. 24, 25.

M. elongata. Williamson's MSS.

Much elongated transversely, narrow, compressed; anterior side short; posterior side greatly elongated; umbones depressed and blunt; surface with slightly wrinkled lines of growth.

The Coal Shale, Wakefield.

5. MODIOLA DEPRESSA.—The Depressed Modiola, pl. LXXII. fig. 41.

M. depressa. Sowerby, I. p. 29, pl. 8, three upper figures.

Ovate; breadth nearly twice and a-half its length; greatly depressed, and narrowing towards the posterior side; margin even and very regularly curved, much so at the anterior side; beaks rounded; surface smooth and shining, and pearlaceous within.

The Lower Greensand, Atherfield, Isle of Wight.

6. MODIOLA PALLIDA.—The Pale Modiola, pl. LXXII. fig. 40.

M. pallida. Sowerby, I. p. 30, pl. 8, three right-hand lower figures.

Oblong; breadth about twice its length; gibbose; inferior margin straight; posterior side slightly inflated; beaks obtuse; surface smooth, and somewhat glossy.

The Portland Stone, Fonthill and Brora.

7. MODIOLA LÆVIS.—The Smooth Modiola, pl. LXXII. fig. 37.

M. lævis. Sowerby, I. p. 30, pl. 8, left-hand figure.

Sub-triangular; breadth not quite twice its length; convex; posterior and lower margin nearly straight; posterior side a little produced, united by a short curve; beaks small; surface very smooth; the lines of growth nearly obsolete.

The Lias, Lyme Regis, near Weymouth, Dorsetshire.

8. MODIOLA ELEGANS.—The Elegant Modiola, pl. LXXII. fig. 7.

M. elegans. Sowerby, I. p. 31, pl. 9, left-hand upper figure, middle and lower figures.

Oblong, gibbose; breadth about twice its length, moderately convex; lower margin straight, dentated, with transverse furrows; posterior side inflated, with a few transverse furrows near the base; beaks slightly curved, and with fine, close, slightly undulating striæ, which pass over the most prominent portion of the surface, and diverge over the anterior side to the base, where they become obsolete; interior frequently pearlaceous.

The London Clay, Bognor and Highgate.

9. MODIOLA ALDAMI.—Aldam's Modiola, pl. LXXII. f. 17.

M. aspera. (?) Var. Phillips, Geo. York, I. pl. 11, fig. 9.

Elongated; anterior side narrow; posterior side large and rounded; hinge-line nearly straight and rather lengthened; umbones small and obtuse; surface with numerous fine striæ.

The Inferior Oolite, Blue Wick, Glaizedale.

10. MODIOLA PLICATA.—The Plicated Modiola, pl. LXXII.* fig. 1.

M. plicata. Sowerby, p. 87, pl. 248, fig. 1.

Much elongated transversely, its length about a fifth of its width, a little curved; anterior side separated by a ridge, above which it is striated, the striæ becoming gradually obsolete towards the beak, where strong oblique plications commence divergent from the beaks; the other parts of the shell smooth; but with a few irregular lines of growth; back almost straight; anterior side a little truncated, and the posterior obtuse.

The Fuller's Earth, near Radstock, and the Inferior Oolite, Cotswold Hill.

11. MODIOLA IMBRICATA.—The Imbricated Modiola, pl. LXXII. fig. 36.

M. imbricata. Sowerby, III. p. 21, pl. 212, fig. 13.

Oval, elongated, its breadth twice its length; front concave; anterior lobe forming a slightly elevated ridge, extending to the beak, which is angular; surface with imbricated ridges.

The Lower Greensand, Pulborough, and the Cornbrash, Felmersham.

12. MODIOLA HILLANA.—Hill's Modiola, pl. LXXII. f. 8.

M. Hillana. Sowerby, III. p. 21, pl. 212, fig. 2.

Elongated ovate, its width a little more than twice its length, depressed; posterior side narrow; posterior lobe obscure; front a little concave; back carinated, and tapering towards the beaks, which are but slightly prominent; surface concentrically striated.

The Fuller's Earth, Bathford Hill.

13. MODIOLA ASPERA.—The Rough Modiola, pl. LXXII. figs. 13, 14.

M. aspera. Sowerby, III. p. 22, pl. 212, fig. 4.

Ovate, transversely elongated; length half its width; posterior side acute, very gibbose; posterior lobe obscure, small, and pointed; surface with numerous transverse, elevated, rough striæ, which are strong towards the broader side of the shell,

and are lost near the beaks; depth of the united valves exceeding the length of the shell.

The Lower Greensand, Hythe.

14. Modiola minima.—The Small Modiola, pl. LXXII. fig. 28.

M. minima. Sowerby, III. p. 19, pl. 210, figs. 5, 6, 7.

Sub-triangularly ovate, its width one and a-half its length; sides nearly rounded, broad anteriorly; posterior lobe small, distinct; front nearly straight; beaks small. The margin forming a prominent angle with the hinge-line at their junction; surface smooth.

The Lias, north of Shropshire, and Vale of Gloucester.

15. Modiola gibbosa.—The Gibbous Modiola, pl. LXXII. figs. 5, 6.

M. gibbosa. Sowerby, III. p. 19, pl. 211, fig. 1.

Transversely elongated; reniform, very gibbose; its width double its length; depth of each valve nearly equal to the length; back broad, arcuated; posterior lobe well defined and inflated; surface smooth.

Great Oolite, Ancliff and Bradford, and the Inferior Oolite, Cotswold Hills.

16. Modiola reniformis.—The Kidney-shaped Modiola, pl. LXXII. figs. 32, 33.

M. reniformis. Sowerby, III. p. 20, pl. 211, fig. 3.

Transversely-oblong, sub-reniform; its width not twice its length; anterior lobe considerably expanded and pointed; posterior lobe small; surface smooth; centre of the front considerably indented.

The Inferior Oolite, near Bath.

17. Modiola sub-carinata.—The Sub-carinated Modiola, pl. LXXII. figs. 21, 22.

M. sub-carinata, (?) Sowerby, III. p. 17, pl. 210, fig. 1. Lamarck, Foss. de. Paris, p. 191; Ann. du Mus. VI. p. 122, and IX. pl. 17, fig. 10.

Transversely-oblong; its width double its length; front arcuated; anterior side keel-shaped; posterior lobe convex and rather obtuse; surface smooth, with well-defined lines of growth.

The London Clay, Highgate.

18. Modiola bipartita.—The Two-parted Modiola, pl. LXXII. figs. 9, 10, and pl. LXXI. figs. 22, 23.

M. bipartita. Sowerby, III. p. 17, pl. 210, figs. 3, 4.

Transversely elongated; its width more than twice and a-half its length; somewhat gibbose and smooth; anterior side obtuse, abruptly raised above the posterior; the posterior lobe irregular; beak sub-carinated; front waved.

19. Modiola æqualis.—The Equal Modiola, pl. LXXII. fig. 35.

M. æqualis. Sowerby, III. p. 18, pl. 210, fig. 2.

Transversely oblong, convex, smooth; anterior lobe obscurely defined; front nearly parallel; width not quite twice its length.

The Lower Greensand, Parham, Sussex.

20. Modiola lineata.—The Lineated Modiola, pl. LXXII. figs. 1, 2.

M. lineata. Sowerby, Geo. Tr. 2d Ser. IV. p. 338, pl. 14, fig. 2.

Elongated, ventricose, arcuated; beaks obtuse; margins arched, and nearly parallel; depth of each valve equal to its width; surface covered with fine regular striæ, diverging from the beaks to the opposite extremity, crossed by remote lines of growth.

The Lower Greensand, near Hythe.

21. Modiola bella.—The Neat Modiola, LXXII. fig. 3.

M. bella. Sowerby, Geo. Tr. 2d Series, IV. p. 336, pl. 11, fig. 9.

Ovate, convex; beaks obtuse; edges parallel; surface smooth, with fine distinct striæ; sides nearly equal.

The Lower Greensand, Hythe and West of Sussex.

22. Modiola producta.—The Produced Modiola, pl. LXXII. figs. 11, 12.

M. producta. Williamson's MSS. and in his Collection.

Elongated, moderately inflated, somewhat arcuated; beaks obtuse; side under the hinge-line much produced; surface smooth; lines of growth slightly defined.

The Coal Shale, Wakefield.

23. Modiola sub-truncata.—The Sub-truncated Modiola, pl. LXXII. figs. 15, 16.

M. gracilis. Williamson's MSS. and in his Collection.

Sub-quadrangular; beaks hardly protruding; hinge-line much lengthened, and nearly straight, and obliquely sloping downwards from the extreme angles; surface smooth.

The Coal Shale, Wakefield.

24. Modiola curtata.—The Cut-off Modiola, pl. LXXII. figs. 19, 20.

M. Curtata. Williamson's MSS. and in his Collection.

Oblong; beaks small and flat; anterior side short, rounded; posterior side large, with a considerable expansion above, and the extremity truncated; surface smooth, with some nearly obsolete lines of growth.

The Coal Shale, Wakefield.

25. Modiola flexuosa.—The Flexuous Modiola, pl. LXXII. fig. 18.

Elongated; anterior side narrow and short; beaks obtuse; basal-line nearly straight, and lengthened from the anterior side, with a flexure below it; surface smooth, with remote, shallow lines of growth; side below the beaks flexuous on the edge.

In the Cabinet of Thomas Allis, Esq. York.

The Marlstone, Gloucestershire, in the lower bed of the Oolitic Series.

26. Modiola Robertsoni.—Robertson's Modiola, pl. LXXII. figs. 24, 25.

Cabinet of Mr Robertson, Newcastle-on-Tyne.

Elongated, considerably inflated; beaks sub-central, very obtuse, and rounded; hinge-line short, with an expansion near it; surface smooth, with remote shallow lines of growth.

The Coal Shale, Newcastle Coal-field.

27. Modiola reversa.—The Reverse Modiola, pl. LXXII. fig. 23.

M. reversa. Sowerby, Geo. Tr. 2d Series, IV. p. 342, pl. 17, fig. 13.

Transversely elongated, rather compressed; anterior side narrow, short; umbones obtuse; posterior side considerably expanded; surface with narrow, very regular, concentric ridges, which are reflected upon the surface.

The Greensand, Blackdown.

28. Modiola Moorei.—Moore's Modiola, pl. LXXII. f. 27.

M. Moorei. Brown, Man. Geo. Tr. I. p. 227, pl. 7, fig. 74.

Transverse, sub-cuneiform, inflated, smooth ; base oblique ; anterior side narrow ; posterior side wide, and obliquely sub-truncated ; surface with many concentric lines of growth, and very fine intermediate irregular striæ, which is only visible by the aid of a lens. Length an eighth of an inch ; breadth somewhat more.

The Carboniferous Shale, Crimsworth Dean, Vale of Todmorden, Yorkshire.

29. MODIOLA MINUTA.—The Minute Modiola, pl. LXXII. fig. 29.

M. minuta. Brown, Manchester, Geo. Trans. I. p. 227, pl. 7, fig. 75.

Transversely oblong-ovate ; smooth ; beaks small, considerably produced and pointed ; anterior side short, and a little acute ; hinge-line rather long, and nearly straight ; length one-eighth of an inch ; breadth somewhat more.

The Carboniferous Shale, Low Moore, near Bradford.

30. MODIOLA PULCHRA.—The Beautiful Modiola, pl. LXXII. fig. 26.

M. pulchra. Phillips, Geo. York, I. pl. 5, fig. 26.

Transversely elongated ; beaks rounded, and placed near the anterior side, which is rounded and short ; posterior side expanded, and obliquely truncated ; surface smooth and shining, with a series of fine, radiating striæ, emanating from the beaks, and occupying the posterior half of the valves ; lines of growth remote, distinctly marked ; basal line almost straight, and nearly parallel with the superior line.

The Kelloways Rock, Scarborough.

31. MODIOLA SQUAMIFERA.—The Scaly Modiola, pl. LXXII. fig. 39.

M. squamifera. Phillips, Geo. York, II. p. 209, pl. 5, f. 22.

Transversely elongated, narrow ; beaks obtuse, hardly rising above the surface ; hinge-line greatly lengthened, and quite straight, ending in a point, beneath which lies an abrupt flexure ; anterior side very short ; posterior side much elongated ; surface with distinct, broad, laminated lines of growth.

The Carboniferous Limestone, Bolland.

32. MODIOLA LINGUALIS.—The Tongue-shaped Modiola, pl. LXXII. fig. 42.

M. lingualis. Phillips, Geo. York, II. p. 209, pl. 5, f. 21.

Greatly elongated, transversely tongue-shaped ; anterior side narrow, gradually widening towards the posterior side ; hinge-line nearly straight and lengthened, from whence it gently curves to the posterior side ; beaks depressed ; anterior side extremely short ; basal line gently curved ; surface smooth, with very delicate lines of growth.

The Carboniferous Limestone, Castleton, Derbyshire.

33. MODIOLA ELONGATA.—The Elongated Modiola, pl. LXXII. fig. 43.

M. elongata. Phillips, Geo. York, II. p. 210, pl. 5, f. 24.

Much elongated ; arcuated, rather gibbose, margins nearly parallel ; sub-carinated ; surface smooth, with very shallow, nearly obsolete lines of growth.

The Carboniferous Limestone, Bolland.

34. MODIOLA INCLUSA. — The Inclosed Modiola, pl. LXXII. figs. 34.

M. inclusa. Phillips, Geo York I. pl. 3, fig. 20.

Ovate, beaks slightly produced ; gently curved both above and below ; surface smooth.

The Coral Rag, Malton, Wiltshire, and Oxfordshire.

35. MODIOLA UNDULATA. — The Waved Modiola, pl. LXXII. fig. 38.

M. cuneata (Var. ?) Phillips, Geo. York, pl. 5, fig. 28.

Transversely elongated, oblique ; beaks large ; very obtuse, hinge-line curved, and with a large wing-shaped expansion, beneath which is a double flexure, anterior side obliquing from the beaks ; base with a considerable curve towards the centre.

The Kelloways Rock, South Cave, Scarborough.

36. MODIOLA CUNEATA.—The Wedge-shaped Modiola, pl. LXXII. figs. 30, 31.

M. cuneata. Sowerby III. p. 19, pl. 211, fig. 1.

Elongated, convex, especially towards the beaks ; beaks obtuse, hinge-line nearly straight, and protruding beyond the surface ; anterior side not projecting so far as the beaks ; base a little concave, seam of the valves waved.

The Inferior Oolite, Somersetshire.

37. MODIOLA LATISSIMA.—The Very Broad Modiola, pl. LXXI., fig. 21.

M. cuneata. Sowerby, III. p. 87, pl. 248, fig. 2.

Transversely elongated ; length one-fourth its width ; a little compressed ; anterior side slightly curved and produced ; posterior side small, ill defined ; beaks short and obtuse, placed near the posterior side ; surface nearly smooth ; with a few irregular, nearly obsolete lines of growth.

38. MODIOLA RECTUS.—The Straight Modiola, pl. LXXII.* fig. 7.

Extremely lengthened transversely ; nearly straight ; beaks hardly defined ; back nearly straight, base with a slight curve, anterior side excessively short ; posterior side very much lengthened ; back with a series of oblique ribs, which extend about a third into the valves, and are then lost in a number of retroverted wrinkles, which form an oblong triangular space from the anterior side of the hinge-line to the opposite extremity ; the other portion of the valves rather smooth, with some shallow lines of growth.

The Middle Oolite, Yorkshire.

39. MODIOLA SCALPRUM.—The Bill-shaped Modiola, pl. LXXII.* fig. 6.

M. scalprum. Phillips, Geo. York, I. pl. 14, fig. 2.

Extremely lengthened transversely, and much curved ; beaks blunt and placed close to the anterior side ; hinge-line much elongated and slightly bent from its termination ; the shell is abruptly curved ; surface with numerous shallow lines of growth.

The Marlstone, Robin Hood's Bay, Yorkshire.

40. MODIOLA AMYGDALINA.—The Almond-shaped Modiola, pl. LXI.*** figs. 11, 12.

M. amygdalina. Phillips, Pal. Fos. p. 38, pl. 17, fig. 62.

Elliptical, gibbous ; obliquely elongated ; narrowed anteriorly ; beaks close to the anterior side and incurved over the lunule, which is excavated and small ; surface with fine concentric striæ and sharp lines.

The Devonian Shale, Petherwin, Cornwall.

41. MODIOLA EXPANSA.—The Expanded Modiola, pl. LXI.* fig. 13.

M. expansa. Portlock, Geo. Rep. 425, pl. 33, fig. 6.

Elongated ; front produced considerably beyond the beaks ; hinge-line straight, and equal in length to about half of the

posterior section of the shell; rounded and narrowed anteriorly; expanded posteriorly, with an oblique curved truncation.

The Silurian Rocks, Tyrone, Ireland.

42. Modiola securiformis.—The Axe-shaped Modiola.

A. securiformis. Portlock, Geo. Sur. p. 425, pl. 33, f. 8.

Elongated; anterior side narrowed and rounded; posterior side expanded and rounded, but destitute of the oblique truncation; an oblique ridge extends from the beak to the posterior margin.

The Silurian Rocks, Tyrone, Ireland.

43. Modiola Brycei.—Bryce's Modiola.

M. Brycei. Portlock, Geo. Rep. p. 425, pl. 33, fig. 7.

Attenuated and rounded anteriorly; hinge-line rather extended; the diagonal ridge strongly marked; surface smooth, with faint-lines of growth.

The Silurian Rocks, Tyrone, Ireland.

44. Modiola carinata.—The Keeled Modiola, pl. LXI.*** figs. 19, 20.

M. carinata. Sowerby, Geo. Tr. 2d Ser. V. pl. 39, fig. 15.

Obliquely elongated, ventricose, boat-shaped; valves deep; anterior side short; posterior side lengthened; beaks obtuse; an abrupt carinated ridge extending from the beaks to the posterior lower angle of the valves; surface with a few obsolete lines of growth.

The Coal Measures, Coalbrook Dale.

45. Modiola Macadami.—Macadam's Modiola, pl. LXI.*** figs. 14, 15, 16.

M. Macadami. Portlock, Geo. Rep. p. 432, pl. 34, figs. 13, 14, 15.

Variety 1.—*Angusta*, pl. LXI.*** fig. 14.——Portk. pl. 34, fig. 13.

Lengthened, narrow, convex, somewhat cylindrical, but wider behind than before; beaks obscure, situate very near the anterior side; front rounded, and with a slight obliquity in the posterior margin; hinge-line straight, but not distinct; surface with fine concentric striæ.

"This diverges as much from the ordinary form in one direction as fig. 15 does in another."—*Portlock.*

Variety 2.—*Elongata*, pl. LXI.*** fig. 15.——Portk. pl. 34, fig. 14.

Elongated; narrowed at both extremities; beaks quite depressed; hinge-line straight, oblique, terminating in an angle, and equal to about half the length of the shell; from thence the side gradually slopes downwards; surface with fine raised thread-like striæ.

"This approximates to *Modiola lingualis* (Phillips.)"—*Portlock.*

Variety 3.—*Lata*, pl. LXI.*** fig. 16.——Portk. pl. 34, fig. 15.

Ovate; beaks obsolete; hinge-line straight, and exceeding one-half the length of the shells, and terminating in an angle; anterior side extremely short and rounded; posterior side expanded and compressed; surface wrinkled on the anterior side and at the beaks, and exhibiting the appearance of the shell having been originally covered with concentric thread-like raised striæ.

"The flattened form is probably the result of pressure, as it is rare; and the ordinary form exhibits a more distinct rise, or rounded ridge, from the beak to the posterior margin, and is narrower."—*Portlock.*

The Carboniferous Limestone, Ballynascreen, Derry and Tyrone.

If form goes for anything, the three varieties of this shell would appear to be distinct; and looking at the lines of growth on figs. 14 & 15, we cannot see how they could assume the form of fig. 16.

46. Modiola granulosa.—The Granular Modiola.

M. granulosa. Phillips, Geo. York, II. p. 210, pl. 5, f. 23.

"Very much elongated, depressed; surface granulose."—*Phillips.*

The Carboniferous Limestone, Bolland and Northumberland.

47. Modiola Nerei.—Neres Modiola, pl. LXI.*** f. 17.

M. Nerei. Mytilis (?) *Nerei.* Munster, Beit. 1840, pl. 11, fig. 14; Portlock, Geo. Rep. p. 424, pl. 33, fig. 10.

Obovate, convex, thick; beaks terminal, a little produced; sides almost equal, curved, and the basal extremity rounded; hinge-line straight; surface with fine regular concentric striæ.

The Silurian Rocks, Desertcreat, Tyrone, Ireland.

48. Modiola marmorata.—The Marbled Modiola.

M. marmorata. Brown, Recent Conch. Brit. & Ir. p. 78, pl. 27, fig. 10. *M. discors.* Turton, p. 210, pl. 15, figs. 4, 5.

Oval, very tumid; anterior side a little pointed; beaks terminal, rounded, and somewhat convolute; centre of the valves a little constricted towards the margin; surface smooth, with a series of longitudinal divergent grooves at both sides, and slightly striated transversely at the pointed extremity.

The Pleistocene Marine Formation, Ayrshire, and the Coral Crag, Sutton.

49. Modiola sub-parallela.—The Sub-parallel Modiola, pl. LXI.*** fig. 18.

M. sub-parallela. Portlock, Geo. Rep. p. 433, pl. 34, f. 16.

Oblong-ovate; convex; beaks obtuse; hinge-line long and nearly straight; anterior side short, the posterior long; both extremities almost equally rounded; with a slight contraction from the beaks to the margin, forming an obscure anterior lobe; a diagonal rise from the beak to the margin, not constituting a ridge; surface with somewhat irregular thread-like concentric striæ.

The Carboniferous Limestone, Ballynascreen, Tyrone, Ireland.

50. Modiola scalaris.—The Ladder Modiola.

M. scalaris. Phillips, Pal. Fos. p. 137, pl. 60, fig. 62.*

"Depressed, transversely elongated to a parallelogramic figure, with elliptical terminations; front edge straightened, or slightly sub-concave near the middle; surface ridged by about fifteen elevated narrow threads, parallel to the margin, separated by wider flat spaces, in which are fine striæ parallel to the elevated threads."—*Phillips.*

Devonian Shales, Berry Pomeroy, South Devon.

51. Modiola papuana.—The Common Modiola.

M. papuana. Brown, Illust. Rec. Conch. Brit. p. 77, pl. 27, figs. 1, 2, 3, 4, 5, 6.

Transversely oblong; anterior side short; posterior side lengthened, dilated, and rounded; beaks tumid and obtusely angular; surface smooth.

The Mammiferous Crag, Postwick.

52. Modiola acuminata.—*Sowerby*, Geo. Tr. 2d Ser. III. p. 119.—Not described.

The Magnesian Limestone, Humbleton, Durham.

53. Modiola decussata.—The Decussated Modiola, pl. LXI.*** figs. 22, 23.

M. (?) Jelly, Mag. Nat. Hist. III. New Ser. p. 551, fig. 69. *b. c.*

Transversely oblong-ovate; anterior side short, hardly extending beyond the beaks, which are obtuse; posterior side obliquely rounded, and angulated below; surface with fine, numerous, radiating striæ, crossed by sharp, pretty regular lines of growth, producing a reticulated appearance.

In the Bath Oolite, in various localities: it is very frequently found in numbers of four or five individuals, enveloping one another, within the *Modiola inclusa*, in the manner represented in fig. 23.

ORDER II.—DIMYARIA.

Shells with two distinct, remote, muscular impressions; which are widely separated, and inserted towards the lateral extremities of the valves.

GRAND DIVISION I.

Shells irregular, and always inequivalve.

TRIBE I.—CHAMACEA.

Shell inequivalve, irregular, attached to other bodies; hinge with one or more large teeth, and provided with two separate lateral muscular impressions.

GENUS I.—CHAMA.—*Bruguière.*

Shell irregular, thick, usually very inequivalve, for the most part covered with irregular spines or foliated processes; umbones distorted, unequal, distant, and involute; that of the attached valve salient at the base, and in some instances projecting considerably beyond it, the other is for the most part reflected over upon its valve, appearing as if imbedded in it; hinge with one strong, thick, irregular, oblique, striated, and generally crenated tooth in one valve, which fits into an irregular striated groove in the opposite valve; each valve provided with two distant, lateral, muscular impressions; line of the mantle attachment entire; ligament external, subdivided at its posterior extremity; one of the segments decurrent to the point of the umbo in each valve.

1. CHAMA SQUAMOSA.—The Scaly Chama, pl. LXXII.* figs. 4, 5.

C. squamosa. Brander, figs. 86, 87. Sowerby, IV. p. 67, pl. 348.

Sub-globose, or nearly orbicular, attached by the right valve, which is somewhat larger than the left; surface with numerous transverse, imbricated, erect lamina, anteriorly produced and adpressed; posterior portion of the right valve with obsolete ribs; left valve rather convex; inner surface smooth.

The London Clay, Barton and Bracklesham Bay.

[GENUS II.—CAPRINA.—*D'Orbigny.*

Shell irregular, inequivalve, inequilateral, with conical divergent apices, more or less unequally prolonged, and incurved upon two opposite planes; hinge and ligament unknown; cavity of the valves divided by a partition into two conical unequal chambers; two muscular impressions situated within the small cavities, the one before and below, and the other above and behind.

1. CAPRINA LONSDALII.—Lonsdal's Caprina, pl. LXXII.* figs. 10, 11.

Diceras Lonsdalii. Sowerby, Geo. Tr. 2d Ser. IV. p. 338, pl. 13, fig. 4.

Inequivalve, the larger one in the form of an elongated cone, somewhat flattened, and curved twice round; the opposite valve with an oblique conical umbo; external surface squamose.

The Lower Greensand, near Calne.

GRAND DIVISION II.—LAMELLIPEDES.

The foot of the animal depressed, lamelliform, and not posterior.

TRIBE I.—NAYADES.

Shells inhabiting fresh waters.—Hinge sometimes provided with an irregular, simple, or divided tooth, and a longitudinal prolonged one; sometimes toothless; some have irregular granulated tubercles, extending the whole length of the hinge-line; provided with a compound muscular impression; the umbones or beaks frequently decorticated.

GENUS III.—ANODON.—*Bruguière.*

Shell equivalve, inequilateral, and transverse, for the most part very thin; hinge-line nearly straight; destitute of cardinal teeth; the hinge being glabrous, and provided with smooth laminæ; truncated, or forming a sinus at the anterior end, terminating the apex of the shell; two lateral, remote, muscular impressions, the posterior one being compound; muscular impression of the mouth entire, and seldom distinctly marked; ligament linear, external, sunk in a cleft at the anterior extremity.

1. ANODON CYGNEA.—The Swan Anodon, pl. LXXIV.* fig. 7.

Anodon cygnea. Brown, Land and Fresh-water Conch. Brit. p. 101, pl. 13.

Inequilateral, oval, tumid, somewhat pointed at both extremities, slightly open at the sides; beaks depressed; surface transversely wrinkled and sub-striated.

In the Pleistocene Fresh-water Formation, Cropthorn; Bacton, Stutton; Clacton and Grays.

GENUS IV.—UNIO.—*Bruguière.*

Shell generally transverse, equivalve, inequilateral, free; sometimes sub-cordate, or sub-orbicular; pearlaceous within; generally covered with a dark olivaceous epidermis; umbones usually decorticated and prominent; hinge provided with a short, irregular, simple, or double compound tooth, which is almost always striated; with two elongated, compressed, lateral teeth, the front one produced, sometimes obsolete; two muscular impressions in each valve, the superior one compound, or composed of several divisions; ligament external.

1. Unio Gerardi.—Gerard's Unio, pl. LXXIII. fig. 23.

Pachyodon Gerardi. Brown, Ann. Nat. Hist. Dec. 1843, pl. 15. figs. 1, 2.

Transversely ovate, inflated, thickness equal to half its breadth; umbones produced, rounded, and contiguous; posterior side short and obliquely truncated; anterior side long and sub-truncated; hinge-line almost parallel; external surface with a few remote concentric wrinkles or lines of growth.

I found this species in the Coal Shale at Dalkeith, Mid-Lothian. Named in honour of my valued friend, James Gerard, Esq., Retreat, East Lothian.

2. Unio lateralis.—The Broad Unio, pl. LXXIII. f. 26.

Pachyodon lateralis. Brown, Ann. Nat. Hist. Dec. 1843, pl. 15, fig. 3.

Transversely elongated, sub-quadrate, cuneiform; sides very unequal, the anterior one very long, gradually sloping from the umbones, and terminating in an obliquely truncated point; posterior one very short; umbones produced, with acute but not inflected beaks. Length somewhat more than half an inch; breadth nearly an inch and a-half.

In the Coal Shale, Whitehaven.

3. Unio sulcatus.—The Furrowed Unio, pl. LXXIII. figs. 28, 29.

Pachyodon sulcatus. Brown, Ann. Nat. Hist. Dec. 1843, pl. 15, figs. 4, 5.

Sub-triangular, rather compressed; umbones prominent, very close, slightly reflected, sub-acute, and placed considerably to one side; general surface smooth, with inequidistant concentric furrows; posterior side arcuated, with a rounded point situate low; anterior side gently rounded; basal line nearly parallel. Length one and a-half inch; thickness one half inch.

The Shale near Whitehaven.

This species is liable to some variety in external contour.

4. Unio rugosus.—The Rugged Unio, pl. LXXIII. figs. 14, 15.

Pachyodon rugosus. Brown, Ann. Nat. Hist. Dec. 1843, pl. 15, figs. 6, 7.

Sub-triangular, greatly ventricose in proportion to its size, its depth being equal to five-sixths of its whole length; umbones very prominent, situate considerably to one side, pointing posteriorly, and remote from each other; anterior side abruptly descending and rounded; posterior side gradually sloping and considerably more acute than the other; ligament produced; external surface with unequal, rugose, concentric wrinkles. Length two inches five-eighths; breadth three inches and a-half; thickness two inches and a quarter.

The young shells are much more rugosely wrinkled than the adult.

Found in the Ironstone Shale at Sheden, by Mr S. Gibson of Hebden Bridge, and in his cabinet.

5. Unio sub-rotundus.—The Sub-rotund Unio, pl. LXXIII. fig. 22.

Pachyodon sub-rotundus. Brown, Ann. Nat. Hist. Dec. 1843, pl. 15, fig. 8.

Sub-rotund; umbones sub-central, produced, blunt, and somewhat remote from each other; hinge-line considerably arcuated; surface with irregular, acute, concentric wrinkles; thickness about equal to half its length.

The Coal Shale, Oldham.

6. Unio bipennis.—Two-winged Unio, pl. LXXIII. f. 27.

Pachyodon bipennis. Brown, Ann. Nat. Hist. Dec. 1843, pl. 15, fig. 9.

Transversely elongated, somewhat hatchet-shaped; sides unequal; umbones produced and remote; hinge and basal lines nearly parallel; anterior side short and rounded; posterior side elongate, and obliquely sub-truncate from the hinge-line, terminating below in a short, slightly acuminated curve: surface rather smooth, with a few distant, transverse, shallow grooves.

The Ironstone Shale at Low Moore, Yorkshire.

7. Unio Dawsoni.—Dawson's Unio, pl. LXXIII. fig. 3.

Pachyodon Dawsoni. Brown, Ann. Nat. Hist. Dec. 1843, pl. 15, fig. 10.

Orbicular; umbones central, large, produced and remote; surface nearly smooth, with only a few nearly obsolete concentric wrinkles; thickness equal to more than half its diameter.

Found in the Ironstone Shale at Low Moore, near Bradford, and is in the Cabinet of Mr S. Gibson, and named in honour of Miss Dawson of Low Moore, an accomplished geologist.

8. Unio nanus.—The Little-vessel Unio, pl. LXXIII. f. 7.

Pachyodon nanus. Brown, Ann. Nat. Hist. Dec. 1843, pl. 16, fig. 1.

Smooth, posterior side elongated, and obliquely sub-truncate above; sub-acute above; anterior side rounded; umbones produced and rounded; hinge-line arcuated.

Coal Shale at Middleton, near Leeds.

9. Unio Rhindii.—Rhind's Unio, pl. LXXIII. fig. 5.

Pachyodon Rhindii. Brown, Ann. Nat. Hist. Dec. 1843, pl. 16, fig. 2.

Sub-acute at both extremities; basal line considerably arcuated, rather produced opposite the umbones; posterior side turned slightly upwards; umbones sub-central, rather produced, and very close; hinge-line curved; surface with transverse, shallow, irregular wrinkles. Length equal to two-thirds of its breadth.

In the Coal Shale, Polmont, Stirlingshire, by my friend William Rhind, Esq., author of "The Age of the Earth," &c.

10. Unio amygdala.—The Almond Unio, pl. LXXIII. fig. 4.

Pachyodon amygdala. Brown, Ann. Nat. Hist. Dec. 1843, pl. 16, fig. 3.

Inflated, anterior side rounded; posterior side acuminated, with an acute beak-like termination; umbones rather obtuse and remote; basal line considerably arcuated; surface with many irregular acute wrinkles.

Ironstone Shale, Low Moore, Yorkshire.

11. Unio exoletus.—The Worn Unio, pl. LXXIII. f. 25.

Pachyodon exoletus. Brown, Ann. Nat. Hist. Dec. 1843, pl. 16, fig. 4.

Shell transversely elongate, its breadth about double its length; surface quite smooth; umbones blunt, placed near to the anterior side, which is round; posterior side acuminated and sub-acute; hinge-line slightly arcuated; basal line nearly parallel; thickness somewhat more than half its length.

Ironstone Shale, Low Moore, near Bradford.

12. Unio dubius.—The Doubtful Unio, pl. LXXIII. f. 13.

Pachyodon dubius. Brown, Ann. Nat. Hist. Dec. 1843, pl. 16, fig. 5.

Sub-ovate, both sides rounded; umbones slightly produced

and rounded; hinge and basal lines arcuated; surface with nearly obsolete, irregular, concentric wrinkles.

Coal Shale, near Newcastle-on-Tyne, by Mr Robertson.

13. Unio sub-triangularis.—The Sub-triangular Unio, pl. LXXIII. fig. 12.

Pachyodon sub-triangularis. Brown, Ann. Nat. Hist. Dec. 1843, pl. 16, fig. 6.

Sub-triangular, rather inflated, umbones very prominent, remote, being nearly a quarter of an inch apart; hinge-line almost parallel; basal line with an undulation; both sides rather abruptly sloping; surface smooth, with a slight elevation towards the umbones.

Ironstone Shale at Coalbrook Dale.

14. Unio Smithii.—Smith's Unio, pl. LXXIII. f. 10, 11.

Pachyodon Smithii. Brown, Ann. Nat. Hist. Dec. 1843, pl. 16, figs. 7, 8.

Sub-triangular; umbones sub-central, prominent, and rounded, inflected and quite close; anterior side rounded; posterior side sub-acute; surface with transverse, rather deep, irregular wrinkles; breadth about a third more than its length.

Ironstone Shale at Sheden.

15. Unio Embletoni.—Embleton's Unio, pl. LXXIII. f. 6.

Pachyodon Embletoni. Brown, Ann. Nat. Hist. Dec. 1843, pl. 16, fig. 9.

Sub-triangular; anterior side short and rounded; umbones placed much to one side; obtuse above; beaks inflected and sharp-pointed; hinge-line considerably arcuated; posterior side gradually sloping, and terminating in a narrow, sub-truncated, rather short beak; surface with transverse irregular wrinkles.

Coal Shale at Middleton, near Leeds.

Named in honour of Thomas William Embleton of Middleton Hall, from whom I received all the *Unionidæ* from that locality.

16. Unio Heyii.—Hey's Unio, pl. LXXIII. fig. 1.

Pachyodon Heyii. Brown, Ann. Nat. Hist. Dec. 1843, pl. 16, fig. 10.

Sub-triangular, inflated; anterior side abruptly sloping; posterior side gradually descending, terminating in an oblique sub-truncation, and slightly beaked; hinge-line arcuated; basal line very slightly curved; umbones prominent, but obtuse and quite close at the beaks; surface with many concentric wrinkles; a longitudinal, gradually widening, shallow groove emanates from the umbones, and terminates on the basal margin.

Ironstone Shale at Sheden.

Named in honour of Mrs William Hey of Leeds, an expert conchologist.

17. Unio agrestis.—The Rustic Unio, pl. LXXIII. f. 20.

Pachyodon agrestis. Brown, Ann. Nat. Hist. Dec. 1843, pl. 16, fig. 11.

Sub-compressed, transversely elongated; anterior side much rounded, posterior side lengthened and sub-acute, descending in a nearly parallel line from the umbones, which are very obtuse and remote; on the posterior side a longitudinal, wide, oblique, shallow groove takes its rise on the disc and terminates on the basal margin, below which there is a flexure on the edge; whole surface covered with very coarse transverse wrinkles; thickness six-eighths of an inch.

Ironstone Shale near Sheden.

18. Unio similis.—The Similar Unio, pl. LXXIII. fig. 9.

Pachyodon similis. Brown, Ann. Nat. Hist. Dec. 1843, pl. 16, fig. 12.

Compressed; anterior side rounded from the umbones, which are hardly produced, but very contiguous; posterior side nearly parallel, obliquely truncate, with a slightly turned-up beak below; hinge-line nearly straight, basal line somewhat arcuated; surface irregularly wrinkled transversely.

Coal Shale at Middleton, near Leeds, by T. W. Embleton, Esq.

19. Unio turgidus.—The Turgid Unio, pl. LXXIII. figs. 16, 17.

Pachyodon turgidus. Brown, Ann. Nat. Hist. Dec. 1843, pl. 16, figs. 13, 14.

Inflated; thickness nearly seven-eighths of an inch; breadth an inch and three-eighths; umbones prominent, set a little apart; anterior side short, slightly sub-truncate; posterior side nearly parallel above, with a truncated termination; hinge-line almost parallel, basil line with a slight flexure; surface with pretty strong irregular wrinkles.

Coal Shale at Wakefield, by W. C. Williamson, Esq. surgeon, Manchester.

20. Unio nucleus.—The Kernel Unio, pl. LXXIII. f. 8.

Pachyodon nucleus. Brown, Ann. Nat. Hist. Dec. 1843, pl. 16,* fig. 1.

Inflated, tranversely ovate; umbones sub-acute and remote; hinge-line nearly straight; anterior side a little acute, posterior side elongated and acuminate; basal line sub-arcuated; surface with shallow transverse wrinkles.

Coal Shale at Woodhall, on the north side of the Pentland Hills, near Edinburgh.

21. Unio Blaydsii.—Blayds' Unio, pl. LXXIII. fig. 2.

Pachyodon Blaydsii. Brown, Ann. Nat. Hist. Dec. 1843, pl. 16,* fig. 2.

Obliquely sub-triangular, inflated; umbones prominent and remote; hinge-line nearly straight; anterior side parallel above its termination, suddenly rounded; posterior side acuminated, straight above, with an obliquely truncated termination, sharply beaked below; basal line ascending from a line with the umbones. Length five-eighths of an inch; breadth seven-eighths; thickness nearly half an inch.

Coal Shale at Middleton.

22. Unio senex.—The Old Unio, pl. LXXIII. fig. 31.

Pachyodon antiquus. Brown, Ann. Nat. Hist. Dec. 1843, pl. 16,* fig. 4.

Transversely elongated, sub-compressed; umbones very obtuse and remote; anterior side short, nearly straight above, with a cleft termination; posterior side long, with an obliquely sub-truncate termination; point below a little rounded; hinge-line very slightly arcuated; a pretty deep transverse furrow runs close to and nearly parallel with the superior margin on the posterior side; basal margin with a slight hollow posteriorly; surface with strong transverse wrinkles, and a few irregular, nearly obsolete, longitudinal furrows, producing an antiquated appearance; thickness three-eighths of an inch.

Ironstone Shale, Low Moore, near Bradford.

23. Unio transversus.—The Transverse Unio, pl. LXXIII. fig. 21.

Pachyodon transversus. Brown, Ann. Nat. Hist. Dec. 1843, pl. 16,* fig. 5.

Transversely elongated; umbones blunt and obliquely rounded; anterior side short, rounded, and slightly produced at the extremity; posterior side long, gradually declining from the umbones, ending in an obliquely truncate termination, rather acutely beaked below; hinge-line nearly straight, basal line with a slight flexure posteriorly; surface rather smooth.

Coal Shale at Middleton, near Leeds.

24. Unio humatus.—The Buried Unio, pl. LXXII. f. 18.

Pachyodon humatus. Brown, Ann. Nat. Hist. Dec. 1843, pl. 16,* fig. 6.

Oblong-ovate, considerably inflated; umbones large, produced, and slightly inflected; anterior side rounded, posterior side sub-acute; hinge-line nearly parallel; basal margin a little arcuated; surface with strong concentric wrinkles.

In the Coal Shale at Gristhorpe Bay.

25. Unio levedensis.—The Coarse Unio, pl. LXXIII. f. 30.

Pachyodon levedensis. Brown, Ann. Nat. Hist. Dec. 1843, pl. 16,* fig. 8.

Sub-triangular, wedge-shaped; umbones rounded, situate considerably to one side; anterior side very short and abruptly descending; posterior side long, acuminated, its superior margin gradually inclining to a truncated termination; basal margin nearly straight; surface with transverse antiquated wrinkles.

Coal Shale at Middleton.

26. Unio pyramidalus.—The Pyramidal Unio, pl. LXXIII. f. 19.

Pachyodon pyramidalus. Brown, Ann. Nat. Hist. Dec. 1843, pl. 16,* fig. 9.

Sub-triangular, cuneiform, somewhat pyramidal; umbones large, contiguous, extremely obtuse; anterior side very short, abruptly descending and rounded below; posterior side elongated, its superior line gradually descending to a blunt acuminated termination, thick on the anterior side, and becoming rapidly compressed posteriorly; base acute, slightly flexuose and thin at the edge; surface with shallow irregular wrinkles; thickness equal to two-thirds its length.

Ironstone Shale at Low Moore; also in Shale at Woodhall, near Edinburgh.

27. Unio Aldamii.—Aldam's Unio, pl. LXXIII. fig. 18.

Pachyodon Aldamii. Brown, Ann. Nat. Hist. Dec. 1843, pl. 16,* fig. 3.

Sub-compressed, flexuose, and sub-triangular; umbones sub-central, very obtuse, set one-eighth of an inch apart; hinge-line slightly arcuated; anterior side abruptly descending from the umbones, beneath which it is slightly rounded, with a flexure below, somewhat produced on the margin immediately under the umbones; posterior side gently sloping and rounded, with a shallow furrow emanating from below the umbones, and rapidly widening, terminates on the base; basal line flexuose. Length one inch five-eighths; breadth two inches one-eighth; thickness one inch.

The greatest thickness of the shell is at the middle of the disk, from whence it rapidly becomes thin towards the margins.

Coal Shale at Whitehaven.

Named in honour of Miss Aldam of Leeds, an excellent conchologist.

28. Unio cordiformis.—The Heart-shaped Unio, pl. LXIV. fig 21.

U. cordiformis. Sowerby, VI. p. 191, pl. 595, fig. 1.

Heart-shaped; posterior side rounded; anterior side pointed, its length and thickness being nearly equal; beaks rounded, large, and considerably produced.

The Weald Clay, Tilgate Forest.

29. Unio sub-truncatus.—The Sub-truncated Unio, pl. LXXIV. fig. 6.

U. sub-truncatus. Sowerby, Geo. Trans. 2d Ser. IV. p. 346, pl. 21, fig. 15.

Ovate, compressed; edges of the valves obtuse; posterior side obliquely wedge-shaped; beaks small and a little remote.

The Hastings Sand, Sussex.

30. Unio Martini.—Martin's Unio, pl. LXXIV. fig. 7.

U. Martini. Sowerby, Geo. Tr. 2d. Ser. IV. p. 346, pl. 21, fig. 7.

Convex, beaks slightly produced and nearly central; posterior side very large and rounded; anterior side somewhat acute; surface nearly smooth.

The Weald Clay, Henhurst, Sussex.

31. Unio Mantellii.—Mantell's Unio, pl. LXXIV. fig. 16.

U. Mantellii. Sowerby, Geo. Tr. 2d Ser. IV. p. 346, pl. 21, fig. 14.

Oblong-ovate, compressed, with the dorsal and basal margins nearly parallel and straight; posterior side short; anterior side lengthened; beaks slightly produced; surface smooth; length about equal to half the breadth.

The Weald Clay and Hastings Sand, Sussex.

32. Unio tumidus.—The Swollen Unio, pl. LXXIV.* figs. 5, 6.

U. tumidus. Brown, Illust. Land and Fresh-water Shells, p. 110, pl. 21, figs. 8, 9.

Somewhat cylindrical, or wedge-shaped; much inflated, with the beaks produced; anterior side short, rounded; posterior side long, gradually sloping from the beaks; the termination sub-truncated; cardinal tooth large, thick, and elevated, with the edge finely serrated, and double in the opposite valve; muscular impressions small; surface with strong concentric wrinkles.

The Pleistocene Fresh-water Formation, Sutton, Grays, and Cropthorn.

33. Unio ovalis.—The Oval Unio, pl. LXXIV.* f. 3, 4.

U. ovalis. Brown, Land and Fresh-water Shells, p. 111, pl. 18, figs. 4, 5.

Transversely ovate; hinge-line arcuated; beaks prominent, wrinkled, and closely approximate; right valve with a strong double, erect, cardinal tooth, the higher portion situate below the beak, and considerably elevated above the margin, with two long, oblique, lateral teeth; muscular impressions of moderate size, the anterior ones deep; left valve with a simple, erect, oblique, cardinal tooth, and a long, elevated, lateral one which fits into the cleft between those of the opposite valve.

The Pleistocene Formation, Cropthorn.

34. Unio Solandri.—Solander's Unio, pl. LXXIV. f. 10.

U. Solandri. Sowerby, Min. Conch. VI. p. 29, pl. 517, Fleming, Brit. An. p. 417.

Shell transversely oblong-ovate, compressed, thin; hinge-

line very straight; umbones a little rugose, very small, and contiguous; posterior slope shorter, more pointed than the anterior one, which is obliquely sub-truncated and a little pointed at the extremity; basal line slightly hollow; length about equal to half its width; thickness three eighths of an inch; surface smooth, with indistinct, transverse undulations, and of a pearlaceous tinge.

Found in the Crag at Hordwell.

35. Unio compressus.—The Compressed Unio, pl. LXXIII. fig. 11.

U. compressus. Sowerby, VI. p. 189, pl. 594, fig. 2.

Shell ovate, compressed; umbones nearly central, and a little produced; hinge-line slightly arcuated; length two-thirds its breadth.

Found in the Clay of Tilgate Forest.

36. Unio antiquus.—The Ancient Unio, pl. LXXIII. fig. 12.

U. antiquus. Sowerby, Min. Conch. VI. f. 190, pl. 594, figs. 3, 4. 5.

Shell elongated, transversely ovate; beaks somewhat produced and sub-compressed; posterior side short, rounded; anterior side elongated and sub-acute; hinge-line straight; surface smooth.

Found in the Weald Clay, Tilgate Forest.

37. Unio porrectus.—The Extended Unio, pl. LXXIV. fig. 14.

U. porrectus. Sowerby, Min. Conc. VI. p. 189, pl. 594, f. 1.

Shell sub-compressed, much elongated; beaks placed much to the posterior side, which is rounded; anterior side greatly elongated, obliquely sub-truncated, and pointed below; hinge-line nearly straight; length about half its width; surface convex and smooth.

Found in the Limestone of Tilgate Forest.

38. Unio polmontensis.—The Polmont Unio, pl. LXXIII. figs. 32, 33.

U.—(?) Rhind, Age of the Earth, p. 167, pl. 2. figs. *c*, *d*.

Oblong; umbones nearly central, somewhat acute, and remote; hinge-line straight, posterior slope but little more rounded than the anterior one; surface smooth, with a few nearly obsolete transverse furrows.

Found in the Coal Shale at Polmont, by William Rhind, Esq. Surgeon, Edinburgh, and in his cabinet.

39. Unio aduncus.—The Crooked Unio, pl. LXXIV. f. 1.

U. aduncus. Mantell, Foss. of Tilgate Forest, p. 57, pl. 10, fig. 11. Sowerby, Min. Conch. VI. p. 190, pl. 595, f. 2.

Shell cuneiform, inflated, very thick; umbones rounded; posterior slope very short; anterior slope long, straight above, sub-truncated, concave, and slightly bent downwards; length somewhat more than half its breadth.

Found in the Wealden Clay, Tilgate Forest.

40. Unio Walterii.—Walten's Unio, pl. LXXIV. f. 2, 3.

U. Walterii. Sowerby, Geo. Trans. 2d Ser. IV. p. 346, pl. 21, fig. 16.

Shell compressed, nearly square; anterior slope rounded; posterior side slightly cared; surface almost smooth, with a few transverse, nearly obsolete wrinkles; a central longitudinal depression, emanating from the back of the umbones, extends to the basal margin.

Sowerby says this depression is not a constant character.

In the Weald, Lenthington, Tunbridge.

41. Unio pictorum.—The Painter's Unio, pl. LXXIV.* figs. 1, 2, and pl. LXXXVIII. fig. 8.

U. pictorum. Brown, Land and Fresh-water Conch. Brit. pl. 19, figs. 1, 2, 3, 4.

Transversely oblong-oval, ventricose; beaks a little produced; hinge-line somewhat curved; anterior side short and rounded, posterior side elongated and acuminated; hinge, with a strong, double, compressed, elevated, elongated, arcuated cardinal tooth in the left valve, with a perpendicularly striated papillose one behind, on which the tooth of the opposite valve rests; lateral teeth in both valves long and narrow; surface with shallow, transverse undulations.

The Pleistocene Fresh-water Formation at Cropthorn, Feversham, Bacton and Grays.

42. Unio (?) Austicei.—Austice's Unio, pl. LXXXVIII. figs. 25, 27.

U. Austicei. Sowerby, Geo. Tr. 2d Ser. V. pl. 39, fig. 7.

Transversely elongated, sub-quadrate, and very convex; hinge-line a little bent; beaks very obtuse, rounded, and approximate; anterior side obliquely truncated and short; posterior side rounded; beaks curved; basal line nearly straight; surface with concentric wrinkles, and slight indications of radiating, longitudinal striæ.

The Coal Measures, Coalbrook Dale, Staffordshire.

43. Unio Urii.—Ure's Unio, pl. LXXXVIII. figs. 9, 10.

U. Urii. Fleming, Brit. An. p. 417. Sowerby, Geo. Tr. 2d Ser. V. pl. 39, fig. 6. Ure's Hist. Rutherglen and Kilbride, p. 311, pl. 16, fig. 4.

Greatly elongated transversely; very convex; hinge-line nearly straight; beaks much depressed; anterior side short; posterior side much elongated, and rather acute at its lower termination; back and basal lines straight and nearly parallel; surface with rough, transverse undulations.

The Coal Measures, Rutherglen, Renfrewshire, and Coalbrook Dale, Staffordshire.

44. Unio modiolaris.—The Modiola-shaped Unio, pl. LXXXVIII. figs. 5, 6.

U. modiolaris. Sowerby, Geo. Trans. 2d Ser. V. pl. 39, fig. 10.

Transversely elongated; convex; anterior side short and narrow; posterior side lengthened, deep, and rounded; beaks very obtuse; hinge-line straight; back quite straight; base a little curved, and nearly parallel to the back; a slight elevation extends from the beaks to the posterior side; surface nearly smooth.

The Coal Measures, Coalbrook Dale, Staffordshire.

45. Unio acutus.—The Acute Unio, pl. LXXIV. fig. 13.

U. acutus. Sowerby, I. p. 84, pl. 23, figs. 5, 6, 7.

Transversely elongated; anterior side short, rounded, and a little pointed towards the centre; posterior side much elongated, acuminated, and rounded; hinge-line nearly straight; beaks considerably incurved, with the points approximating; surface smooth, with a few concentric shallow wrinkles.

The Coal Measures, Bradford.

46. Unio centralis.—The Central-beaked Unio, pl. LXXXVIII. fig. 15.

U. centralis. Sowerby, Geo. Tr. 2d Ser. V. pl. 39, fig. 13.

Oval; anterior side rather shorter than the posterior side,

and a little narrower; beaks obtuse, and nearly central; basal line a little arcuated.

The Coal Measures, Coalbrook Dale, Staffordshire.

47. UNIO PHASEOLUS.—The Phaseola Unio, pl. LXXXVIII. fig. 21, 22.

U. phaseolus. Sowerby, Geo. Tr. 2d Ser. V. pl. 39, fig. 11.

Considerably elongated transversely; anterior side very short, and pointed; posterior side lengthened, obtuse, and a little flattened; beaks obtuse, and hardly developed; back nearly straight; base a little concave in the middle.

The Coal Measures, Coalbrook Dale.

48. UNIO ROBUSTUS.—The Strong Unio, pl. LXXXVIII. fig. 16.

U. robustus. Sowerby, Geo. Tr. 2d Ser. V. pl. 39, fig. 14.

Sub-conic, convex; beaks nearly central and obtuse; both sides sloping almost equally from the beaks; the anterior one large and rounded; posterior side a little narrowed; basal line convex; surface with strong lines of growth.

The Coal Measures, Coalbrook Dale.

49. UNIO LITTORALIS.—The Shore Unio, pl. LXXXVIII. fig. 7.

U. littoralis. Drapernaud, pl. 10, fig. 20.

Oblong-ovate; much inflated; anterior side very short, and terminating rather abruptly; beaks obtuse; back considerably arcuated; a little narrowed at the lower posterior end; basil line a little concave; surface with nearly obsolete, shallow lines of growth.

The Coal Measures, Bradford.

50. UNIO DOLOBRATUS.—Squared Unio, pl. LXXXVIII. fig. 17.

U. dolobratus. Sowerby, Geo. Tr. 2d Ser. V. pl. 39, fig. 9.

Sub-quadrate; rather flat, with an oblique convexity along the middle; anterior side exceedingly short; posterior side lengthened; hinge-line a little curved, base oblique, surface rather uneven.

The Coal Measures, Coalbrook Dale.

51. UNIO AQUILINUS.—The Eagle's-beak Unio, pl. 39, LXXXVIII. fig. 23.

U. aquilinus. Sowerby, Geo. Trans. 2d Ser. V. pl. 39, fig. 12.

Transversely oblong-ovate; beaks very small; anterior side very short with a small terminal projection; posterior side lengthened and pointed; hinge-line a little curved; back and base slightly convex; surface with transverse, rather ragged ridges.

The Coal Measures, Coalbrook Dale, Staffordshire.

52. UNIO PARALLELUS.—The Parallel Unio, pl. LXXXVIII. fig. 25.

U. parallelus. Sowerby, Geo. Trs. 2d Ser. V. pl. 39, f. 8.

Transversely elongated, sub-quadrate, and somewhat flattened; beaks nearly terminal, from whence the side abruptly descends in a slightly oblique line; posterior side, back and basal line straight, and parallel to each other; surface with well-marked concentric lines of growth.

The Coal Measures, Coalbrook Dale.

53. UNIO DISCREPANS. — The Discrepant Unio, pl. LXXXVIII. fig. 24.

Transversely oblong-ovate, and much inflated; beaks obtuse; hinge-line a little curved and oblique; anterior side rounded and of medium length; a slight hollow below the beaks; posterior side elongated; sub-truncated and contracted at the termination; back somewhat arcuated; basal line arcuated; a little concave near the posterior side.

The Coal Measures, Low Moore, near Bradford, Yorkshire.

54. UNIO SUB-CONSTRICTUS.—The Sub-constricted Unio, pl. LXXIV. figs. 15, 17.

U. sub-constrictus. Sowerby, I. p. 83, pl. 33, figs. 2. 3.

Oblong-ovate, beaks sub-central, incurved and approximate; posterior side lengthened; contracted near the end; anterior side rounded; hinge-line sub-triangular, a sub-constriction, or oblique groove running from the beaks to the margin; basal line arcuated interiorly, and a little concave posteriorly; surface smooth, with some shallow concentric furrows.

In the Argillaceous Ironstone, Derbyshire.

55. UNIO UNIFORMIS.—The Uniform Unio, pl. LXI. *** fig. 23.

U. uniformis. Sowerby, I. p. 83, pl. 23, fig 4. *Mya ovalis*, Martin, Pet. Derby, pl. 27, fig. 28.

Transversely oblong ovate; beaks sub-central; anterior side a little rounded, posterior side slightly acuminated; hinge-line triangular; surface smooth, with a few shallow transverse lines of growth.

In the Clay of the Middle Oolite, Felmersham, Bedfordshire, and Derbyshire.

GENUS V.—ALASMODON.—*Say.*

Shell thick, generally transversely elongate, but variable in form, equivalve, inequilateral; a little gaping posteriorly; with or without auricles; umbones for the most part rough and decorticated, more so anteriorly; hinge with a lamellar, blunted, lateral tooth on the posterior side, situate under the ligament, but destitute of one on the anterior side; a short, irregularly indented, cardinal tooth in the right valve, which locks between the two irregularly crested teeth in the left valve; ligament exterior and much elongated; muscular impressions large, irregular, frequently double, and placed near the extremities; pallial impression deeply defined.

1. ALASMODON VESTUSTAS.—The Ancient Alasmodon, pl. LXXII.* fig. 19.

Pachyodon vestustas. Brown, Ann. Nat. Hist. 1843, pl. 16,* fig. 7.

Transversely elongated, compressed; umbones very obtuse and depressed; anterior side short and sub-acute; posterior side long, broad, and rounded at the extremity; hinge and basal lines very slightly arcuated; external surface with pretty broad, shallow, concentric wrinkles.

In the Carbonaceous Shale, at Gristhorpe.

I consider this species as belonging to the genus *Alasmodon*, with which it agrees in all its external characters.

TRIBE II.—TRIGONACEA.

Primary teeth lamelliform, and transversely striated.

GENUS VI.—TRIGONIA.—*Bruguière.*

Shell equivalve, inequilateral, transverse, trigonal, sometimes sub-orbicular; cardinal teeth oblong, laterally compress-

ed, divergent, two in the right valve transversely grooved on both sides; the grooves regularly marked, each forming the segment of a circle; four teeth in the left valve grooved in one side only, but these alternately in pairs; consequently the four teeth of this valve receive within their grooved sides the two teeth of the right valve; two principal muscular impressions, the lateral ones very distinct, one of which is situate close to the superior end of the cardinal tooth, and a little behind it; the other somewhat more distant, with a minute one between it and the cardinal tooth; pallial impressions almost entire; ligament marginal, thick, rather short, and external.

1. Trigonia costata.—The Ribbed Trigonia, pl. LXXV. fig. 4.

T. costata. Parkinson, Org. Rem. III. pl. 12, fig. 4. Sowerby, I. p. 195, pl. 85.

Trigonal, posterior side somewhat ventricose, with a series of transverse, elevated, curved, smooth ribs, and smooth intercostal spaces; anterior side large, divided from the flattened anterior by an elevated, longitudinal, obliquely curved, crenated rib, reaching from the beak to the margin, and projecting a little beyond it in some specimens; two additional equidistant longitudinal ribs divide the side; several longitudinal, raised, crenated, thread-like striæ occupy the intercostal spaces; beaks nearly central, and sub-acute.

A widely diffused species, existing through various formations, viz.: the Oxford Clay, Osmington, Dorsetshire; the Coral Rag, Malton and Steeple Ashton; the Great Oolite, White Nab, Stonefield; and the Inferior Oolite, Limpley Stoke and Cotswald Hill.

2. Trigonia elongata.—The Elongated Trigonia, pl. LXXII.* fig. 13.

T. elongata. Sowerby, V. p. 39, pl. 431.

Elongated; sub-triangular, slightly oblique, and gibbose; beaks nearly central, a little reflected; anterior side moderately arcuated, with a series of transverse, elevated, smooth ribs, with wide intervening furrows; posterior side separated from the anterior side by a longitudinal curved furrow and a crenulated rib, with two additional distant ribs; the broad intervening spaces being covered with wide-set, longitudinally curved striæ, crossed by waved transverse striæ, producing a scaly appearance.

In the Lower Greensand, Ashford, Kent, and the Portland Stone, Dorsetshire.

3. Trigonia duplicata.—The Two-plaited Trigonia, pl. LXXII.* fig. 14.

T. duplicata. Sowerby, III. p. 63, pl. 237, figs. 4, 5.

Transversely and obliquely oblong; somewhat compressed; anterior side large, with small, arcuated, curved ridges; and a strong tuberculated curved rib separating it from the posterior side, which is small, and covered with obliquely transverse narrow furrows; beaks rather large and prominent; basal margin crenated.

The Inferior Oolite, Glaizedale, Yorkshire.

4. Trigonia pennata.—The Winged Trigonia, pl. LXXII.* fig. 9.

T. pennata. Sowerby, III. p. 64, pl. 237, fig. 6.

Obliquely oblong, and considerably arcuated; the anterior side arched, with from ten to twelve elevated, obliquely curved ribs, which are striated on their fronts; with smooth intercostal spaces; posterior side flattened, concave, and divided into two lobes by a longitudinal furrow, on each side of which a series of tuberculated ribs diverge downwards; beaks sub-acute, a little bent; basal line cleft.

The Greensand, Teignmouth, Devonshire.

5. Trigonia striata.—The Striated Trigonia, pl. LXXII.* fig. 15.

T. striata. Sowerby, III. p. 63, pl. 237, figs. 1, 2, 3.

Elongated, sub-triangular, inflated; posterior side with large, thick, crenated, transverse ribs; anterior side with numerous oblique, waved striæ, subdivided by a longitudinal furrow; basal line of the posterior side waved; beaks sharp-pointed; beneath them a longitudinal, lanceolate lunule.

The Inferior Oolite, Dundry, Yorkshire, and Cotswold Hill.

6. Trigonia angulata.—The Angular Trigonia, pl. LXXV. fig. 1.

T. angulata. Sowerby, VI. p. 9, pl. 508, fig. 1. Ib. *T. clavellata*, var. I. p. 197, pl. 87, lower figs.

Transversely sub-triangular and elongated; rather convex; anterior side sub-arcuated, and abruptly sloping; surface with transverse, curved, raised ribs, each of which, on reaching the disk, changes into a continuous series of nodules; posterior side much produced, and divided from the anterior by a curved, longitudinal, crenated rib, with the extremity considerably acuminate and truncated; crossed by transverse, wide-set striæ; the upper edge concave.

The Inferior Oolite, Nunney and Blue Wick.

7. Trigonia alæformis.—The Wing-shaped Trigonia, pl. LXXV. fig. 7.

T. alæformis. Parkinson, Org. Rem. III. p. 176, pl. 12, fig. 9. Sowerby, III. p. 27, pl. 215, figs. 1, 2, 3, 4.

Sub-triangular; wing-shaped; anterior side arcuated, and occupying the greater part of the valve; with many transverse, tuberculous ribs, which become smooth, plain, and narrow towards the inner side; intercostal spaces smooth; posterior side lengthened into an acuminated, sub-truncated beak, and separated from the other portion by a broad, curved, flattened ridge, extending from the beak, and rapidly widening as it approaches the basal margin; beyond the ridge is a flat space, crossed by oblique, flat ribs, divided by very narrow furrows; beaks acute, and much incurved.

In the Gault, Vale of Wardour; the Lower Greensand, Broughton, Blackdown, and Lyme Regis.

8. Trigonia imbricata.—The Imbricated Trigonia, pl. LXXV. fig. 2.

T. imbricata. Sowerby, VI. p. , pl. 507, figs. 2, 3.

Triangular; compressed; anterior side with five or six transverse, imbricated ribs; posterior side obliquely truncated, with oblique, transverse, flattened ribs.

The ribs upon this shell resemble a series of terraces, situate one above another.

The Great Oolite, Ancliff.

9. Trigonia quadrata.—The Squarish Trigonia, pl. LXXV. fig. 5.

T. quadrata. Sowerby, Geo. Trans. 2d Ser. IV. p. 342, pl. 17, fig. 12.

Sub-quadrangular; compressed; anterior side short and much rounded; posterior side broad and truncated; beaks ob-

tuse; superior line nearly straight; basal line a little arcuated; surface with concentric ribs, each of which is bent at a right angle in the middle, where there is a line of large tubercles extending in an angle from the beaks to the margin.

The Greensand, Blackdown.

10. Trigonia spinosa.—The Spinous Trigonia, pl. LXXV. fig. 8.

T. spinosa. Parkinson, Org. Rem. II. pl. 12, fig. 7. Sowerby, I. p. 196, pl. 86. Var. Ib. Geo. Trans. 2d Ser. IV. p. 196, pl. 13, fig. 3.

Obliquely ovate; compressed; beaks obtuse; anterior side large, and separated from the posterior by an oblique ridge extending from the beaks to the margin; on each side of which the surface is covered with many divergent spinous ribs, bending upwards, and increasing in thickness as they diverge from the ridge, and producing a crenulated margin all round.

The Lower Greensand, Seabrook, Pulborough, Sandgate, and Lyme Regis.

11. Trigonia spectabilis.—The Notable Trigonia, pl. LXXV. fig. 9.

T. spectabilis. Sowerby, VI. p. 83, pl. 544.

Sub-ovate, sub-trigonal, convex; an obtuse, nearly central, slightly curved elevation, emanates from the beaks, and terminates on the base; beaks obtuse, a little turned to one side; near to them, three or four smooth, concentric, rounded ribs; surface almost smooth, with seven or eight semicircular rows of large, blunt, round tubercles, and a few irregular smaller ones on the posterior side; both edges rather straight, undulous, produced by the projecting tubercles; base rounded.

The Greensand, Blackdown.

12. Trigonia nodosa.—The Nodulous Trigonia, pl. LXXV. fig. 10.

T. nodosa. Sowerby, V. p. 7, pl. 507, fig. 1.

Somewhat obovate; beaks obtuse, and nearly central; surface smooth, covered anteriorly with indistinct, irregular rows of large, depressed knobs, and some smaller ones on the posterior portion; anterior side rounded, or arcuated; posterior side nearly straight from the beak for two-thirds the length of the valve; anterior side arcuated; base rounded.

The Lower Greensand, Seabrook, Kent.

13. Trigonia clevellata.—The Club-shaped Trigonia, pl. LXXV. fig. 11.

T. clevellata. Parkinson, Org. Rem. III. p. 175, pl. 12, fig. 3. Sowerby, I. p. 197, pl. 87, upper figs.

Sub-triangular, obliquely elongated, curved; anterior side straight, flattened, with three longitudinal, linear rows of small round tubercles; posterior side much arcuated, with from twelve to fourteen transverse, curved series of rounded tubercles; the surface rather rough; anterior seam undulous, slightly gaping under the curved and small beaks.

The Lower Greensand, Seabrook, Kent; the Portland Stone, Langcombe and Swindon; and the Kelloways Rock, Weymouth and South Cave.

14. Trigonia gibbosa.—The Gibbous Trigonia, pl. LXXV. fig. 13.

T. gibbosa. Sowerby, III. p. 61, pl. 235.

Sub-triangular, transversely elongated, oblique, and gibbose; anterior side nearly straight; posterior side produced, narrowed, and obliquely sub-truncated, with a broad, oblique, longitudinal, shallow furrow, or depressions emanating from the beak, and terminating on the extreme point of the somewhat beaked terminations; beaks narrow, incurved, and approximating; basal line regularly arcuated; back concave; surface smooth, with transverse, shallow lines of growth, which increase in depth and proximity at the base.

The Lower Greensand, Lockswell Heath.

15. Trigonia pustulata.—The Pustulous Trigonia, pl. LXXV. fig. 12.

T. gibbosa. Var. B., Sowerby, III. p. 61, pl. 236.

Sub-triangular, gibbose; anterior side rounded; posterior side produced, and obliquely sub-truncated; back somewhat concave; base considerably arcuated anteriorly, and posteriorly a little concave, giving it a beaked aspect; beaks obtuse and incurved; whole surface with shallow concentric furrows, the anterior portion with series of irregularly set, oval pustules.

The Portland Stone, Portland; the Vale of Wardour; Swindon, and Brill.

Although the two preceding shells bear a striking similitude in form, yet I cannot agree with Sowerby and others that they are the same species.

16. Trigonia cuspidata.—The Pointed Trigonia, pl. LXXV. figs. 14, 15.

T. cuspidata. Sowerby, VI. p. 8, pl. 507, figs. 4, 5.

Sub-triangular, compressed; anterior side rounded; posterior side abruptly truncated, with a projecting tag at its lower angle; surface with about seven concentric ribs, which are pointed and angular at the posterior division of the valves; beaks acute; teeth of the hinge much elongated; back rounded; basal line arcuated; texture of the shell thin.

The Great Oolite, Ancliff, Wiltshire.

17. Trigonia pullus.—The Bug Trigonia, pl. LXXV. figs. 16, 17.

T. pullus. Sowerby, VI. p. 10, pl. 508, figs. 2, 3.

Sub-triangular, inflated; anterior side rounded; posterior side obliquely truncated, angular at its lower extremity; beaks rather obtuse; anterior portion with numerous transverse smooth ribs, and separated from the other side by a longitudinal, rather thickened, curved, slightly crenated rib, with several similar ones on the flattened posterior side; lunette large and transversely striated.

The Oxford Oolite, Upware, near Cambridge, and the Great Oolite, Ancliff, and Cain's Cross.

18. Trigonia affinis.—The Allied Trigonia, pl. LXXVI. fig. 41.

T. affinis. Sowerby, III. p. 11, pl. 208, fig. 3.

Transversely ovate; anterior side rounded, smooth, and covered with transverse, flattened ridges; posterior side a little produced, slightly and obliquely sub-truncated, a little beaked at its lower angle; basal line nearly straight; beaks very obtuse.

The Greensand, Blackdown and Parham.

19. Trigonia eccentrica.—The Eccentric Trigonia, pl. LXXVI. fig. 45.

T. eccentrica. Parkinson, Org. Rem. III. p. 175, pl. 12, fig. 5. Sowerby, III. p. 11, pl. 208, figs, 1, 2.

Transversely sub-triangular, convex; anterior side short, rounded; posterior side elongated, acuminated, and truncated; its length little more than half its width; beaks obtuse, in-

curved, and approximating; back gradually sloping from the beaks; basal line gently curved; surface with regular, transverse, shallow furrows, or lines of growth, and a few short, oblique, shallow ones crossing in a lozenge manner at the anterior side.

The Greensand, Staple Hill and Devonshire.

20. Trigonia dædalea.—The Handsome Trigonia, pl. LXXVI. fig. 21.

T. dædalea. Parkinson, Org. Rem. III., p. 176, pl. 12, fig. 6. Sowerby, I. p. 198, pl. 88.

Oblong-ovate, trigonal; a longitudinal, tuberculated ridge, dividing the valves into nearly equal halves; both sides angular near their centre, the anterior one gradually rounded both above and below the angle; posterior side slightly hollowed beneath the beaks, and thence a little arcuated till it reaches the centre, below which there is a double flexure; beaks small and pointed; anterior side with many series of large tubercles, set in arcuated ridges; posterior side with a series of less regular ones running downwards from the side towards the central ridge.

The Lower Greensand, Parham and Blackdown.

21. Trigonia incurva.—The Incurved Trigonia, pl. LXXVI. fig. 42.

T. incurva. Sowerby, Geo. Tr. 2d Ser. IV. p. 347, pl. 22, fig. 14. Bennet, Wiltshire, Foss. pl. 18, fig. 2.

Transversely and obliquely longitudinal, its width nearly double its length, convex; posteriorly flattened; surface tuberculate, set in curved series.

The Portland Stone, Portland; Vale of Wardour and Swindon.

22. Trigonia impressa.—The Impressed Trigonia.

T. impressa. Sowerby, Zool. Journ. III. p. pl. 11. fig. 1.

Sub-triangular, anterior side rounded; posterior side somewhat truncated, beaks obtuse; surface with a series of concentric papillose ribs.

The Great Oolite, Stonefield.

23. Trigonia literata.—Lettered Trigonia, pl. LXI.*** fig. 21.

T. literata. Phillips, Geo. York, I. pl. 14, fig. 11.

Sub-triangular, sub-conic, moderately convex; anterior side rather abruptly sub-truncated; posterior side concave above, considerably produced, and somewhat acuminated below, separated from the other portion by a longitudinal, linear row of obtuse tubercles, which emanate from the beak, and with an obscure longitudinal row of pustules in its centre, obliquely crossed by lines of growth; anterior portion of the surface with a series of very strong, rugged, longitudinal ribs, which rapidly thicken as they descend, emanating from the pustular division, which, on reaching the centre of the valve, suddenly turn upwards at an acute angle, in the form of the letter *V*, and again turn to the anterior margin; all the ribs are crossed by irregular rough striæ; beaks acuminated and incurved; lunule, large, and bounded by a margin of transversly elongated pustules: basal line convex.

The Lias, Robin Hood's Bay, Yorkshire.

Tribe III.—ARCACEA.

Shells provided with numerous small primary teeth, disposed in a straight or interrupted line in each valve.

Genus VII.—NUCULA.—*Lamarck.*

Shell equivalve, inequilateral, transverse, oval, trigonal, or oblong; generally covered with a strong epidermis; hinge linear, narrow, divided into two parts by an oblique, produced, nearly central pit, which is destined for the reception of the ligament; the one anterior, and the other posterior; lateral teeth on each side numerous, acute, elevated, somewhat recurved, those of the opposite valves locking into the intervening spaces; umbones contiguous, and not separated by an intervening area; two simple, muscular impressions; mantle impression destitute of a sinus.

1. Nucula ovalis.—The Oval Nucula, pl. LXXVI. fig. 33.

N. (?) ovalis. Murchison, Silur. Syst. pt. II. p. 609, pl. 5, fig. 8.

Shell transversely ovate, smooth, rather convex; beaks subacute, and placed near the anterior side; length about four lines, breadth five lines.

The Upper Ludlow Rock, Trewerne Hills on the Wye, Radnorshire.

2. Nucula lævis.—The Smooth Nucula, pl. LXXVI. fig. 22.

N. lævis. Murchison, Silur. Syst. pt. II. p. 635, pl. 22, f. 1.

Shell oval, transversely elongated, smooth, ventricose; beaks large, acute; length three-eighths of an inch, breadth two-eighths.

Found in Black Schist, in the Lower Silurian Rocks, Pensarn, near Caermarthen, Wales.

3. Nucula Cobboldiæ.—Cobbold's Nucula, pl. LXXVI. fig. 55.

N. Cobboldiæ. Sowerby, II. p. 177, pl. 180, fig. 2.

Transversely obovate, convex; posterior side very short, with numerous, shallow, smooth, zigzag furrows, diverging over the sides; space between the teeth elongated and deep; margin entire.

The Mammiferous Crag, Bramerton, and the Red Crag, Sutton.

4. Nucula lanceolata.—The Lance-shaped Nucula, pl. LXXVI. fig. 55.

N. lanceolata. Sowerby, II. p. 178, pl. 180, fig. 1.

Transversely lanceolate and ovate; width double the length; sides nearly equal, the anterior very slightly the largest; posterior side a little pointed; beaks a little produced; surface smooth; hinge with a deltoidal concave space; margin entire; substance of the shell strong.

The Red Crag, Bawdsey.

5. Nucula deltoidea.—The Deltoidal Nucula, pl. LXXVI. fig. 51.

N. deltoidea. Sowerby, VI. p. 103, pl. 554, fig. 1.

Triangular, ventricose; anterior side short, and rounded; posterior side obliquely truncated, flat, and pointed; generally smooth, but sometimes longitudinally striated towards the anterior margin.

The Upper Marle, Isle of Wight, and Bagshot Sands, Shapley Heath.

6. Nucula inflata.—The Inflated Nucula, pl. LXXVI. figs. 11, 12.

N. inflata. Sowerby, VI. p. 103, pl. 554, fig. 2.

Almost globular; the posterior side small, and a little pro-

duced; compressed, and somewhat pointed; with the surface smooth.

The London Clay, Highgate and Sheppey.

7. Nucula undulata.—The Waved Nucula, pl. LXXVI. figs. 6, 7.

N. undulata. Sowerby, VI. p. 104, pl. 554, fig. 3.

Globular, its width a little more than its length, and somewhat oblique; posterior side produced, narrowed, and acute; surface concentrically waved.

The Gault, Folkstone.

8. Nucula amygdaloides.—The Almond-shaped Nucula, pl. LXXVI. figs. 35, 36.

N. amygdaloides. Sowerby, VI. p. 104, pl. 554, fig. 4.

Transversely elliptical, elongated, compressed, its width being nearly double its length; sides equal, surface with numerous small, regular, transverse furrows.

The London Clay, Sheppey and Hampstead.

9. Nucula lævigata.—The Smooth Nucula, pl. LXXVI. fig. 50.

N. lævigata. Sowerby, II. p. 207, pl. 192, figs. 1, 2.

Transversely elliptical, convex; posterior side truncated; lunette impressed, convex and oblong, with surface smooth; edge entire; a pit or compressed tooth in the hinge.

The Red Crag, Walton, Naze, and the Coralline Crag, Sutton.

10. Nucula similis.—The Similar Nucula, pl. LXXVI. figs. 28, 19, and 48.

N. similis. Sowerby, II. p. 207, pl. 192, f. 3, 4, and 10.

Transversely obovate, compressed; posterior side straight; lunette oblong, sunk, concave in the middle; surface longitudinally striated; edge crenulated.

The London Clay, Barton and Highgate.

11. Nucula trigona.—The Triangular Nucula, pl. LXXVI. fig. 43.

N. trigona. Sowerby, II. p. 208, pl. 192, fig. 5.

Triangular, compressed; sides nearly equal; lunette concave; surface smooth; hinge-pit short; edge crenulated.

The London Clay, Barton, Hampshire.

12. Nucula pectinata.—The Toothed Nucula, pl. LXXVI. fig. 54.

N. pectinata. Sowerby, II. p. 209, pl. 192, figs. 6, 7.

Transversely elliptical, elongated, convex; posterior side truncated; lunette sunk, flat, and heart-shaped; surface with numerous small divergent furrows, which are intersected by very fine transverse striæ.

The Gault, Folkstone and Cambridgeshire; and the Greensand, Blackdown and Lyme Regis.

13. Nucula minima.—The Small Nucula, pl. LXXVI. fig. 53.

N. minima. Sowerby, II. p. 209, pl. 192, figs. 8, 9.

Transversely ovate, nearly twice as wide as long, gibbose; posterior side pointed; lunette straight and elongated, reaching from the beak to the angle of the posterior side; surface transversely striated; edge without crenulations; hinge-pit minute.

The London Clay, Barton and Highgate.

14. Nucula palmæa.—The Palm Nucula, pl. LXXVI. fig. 39.

N. palmæa. Sowerby, V. p. 117, pl. 475, fig. 1.

Transversely elongated, nearly cylindrical, with the ends rounded and equal; very gibbose; beaks nearly central; surface smooth and shining, with irregular lines of growth.

The Carboniferous Limestone, Derbyshire.

15. Nucula variabilis.—The Variable Nucula, pl. LXXVI. figs. 1, 2.

N. variabilis. Sowerby, V. p. 117, pl. 475, fig. 2.

Transversely ovate, elongated; sometimes oblique; rather compressed; sides unequal; beaks placed near to the posterior side, which is usually less rounded than the other; valves deepest towards the beaks; surface smooth; lunette inconspicuous.

The Great Oolite, Ancliff and Cloughton, and the Inferior Oolite, Blue-Wick.

16. Nucula impressa.—The Impressed Nucula, pl. LXXVI. figs. 15, 16.

N. impressa. Sowerby, V. p. 118, pl. 475, fig. 3.

Transversely ovate, compressed; sides unequal, the beaks situated nearest the posterior extremity; margin regularly curved, except at the lunette; lunette deeply impressed, convex, and elongated; surface smooth; edges destitute of crenulations.

The Lower Greensand, Parham and Pulborough.

17. Nucula antiquata.—The Antiquated Nucula, pl LXXVI. figs. 3, 4.

N. antiquata. Sowerby, V. p. 118, pl. 475, fig. 4.

Triangular, rounded, inflated, and antiquated; beaks incurved, and nearly touching; lunette cordiform and sunk; surface longitudinally striated; margin crenulated.

The Lower Greensand, Pulborough and Blackdown.

18. Nucula ovum.—The Egg-shaped Nucula, pl. LXXVI. fig. 37.

N. ovum. Sowerby, V. p. 118, pl. 476, fig. 1. Phillips, Geo. York, I. pl. 12, fig. 4.

Transversely obovate, inflated and smooth; pointed a little anteriorly; posterior side regularly rounded; almost as deep as long.

The Lias, Whitby, Yorkshire.

19. Nucula claviformis.—The Club-shaped Nucula, pl. LXXVI. fig. 38.

N. claviformis. Sowerby, V. p. 119, pl. 476, fig. 2.

Transversely elongated, its width upwards of twice its length; ventricose; anterior side rounded; much produced and attenuated, and slightly truncated posteriorly, on which side there is a broad concave area, bounded by two ridges, emanating from the beaks, and terminating on the anterior extremity; surface with fine concentric ridges.

The Lias, Northamptonshire, and Magilligan, Ireland.

20. Nucula lacryma.—The Tear Nucula, pl. LXXVI. fig. 23, 24.

N. lacryma. Sowerby, V. p. 119, pl. 476, fig. 3, Phillips, Geo. York, I. pl. 11, fig. 14.

Ovate, ventricose; its width twice its length; anterior side produced, pointed, and convex above; posterior side rounded; surface smooth.

The Great Oolite, Ancliff and Cloughton, and the Inferior Oolite, Blue-Wick, Yorkshire.

21. Nucula mucronata.—The Mucronated Nucula, pl. LXXVI. figs. 18, 19.

N. mucronata. Sowerby, V. p. 120, pl. 476, fig. 4.

Sub-rhomboidal, two-thirds as long as wide, rounded, ventricose; anteriorly mucronated, and drawn out in the form of a flattened spine; surface concentrically furrowed.

A very minute species, found in the Great Oolite, Ancliff, Wiltshire.

22. Nucula angulata.—The Angled Nucula, pl. LXXVI. figs. 31, 32.

N. angulata. Sowerby, V. p. 120, pl. 476, fig. 5.

Rhomboidal, its width about once and a-half its length, front rounded; both sides equal, angular; their lines from the sides to the beaks almost straight; most convex near the beaks; surface with fine concentric furrows, rather inconspicuous to the naked eye.

The Greensand, Blackdown.

23. Nucula apiculata.—The Bee-like Nucula, pl. LXXVI. figs. 13, 14.

N. apiculata. Sowerby, Geo. Tr. 2d. Ser. p. 342, pl. 17, fig. 10.

Sub-orbicular, convex, anterior side rounded; posterior side concave above, with the lower extremity much pointed; surface smooth.

The Greensand, Blackdown.

24. Nucula sub-compressa.—The Sub-compressed Nucula, pl. LXXVI. fig 90.

N. undulata. Phillips, Geo. York, II. p. 210, pl. 5, f. 16.

Transversely ovate, compressed; both sides equally rounded; beaks obtuse and approximating; surface with delicate, regular, concentric striæ; posterior side with a depressed ridge.

The Carboniferous Limestone, Bolland.

25. Nucula lineata.—The Lineated Nucula, pl. LXXVI. figs. 8, 9, 10.

N. lineata. Sowerby, Geo. Trans. 2d Ser. IV. p. 342, pl. 17, fig. 9.

Elliptical; beaks nearly central, small, and hardly developed; anterior side rounded; posterior side a little truncated, with a short point at its superior angle; surface transversely striated, which are straighter than the lines of growth, and consequently cross them twice.

The Greensand, Blackdown.

26. Nucula crenistriata.—The Crenistriated Nucula, pl. LXXVI. fig. 91.

N. lineata. Phillips, Pal. Fos. p. 39, pl. 18, fig. 64.

Deltoidal, or obliquely triangular; convex; sides nearly straight; surface smooth, with numerous close, transverse striæ, every third or fourth being much more prominent than the others, and crenulated on their lower edge; beaks obtuse, and approximating.

A variety of this species has the striæ all even and plain.

The Devonian Shales, in Limestone Nodules, Boggy Point, North Devonshire.

27. Nucula sub-recurva.—The Sub-recurved Nucula, pl. LXXVI. fig. 26.

N. sub-recurva. Phillips, Geo. York, I. pl. 2, fig. 11.

Transversely oblong-ovate; anterior side somewhat turned up, rather acute; posterior side rounded; beaks very obtuse; surface smooth.

The Speeton Clay, Speeton, Yorkshire.

28. Nucula axiniformis.—The Canopy-formed Nucula, pl. LXXVI. fig. 34.

N. axiniformis. Phillips, Geo. York, I. pl. 11, fig. 13.

Transversely elongated; anterior side terminating in an acute point, the dorsal line being straight, and the basal line also nearly so; posterior side sub-acute, the superior line sloping downwards, and inclining suddenly from the centre; beaks obtuse; basal line gently curved; surface smooth.

The Blue-Wick, Inferior Oolite, Yorkshire.

29. Nucula bivirgata.—The Double-streaked Nucula, pl. LXXVI. fig. 44.

N. bivirgata. Sowerby, Geo. Tr. 2d. Ser. IV. p. 335, pl. 11, fig. 8.

Obliquely sub-triangular, wider than long; very convex; back gently curved, ending in a sub-acute point; posterior side concave, with the extremity pointed; base considerably arcuated, beaks obtuse, and approximating; surface with two sets of linear furrows, which converge towards the posterior slope, where they meet at acute angles, directed towards the beak of each valve; the junction producing a regular line, without forming a ridge; lunette broad; two transverse bands near the base.

The Gault, Folkstone.

30. Nucula elliptica.—The Elliptical Nucula, pl. LXXVI. fig. 40.

N. elliptica. Phillips, Geo. York, I. pl. 5, fig. 6.

Elliptical; both extremities rounded; anterior side short; beaks rather large, and turned anteriorly; surface smooth.

The Oxford Clay, Scarborough.

31. Nucula pisum.—The Pea Nucula, pl. LXXVI. figs. 46, 47.

Sub-orbicular; very convex; beaks obtuse, approximate; both sides rounded, the anterior one a little narrowed; surface smooth.

In the Coal Measures, near Newcastle-on-Tyne, by Mr Robertson.

32. Nucula dubia.—The Dubious Nucula, pl. LXXVI. fig. 30.

Nucula (?) Phillips, Geo. York, I. pl. 4, fig. 4.

Transversely oblong-ovate; both extremities pointed; beaks very obtuse and nearly central; base gently rounded; surface smooth.

The Coralline Oolite, Malton.

33. Nucula obtusa.—The Obtuse Nucula, pl. LXXVI. fig. 49.

N. obtusa. Sowerby, Geo. Tr. 2d. Ser. IV. pl. 17, fig. 11.

Transversely ovate, convex, and smooth; lunette prominent, and elongated; beaks rather obtuse.

The Greensand, Blackdown.

34. Nucula complanata.—The Flattened Nucula, pl. LXXVI. fig. 27.

N. complanata. Phillips, Geo. York, I. pl. 12, fig. 8.

Transversely elongated, anterior side rounded; posterior side concave above, with a narrowed, sub-truncated, produced termination; surface smooth.

The Upper Lias Shale, Whitby.

35. Nucula ovata.—The Ovate Nucula, pl. LXXVI. fig. 17.

N. ovata. Phillips, Geo. York, I. pl. 2, fig. 10.

Ovate; anterior side short and obliquely truncated; pos-

terior side elongated and rounded; beaks very obtuse; surface smooth.

The Speeton Clay, Speeton, Yorkshire.

36. NUCULA ACCIPIENS.—The Admitted Nucula, pl. LXXVI. figs. 56, 57.

N. accipiens. Sowerby, Geo. Tran. 2d. Ser. V. pl. 39, f. 4.

Transversely elongated; oblong-oval; much compressed; anterior side rounded; posterior side truncated; beaks nearly central; surface with fine, regular, concentric striæ.

The Coal Measures, Coalbrook Dale, Staffordshire.

37. NUCULA ACUTA.—The Acute Nucula, pl. LXXVI. fig. 58.

N. acuta. Sowerby, Geo. Trans. 2d. Ser. V. p. 639, fig. 5.

Transversely oblong, convex; anterior side rounded; posterior side acuminated, and terminating in a sharp point; beaks rather acute, and sub-central; surface with fine concentric striæ.

The Coal Measures, Coalbrook Dale.

38. NUCULA ÆQUALIS.—The Equal Nucula, pl. LXXVI. fig. 59.

N. æqualis. Sowerby, Geo. Tr. 2d Ser. V. pl. 39, fig. 3.

Transversely sub-ovate; convex; anterior side short, rounded; posterior side separated by a ridge and truncated; beaks situate nearest the anterior side; surface with numerous fine concentric ridges.

The Coal Measures, Coalbrook Dale, Staffordshire.

39. NUCULA ATTENUATA.—The Attenuated Nucula, pl. LXXVI. fig. 70.

N. attenuata. Fleming, Brit. An. p. 403. Ure, Hist. Rutherglen, &c. pl. 15, fig. 5.

Transversely elongated, greatly arcuated, ventricose; anterior side short, obliquely truncated; posterior side much elongated and attenuated, terminating in a blunted point; hinge area wide and very concave; beaks much produced, a little incurved; surface with fine, delicate, transverse striæ; base much arcuated.

Coal Shale, Renfrewshire.

40. NUCULA BREVIROSTRA.—The Short-beaked Nucula, pl. LXXVI. fig. 74.

N. brevirostra. Phillips, Geo. York, II. p. 210, pl. 5, fig. 11*a*.

Ovate, anterior side short and attenuated; posterior side large and rounded; beaks short; surface with fine concentric striæ; back and base equally curved.

The Carboniferous Limestone, Harelaw, Northumberland.

41. NUCULA LONGIROSTRA.—The Long-billed Nucula, pl. LXXVI. figs. 68, 69.

N. claviformis. Phillips, Geo. York, II. p. 210, pl. 5, fig. 17*a*.

Claviform, much elongated, transversely convex; anterior side rounded; posterior side lengthened, and rapidly attenuated, with the termination acute; beaks short, a little incurved; basal line ascending abruptly from the point opposite the beaks.

The Carboniferous Limestone, Harelaw and Otterburn, Northumberland.

42. NUCULA GIBBOSA.—The Tumid Nucula, pl. LXXVI. fig. 79.

N. gibbosa. Fleming, Brit. An. p. 403. Ure, Rutherglen, p. 310, pl. 15, fig. 6. Phillips, Geo. York, II. p. 210, pl. 5, fig. 15.

Transversely ovate, ventricose; anterior side short; posterior longer and rounded; beaks obtuse and incurved; surface with shallow remote lines of growth.

The Coal Shale, Renfrewshire.

43. NUCULA LUCINIFORMIS.—The Lucina-formed Nucula, pl. LXXVI. figs. 80, 81.

N. luciniformis. Phillips, Geo. York, II. p. 210, pl. 5, fig. 11.

Obliquely ovate; inflated; smooth; anterior side rounded; posterior side obliquely truncated, with some narrow striæ; base considerably arcuated.

The Carboniferous Limestone, Bolland.

44. NUCULA CUNEATA.—The Wedge-shaped Nucula, pl. LXXVI. fig. 72.

N. cuneata. Phillips, Geo. York, II. p. 210, pl. 5, fig. 14.

Transversely elongated; wedge-shaped; beaks obtuse, situate near the anterior end; hinge-line straight, and extending nearly the whole breadth of the shell; anterior end narrow, and increasing in breadth towards the other extremity, which is rounded; surface with a few remote, radiating striæ, and concentric lines of growth.

The Carboniferous Limestone, Bolland.

45. NUCULA BOWERBANKII.—Bowerbank's Nucula, pl. LXXVI. figs. 82, 83.

N. Bowerbankii. Sowerby, Geo. Tr. 2d Ser. V. p. 136, pl. 8, fig. 11.

Sub-elliptical, convex; anterior side obliquely truncated, with a nearly flat, pointed lunette, occupying the whole side; posterior side rounded; external surface smooth, striated internally; edge toothed; impressions of the obductor muscles shallow.

The London Clay, Hampstead Heath.

46. NUCULA WETHERELLII.—Wetherell's Nucula, pl. LXXVI. figs. 76, 77.

N. Wetherellii. Sowerby, Geo. Tr. 2d Ser. V. p. 136, pl. 8, fig. 12.

Nearly orbicular; gibbose; smooth; both sides slightly pointed; beaks small, nearly central; hinge-line triangular; margin crenulated.

The London Clay, Hampstead Heath.

47. NUCULA COMPRESSA.—The Compressed Nucula, pl. LXXVI. figs. 63, 64.

N. compressa. Sowerby, Geo. Tr. 2d Ser. V. p. 136, pl. 8, fig. 14.

Sub-ovate, smooth; compressed; anterior side rather short, contracted, and a little pointed; posterior side large and rounded; base arcuated; destitute of a lunette.

The London Clay, Hampstead Heath.

48. NUCULA STRIATA.—The Striated Nucula, pl. LXXVI. figs. 60, 61.

N. striata. Variety, Sowerby, Geo. Tr. 2d Ser. V. p. 136, pl. 8, fig. 13.

Transversely elliptical; anterior side rather short, and a little pointed; posterior side rounded, acute above; hinge-line straight; external surface with very fine concentric striæ.

The London Clay, Hampstead Heath.

49. NUCULA NUDA.—The Bare Nucula, pl. LXXVI. f. 75.

N. nuda. Phillips, Geo. York, I. pl. 5, fig. 5.

Transversely elongated; anterior side short; posterior side elongated; beaks obtuse; surface smooth; base a very little curved.

Oxford Clay, Scarborough.

50. NUCULA LÆVIROSTRA.—The Smooth-beaked Nucula, pl. LXXVI. fig. 71.

N. lævirostrum. Portlock, Geo. Sur. p. 439, pl. 36, f. 12.

Oblong-ovate, club-shaped; anterior side short and rounded; posterior side lengthened and obtuse; beaks obtuse; surface with fine concentric striæ.

The Carboniferous Limestone, Tyrone and Armagh, Ireland.

51. NUCULA LATISSIMA.—The Very-broad Nucula, pl. LXXVI. fig. 73.

N. latissima. Phillips, Pal. Fos. p. 137, pl. 58, fig. 65.*

Oblong-ovate; both extremities almost equally round, with a slightly produced angle superiorly.

The Devonian Shales at Pelton.

52. NUCULA PYGMÆA.—The Pigmy Nucula, pl. LXXVI. figs. 66, 67.

N. pygmæa. Goldfuss, pl. 125, fig. 17. *N. gibbosa.* Forbes, Wern. Tr. VIII. pl. 2, fig. 10, 10.* (?)

Sub-triangular; anterior side a little pointed; posterior side slightly rounded; base much arcuated; beaks obtuse; surface smooth.

The Pleistocene Marine Formations, Greenock Railway, and the Coral Crag, Ramshot and Sutton.

53. NUCULA PLICATA.—The Plicated Nucula, pl. LXXVI. fig. 62.

N. plicata. Phillips, Pal. Fos. p. 38, pl. 18, fig. 63.

Obliquely ovate, compressed; beaks prominent; surface smooth, shining, concentrically striated, with the posterior area finely plicated.

The Devonian Shales, Boggy Point.

54. NUCULA RADIATA.—The Rayed Nucula, pl. LXXVI. fig. 65.

N. (?) *radiata.* Portlock, Geo. Rep. p. 430, pl. 36, fig. 11.

Transversely elongated; anterior side rounded; posterior side acute, and obliquely truncated, and with a ridge emanating from the beak, and terminating on the side; the flattened space with radiating thread-like striæ; beaks well defined.

The Silurian Rocks, Tyrone, Ireland.

55. NUCULA MINUTA.—The Minute Nucula.

N. minuta. Brown, Rec. Conch. Brit. p. 84, pl. 33, fig. 18.

Transversely elongated; anterior side rounded; posterior side produced, acuminated, sub-truncated, and a little curved upwards; surface with strong, transverse striæ.

The Pleistocene Marine Formation, Dalmuir, and the Red Crag, Sutton.

56. NUCULA NUCLEUS.—The Kernal Nucula.

N. margaritacea. Brown, Rec. Conch. Brit. p. 85, pl. 33, fig. 12.

Ovate; both sides rounded; beaks near the anterior side; surface with numerous fine lines of growth.

The Pleistocene Marine Formations, Ayr, and the Red Crag, Sutton.

57. NUCULA ROSTRATA.—The Beaked Nucula.

N. rostrata. Brown, Rec. Conch. Brit. p. 84, pl. 33, f. 16.

Transversely elongated; anterior side rounded; posterior side produced and curved upwards, and transversely striated; surface slightly ribbed longitudinally, and obliquely crossed by the striæ.

The Pleistocene Marine Formations, Sutton, &c.

58. NUCULA TENUIS.—The Thin Nucula.

N. tenuis. Brown, Rec. Conch. Brit. p. 85, pl. 33, fig. 13.

Obliquely ovate; both sides rounded; surface smooth and shining.

Pleistocene Marine Formation, Dalmuir and Paisley; the Mammiferous Crag, Southwold, and the Red Crag, Bawdsey.

59. NUCULA OBLONGOIDES.—The Oblong Nucula, pl. LXXVI. figs. 84, 85.

Wood, Mag. Nat. Hist. 1840, p. 297, pl. 14, fig. 4.

Transversely ovate, lanceolate; somewhat inequilateral, the anterior side rounded; posterior side acuminated; lunule lanceolate; surface smooth.

Mammiferous Crag, Bramerton, and the Red Crag, Butley.

60. NUCULA SEMI-STRIATA.—The Half-striated Nucula, pl. LXXVI. figs. 86, 87.

N. semi-striata. Wood, Mag. Nat. Hist. 1840, p. 297, pl. 14, fig. 5.

Transversely ovate; somewhat inequilateral; anterior side rounded and smooth; posterior side acuminated, and transversely striated; substance of the shell thin.

The Coral Crag, Sutton.

61. NUCULA TRIGONULA.—TheTrigonal Nucula,pl. LXXVI. figs. 88, 89.

N. trigonula. Wood, Mag. Nat. Hist. 1840, p. 295, pl. 14, fig. 3.

Obliquely ovate, deltoidal, tumid; beaks prominent; lunule embedded; convex in the middle; surface smooth; internal margin crenulated; longitudinal diameter three sixteenths, transverse diameter a quarter of an inch.

The Coralline Crag, Sutton.

GENUS VIII.—PLEURODON.—*S. Wood.*

Shell bivalve, inequilateral; hinge-line curved; several uniform, converging, cardinal teeth placed in a row, immediately under the umbo; one large lateral tooth, situate posteriorly; ligament external.

1. PLEURODON OVALIS.—Pl. LXI.*** figs. 24, 25.

P. ovalis. Wood, Mag. Nat. Hist. 1840, p. 230, pl. 13, fig. 1. *Nucula miliaris* (?) Deshayes, Foss. des Env. de Paris, pl. 36, figs. 7, 8, 9.

Ovate, deltoidal, gibbose, sub-orbicular; smooth, margin entire; hinge with five or six converging cardinal teeth, and a large lateral tooth in each anterior side of the valves; largest diameter three thirty-seconds of an inch.

GENUS IX.—PECTUNCULUS.—*Lamarck.*

Shell orbicular, sub-equilateral, with the valves close; umbones near to each other, and separated by a narrow facet or area; hinge semicircular; teeth numerous, arcuated, oblique,

serrated, placed in two rows, one on each side of the umbones, and are separated by a small triangular disk in each valve, which contains the ligament, those of the opposite valves alternately inserted between each other, and becoming nearly obsolete towards the umbones; two lateral, strongly marked, distant, muscular impressions, which are united by an uninterrupted pallial impression; ligament external.

1. Pectunculus brevirostris.—The Short-beaked Pectunculus, pl. LXXVII. fig. 1.

P. brevirostris. Sowerby, V. p. 112. pl. 472, fig. 1.

Nearly orbicular, slightly oblique, and inequilateral; moderately convex; hinge-line triangular; teeth few and oblique; beaks short, rather obtuse, and approximating, with a slight elevation on the anterior side, emanating from the beaks, and terminating on the margin, where it projects a little; surface with very flat, longitudinal ribs, crossed by fine concentric striæ, which are invisible without the aid of a glass.

In the London Clay, Bognor and Reading.

2. Pectunculus pilosus.—The Hairy Pectunculus, pl. LXXVII. fig. 5.

P. variabilis. Sowerby V. p. 111, pl. 471.

Nearly orbicular, very slightly oblique, and rather convex; beaks large, rounded, and approximate; hinge area large, with the triangular lines numerous; teeth numerous; surface with fine, wide-set, divergent striæ, crossed by remote lines of growth, which become more numerous towards the basal margin.

In the Pleistocene Marine Formation, Ayr and Ireland; the Mammiferous Crag, Thorpe; the Red Crag, Sutton, and the Coral Crag, Ramshot.

3. Pectunculus obliquus.—The Oblique Pectunculus, pl. LXXVII. fig. 9.

Obliquely sub-ovate; somewhat compressed; beaks small, rather approximate; ligament area triangular, with rather numerous deep lines; teeth of the hinge numerous and continuous; anterior side a little narrowed; posterior side considerably broader; surface with numerous wide-set, longitudinal, divergent striæ, crossed by many concentric shallow ones; marginal crenulations small and numerous; substance of the shell rather thin.

The Red Crag, Bromswell.

4. Pectunculus minimus.—The Least Pectunculus, pl. LXXVII. figs. 2, 3, 4.

P. minimus. Sowerby, V. p. 114, pl. 472, fig. 5.

Orbicular; convex; equilateral; hinge-line straight, with about five teeth on each side; beaks rather prominent; surface smooth; destitute of internal marginal crenulations.

The Great Oolite, Ancliff, Wiltshire.

5. Pectunculus oblongus.—The Oblong Pectunculus, pl. LXXVII. figs. 6, 7, 8.

P. oblongus. Sowerby, V. p. 114, pl. 472, fig. 6.

Transversely ovate; rather inequilateral and convex; sides slightly truncated obliquely; surface smooth, and destitute of internal marginal crenulations.

The Great Oolite, Ancliff.

6. Pectunculus delectus.—The Delectible Pectunculus, pl. LXXVII. fig. 13.

P. costatus. Sowerby, I. p. 72, pl. 27, fig. 2.

Orbicular, compressed; ligamental area small; beaks rather large; hinge with about fourteen uninterrupted teeth; surface with about twenty-five sharp, divergent ribs, and a few concentric, distant striæ; margin finely crenulated within.

The London Clay, Barton.

7. Pectunculus decussatus.—The Decussated Pectunculus, pl. LXXVII. fig. 20.

P. decussatus. Sowerby, I. p. 71, pl. 27, fig. 1.

Sub-orbicular; sides rather straight; slightly compressed; ligamental area small; hinge with from twenty-five to thirty continuous teeth; beaks small and obtuse; surface with numerous, very fine, longitudinal, divergent striæ, which are hardly visible without the aid of a lens; margin thick, and destitute of crenulations.

The London Clay, Highgate and Bognor.

8. Pectunculus Plumsteadiensis.—The Plumstead Pectunculus, pl. LXXVII. fig. 14.

P. Plumsteadiensis. Sowerby, I. p. 72, pl. 27, fig. 3.

Sub-orbicular; slightly oblique; one side a little straight; beaks produced; ligamental area small; hinge rather straight, with numerous teeth; surface with obscure, longitudinal, narrow furrows, with minute concentric striæ; margin internally crenated.

The London Clay, Plumstead and Upnor.

9. Pectunculus umbonatus.—The Large-beaked Pectunculus, pl. LXXVII. fig. 11.

P. umbonatus. Sowerby, V. p. 113, pl. 472, fig. 3, and pl. 156, figs. 2, 3, 4.

Nearly orbicular; almost equilateral and gibbose; beaks large and prominent, somewhat oblique; hinge area large, the ligamentary lines triangular; teeth numerous and continuous; anterior side a little concave above; surface with fine longitudinal, radiating striæ, and very obscure concentric ribs; inner margin with large crenulations.

In the Gault at Ridge, South Wiltshire; and the Greensand, Blackdown and Haldon.

10. Pectunculus sublævis.—The Half-smooth Pectunculus, pl. LXXVII. fig. 10.

P. sublævis. Sowerby, V. p. 112, pl. 472, fig. 4.

Almost orbicular, equilateral, and somewhat convex; anterior side with a longitudinal depression; beaks short, approximate, and rounded; ligamentary space exceedingly narrow; surface with many obtuse ribs, occupying the centre portion of the valves, the sides being smooth; inner edge with small crenulations.

In the Greensand, Blackdown and Lyme Regis.

11. Pectunculus scalaris.—The Ladder Pectunculus, pl. LXXVII. fig. 23.

P. scalaris. Sowerby, V. p. 113, pl. 472, fig. 2.

Obvate, considerably narrowed above; the beaks prominent; hinge-line short, angular at the extremities, with a triangular pit in its centre; centre of the surface with strong regular ribs; internal margin with fine irregular crenulations.

The London Clay, Barton.

12. Pectunculus Apjohni.—Apjohn's Pectunculus.

P. Apjohni. Portlock, Geo. Sur. p. 429, pl. 34, fig. 8.

Orbicular, convex; beaks prominent; hinge-line and teeth gently arcuated, the teeth more numerous behind than before the beaks; margin smooth.

The Silurian Limestone, Desertcreat, Tyrone, Ireland.

13. Pectunculus semi-truncatus.—The Semi-truncated Pectunculus.

P. semi-truncatus. Portlock, Geo. Sur. p. 429, pl. 34, fig. 7.

Nearly orbicular, a little oblique; moderately convex, with a slight truncation behind; hinge-line very moderately curved, extending a short distance behind the beaks, but more lengthened in front; surface smooth; margin slightly depressed.

The Silurian Limestone, Desertcreat, Tyrone, Ireland.

14. Pectunculus ambiguus.—The Ambiguous Pectunculus.

P. (?) ambiguus. Portlock, Geo. Sur. p. 430, pl. 34, f. 11.

Sub-orbicular; compressed; beaks small and pointed; hinge-line straight and short; both sides equally rounded; surface smooth, with very faint lines of growth.

The Silurian Limestone, Desertcreat, Tyrone, Ireland.

Genus X.—MACRODON.—*Lycett.*

Shell equivalve, transverse, inequilateral, sub-quadrate, somewhat ventricose; hinge-line nearly parallel; beaks small, placed near to one end, remote, separated by a pretty broad area; hinge with six obliquely-parallel linear teeth in the right valve, situated near the anterior extremity, the innermost tooth stretching transversely nearly the entire length from the hinge-line; these teeth are received into corresponding cavities formed for their reception in the opposite valve; base, or ventral margin, provided with a hiatus for the passage of the byssus, and producing a corrugation in the edge of the valves; two muscular impressions in each valve, the anterior one furnished with a prominent ledge projecting from the side of the shell, the posterior one expanded and indistinct.

1. Macrodon rugosus.—The Rough Macrodon, pl. LXI.*** fig. 26.

M. rugosus. Murchison, Geo. Cheltenham, 2d Ed. p. 99, pl. 5, fig. 5.

Transversely elongated, its width being a little more than twice its length; surface and marginal outline flexuous; both extremities somewhat truncated; numerous elevated concentric lines of growth traverse its surface, with many strong, prominent, radiating, narrow ribs crossing the intervening spaces; basal line undulating.

In the Oolite, top of Leckhampton and Critchley Hills, and near Minchinhampton.

Genus XI.—ARCA.—*Linnæus.*

Shell transverse, equivalve, sub-quadrate, inequilateral, ventricose; hinge-line straight, generally angular at both extremities, sometimes a little rounded; hinge with numerous small, close-set, notched teeth, for the most part increasing in size as they diverge from the beaks; umbones remote, separated by a wide area, on which the ligament is spread in cross rows; surface mostly longitudinally ribbed; two lateral, distant, muscular impressions in each valve; ligament external.

1. Arca Eastnori.—The Eastnor Arca, pl. LXXVII. fig. 27.

A. Eastnori. Murchison, Silur. Syst. Part II. pl. 20, f. 1.

Shell thick, transversely ovate, extremely convex; beaks short, nearly central; muscular impressions deep; the posterior one considerably so; hinge-line nearly rectilinear; teeth small, upright, and numerous, and slightly divergent; length upwards of half an inch; breadth nearly an inch.

In the Curadoc Sandstone, at Golden Grove, Llandeilo, and also in Eastnor Park.

2. Arca appendiculata.—The Appendaged Arca, pl. LXXVII. fig. 17.

A. appendiculata. Sowerby, III. p. 135, pl. 276, fig. 3.

Transversely elongated, rhombic, gibbose; beaks somewhat distant and incurved; two oblong appendages on the hinge area, between the beaks; whole surface pretty closely decussated; the longitudinal ridges frequently furcated, and deeply intercepting the lines of growth; teeth not very numerous; internal margin toothed.

The London Clay, Barton Cliff.

3. Arca Branderi.—Brander's Arca, pl. LXXVII. f. 16.

A. Branderi. Sowerby, III. p. 135, pl. 276, figs. 1, 2.

Transversely elongated, gibbose; beaks remote; hinge-line straight, each side terminated by an auriform process; an obtuse ridge emanates from the beak, terminating near the front in the lower side; space between the beaks plain, except having three or four impressed striæ, which are more perpendicular than usual; surface very finely decussated; teeth numerous; external edge entire.

The London Clay, Barton Cliff.

4. Arca cancellata.—The Cancellated Arca, pl. LXXVII. fig. 18.

A. cancellata. Sowerby, V. p. 115, pl. 473, fig. 2. ***Arcites cancellatus***, Martin, Pet. Derby, pl. 44, fig. 7.

Transversely elongated, its width being nearly double its length; beaks somewhat produced, and nearly touching; posterior side rounded; anterior side nearly parallel, defined by a keel; marginal sinus short and deep, whole surface covered with longitudinal and transverse striæ, producing an elegant cancellated appearance.

Carboniferous Limestone, Derbyshire.

5. Arca pulchra.—The Splendid Arca, pl. LXXVII. fig. 29.

A. pulchra. Sowerby, V. p. 115, pl. 473, fig. 3.

Elongated, transversely ovate, its width nearly twice its length, depressed; anterior side considerably impressed, obliquely truncated; beaks approximating, whole surface with close, uniform, fine striæ.

Great Oolite, Ancliff, Wiltshire.

6. Arca quadrisulcata.—The Four-furrowed Arca, pl. LXXVII. fig. 30.

A. quadrisulcata. Sowerby, V. pl. 473, fig. 1.

Convex, its width twice its length; anterior side truncated and defined by a keel, furnished with four deep, well-defined furrows; posterior side small, rounded; margin furnished with a large marginal sinus; surface longitudinally striate, and crossed by lines of growth, producing a rugged aspect.

Coral Rag, Malton, Yorkshire.

7. ARCA DUPLICATA.—The Two-plaited Arca, pl. LXXVII. fig. 19.

A. duplicata. Sowerby, V. pl. 474, fig. 1.

Convex-ovate, transversely elongated, with double longitudinal ribs, which are furrowed along the middle; margin toothed; marginal sinus obscure; beaks approximate.

London Clay, Hordwell and Barton Cliff.

8. ARCA DEPRESSA.—The Depressed Arca, pl. LXXVII. fig. 24.

A. depressa. Sowerby, V. pl. 474, fig. 2.

Compressed, transversely elongated; both sides rounded; surface with distant elevated crenulated striæ, decussated by lines of growth, the striæ upon the anterior side very wide-set, appearing like knotted threads; marginal sinus obscure.

The Plastic Clay, Woolwich.

9. ARCA TUMIDA.—The Tumid Arca, pl. LXXVII. fig. 15.

A. tumida. Sowerby, V. pl. 474, fig. 3.

Very gibbose, the depth of each valve nearly equalling its length, transversely elongated, with the anterior side acute; marginal sinus short and deep; umbones remote, situate near the posterior side; surface with obsolete ribs.

The Magnesian Limestone, Durham and Humbleton.

10. ARCA SUB-ACUTA.—The Sub-acute Arca, pl. LXXVII. fig. 33.

A. sub-acuta. Sowerby, I. p. 95, pl. 44, upper figures.

Gibbose, transversely oblong; its breadth exceeding its length; hinge-line extending the whole length of the valves; surface longitudinally striated; marginal plaits rounded, and very deep, particularly at the anterior side; teeth sharp and numerous.

The Chalk Marl, Hamsey.

11. ARCA CARINATA.—The Keeled Arca, pl. LXXVII. fig. 12.

A. carinata. Sowerby, I. p. 96, pl. 45, lower figure.

Very convex, parallelipedal, its width twice its length; anterior side flattened, separated by an acute angle, truncated at almost a right angle; posterior side rounded; surface longitudinally ribbed, every alternate one more prominent than the other.

The Upper Greensand, Hampshire.

12. ARCA ROTUNDATA.—The Rounded Arca, pl. LXXVII. fig. 26.

A. rotundata. Sowerby, Geo. Tr. 2d Ser. IV. p. 340, pl. 17, fig. 8.

Transverse; beaks small, quite contiguous; anterior side narrow; posterior side large and expanded, both extremities rounded; disk hollowed towards the base, where it is a little concave; surface with fine, radiating, longitudinal striæ, and a few concentric fine lines of growth.

The Greensand, Blackdown and Lyme Regis.

13. ARCA IMPOLITA.—The Unpolished Arca.

A. impolita. Sowerby, Geo. Tr. 2d Ser. V. p. 136, pl. 8, fig. 10.

Transversely ovate; very convex; beaks small, hardly protruding; anterior side small, rounded; posterior side larger and rounded; hinge and basal lines parallel to each other; surface with longitudinal lines of small punctures; substance of the shell thin.

The London Clay, Hampstead.

14. ARCA NITENS.—The Shining Arca.

A. nitens. Sowerby, Geo. Trans. 2d Ser. V. p. 136, pl. 8, fig. 9.

Transversely ovate, convex; anterior side small, somewhat rounded; posterior a little wedge-shaped; surface smooth and shining; substance of the shell thin.

In the London Clay, Hampstead.

15. ARCA PAPILLOSA.—The Pimpled Arca, pl. LXXVII. fig. 28.

A. papillosa. Brown, Wernerian Mem. VIII. pl. 1, fig. 19.

Transversely elongated; beaks much produced, a little curved inwards, and remote from each other; hinge-line long and straight, with numerous small teeth; ligamental area broad and elongated; anterior side shortest and rounded; acute above; posterior side obliquely truncated; a ridge emanating from the umbo terminates on the lower angle of the truncations; basal and hinge lines parallel; surface with numerous divergent, longitudinal, papillose ribs; and a few strong transverse lines of growth.

The Pleistocene Marine Formation, Portrush, Ireland.

16. ARCA COSTATA.—The Ribbed Arca, pl. LXXVII. f. 32.

A. costata. Brown, Mem. Man. Geo. Soc. I. p. 66, pl. 6, figs. 34, 35.

Transversely oblong-ovate; anterior side very short and acute; the posterior lengthened and sub-truncated; beaks small and slightly produced; surface with three or four prominent ribs emanating from the beaks and terminating on the posterior side, with many nearly obsolete concentric wrinkles.

The New Red Sandstone, Newton, Manchester.

17. ARCA ÆMULA.—Emulating Arca, pl. LXXVII. fig. 36.

A. æmula. Phillips, Geo. York, I. pl. 3, fig. 29.

Transversely elongated, oblique; beaks large, obtuse, and approximating; disk slightly hollowed; base a little concave in the centre; surface with divergent, longitudinal striæ, interrupted by the transverse lines of growth, which are pretty strong, and following the concave direction of the basal line.

The Coral Rag, Malton, Yorkshire.

18. ARCA LACTEA.—The Milk-white Arca.

A. lactea. Brown, Illust. Conch. Gt. Brit. and Ird. p. 86, p'. XXXIII. fig. 6.

Transversely oblong, and slightly oblique; beaks obtuse, remote; posterior side a little angulated; somewhat open at the base for the passage of a byssus; longitudinally ribbed, and crossed by numerous lines of growth, producing a decussated aspect; with the interstices punctured; margin plain.

The Pleistocene Marine Formation, in the Forth.

19. ARCA ELONGATA.—The Elongated Arca, pl. LXXVII. fig. 34.

Transversely elongated; oblique; beaks very obtuse; ligamental area of medium width; anterior side angular above and rounded below; posterior sub-truncated obliquely, rather acute above, and rounded below; hinge-line and base nearly parallel, the latter a little concave in the centre; surface with fine divergent, longitudinal striæ; crossed by remote, rather regular lines of growth.

In the Greensand, Blackdown.

20. ARCA CYLINDRICA.—The Cylindrical Arca.

A. cylindrica. Portlock, Geo. Rep. p. 428, pl. 34, fig. 9.

Transversely elongated, cylindrical and convex; anteriorly rounded; obliquely truncated posteriorly; teeth nearly in a straight line.

The Silurian Rocks, Tyrone, Ireland.

21. Arca Noæ.—Noah's Arca.

A. Noæ. Brown, Recent Conch. Brit. p. 8, pl. 33, figs. 1, 2, 3.

Transversely oblong, sub-rhomboidal; ligamentary area wide; beaks remote at their points, and rather prominent; surface decussated with fine longitudinal and transverse striæ; base with a central hiatus between the valves.

The Coral Crag, Sutton.

22. Arca sub-truncata.—The sub-truncated Arca.

A. sub-truncata. Portlock, Geo. Sur. p. 427, pl. 34, fig. 1.

Transversely ovate, convex; beaks nearly central, slightly produced; hinge-line a little curved; anterior side obliquely sub-truncated; base a little rounded.

The Silurian Rocks, Tyrone, Ireland.

23. Arca regularis.—The Regular Arca.

A. regularis. Portlock, Geo. Rep. p. 427, pl. 34, fig. 2.

Almost semicircular transversely; hinge-line nearly straight; teeth slightly circular; beaks central; sides rounded; surface smooth.

The Silurian Rocks, Tyrone, Ireland.

24. Arca dissimilis.—The Dissimilar Arca.

A. dissimilis. Portlock, Geo. Rep. p. 428, pl. 34, fig. 5.

Obliquely oval, convex; anterior side narrow; posterior side broad; slightly truncated obliquely; hinge-line straight, with the teeth oblique to the line; those behind the beaks in a line a little curved; those in front few; beaks very obtuse.

The Silurian Rocks, Tyrone, Ireland.

25. Arca obliqua.—The Oblique Arca.

A. obliqua. Portlock, Geo. Sur. p. 429, pl. 34, fig. 6.

Obliquely transverse; ovate; anteriorly short and rounded, with an oblique sub-truncation behind; beaks placed very near the posterior side; teeth slightly oblique to the hinge-line.

The Silurian Rocks, Tyrone, Ireland.

26. Arca lactanea.—The Whitish Arca.

A. lactanea. Wood, Mag. Nat. Hist. 1840, p. 232, pl. 13, fig. 3.

Transversely oblong-ovate; beaks approximate; surface with fine longitudinal striæ, decussated with numerous strong lines of growth; internal margin destitute of crenulations; cardinal teeth vertical, becoming gradually inclined towards the extremities of the hinge-line.

In the Red Crag, Walton, and the Coral Crag, Sutton.

27. Arca raridentata.—The Few-toothed Arca.

A. raridentata. Wood, Mag. Nat. Hist. 1840, p. 232, pl. 13, fig. 4.

Rhomboidal, rather tumid; anterior side short and rounded; posterior larger, obliquely sub-truncated above, and rounded below; the basal line undulous; beaks large, obtuse; teeth much inclined externally, and with a plain space on the cardinal area below the beaks—three on the shorter side set at an angle of 45° with the hinge-line, and three nearly horizontal ones on the longer side; surface with fine, longitudinal striæ, decussated by elevated lines of growth.

In the Coral Crag, Sutton.

Genus XII.—CUCULLÆA.—*Lamarck.*

Shell sub-equivalve, trapeziform, or sub-quadrate; extremely ventricose; beaks distant, separated by a flat area, on which the external ligament is placed; two muscular impressions in each valve; the anterior one is elevated into a sharp-edged plate or ledge, projecting from the side of the shell; posterior muscular impression flat and indistinct; hinge rectilinear, with a series of angular, somewhat irregular teeth, set in a straight line, very small near the umbones, larger and more oblique towards both extremities; outside covered by an epidermis.

1. Cucullæa antiqua.—The Ancient Cucullæa, pl. LXXVIII. figs. 8, 9.

C. antiqua. Murchison, Silur. Syst. pt. II. p. 602, pl. 3, figs. 1 *b* and 12 *a*.

Shell transversely ovate, smooth, rather convex; posterior side larger than the anterior, and acutely angular; internal lamina longitudinal; umbones rather obtuse; length about three-eighths to half an inch; breadth from half an inch to three-quarters.

Found in the lowest beds of the Old Red Sandstone, at Horeb Chapel, Felindre-on-the-Teme, Wales.

2. Cucullæa ovata.—The Ovate Cucullæa, pl. LXXVIII. fig. 4.

C. ovata. Murchison, Silur. Syst. pt. II. p. 602, pl. 3, fig. 12 *b*.

Shell transversely ovate, and nearly convex; umbones placed near the anterior side; interior lamina longitudinal; both sides gradually rounded; length one inch and an eighth; breadth one inch and a-half.

Found in the lowest beds of the Old Red Sandstone, at Horeb Chapel, Wales.

3. Cucullæa Cawdori. — Cawdor's Cucullæa, pl. LXXVIII. fig. 15.

C. Cawdori. Murchison, Silur. Syst. pt. II. p. 602, pl. 3, fig. 11.

Shell transversely oval, convex, nearly smooth; anterior side rounded; posterior side obliquely truncated; umbones rather acute and nearly central, from whence a rounded ridge extends to the posterior angle of the margin, with oblique internal laminæ.

Found in Upper Silurian Rocks at Freshwater East, Pembrokeshire.

4. Cucullæa glabra. — The Smooth Cucullæa, pl. LXXVIII. figs. 1, 2.

C. glabra. Sowerby, I. p. 151, pl. 57.

Rhomboidal, slightly ventricose, its width about a fourth more than its length; anterior angle obtuse; posterior edge of the front rounded; hinge area with four divergent furrows; beaks somewhat incurved; whole surface with fine longitudinal striæ, which are decussated by numerous lines of growth; hinge-line finely striated; teeth deeply striated.

Upper Greensand, Warminster and Lime; the Lower Greensand, Petersfield.

5. Cucullæa carinata.—The Keeled Cucullæa, pl. LXXVII. fig. 41.

C. carinata. Sowerby, III. p. 9, pl. 207, fig. 1.

Obliquely wedge-shaped; length and breadth nearly equal; anterior side pointed, with a ridge running from the beaks to the margins; surface very smooth.

Greensand, Blackdown.

6. Cucullæa fibrosa.—The Fibrous Cucullæa, pl. LXXVII. fig. 40.

C. fibrosa. Sowerby, III. p. 9, pl. 207, fig. 2.

Gibbose, ovate; width somewhat more than the length; anterior margin straight, and prominent near the hinge; surface with numerous elevated, longitudinal striæ, crossed by lines of growth.

Greensand, Blackdown.

7. Cucullæa elongata.—The Elongated Cucullæa, pl. LXXVIII. fig. 19.

C. elongata. Sowerby, V. p. 67, pl. 447, fig. 1.

Elongated, its width nearly thrice its length, sub-cylindrical; anterior side pointed; posterior side very short; beaks small, incurved, and remote from the anterior side; whole surface covered with very fine longitudinal striæ.

The Coral Rag, Malton and Cove; the Inferior Oolite, Crosshands, Yorkshire; and the Lias, Vale of Gloucester.

8. Cucullæa costellata.—The Small-ribbed Cucullæa, pl. LXXVIII. fig. 7.

C. costellata. Sowerby, V. p. 67, pl. 447, fig. 2.

Gibbose, transversely oblong, breadth being about twice its length; the general outline being an oblique parallelogram; anterior lobe wing-shaped and strongly ribbed, with intermediate striæ between them, and with a carinated division separating it from the disk; posterior side rounded and ribbed; beaks distinct from each other, and sharp-pointed; whole surface covered with longitudinal striæ, distant in some specimens, and numerous in others, slightly decussated by lines of growth.

The Lower Greensand, Seabrook, Kent.

9. Cucullæa minuta.—The Minute Cucullæa, pl. LXXVII. fig. 37.

C. minuta. Sowerby, V. p. 68, pl. 447, fig. 3.

Convex, ovate, elongated, its width being more than double its length, and smallest at the extremities, the ridge which divides the anterior lobe forming a projecting angle upon the margin; anterior side rather small, very obliquely truncated; beaks nearly close; surface longitudinally striated.

The Great Oolite, Ancliff, Wiltshire.

10. Cucullæa radis.—The Rough Cucullæa, pl. LXXVII. fig. 22.

C. radis. Sowerby, V. p. 68, pl. 447, fig. 4.

Convex, transversely oblong; beaks incurved, and nearly meeting; surface rugged, and longitudinally ribbed; anterior lobe ill-defined; disk deeply striated.

The Great Oolite, Ancliff, Wiltshire.

11. Cucullæa oblonga.—The Oblong Cucullæa, pl. LXXVII. fig. 25.

C. oblonga. Sowerby, III. p. 7, pl. 206, figs. 1, 2; Phillips, Geo. York, I. pl. 3, fig. 34.

Gibbose, transversely oblong, its width about twice its length; anterior side wedge-shaped; front inclining slightly to the posterior side, which is small; beaks elegantly incurved; hinge area rhomboidal, with from nine to twelve parallel lozenges; surface with numerous longitudinal, irregular, elevated striæ.

Coral Rag, Malton, Yorkshire, and Inferior Oolite, Dundry.

12. Cucullæa cancellata.—The Cancellated Cucullæa, pl. LXXVII. fig. 18, and pl. LXXVIII. fig. 16.

C. cancellata. Phillips, Geo. York, I. pl. 19, fig. 24, and pl. 11, fig. 44.

Obliquely sub-ovate; hinge-line straight and oblique, and acute at both extremities; ligamental area narrow; beaks small, approximating; anterior side gently curving; posterior side depressed, and nearly obliquely straight; a ridge, emanating from the beak, diverges to the base, which is arcuated; surface decussated with transverse and longitudinal striæ.

The Great Oolite, Cloughton, and Inferior Oolite, Blue Wick.

13. Cucullæa crassatina.—The Thickened Cucullæa, pl. LXXVII. fig. 39.

C. crassatina. Lamarck, An. du Mus. 6, p. 338. *C. decussata.* Sowerby, III. pl. 206, figs. 3, 4.

Gibbose, transversely ovate, about one-fifth wider than long, anterior side angular; surface with somewhat flattened longitudinal ridges, and decussated by fine close lines of growth; interior margin crenated; teeth of the hinge striated on their sides; lines beneath the cartilage few.

The London Clay, Feversham and Herne Bay.

14. Cucullæa contracta.—The Contracted Cucullæa, pl. LXXVII. fig. 21.

C. contracta. Phillips, Geo. York, I. pl. 3, fig. 30.

Obliquely sub-quadrangular, inflated; hinge area of moderate width; beaks large, rather obtuse; base rather straight; surface smooth.

The Coral Rag, Malton, Yorkshire.

15. Cucullæa reticulata.—The Reticulated Cucullæa, pl. LXXVIII. fig. 13.

C. reticulata. Phillips, Geo. York, I. pl. 11, fig. 18.

Transversely elongated; rather inflated; anterior side large and rounded; posterior side narrowed; straight and oblique above, and obliquely truncated, with a produced angle below; beaks very large and obtuse; base slightly hollowed; surface with longitudinal radiating striæ on the anterior side and middle, crossed by transverse shallow ridges, producing a reticulated appearance.

The Inferior Oolite, Yorkshire.

16. Cucullæa oviformis.—The Egg-shaped Cucullæa, pl. LXXVIII. fig. 3.

C. ——— Sowerby, Sil. Syst. pl. 3, fig. 1.

Transversely oviform, hinge-line curved; anterior side rounded, posterior side narrowed; base and back a little arcuated; surface smooth.

Old Red Sandstone, Ludlow.

17. Cucullæa pectinata.—The Pectinated Cucullæa, pl. LXXVIII. fig. 5.

C. pectinata. Phillips, Geo. York, I. pl. 3, fig. 32.

Transversely elongated; beaks obtuse, placed near the anterior side, which is somewhat rounded; posteror side a little produced below; back and base gently curved; surface with numerous radiating striæ crossed by remote equidistant lines of growth.

The Coral Rag, Malton, Yorkshire.

18. Cucullæa triangularis.—The Triangular Cucullæa, pl. LXXVIII. fig. 6.

C. triangularis. Phillips, Geo. York, I. pl. 3, fig. 31.

Sub-triangular, wedge-shaped, anterior side obliquely straight; beaks pointed, surface smooth, with a few remote lines of growth.

The Coral Rag, Malton, Yorkshire.

19. CUCULLÆA CYLINDRICA.—The Cylindrical Cucullæa, pl. LXXVIII. fig. 17.

C. cylindrica. Phillips, Geo. York, I. pl. 9, fig. 20.

Transversely elongated, cylindrical, and ventricose; beaks prominent, approximating, and situate towards the anterior side; posterior side with a ridge emanating from the beaks, and terminating on the basal margin; surface with many elevated, concentric ridges.

Great Oolite, White Nab, Yorkshire.

20. CUCULLÆA CONCINNA.—Neat Cucullæa, pl. LXXVIII. fig. 18.

C. concinna. Phillips, Geo. York, I. pl. 5, figs. 9 and 31.

Transversely elongated; short; moderately inflated, beaks rather large; anterior side rounded; posterior side obliquely truncated and flattened, with a ridge from the beak to the margin, and longitudinally striated; anterior side obscurely ribbed; hinge-line lengthened; base gently curved.

The Oxford Clay, Scarborough, and the Kelloways Rock, Cove.

21. CUCULLÆA IMPERIALIS.—The Imperial Cucullæa, pl. LXXVIII. fig. 20.

C. imperialis. Phillips, Geo. York, I. pl. 9, fig. 19.

Transversely lengthened; inflated; anterior side rather short; posterior side hollow, considerably elongated; beaks very large, prominent, incurved, and approximate; superior portion of the surface with wide-set radiating striæ, extending downwards for more than half the length of the valve; crossed by remote concentric lines of growth; basal line nearly straight, with a slight hollow near the centre.

The Great Oolite, Cloughton Wyke.

22. CUCULLÆA ARGUTA.—The Sharp Cucullæa.

C. arguta. Phillips, Geo. York, II. p. 210, pl. 5, fig. 20.

Transversely lengthened; posterior side angulated; beaks situate near the anterior side; surface with deep regular furrows parallel to the margin.

The Carboniferous Limestone, Bolland, Yorkshire.

23. CUCULLÆA OBTUSA.—The Obtuse Cucullæa.

C. obtusa. Phillips, Geo. York, II. p. 210, pl. 5, fig. 19.

Transversely lengthened; oblong-oval; anterior side short, a little inflexed; posterior side obliquely sub-truncated and reticulated; hinge-line and base nearly parallel; beaks rather large and obtuse.

24. CUCULLÆA DEPRESSA.—The Depressed Cucullæa.

C. depressa. Phillips, Pal. Fos. p. 42, pl. 17, fig. 71.

Oblique; sub-triangular; its breadth and length nearly equal; cardinal area narrow; surface smooth.

The Devonian Strata, Marwood.

25. CUCULLÆA AMYGDALINA.—The Almond-shaped Cucullæa.

C. amygdalina. Phillips, Pal. Fos. p. 40, pl. 18, fig. 66.

Transversely elongated; width double its length; anterior side short and rounded; posterior side much acuminated and somewhat depressed, with a ridge extending from the beaks to the extreme point below; surface with concentric lines of growth; beaks obtuse.

The Devonian Shales, Marwood, North Devonshire.

26. CUCULLÆA HARDINGII.—Harding's Cucullæa.

C. Hardingii. Sowerby, Geo. Tr. 2d Ser. V. pl. 53, figs. 26, 27. Phillips, Pal. Fos. p. 40, pl. 18 and 19, fig. 67.

Transversely oblong-oval; posterior side large and obliquely sub-truncated; anterior short and rounded; beaks rather large and rounded, and obtuse; surface smooth.

Devonian Shales, Marwood, North Devon.

27. CUCULLÆA ANGUSTA.—The Narrow Cucullæa.

C. angusta. Sowerby, Geo. Tr. V. pl. 53, fig. 25. Phillips, Pal. Fos. p. 41, pl. 19, fig. 68.

Sub-quadrangular, length exceeding the width; convex; anterior side rounded; posterior side truncated, angular above and a little so below; beaks small, nearly central; surface smooth.

The Devonian Rocks, Marwood.

28. CUCULLÆA SULCATA.—The Furrowed Cucullæa.

C. sulcata. Sowerby, Geo. Tr. 2d Ser. III. p. 119.

29. CUCULLÆA TRAPEZIFORM.—The Trapeziform Cucullæa.

C. trapezium. Sowerby, Geo. Tr. 2d Ser. V. pl. 53, fig. 23. Phillips, Pal. Fos. pl. 19, fig. 70.

Nearly quadrangular, or trapezoidal; convex; anterior side rounded; posteriorly truncated and large; surface smooth; hinge-line sub-triangular; beaks rather prominent.

The Devonian Shales, Marwood, North Devon.

30. CUCULLÆA UNILATERALIS.—

C. unilateralis. Sowerby, Geo. Tr. 2d Ser. V. pl. 53, fig. 24. Phillips, Pal. Fos. p. 41, pl. 19, fig. 69.

Obliquely ovate; inflated; posterior side oblique, flattened; beaks nearest the anterior side, which is short and slightly rounded.

The Devonian Shales, Marwood, North Devon.

GENUS XIII.—AXINUS.—*Sowerby.*

Shell equivalve, transverse, free, posterior side very short, rounded; hinge provided with a long, oblique ligament, situate in a furrow, stretching along the whole edge; anterior side considerably produced, angulated, and somewhat obliquely truncated, with a flattish lunette near the beaks.

1. AXINUS (?) LATUS.—The Broad Axinus, pl. LXXIX. fig. 4.

Transversely elongated; beaks blunt, placed much to the anterior side, which is short, and gently rounded; posterior side much lengthened, and somewhat acuminated; breadth double its length; basal line very little curved; surface smooth.

In the Sandstone, Vale of Todmorden Yorkshire.

2. AXINUS DUBIUS.—The Doubtful Axinus, pl. LXXIX. fig. 8.

Transversely elongated, slightly curved; anterior side short, and somewhat narrowed; posterior side lengthened and broad; basal line moderately arcuated.

Sandstone, Vale of Todmorden.

3. AXINUS OBSCURUS.—The Obscure Axinus, pl. LXXIX. figs. 5, 6, 7.

A. obscurus. Sowerby, IV. p. 12, pl. 314.

Sub-triangular, transverse; beaks obtuse and nearly central; anterior side rather abruptly abbreviated, and moderately rounded; posterior side wedge-shaped, and attenuated below into an obtuse point; base gradually curved; surface smooth.

The Magnesian Limestone, Garforth, near Leeds.

4. Axinus angulatus.—The Angular Axinus, pl. LXXIX. fig. 17.

A. angulatus. Sowerby, IV. p. 11, pl. 315.

Sub-triangular; convex; oblique; breadth and length nearly equal; anterior side very short; a little curved; posterior side wedge-shaped, and depressed, with a ridge rising from the beaks and terminating on the side; producing an obtuse angle on both sides; surface nearly flat, with a few lines of growth; lunette ovate, pointed, and curved.

The London Clay, Hampstead and Sheppy.

5. Axinus sulcatus.—The Furrowed Axinus.

Donax sulcatus. Sowerby, Geo. Tr. 2d Ser. V. pl. 39, fig. 1.

Sub-triangular; convex; anterior side short; straight for some distance below the beaks; rounded below; posterior side wedge-shaped; acuminated; beaks incurved and approximating; surface smooth, with a few furrows; transverse towards the base, which is a little rounded anteriorly, and sloping from them upwards to the pointed extremity.

The Coal Measures, Coalbrook Dale.

6. Axinus rotundatus.—The Rounded Axinus, pl. LXXIX. fig. 1.

A. rotundatus. Brown, Tr. Manchester, Geo. Soc. I. p. 65, pl. 6, fig. 29.

Nearly orbicular; umbones almost central and acute, and remote; surface smooth; length upwards of three-eighths of an inch; breadth nearly half an inch.

The New Red Sandstone, Newtown, Manchester.

7. Axinus parvus.—The Small Axinus, pl. LXXIX. f. 12.

A. parvus. Brown, Geo. Trans. Manchester, Geo. Soc. I. p. 65, pl. 6, fig. 30.

Smooth, sub-triangular; somewhat inflated; umbones prominent, inflated, and contiguous; posterior side acute, oblique, and elongated; anterior side short and rounded; length upwards of a quarter of an inch, breadth nearly three-eighths of an inch.

The New Red Sandstone, Newtown, Manchester.

8. Axinus undatus.—The Waved Axinus, pl. LXXIX. fig. 9.

A. undatus. Brown, Trans. Manch. Geo. Soc. I. p. 65, pl. 6, fig. 31.

Sub-triangular, smooth, inflated; umbones small, obtuse; sides nearly equal; anterior side rounded; posterior side acute; from the centre of the valve emanates a triangular flexure, terminating in the basal margin; length three-eighths, breadth half an inch.

The New Red Sandstone, Newtown, Manchester.

9. Axinus pucillus.—The Slender Axinus, pl. LXXXIX. fig. 10.

A. pucillus. Brown, Trans. Manch. Geo. Soc. I. p. 66, pl. 6, fig. 32.

Triangular; smooth; beaks very prominent and nearly central; length one-eighth of an inch; breadth the same.

The New Red Sandstone, Newtown, Manchester.

10. Axinus minimus.—The Least Axinus, pl. LXXIX. figs. 2, 3.

Nearly orbicular; a little transverse; beaks central, large, and produced; hinge-line nearly straight; surface smooth; width something more than an eighth of an inch.

The New Red Sandstone, Newtown, Manchester.

Family IV.—CARDIACEA.

Primary teeth irregular both in form and situation, and, in general, accompanied by one or two lateral teeth.

Genus XIV.—PACHYMYA.—*Sowerby.*

Shell very thick, equivalve, transversely elongated; sublobate, with the umbones situate near the anterior extremity; ligament short, partly internal, and attached to a prominent process or fulcrum; close at both extremities.

1. Pachymya gigas.—The Giant Pachymya, pl. LXXVIII. figs. 11, 12.

P. gigas. Sowerby, VI. p. 2, pl. 504, 505. Brown, Elts. Foss. Conch. p. 84, pl. 7, figs. 12, 13.

Shell gibbose, ponderous, width twice its length; anterior side small, rounded; posterior side somewhat truncated; a ridge in both valves, emanating at the umbones, terminating on the posterior margin, gives a boat-shape to the general contour of the shell; umbones very obtuse, placed much to one side, general surface smooth, except near the basal margin, where it is provided with imbricated laminæ; thickness of the shell exceeding its length.

Found in the Chalk at Dowlands, near Lyme Regis.

Genus XV.—HIPPOPODIUM.—*Conybeare.*

Shell equivalve, obliquely transverse, very thick, deep, and inequilateral; umbones incurved; ventral margin situated so as to produce a bilobate appearance; hinge much thickened, and furnished with one rugged oblique tooth.

1. Hippopodium ponderosum.—The Ponderous Hippopodium, pl. LXXIX. figs. 20, 21.

H. ponderosum. Sowerby, III. p. 91, pl. 250. Fleming, p. 420. Brown, Elts. Fossil Conch. p. 95, pl. 7, figs. 21 and 23.

Gibbose, rugged, thick, and ponderous; anterior lobe somewhat angular, and a little acute; posterior lobe considerably smaller, rounded, and following the curvature of the umbones, forms the boundary of the cordiform pit beneath them, the width of which is greater than its length; this heart-shaped pit is deep, and extends to the hinge tooth, and upon which the lines of growth are well defined, and continue to the margin of the valve; one valve is in depth equal to its smallest diameter, which measures about half the distance from the point of the anterior lobe to the beaks.

When this shell rests upon the prominent parts of the anterior lobe, it bears a striking similitude to the general contour

of the foot of a horse, which suggested the idea of its generic name.

Found in the Upper Lias, Cheltenham, at Toddenham, near Shipson-on-Stour, and near Oxford.

Genus XVI.—MEGALODON.—*Sowerby.*

Shell bivalve, equivalve, longitudinal, acuminated towards the beaks; a large bifid tooth placed upon a septum across the beak of the right valve, and one irregular and more acute tooth, similarly situate in the left valve; a small pit near the teeth for the reception of the ligament, which is anterior, long, and external.

1. Megalodon cucullatus.—The Hooded Megalodon, pl. 79, figs. 13, 14.

M. cucullatus. Sowerby, VI. p. 132, pl. 568.

Oblong, smooth, convex, thick, ponderous; beaks pointed, incurved; a deep, acute-edged pit, for the reception of the anterior muscle, situate close to the thick plate on which the hinge-teeth are situated.

Limestone, Bradley, near Newton Bushel, Devonshire.

2. Megalodon carinatus.—The Keeled Megalodon, pl. LXXXIII. figs. 21, 22.

M. carinatus. Goldfuss, pl. 132, fig. 9; Phillips, Pal. Foss. p. 136, pl. 60, fig. 60*.

Transversely elongated, oblique; sub-lobate anteriorly; surface diagonally carinated and elevated; beaks recurved over the small and rather deep lunule; surface with oblique and prominent lines of growth.

In the Devonian Rocks, Newton, and Ogwall.

Genus XVII.—ISOCARDIA.—*Lamarck.*

Shell equivalve, heart-shaped, ventricose; beaks very distant, divergent, and involute; hinge with two primary compressed teeth in each valve, the one next the apex inflected under the umbo; and with one elongated, lateral tooth, situate immediately before the ligament, which is external, and divided into two segments at its posterior extremity, both of which are divergent to the point of the beak in each valve; both valves provided with two lateral, remote, muscular impressions, the linear impression of the mantle is entire, and extending from one muscular impression to the other.

1. Isocardia minima.—The Very Small Isocardia, pl. LXXX. figs. 2, 3.

I. minima. Sowerby, III. p. 171, pl. 295, fig. 1. Phillips, Geo. York, I. pl. 11, fig. 40.

Sub-deltoidal, globose; anterior side a little truncated; posterior side somewhat flattened and heart-shaped.

The Cornbrash, Scarborough and Wiltshire.

2. Isocardia abrupta.—The Abrupt Isocardia, pl. LXXX. fig. 7.

Cardita abrupta. Sowerby, I. p. 200, pl. 89, fig 2.

Triangular, inflated; anterior side nearly straight; beaks produced near one of the angles; surface covered with oblique striæ, some of which meet the longitudinal ones upon the anterior side; the others terminate abruptly on the first transverse rib; the anterior side longitudinally striated; front provided with five or six longitudinal ridges.

Inferior Oolite, Swanwick, Somersetshire.

3. Isocardia striata.—The Striated Isocardia, pl. LXXX. fig. 4.

Cardita striata. Sowerby, I. p. 199, pl. 89, fig. 1.

Nearly rectangular and quadrangular, much inflated; beaks situated near to one of the angles; anterior side rounded; the whole surface with longitudinal curvilinear striæ.

Inferior Oolite, Swanwick, Somersetshire.

4. Isocardia tener.—The Tender Isocardia, pl. LXXIX. figs. 26, 27.

I. tener. Sowerby, III. p. 171, pl. 295, fig. 2.

Obovate, anteriorly sub-truncated, and posteriorly rounded; beaks produced; surface smooth; the anterior side is circumscribed by a slight ridge, which has bent striæ projecting somewhat beyond it; texture of the shell thin.

The Kelloways Rock, Kelloway and Wiltshire.

5. Isocardia rostrata.—The Beaked Isocardia, pl. LXXIX. figs. 18, 19.

I. sulcata. Sowerby, III. p. 172, pl. 295, fig. 3.

Very ventricose, deltoidal; anterior side produced and acute; posterior side depressed and rounded; beaks short; size of a hazel nut.

The Inferior Oolite, Cotswold and Yorkshire.

6. Isocardia sulcata.—The Furrowed Isocardia, pl. LXXIX. figs. 22, 23.

I. sulcata. Sowerby, III. p. 172, pl. 295, fig. 4.

Orbicular, its depth exceeding its width; beaks remote, much incurved, with a heart-shaped depression beneath them; surface pearlaceous, with longitudinal, broad, numerous furrows.

The London Clay, Islington and Sheppy.

7. Isocardia concentrica.—The Concentric Isocardia, pl. LXXIX. figs. 28, 29.

I. concentrica. Sowerby, V. p. 147, pl. 491, fig. 1.

Oval, heart-shaped, transversely elongated, the depth and length nearly equal, and considerably less than the width; beaks projecting and incurved; surface smooth, with numerous shallow, transverse furrows, which become more distant as they approach the edge; shell thin.

The Fuller's Earth, Widcombe, and Great Oolite, Bath.

8. Isocardia similis.—The Similar Isocardia, pl. LXXX. fig. 12.

I. similis. Sowerby, VI. p. 27, pl. 516, fig. 1.

Ventricose, transversely oblong; middle of the disk slightly flattened; anterior side small, turned a little up; base nearly straight; surface with very shallow transverse undulations.

The Lower Greensand, Sandgate, near Margate.

9. Isocardia Cor.—The Heart Isocardia, pl. LXXX. f. 5.

I. cor. (?) Sowerby, VI. p. 27, pl. 516, fig. 2. Brown, Illust. Recent Conch. Brit. &c. p. 86, pl. 30, fig. 9, and pl. 30*, fig. 5. *Chama cor.* Montagu, p. 134.

Heart-shaped, greatly inflated, with strong, irregular, transverse wrinkles, which increase in coarseness and elevation as they approach the base; beaks much curved and acute.

The Red Crag, Sutton, and the Coral Crag, Ramshot.

10. Isocardia triangularis.—The Triangular Isocardia, pl. LXXX. fig. 11.

I. triangularis. Beau. Mag. Nat. Hist. N. Ser. III. p. 60, fig. 20.

Triangular, smooth, inflated; beaks small, considerably inflected; surface with pretty strong, concentric lines of growth, and fine, somewhat regular, longitudinal striæ; basal line much arcuated.

In the Cornbrash, Scarborough, Yorkshire.

11. ISOCARDIA ANGULATA.—The Angulated Isocardia, pl. LXXIX. figs. 24, 25.

I. angulata. Phillips, Geo. York, I. pl. 2, figs. 20, 21.

Sub-triangular, beaks obtuse and large; surface smooth; base very little curved, and rather acute at both extremities.

The Specten Clay, Speeton, Yorkshire.

12. ISOCARDIA RHOMBOIDALIS.—The Rhomboidal Isocardia, pl. LXXIX. fig. 16.

I. rhomboidalis. Phillips, Geo. York, I. pl. 3, fig. 28.

Rhomboidal, or obliquely quadrate; anterior side depressed; smooth; posterior side with many narrow concentric furrows; basal line triangular.

The Coral Rag, Malton, Yorkshire.

13. ISOCARDIA AXINIFORMIS.—The Axinus-formed Isocardia, pl. LXXX. fig. 6.

I. axiniformis. Phillips, Geo. York, II. p. 209, pl. 5, f. 13.

Transversely elongated, wedge-shaped; beaks rather short and involute; surface glabrous, with many fine, concentric striæ.

The Carboniferous Limestone, Northumberland.

14. ISOCARDIA NITIDA.—The Shining Isocardia, pl. LXXX. fig. 17.

I. nitida. Phillips, Geo. York, I. pl. 9, fig. 10.

Heart-shaped; beaks involute; surface smooth and shining.

The Great Oolite, Coughton, Wyke.

15. ISOCARDIA TUMIDA.—The Tumid Isocardia, pl. LXXIX. fig. 15.

I. tumida. Phillips, Geo. York, I. pl. 4, fig. 25.

Heart-shaped, much inflated, rather elongated; beaks tumid, considerably involute; surface with transverse lines of growth, and crossed by longitudinal, radiating, shallow furrows, commencing on the disk, and terminating in the basal margin all round.

The Calcareous Grit, Gristhorpe, Yorkshire.

GENUS XVIII.—CARDIOMORPHA.—*Koninck.*

Shell equivalve, inequilateral, frequently oblique, and transversely elongated; ventricose and heart-shaped; hinge-line straight, and extending from behind the beaks, and terminating in a produced acute point; hinge destitute of teeth; inside with two muscular impressions; the pallial impression simple, and destitute of a sinus; texture of the shell thin.

1. CARDIOMORPHA OBLONGA.—The Oblong Cardiomorpha, pl. LXXIX. figs. 30, 31, and pl. LXXXI. fig. 5.

C. oblonga. Koninck, p. 103, pl. 2, fig. 7. *Isocardia oblonga.* Sowerby, V. p. 148, pl. 491, fig. 2. Phillips, Geo. York, II. p. 209, pl. 5, fig. 9.

Oblong, sub-compressed, anteriorly expanded, and very short; with the beaks close to and curved into it; posterior side large; hinge-line nearly straight; surface smooth.

The Carboniferous Limestone, Dublin, Kildare, and Bolland, Yorkshire.

GENUS XIX.—OPIS.—*Defrance.*

Shell equivalve, rhomboidal, heart-shaped, inflated; beaks involute and approximate, nearly touching; hinge-area oblique; hinge with a large striated tooth, fitting into a cavity in the opposite valve; lunette very large, deep, oval, and pointed below the cavity, which has two smaller teeth on each side.

1. OPIS LUNULATA.—The Luniform Opis, pl. LXXX. figs. 15, 16.

Cardita lunulata. Sowerby, III. p. 55, pl. 232, figs. 1, 2.

Rhomboidal, inflated, and pointed anteriorly, and separated by a projecting keel; beaks involute, considerably produced; posterior side rounded, and with an incurved margin, which confines the deeply excavated lunette, and strongly impressed by the involute beaks; anterior side furnished with a series of steps, the first of which is somewhat concave, giving the margin a truncated aspect; right valve with two teeth, and one in the left, which looks into a cavity between the two in the opposite valve; surface with transverse ribs; base acute.

The Great Oolite, Cain's Cross, and the Inferior Oolite, Dundry.

2. OPIS SIMILIS.—The Similar Opis, pl. LXXX. fs. 13, 14.

Cardita similis. Sowerby, III. p. 56, pl. 232, fig. 3. Phillips, Geo. York, I. pl. 3, fig. 23.

Gibbose, rhomboidal, anterior side separated by a produced serrated keel; lunette nearly heart-shaped, and almost flat; beaks involute; surface transversely ribbed.

Resembling *O. lunulata*, but the shell is shorter, more inflated; the ribs less prominent on the sides, and the base not so acute.

The Coral Rag, Malton and Scarborough, and the Inferior Oolite, Dundry.

GENUS XX.—SPHÆRA.—*Sowerby.*

Shell bivalve, globular, with short, obtuse, incurved ears; with one central and two (?) remote teeth about the hinge, the line of which is lengthened, slightly incurved, and terminating at one end with an indistinct tooth, beneath the insertion of the ear; in its centre is a large irregularly-formed tooth, transversely depressed, and pointing towards the incurved approximate beaks. It is a heavy shell, gibbose in its shape.

1. SPHÆRA CORRUGATA.—The Corrugated Sphæra, pl. LXXX. fig. 10.

S. corrugata. Sowerby, Min. Conch. IV. p. 42, pl. 335, fig. 2. *Venus Ringmerensis.* Mantell, Geo. Sussex, p. 126, pl. 25, fig. 5.

Shell gibbose, ponderous; surface with coarse corrugations; rugæ placed transversely and obtuse, more conspicuous near the sides, nearly smooth in the middle, but extending over the ears.

In the Iron Sand Formation, east of Sandown Bay, Isle of Wight; and at Middleham and Ringmer, and the Lower Greensand, Sandgate and Shanklin.

Genus XXI.—EDMONDIA.—*Koninck.*

Shell tumid; equivalve, inequilateral; transversely sub-oval, or rounded; surface with transverse striæ; lunule with a hiatus; hinge destitute of teeth; the cardinal laminæ transverse and internal; ligament internal, situate in a deep pit.

1. Edmondia unioniformis.—The Unio-formed Edmondia, pl. LXXXI. fig. 15.

E. unioniformis. Koninck, p. 67, pl. 1, fig. 4. *Isocardia unioniformis.* Phillips, Geo. York, II. p. 209, pl. 5, fig. 18.

Transverse, slightly ovate, gibbose; anterior side rather shorter than the other, and rounded; posterior a little narrowed; beaks obtuse, incurved, and approximate; base considerably arcuated; surface with the posterior side considerably wrinkled transversely.

The Carboniferous Limestone, Bolland.

Genus XXII.—CYPRICARDIA.—*Lamarck.*

Shell equivalve, inequilateral, obliquely or transversely elongated; posterior side very short; hinge with three teeth in each valve, situated immediately within and behind the umbo; and one rather lengthened lateral tooth extending towards the anterior side; two somewhat irregular lateral muscular impressions; mantle, or palial impression, very indistinct, and nearly obsolete.

1. Cypricardia cymbæformis.—The Boat-formed Cypricardia, pl. LXXXI. figs. 1, 2.

C. cymbæformis. Sowerby, Silur. Syst. pt. II. p. 602, pl. 3, fig. 10 *a*. Variety, p. 609, pl. 5, fig. 6.

Transversely oblong, its breadth being nearly double its length; beaks small, incurved, placed near the heart-shaped anterior side; produced; posterior side suddenly contracted into a point; valves very deep, acutely carinated, extending from the beak to the angular extremity; striated towards the beaks, which are short and incurved, and obscurely undulated transversely below.

Found in the lowest beds of the Old Red Sandstone, at Felindre-on-the-Teme, ten miles west of Knighton. Variety *a*, fig. 2, differs from fig. 1, in being less inflated and somewhat wider. It is found in the Upper Ludlow Rock at Ludlow.

2. Cypricardia impressa.—The Impressed Cypricardia, pl. LXXXI. fig. 14.

C. (?) *impressa.* Sowerby, Silur. Syst. pt. II. p. 609, pl. 5, fig. 3.

Shell transversely oblong-ovate, much inflated, smooth; hinge-line long, and almost straight; anterior side slightly truncated; posterior side obtusely pointed; base concave; beaks rather blunted, and placed near the anterior extremity; a depression from the umbones towards the base, where there is a slight flexure; length nearly seven-eighths of an inch; breadth one inch and three-eighths.

Found in the Upper Ludlow Rock at Delbury, near Ludlow.

3. Cypricardia amygdalina.—The Almond-shaped Cypricardia, pl. LXXXI. figs. 5, 6.

C. (?) *amygdalina.* Sowerby, Silur. Syst. pt. II. p. 609, pl. 5, fig. 2.

Shell transversely oblong-ovate, smooth; valves deep and obtusely carinated; anterior side short, cordiform, and obtuse; posterior side somewhat acute; beaks short, obtuse, and placed very near the anterior side; length one inch; breadth one inch and a quarter.

Found in the Upper Ludlow Rock, of which it is a good characteristic, from its abundance. It has much the general aspect of *C. impressa*, but not so much rounded as that species.

4. Cypricardia undata.—The Waved Cypricardia, pl. LXXXI. fig. 4.

C. (?) *undata.* Sowerby, Silur. Syst. pt. II. p. 609, pl. 5, f. 4.

Shell transversely elongated, extremely convex; surface with rather deep and wide undulations; beaks short, placed close to the anterior side; lunette cordiform; front concave, a slight hollow proceeding from the umbones in an arcuated form towards the margin; length about half an inch; breadth one inch.

In the Upper Ludlow Rock, near Aymestry.

5. Cypricardia solenoides.—The Solen-formed Cypricardia, pl. LXXXI. fig. 9.

C. solenoides. Sowerby, Silur. Syst. pt. II. p. 617, pl. 8, fig. 2.

Shell transversely elongated, somewhat compressed; beaks obtuse, placed near the anterior side, which is short and rounded; posterior side obliquely sub-truncated, terminating in a produced point; lunette large and deep; length nearly six-eighths of an inch; breadth about an inch and an eighth.

In the Lower Ludlow Rock, at Ludlow Escarpements and Abberly.

6. Cypricardia retusa.—The Blunted Cypricardia, pl. LXXXI. fig. 12.

C. retusa. Sowerby, Silur. Syst. pt. II. p. 609, pl. 5, f. 5.

Shell cordiform, smooth, sub-depressed; beaks large, long, and sub-acute; anterior side a little pointed, and separated from the other parts by a concave space; posterior side long and slightly truncated obliquely; length a little more than half an inch; breadth about an inch.

In the Upper Ludlow Rock, at Delbury.

7. Cypricardia rhombea.—The Rhomboidal Cypricardia, pl. LXXXI. fig. 3.

C. rhombea. Phillips, Geo. York, II. p. 209, pl. 5, fig. 10.

Rhomboidal; anterior side short, a little rounded; posterior side large, obliquely truncated, with a keel extending from the beak to the extreme angle of the base, which is nearly straight; back a little convex; beaks obtuse.

The Carboniferous Limestone, Bolland and Northumberland.

8. Cypricardia glabrata.—The Very Smooth Cypricardia, pl. LXXXI. fig. 10.

C. glabrata. Phillips, Geo. York, II. p. 209, pl. 5, f. 25.

Transversely rhomboidal; anterior side very short, nearly straight; posterior side lengthened, with an oblique keel from the beak to the margin; surface glossy, with transverse furrows; basal line nearly straight.

The Carboniferous Limestone, Bolland.

9. Cypricardia pectenifera.—The Pectinated Cypricardia, pl. LXXXI. fig. 11.

Venus (?) *pectenifera.* Sowerby, III. p. 26, pl. 422, fig. 4.

Transversely sub-quadrangular, with a keel running from the beak at the posterior side to the base; surface longitudinally furrowed, with three or four erect transverse lamellæ, which are pectinated upon their lower sides; anterior side smooth and truncated.

The London Clay, Barton.

10. Cypricardia Deltoidea.—The Deltoidal, Cypricardia, pl. LXXXI. fig. 7.

C. deltoidea. Phillips, Pal. Fos. p. 37, pl. 17, fig. 59. Portlock, Geo. Rep. pl. 36, fig. 7.

Ovate, rhomboidal, compressed; anterior side rounded; posterior side obliquely truncated below, with an oblique ridge from the beaks to the base; beaks obtuse, nearly central; base rounded; surface smooth.

The Devonian Shales, Petherwin, Cornwall, and the Carboniferous Limestone, Tyrone, Ireland.

11. Cypricardia tricostata.—The Three-ribbed Cypricardia, pl. LXXXI. fig. 13.

C. tricostata. Portlock, Geo. Rep. p. 441, pl. 34, fig. 17.

Much elongated transversely, moderately inflated; hinge-line lengthened, and nearly straight; anterior side short and rounded; posterior side lengthened, with a pretty strong diagonal ridge from the beak to the margin; a little above this are two other ridges, and one running parallel, and close to the hinge-line; surface with irregular concentric striæ.

The Carboniferous Limestone, Carnteel, Tyrone, and Drumkeeran, Fermanagh, Ireland.

Captain Portlock considers this species as highly characteristic of the iron-gray Limestone in which it occurs.

Genus XXII.—CARDIUM.—*Linnæus.*

Shell equivalve, nearly equilateral, and more or less gaping posteriorly; generally with strong ribs radiating from the umbones or beaks to the margins; inside of the lips crenulated or dentated, corresponding in size to the ribs, two approximate oblique cardinal teeth in each valve, locking into each other cross-ways, and with two remote, lateral teeth in both valves; two lateral, distant, muscular impressions in each valve; mantle impressions entire; ligament external.

1. Cardium striatum. — The Striated Cardium, pl. LXXXI. fig. 21.

C. (?) striatum. Sowerby, Silur. Syst. pt. II. p. 614, pl. 6. f. 2.

Shell sub-orbicular, convex, beaks prominent; surface covered with numerous longitudinal, divergent striæ; length an inch and seven-eighths; breadth an inch and five-eighths.

In the Aymestry Limestone, near Shelderton, in Lower Ludlow, and also at Aymestry.

Murchison mentions a variety of this species larger than the above, more oblique in its form, and provided with more distant and deeper striæ; it is found in the landslip, in Wheeler Vallets Wood, north flank of Brindgwood Chace.

2. Cardium gentianum.—Gent's Cardium, pl. LXXX, f. 1.

Cardita tuberculata. Sowerby, II. p. 97. pl. 143.

Heart-shaped, valves equal, laterally compressed, and longitudinally sub-carinated, one side somewhat lobated, the other nearly flat; beaks much incurved; surface with numerous longitudinal, tuberculated ribs, placed in sets of three or four, with longer and more conspicuous ones intervening.

Upper Greensand, Devizes, and Lyme Regis, Dorset.

3. Cardium Hillanum.—Hill's Cardium, pl. LXXXII. fig. 3.

C. Hillanum. Sowerby, I. p. 41, pl. 14, upper fig.

Nearly circular, a very little wider than long, and slightly oblique; somewhat gibbose, with longitudinal furrows, which occupy about a fourth of its breadth on the anterior side; whole surface with numerous concentric striæ, the interstices between which are smooth.

Greensand, Blackdown and Haldown.

4. Cardium Plumstediense.—The Plumsted Cardium, pl. LXXXI. fig. 22.

C. Plumstedianum. Sowerby, I. p. 42, pl. 14, right and left hand upper figures.

Sub-cordate, smooth, anterior side longitudinally furrowed, the serrations on the edge of the shell being rather acute, with transverse, irregular, slightly defined lines of growth, which cover but a fifth of the surface.

Plastic Clay, Plumsted and Upnor.

5. Cardium nitens.—The Shining Cardium, pl. LXXXII. figs. 6, 7.

C. nitens. Sowerby, I. p. 43, pl. 14, lower right hand figures.

Rather round, anterior side a little produced; smooth and shining; surface covered with faint, punctated lines of growth, which are most distinct at the anterior side; near the base longitudinally striated.

The London Clay, Highgate and Nuneham.

6. Cardium angustatum.—The Narrowed Cardium, pl. LXXXII. fig. 8.

C. angustatum. Sowerby, III. p. 149, pl. 283, fig. 2.

Transversely elongated, its length equalling two-thirds of its breadth; thin, somewhat depressed; anterior side truncated; posterior side rounded; surface with twenty-seven longitudinal ribs; margin toothed.

Red Crag, Sutton; and Alderton, near Woodbridge.

7. Cardium edulinum.—The Small Edible Cardium, pl. LXXXII. fig. 13.

C. edulina. Sowerby, III. p. 149, pl. 283, fig. 3.

Thick, almost orbicular; convex, and slightly oblique; anterior side a little truncated; posterior side somewhat produced; surface covered with eighteen rugose longitudinal ribs.

Differs from *C. edule* in the form of the anterior side, which is less wedge-shaped, and is somewhat shorter.

The Red Crag, Sutton, and the Coralline Crag, Ramshot.

8. Cardium Parkinsoni.—Parkinson's Cardium, pl. LXXXI. fig. 20.

C. Parkinsoni. Sowerby, I. p. 105, pl. 49.

Gibbose, somewhat oblique; posterior side a little parallel; with thirty-eight to forty longitudinal ribs, with transverse slight elevations on each, which are most prominent towards the margin.

Differs from *C. edule* in its more delicate form, and in being less acute at the posterior side.

Red Crag, Walton.

9. Cardium proboscideum.—The Produced Cardium, pl. LXXXI. fig. 19.

C. proboscideum. Sowerby, II. p. 127, pl. 156, fig. 1.

Gibbose, sub-orbicular; anterior side nearly parallel; surface with about twenty slightly elevated longitudinal ribs, each

surrounded by numerous large, channelled, conical spines, with two series of lesser ones between each.

Greensand, Blackdown, Devonshire.

10. Cardium semi-granulatum.—The Semi-granulated Cardium, pl. LXXXII. fig. 21.

C. semi-granulatum. Sowerby, II. p. 99, pl. 144.

Gibbose, transverse, sub-triangular; shell smooth; slender; posterior side nearly straight, longitudinally sulcated, and with large granulations; general surface with fine longitudinal striæ, which upon the anterior side become enlarged, and assume the form of sharp sulci; the intervening ridges furnished with numerous small, irregular, globose granules; marginal edge minutely dentated.

London Clay, Barton Cliff and Wandsworth.

11. Cardium striatulum.—The Small-striated Cardium, pl. LXXXI. fig. 27.

C. striatulum. Sowerby, VI. p. 101, pl. 553, fig. 1. Phillips, Geo. York, I. pl. 11, fig. 7.

Convex, orbicular; posterior side longitudinally striated, and ending in a toothed margin; general surface concentrically and irregularly striated.

The shell strongly resembles *C. Hillanum*, but is more perfectly orbicular, the transverse striæ less regular, and the longitudinal ones doubly numerous.

12. Cardium dissimile.—The Dissimilar Cardium, pl. LXXXII. fig. 22.

C. dissimile. Sowerby, VI. p. 101, pl. 553, fig. 2.

Gibbose, transversely obovate; its length a trifle less than its breadth; smooth; shell thick, except near the beaks; posterior side bounded by a small rib, and longitudinally striated; front rather straight.

The Lower Greensand, Sandgate, and the Portland Sand, Tisbury, Swindon, &c.

13. Cardium turgidum.—The Swollen Cardium, pl. LXXXII. fig. 2.

C. truncatum. Sowerby, IV. p. 63, pl. 346, fig. 1.

Gibbose, obovate, slightly transverse, smooth; anterior side a little truncated, with from twenty to thirty longitudinal furrows, and with fine, nearly obsolete striæ; margins bluntly toothed.

The London Clay, Barton, Hampshire.

14. Cardium truncatum.—The Truncated Cardium, pl. LXXXI. fig. 25.

C. truncatum. Sowerby, VI. p. 102, pl. 553, fig. 3. Phillips, Geo. York, I. pl. 13, fig. 14.

Gibbose, transversely ovate, its length nearly equal to its width; smooth; posterior side obliquely truncated, and longitudinally striated, the interstices between which, towards the beaks, are a little scabrous; beaks small.

The Lias, Yorkshire, Cotswold Hill, and Brambury Hill.

15. Cardium porulosum.—The Porous Cardium, pl. LXXXI. fig. 16.

C. porulosum. Sowerby, IV. p. 64, pl. 347, fig. 2.

Nearly orbicular; right side a very little truncated; surface with many longitudinal deep furrows; on the intervening flat, smooth spaces, a series of erect, sub-acute, approximating spines, which are united a great part of their length by thin laminæ, projecting from their sides, their bases and points being free; margin deeply denticulated all round; hinge-line straight.

The London Clay, Barton, and Bracklesham.

16. Cardium globosum.—The Globular Cardium, pl. LXXXI. fig. 16.

C. globosum. Beau. Mag. Nat. Hist. New Ser. III. p. 60, fig. 19.

Nearly orbicular, inflated; surface smooth, with many fine concentric striæ; posterior side somewhat flattened for a little way below the beaks.

The London Clay, Barton.

17. Cardium aculeatum.—The Prickly Cardium, pl. LXXXI. fig. 17.

C. aculeatum. Pennant, Brit. Zool. IV. p. 90, pl. 1, f. 37.

Elongated, oblique; anteriorly short; posteriorly long, and somewhat truncated; surface with many longitudinal, triangular, large ribs, which extend beyond the margins, armed with a series of sharp, curved, regular spines along their centre; furrows striated transversely.

The Pleistocene Marine Formation, Stevenston, Ayrshire.

18. Cardium echinatum.—The Spined Cardium, pl. LXXXI. fig. 23.

C. echinatum. Donovan, Brit. Sp. pl. 107, fig. 1.

Convex, and nearly orbicular, with about eighteen irregular raised ribs, armed with a row of numerous inflected spines along their centre; the intervening furrows striated transversely.

This shell is rounder and not so oblique as the last.

The Pleistocene Marine Formation, Largs, Frith of Clyde, and Ireland.

19. Cardium acutangulum.—The Acute-angled Cardium, pl. LXXXI. fig. 24.

C. acutangulum. Phillips, Geo. York, I. pl. 11, fig. 6.

Sub-triangular; anterior side rounded; posterior side flattened; obliquely truncated, defined by a ridge emanating from the beak, and terminating in an acute angle on the margin; surface smooth.

The Great Oolite, Brandsby, Yorkshire, and the Inferior Oolite, Glaizedale.

20. Cardium edule.—The Edible Cardium, pl. LXXXII. figs. 4 and 16.

C. edule. Pennant, Brit. Zool. IV. p. 91, pl. 50, fig. 41.

Somewhat globose, with from twenty-four to twenty-six rounded, longitudinal ribs, crossed by transverse, scale-like protuberances, separated by very narrow furrows.

The Mammiferous Crag, Bramerton, and the Red Crag, Sutton.

21. Cardium gibberulum.—The Inflated Cardium, pl. LXXXII. fig. 1.

C. gibberulum. Phillips, Geo. York, I. pl. 11, fig. 8.

Sub-triangular, inflated; anteriorly rounded; posteriorly sub-truncated above; surface smooth, crossed by remote and equidistant lines of growth.

The Inferior Oolite, Yorkshire.

22. Cardium citrinoideum.—The Citron-like Cardium, pl. LXXXII. fig. 20.

C. citrinoideum. Phillips, Geo. York, I. pl. 7, fig. 7.

Oblong-ovate; beaks large; hinge-line straight; short; sides gently rounded; base arcuated; surface smooth and shining.

The Cornbrash, Scarborough.

23. Cardium lobatum.—The Lobed Cardium, pl. LXXII. fig. 26.

C. lobatum. Phillips, Geo. York, I. pl. 9, fig. 14.

Nearly circular, oblique; anterior side short, with a central flexure, from whence it is finely rounded nearly to the beaks on the opposite side; surface smooth, with a few remote, rather regular, indistinct lines of growth.

The Coral Rag, Malton, Yorkshire.

24. CARDIUM SEMI-GLABRATUM.—The Half-smooth Cardium, pl. LXXXII. fig. 12.

C. semi-glabratum. Phillips, Geo. York, I. pl. 9, fig. 15.

Transversely ovate; oblique; posterior side smooth, a little produced below; anterior side with longitudinal divergent striæ.

The Great Oolite, Cloughton Wyke, Yorkshire.

25. CARDIUM INCERTUM.—The Doubtful Cardium, pl. LXXXII. fig. 5.

C. incertum. Phillips, Geo. York, I. pl. 11. fig. 5.

Slightly transverse; anterior side short and rounded; posterior side large, rounded, and slightly concave above; beaks protruding; surface smooth.

The Inferior Oolite, Yorkshire.

26. CARDIUM SEMI-STRIATUM.—The Semi-striated Cardium, pl. LXXXII. fig. 9.

C. semi-striatulum. Deshayes, Coq. Foss. I. pl. 29, figs. 9, 10.

Elongated; sub-triangular; inflated; anterior side short, and gently curved; posterior side concave; surface with the lower portion of the valves longitudinally striated, and a few faint lines of growth; base arcuated.

The London Clay, Bracklesham.

27. CARDIUM GRŒNLANDICUM.—The Greenland Cardium, pl. LXXXII. fig. 30.

C. Grœnlandicum. Chemnitz, VI. pl. 19, fig. 198.

Elongated; a little pointed towards the beaks, which are nearly central; anteriorly curved; posteriorly slightly concave; surface with many flattened longitudinal ribs, with narrow intervening furrows; the whole crossed by narrow, flat, circular laminæ.

The Red Crag, Bawdsey.

28. CARDIUM COGNATUM.—The Kindred Cardium, pl. LXXXII. fig. 27.

C. cognatum. Phillips, Geo. York, I. pl. 4, fig. 3.

Nearly circular; beaks central, much produced, and large; sides nearly alike; surface smooth, with a few remote lines of growth.

The Great Oolite, Cloughton Wyke, Yorkshire.

29. CARDIUM LÆVIGATUM.—The Smooth Cardium, pl. LXXXII. fig. 28.

C. lævigatum. Brown, Illust. Recent Conch. Gt. Brit. p. 88, pl. 35, figs. 12–15.

Elongated; sub-oval; somewhat oblique, and sub-compressed; narrowed towards the beaks, and expanded beneath; surface with many flat longitudinal ribs, divided by narrow, shallow furrows; the posterior side being destitute of these; internal margin crenulated.

The Pleistocene Marine Formations, Largs and Stevenston, Ayrshire.

30. CARDIUM ELONGATUM.—The Elongated Cardium, pl. LXXXII. fig. 29.

C. elongatum. Brown, Illust. Rec. Conch. Brit. p. 88, pl. 35, figs. 16, 17.

Elongated; oval; a litttle oblique; moderately inflated; with numerous flat ribs, and narrow intervening furrows, crossed by very indistinct lines of growth; internal margin with crenulations all round.

In the Pleistocene Marine Formation, Portrush, Ireland.

The former species and this are nearly allied; but this is distinguished by being narrower, more elongated, and more ventricose.

GENUS XXIV.—PLEURORHYNCHUS.—*Phillips.*

Shell transversely elongated; hinge-line long, straight; anterior side with a short prolongation; posterior side lengthened into an acute, wing-shaped, auricular process; generally longitudinally ribbed; beaks but slightly produced.

1. PLEURORHYNCHUS HIBERNICUS.—The Irish Pleurorhynchus, pl. LXXXII. figs. 14, 15.

P. Hibernicus. Phillips, Geo. York, II. p. 210, pl. 5, fig. 26. *Cardium Hibernicum.* Sowerby, I. p. 187, pl. 82, figs. 1, 2, and VI. p. 100, pl. 552, fig. 3.

Deltoidal; anterior side much produced; posterior side greatly truncated, and in the form of a horse-hoof; bounded by a large ridge, which encompasses its entire margin with a nearly central produced wing; beaks small, flat, and incurved; whole surfaced with numerous sharp longitudinal ridges; these on the truncated or concave side concentrical; margins locked together with sharp, serrated, small crenulations.

The Carboniferous Limestone, Limerick, Mendip Hills and Dovedale, Derbyshire.

2. PLEURORHYNCHUS ARMATUS.—The Armed Pleurorhynchus, pl. LXXXII. fig. 11.

P. armatus. Phillips, Geo. York, II. p. 211, pl. 5, f. 29.

Anteriorly gibbose; slightly sub-truncate obliquely; posterior side with an elongated, slender, and acute wing; surface with longitudinal, flat, divergent ribs and furrows.

The Carboniferous Limestone, Kildare, Ireland.

3. PLEURORHYNCHUS ALIFORMIS.—The Wing-shaped Pleurorhynchus, pl. LXXXII. figs. 24, 25.

P. aliformis. Phillips, Pal. Fos. p. 34, pl. 17, fig. 51. *Cardium alæforme*, Sowerby, VI. p. 100, pl. 552, fig. 2. Ib. Geo. Tr. 2d Ser. V. pl. 56, fig. 2. Goldfuss, pl. 142, fig. 1.

Sub-triangular; anterior side convex, heart-shaped, bounded by a carinated marginal ring; posterior side wedge-shaped; beaks incurved; surface with many pretty strong longitudinal ribs.

The Carboniferous Limestone, Bolland and Isle of Man; and the Devonian Rocks, Barton and Newton.

4. PLEURORHYNCHUS ELONGATUS.—The Elongated Pleurorhynchus, pl. LXI.* figs. 29, 30.

P. elongatus. Phillips, Geo. York, II. p. 211, pl. 5, fig. 28. *Cardium elongatum*, Sowerby, I. p. 188, pl. 82, fig. 3. Goldfuss, pl. 142, fig. 2.

Transversely elongated; ventricose; anterior side elongated and conical; posterior side very short, inflated beneath the beaks; surface with numerous fine, regular, longitudinal, radiating striæ, which assume the form of ribs on the lengthened side.

Carboniferous Limestone, Bolland, Yorkshire, and Derbyshire.

5. PLEURORHYNCHUS LONGIPENNIS.—The Long-Winged Pleurorhynchus, pl. LXXXII. fig. 10.

Transversely and much elongated; hinge-line nearly straight; body deltoidal, with fine radiating striæ, crossed by some irregular thin lines of growth; centre of the valves rising into a prominent keel-shaped projection, which emanates from the beaks, on which portion the striæ are double, and much closer than towards the sides; rings, consisting of greatly lengthened, smooth, wing-shaped processes, that on the anterior side shortest, and acutely pointed; the other, broader throughout, and a little obtuse at its termination, and with a few nearly obsolete transverse ribs at its point; length not quite three-eighths; breadth upwards of an inch.

This beautiful shell is in the cabinet of my friend, Dr Fleming, of Broughton View, Pendleton, who found it at Dovedale, Derbyshire, in the Carboniferous Limestone.

6. PLEURORHYNCHUS MINAX.—The Menacing Pleurorhynchus, pl. LXXXII. figs. 17 and 25.

P. minax. Phillips, Geo. York, II. p. 210, pl. 5, fig. 27. Pal. Foss. p. 33, pl. 17, fig. 60. *Cardium alæforme.* Sowerby, VI. p. 100, pl. 552, fig. 2, (the lower shell.)

Deltoidal, transversely elongated; gibbous anteriorly, with a contracted, slightly concave space around the umbo; posterior side conically elongated; beaks anterior; surface with many equal, longitudinal, divergent ribs, except on the cordiform anterior space, where they are much finer than on the other portions, and are distinctly separated by the ring which circumscribes the depression.

The Carboniferous Limestone, Bolland and Kildare, and Devonian Rocks, Bradley and Halberton.

7. PLEURORHYNCHUS TRIGONALIS.—The Trigonal Pleurorhynchus, pl. LXXXII. figs. 12 and 19.

P. trigonalis. Phillips, Geo. York, II. p. 211, pl. 5, figs. 30, 31, 32.

Elongated, horse-hoof shaped; gibbose anteriorly, with a short smooth wing; oblique; hinge-line nearly straight; posterior side elongated, and somewhat wedge-shaped; obliquely obtuse at the termination, which, as well as the body, is covered with many flat, divergent, longitudinal ribs.

The Carboniferous Limestone, Bolland.

GENUS XXV.—CARDIOLA.—*Broderip.*

Shell equivalve, oblique, inequilateral; beaks prominent and curved; hinge-line long, with a flat area; surface concentrically furrowed.

The shells of this genus are highly characteristic of the lower members of the Upper Silurian Rocks, and are spread over a wide extent of country.

1. CARDIOLA FIBROSA.—The Fibrous Cardiola, pl. LXXXII. fig. 31.

C. fibrosa. Sowerby, Sil. Syst. pt. II. p. 617, pl. 8, fig. 4.

Cordiform; beaks acuminated and elongated; slightly incurved; upper portion of the surface smooth, with a few concentric furrows; lower portion with longitudinal striæ, finely decussated by numerous transverse striæ.

The Lower Ludlow Rock, Ludlow; Welchpool, Maryknoll, Dingle, &c.

2. CARDIOLA INTERRUPTA.—The Interrupted Cardiola, pl. LXXXII. fig. 32.

C. interrupta. Sowerby, Sil. Syst. pt. II. p. 617, pl. 8, fig. 5.

Ovately cordiform and sub-compressed; beaks nearly central and short; surface covered with many deep concentric furrows, and more numerous longitudinal divergent ones, which are less deep than the others.

The Lower Ludlow Rock, Breidden Hills; Garden House Quarry, near Aymestry; Radnor Forest, &c.

GENUS XXVI.—MYOCONCHA.—*Sowerby.*

Bivalve, equivalve, oblique, sides very unequal; hinge with an elongated oblique tooth in the left valve, and provided with an external ligament, which is seated in a deep groove; beaks placed close to the posterior extremity; destitute of a sinus in the impression of the mantle.

1. MYOCONCHA CRASSA.—Thick Myoconcha, pl. LXXXIII. figs. 35, 36.

M. crassa. Sowerby, V. p. 103, pl. 467.

Longitudinally elongated; its length nearly twice its width; convex; slightly curved, and pointed at the beaks; surface almost smooth, with a few concentric lines of growth; substance of the shell thick, and the valves rather shallow.

In the young condition there are three or four elevated striæ crossed by lines of growth.

The Inferior Oolite, Dundry and Brakenridge.

FAMILY V.—CONCHACEA.

Shells with three primary teeth at least in one valve, and the other generally with the same number, but in some instances fewer.

SUB-DIVISION I.—MARINE.

Generally destitute of lateral teeth.

GENUS XXVII.—VENERICARDIA.—*Lamarck.*

Shell equivalve, inequilateral, sub-orbicular, the surface generally with longitudinal radiating ribs or furrows; two oblique primary teeth, directed to the same side; substance of the shell thick.

1. VENERICARDIA PLANICOSTA.—The Flat-ribbed Venericardia, pl. LXXXIII. fig. 23.

V. planicosta. Sowerby, I. p. 107, pl. 5.

Somewhat heart-shaped; rather smooth, with about twenty flat, broad, curved, longitudinal ribs, and narrow, shallow, intervening furrows; on the internal posterior margin a few large crenulations, which do not extend to the margin; beaks much incurved; substance of the shell very thick and ponderous; hinge very large and powerful.

The London Clay, Blackdown.

2. VENERICARDIA SCALARIS.—The Ladder Venericardia, pl. LXXXIII. fig. 24.

V. scalaris. Sowerby, V. pl. 146, p. 490, fig. 3.

A little elongated; nearly straight, and sub-triangular; slightly compressed; beaks obtuse, and nearly central; cardinal teeth long and thin; surface with about twenty very flat, straight, divergent ribs, crossed by fine concentric striæ; internal margin denticulated.

The Red, and also the Coral Crag, Sutton.

3. VENERICARDIA CHAMAEFORMIS.—The Chama-formed Venericardia, pl. LXXXIII. fig. 29.

V. chamaeformis. Sowerby, V. p. 145, pl. 496, fig. 1.

Oblong; convex; a little acuminated towards the beaks, which are slightly curved and produced, with about fourteen large, rugged, prominent, distant ribs, with flat, intervening furrows.

The Coral Crag, Sutton.

4. VENERICARDIA DELTOIDEA.—The Deltoidal Venericardia, pl. LXXXIII. fig. 34.

V. deltoidea. Sowerby, III. p. 106, pl. 259, fig. 1.

Deltoidal; a little oblique; hinge very strong; surface with about twenty almost smooth, carinated, curved, longitudinal ribs; lunette small and obsolete; internal margin crenated; hinge remarkably strong.

The London Clay, Barton and Lyndhurst.

5. VENERICARDIA ACUTICOSTA.—The Sharp-ribbed Venericardia, pl. LXXXIII. fig. 32.

V. carinata. Sowerby, III. p. 106, pl. 259, fig. 2.

Transversely oblong; gibbose; beaks very large and obtuse; lunette obsolete; a little indented below the beaks; surface with about twenty almost smooth, prominent, curved, carinated ribs; internal margins denticulated.

The London Clay, Bracklesham Bay; Stubbington and Barton.

6. VENERICARDIA GLOBOSA.—The Globular Venericardia, pl. LXXXIII. figs. 30, 31.

V. globosa. Sowerby, III. p. 161, pl. 289, upper and middle figs.

Globular; beaks rather large and obtuse; surface with from fifteen to twenty carinated, strong, curved ribs, the carinæ being provided with compressed tubercles; inner margin strongly denticulated.

The London Clay, Barton and Hordwell.

7. VENERICARDIA OBLONGA.—The Oblong Venericardia, pl. LXXXIII. fig. 26.

V. oblonga. Sowerby, III. p. 162, pl. 289, three lower figures.

Transversely oblong; sub-quadrangular; gibbous; oblique; sides unequal; surface with eleven to thirteen strongly tuberculated, curved, distant ribs; internal margin with large crenulations.

The London Clay, Barton.

8. VENERICARDIA ORBICULARIS.—The Orbicular Venericardia, pl. LXXXIII. fig. 27.

V. orbicularis. Sowerby, V. p. 145, pl. 490, fig. 2.

Orbicular, rather convex; surface with about sixteen crenated, longitudinal ribs; the intervening furrows concentrically striated; hinge small.

The Red Rag, Sutton.

9. VENERICARDIA SENILIS.—The Aged Venericardia, pl. LXXXII. fig. 33.

V. senilis. Sowerby, III. p. 105, pl. 258.

Obliquely heart-shaped, convex; hinge very strong; surface with from sixteen to eighteen strong, sub-imbricated ribs; lunette obsolete; substance of the shell thick; internal margin crenulated.

The Red Crag, Sutton, and the Coral Crag, Ramshot.

10. VENERICARDIA TENUICOSTA.—The Thin-Ribbed Venericardia, pl. LXXXIII. fig. 25.

V. tenuicosta. Geo. Trans. 2d Ser. IV. p. 335, pl. 11, fig. 7*.

Nearly orbicular, or slightly quadrangular; convex, and somewhat heart-shaped; surface with numerous fine longitudinal ribs, crossed by strong striæ, which make the ribs feel rough to the touch; lunette oblong, rather hollow; posterior side slightly even; internal margin crenulated.

The Gault, Folkstone, and Vale of Wardour.

GENUS XXVIII.—PULLASTRA.—*Sowerby.*

Shell equivalve, inequilateral, the anterior side being the shorter; three cardinal teeth in each valve, situate near to each other, and generally within a notched or cleft termination; and in a few species the central tooth is deeply so; two lateral, somewhat rounded, muscular impressions; pallial impressions with a large sinus; ligament external, and partly concealed by the dorsal margins of the valves.

1. PULLASTRA LÆVIS.—Smooth Pullastra, pl. LXXXIII. fig. 7.

P. lævis. Sowerby, Silur. Syst. pt. II. p. 602, pl. 3, fig. 1*a*.

Shell transversely elongated, a little convex, smooth, plain; beaks very small; anterior side short; posterior side large, somewhat flattened or sub-truncated, and nearly parallel with the hinge-line; length three quarters of an inch; breadth one inch and a quarter.

In the lowest beds of the Old Red Sandstone, at Horeb Chapel, Wales.

2. PULLASTRA COMPLANATA.—The Smooth Pullastra, pl. LXXXIII. fig. 8.

P. complanata. Sowerby, Silur. Syst. pt. II. p. 609, pl. 5, fig. 7.

Shell transversely elongated, its width being double its length, compressed, smooth; anterior side short and rounded; posterior side long and sub-acute, with an oblique edge; beaks obtuse, and placed near the anterior side; length three quarters of an inch; breadth an inch an a half.

The Upper Ludlow Rock, Darley Brook, Linley, near Bridgenorth.

3. PULLASTRA PEREGRINA.—The Marsh Pullastra, pl. LXXXVIII. figs. 1, 2.

Unio peregrinus. Phillips, Geo. York, I. p. 115, pl. 7, fig. 12.

Ovate; beaks rather obtuse, and somewhat remote; hinge-line oblique; anterior side short; posterior side long; both extremities rounded; basal line gently arcuated; back gradually sloping downwards; surface smooth, with a few well-marked concentric furrows.

The Cornbrash, Scarborough.

4. PULLASTRA VIRGINEA.—The Virgin Pullastra, pl. LXXXIII. fig. 1.

P. virginea. Brown, Illust. Rec. Conch. Brit. p. 89, pl. 36, fig. 6, and pl. 37, figs. 8, 9.

Oblong-ovate; sub-compressed; smooth and shining, with wide-set, shallow, concentric striæ, here and there interrupted by a deeper one; lunule lanceolate; margins smooth.

The Pleistocene Marine Formation, Ayrshire, and the Red Crag, Sutton.

5. PULLASTRA DECUSSATA.—The Decussated Pullastra, pl. LXXXIII. fig. 6.

P. decussata. Brown, Illust. Rec. Conch. Brit. p. 88, pl. 37, figs. 5, 6.

Transverse, inequilateral; anterior side shortest; sub-rhomboidal; anterior side a little truncated; whole surface covered with longitudinal and transverse striæ, producing a beautiful and decussated appearance, which is stronger on the anterior side; beaks obtuse, with a lanceolate lunule.

The Pleistocene Marine Formation, Ayr and Paisley.

6. PULLASTRA OBLITA.—The Forgotten Pullastra, pl. LXXXIII. fig. 5.

P. oblita. Phillips, Geo. York, I. pl. 11, fig. 15.

Transversely oblong-ovate; anterior side acutely rounded; posterior side slightly flattened and acuminated; beaks obtuse; surface with almost equidistant regular lines of growth.

The Inferior Oolite, Blue Wick, Yorkshire.

7. PULLASTRA RECONDITA.—The Hidden Pullastra, pl. LXXXIII. fig. 11.

P. recondita. Phillips, Geo. York, I. pl. 9, fig. 13.

Transversely ovate; both extremities rounded; a central ridge from the beak to the margin; whole surface with numerous concentric furrows; beaks small.

The Great Oolite, Cloughton, Wyke and Brora.

8. PULLASTRA ELLIPTICA.—The Elliptical Pullastra, pl. LXXXIII. fig. 12.

P. elliptica. Phillips, Pal. Foss. p. 35, pl. 17, fig. 54.

Regularly ovate, much compressed; beaks hardly protruding; surface smooth, with wide-set concentric striæ.

9. PULLASTRA ANTIQUA.—The Ancient Pullastra, pl. LXXXII. fig. 10.

P. antiqua. Sowerby, Geo. Tr. 2d Ser. V. pl. 53, fig. 28. Phillips, Pal. Fos. pl. 17, fig. 55.

Transversely oblong-ovate; moderately convex; anterior side rounded; posterior side slightly and obliquely truncated; beaks scarcely developed; surface with regular wide-set concentric striæ.

The Devonian Rocks, Pilton, Marwood, and Plymouth.

10. PULLASTRA IRUS.—The Stone Pullastra, pl. LXXXIII. fig. 13.

P. irus. Brown, Illust. Rec. Conch. Brit. p. 89, pl. 36, fig. 9. *Venirupus perforans*, Turton, Biv. p. 29, pl. 2, figs. 15–18.

Transversely sub-ovate; surface with concentric, membranaceous, elevated, undulating ridges, reflected upwards, frequently interrupted; the interstices with fine longitudinal striæ.

The Red Crag, Walton Naze.

GENUS XXIX.—VENUS.—*Linnæus.*

Shell smooth, equivalve, inequilateral, transverse, subglobose, or sub-oval; external surface sometimes rugose; margin close; three divergent cardinal teeth in each valve, all approximate; umbones prominent for the most part, with a cordiform depression immediately below them; two lateral, remote, somewhat orbicular muscular impressions, united by a pallial impression, which is generally sinuated behind; ligament external, although sometimes almost hidden by the extension of the outer edge of the shell.

1. VENUS SUBMERSA.—The Bulged Venus, pl. LXXIV. fig. 2.

V. submersa. Sowerby Geo. Tr. 2d Ser. IV. p. 342, pl. 17, fig. 4.

Nearly orbicular; extremely tumid; beaks approximate; lunette obscure; hinge slope gently curved; posterior side a little truncated; surface quite smooth.

The Greensand, Blackdown.

2. VENUS SUB-LÆVIS.—The Half-Smooth Venus, pl. LXXXIV. fig. 8.

V. sub-lævis. Sowerby, Geo. Tr. 2d Ser. p. 342, pl. 17, f. 5.

Elliptical, compressed; beaks pointed, situate near to one side; lunette not sunk or defined; surface smooth, with a few shallow, hardly impressed lines of growth.

The Greensand, Blackdown.

3. VENUS IMMERSA.—The Immersed Venus, pl. LXXXIV. fig. 9.

V. immersa. Sowerby, Geo. Tr. 2d Ser. IV. p. 342, pl. 17, fig. 6.

Transversely elliptical; much compressed; beaks considerably acute; lunette deeply sunk, its edge not defined; back and base elegantly curved; posterior side a little narrowed; anterior side a little concave below the beaks; surface smooth, with remote, nearly obsolete lines of growth.

The Greensand, Blackdown and Lyme Regis.

4. VENUS OVALIS.—The Oval Venus, pl. LXXXIV. f. 16.

V. ovalis. Sowerby, VI. p. 129, pl. 567, figs. 1, 2.

Transversely oval; convex; beaks well defined; lunette obscure, elongated, prominent, and smooth; surface with numerous very fine concentric striæ.

The Lower Greensand, Parham.

5. VENUS VARICOSA.—The Warted Venus, pl. LXXXIV. fig. 17.

V. varicosa. Sowerby, III. p. 173, pl. 296, figs. 1, 2.

Sub-globose; beaks large, produced, and incurved; sides nearly alike; surface with shallow, concentric furrows, and two longitudinal varicose ridges within each valve.

The Cornbrash, Felmersham, Bedfordshire.

6. VENUS RUGOSA.—The Rough Venus, pl. LXXXIV. f. 5.

V. rugosa. Brown, Illust. Recent Conch. Brit. and Ireland, p. 90, pl. 36, fig. 14.

Sub-triangularly sub-cordiform; rather convex; lunette oblong, heart-shaped; beaks considerably turned to one side; surface with numerous rough concentric ridges; a hollow elongated space on the cartilage hinge-line; margin blunt, and crenated internally.

The Pleistocene Marine Formation, Dalmuir, on the Clyde, &c.

7. Venus gallina.—The Hen Venus, pl. LXXXIV. f. 10.

V. gallina. Brown, Illust. Rec. Conch. Brit. &c. p. 89, pl. 36, fig. 11.

Sub-triangularly sub-cordiform; moderately convex; beaks considerably turned to one side, and approximate; lunette oblong, and longitudinally striated; surface with numerous prominent, rounded, concentric ribs; internal margin finely crenated.

The Pleistocene Marine Formation, Ayr.

8. Venus faba.—The Bean Venus, pl. LXXXIV. figs. 24, 25.

V. faba. Sowerby, VI. p. 129, pl. 567, fig. 3.

Transversely obovate; sub-compressed, flattened in the middle; beaks short; lunette deep and lanceolate; surface with numerous fine concentric striæ, and inequidistant lines of growth.

The Lower Greensand, Parham and Blackdown.

9. Venus elliptica.—The Elliptical Venus, pl. LXXXIII. fig. 9.

V. elliptica. Phillips, Geo. York, II. p. 209, pl. 5, fig. 7.

Elliptical; compressed; posterior side a little narrowed; anterior side rounded; surface with broad, concentric, shallow furrows.

The Carboniferous Limestone, Northumberland.

10. Venus gibbosa.—The Inflated Venus, pl. LXXXIV. fig. 6.

V. gibbosa. Sowerby II. p. 126, pl. 155, figs. 3, 4.

Orbicular; gibbous; hinge area very strong and broad; anterior side a little truncated; lunette large and short; surface with distant concentric lines of growth; inner edge with very fine, hardly visible crenulations.

The Crag, Suffolk.

11. Venus turgida.—The Swollen Venus, pl. LXXXIV. fig. 1.

V. turgida. Sowerby, III. p. 101, pl. 256. *Dosina turgidus.* Wood.

Orbicular; gibbose; hinge strong; beaks large, rounded; surface with many distant, concentric ridges; inside with a series of inflated crenulations a little way from the margin, which is much thickened; substance of the shell thick.

The Red Crag, Sutton; and the Coral Crag, Ramshot.

12. Venus fasciata.—The Banded Venus, pl. LXXXIII. fig. 15.

V. fasciata. Brown, Illust. Rec. Conch. Brit. p. 91, pl. 36, fig. 10.

Sub-triangular; sub-compressed; beaks nearly central, considerably turned to one side, and acute, with a shallow ovate lunette under them; striated longitudinally; that portion of the valves rather concave; cartilage side flat, with a large lanceolate depression; surface with flat, transverse, broad, reflected ribs.

The Pleistocene Marine Formation, Inch Marnock, on the Clyde; the Mammiferous Crag, Brammerton; and the Red and Coral Crags, Sutton.

13. Venus ovata.—The Ovate Venus, pl. LXXXIII. fig. 14.

V. ovata. Brown, Ill. Rec. Conch. Brit. p. 91, pl. 37, fig. 11.

Sub-triangular; oblique; sub-compressed; beaks nearly central, straight, and slightly inflexed; sides nearly equal; surface with rather strong, longitudinal, divergent ribs, crossed by fine transverse striæ, producing a beautifully cancellated appearance.

The Pleistocene Marine Formation, Ireland; and the Red Crag, Sutton.

14. Venus imbricata.—The Imbricated Venus, pl. LXXXVII. fig. 20.

Astarte imbricata. Sowerby, VI. p. 37, pl. 521, fig. 1.

Cordiform; orbicular; convex; lunette elongated and flat; tooth in the left valve under the lunette rather small; hinge-line arcuated; edge finely crenulated internally; surface with from nine to eleven transverse imbricated ribs.

The Red Crag, Sutton; and Coralline Crag, Ramshot.

15. Venus parallela.—The Parallel Venus, pl. LXXXIII. figs. 3, 4.

V. parallela. Phillips, Geo. York, II. p. 209, pl. 5, fig. 8.

Transversely ovate, with sub-parallel sides; back gently sloping from the beaks, which are small and pointed; lunette lanceolate, and rather deep; surface with delicate concentric furrows.

The Carboniferous Limestone, Bolland.

Genus XXX.—CYTHEREA.—*Lamarck.*

Shell bivalve, equivalve, generally more or less equilateral, or obtusely trigonal and transverse, or ovate; smooth, or variously striated; with three or more short divergent cardinal teeth, and one anterior approximate lateral tooth in both valves, situate near the primary teeth; two remote lateral muscular impressions, united by a pallial impression; ligament external.

1. Cytherea incrassata.—The Thickened Cytherea, pl. LXXXIV. fig. 4.

Venus incrassata. Sowerby, II. p. 126, pl. 155, figs. 1, 2.

Nearly orbicular; slightly oblique; sub-compressed; smooth, with shallow lines of growth; anterior side a little concave under the beaks; lunette large, and not well defined; internal margin entire.

The Upper Marle, Isle of Wight.

2. Cytherea parva.—The Small Cytherea, pl. LXXXIV. fig. 20.

Venus parva. Sowerby, VI. p. 32, pl. 518, figs. 4, 5, 6.

Transversely obovate; rather convex; beaks obtuse; surface smooth, with remote shallow lines of growth; lunette narrow.

The Gault, Folkstone; and Ridge, Wiltshire; and the Lower Greensand, Parham and Blackdown.

3. Cytherea lineolata.—The Lineated Cytherea, pl. LXXXIV. fig. 28.

Venus lineolata. Sowerby, I. p. 57, pl. 20, upper figure.

Transversely ovate, subcordate; rather ventricose; anterior side smooth; the other portions covered with zig-zag striæ; beaks prominent; internal margin entire; substance of the shell very thick.

The Greensand, Blackdown.

4. Cytherea convexa.—The Convex Cytherea, pl. LXXXIV. fig. 19.

C. convexa. Brongniart, Env. de Paris, pl. 8, fig. 7.

C. scutellaria (?) Mantell, Geo. Suss. p. 263, pl. 25, fig. 2.

Sub-triangular; beaks nearly central; sides abruptly sloping from the beaks; base rather straight; surface with shallow, concentric furrows.

The Plastic Clay, Castlehill, Newhaven.

5. Cytherea nitidula.—The Shining Cytherea, pl. LXXXVI. fig. 4.

C. nitidula. Lamarck, Ann. du Mus. VII. p. 133, No. 3 et 12, pl. 40, f. 1, 2. Defrance, Dict. des Sc. Nat. XII. p. 421. Deshayes, Coq. Foss. I. p. 134, pl. 21, figs. 314, 315, 316.

Shell ovately rounded; tumid, smooth, and shining; external surface provided with nearly obsolete transverse striæ; striæ very slight; lunule cordiform; hinge with three teeth; lateral teeth large, conical.

Found in the London Clay at Bracklesham Bay.

6. Cytherea obliqua.—The Oblique Cytherea, pl. LXXXVI. fig. 24.

C. obliqua. Deshayes, Coq. Foss. pl. 21, figs. 7, 8.

Shell ovate, oblique, tumid, sub-quadrate, and inequilateral; umbones obliquely recurved; lunule large and heart-shaped; with numerous thin, somewhat irregular, transverse striæ; hinge with three teeth, the posterior one bifid.

Found in the Plastic Clay at Stratford.

7. Cytherea sub-erycinoides.—The Erycina-like Cytherea, pl. LXXXVI. fig. 25.

C. sub-erycinoides. Deshayes, Coq. Foss. I. p. 129, pl. 22, figs. 8, 9.

Shell transversely ovate, sub-depressed, and provided with numerous rounded, regular, transverse furrows; lunule small and smooth; hinge with three divergent teeth; the posterior one cleft; the lateral one very small.

Found in the London Clay at Bracklesham.

8. Cytherea pusilla.—The Slender Cytherea, pl. LXXXVI. fig. 19.

C. pusilla. Deshayes, Coq. Foss. I. p. 137, pl. 22, fig. 14.

Shell small, orbicular, oblique, sub-transverse; with thin, numerous, transverse striæ; umbones very small, oblique, and recurved; destitute of a lunule; hinge with two teeth in one valve and three in the other; lateral teeth small.

Found in the London Clay at Barton.

9. Cytherea tellinaria.—The Tellina-like Cytherea, pl. LXXXVI. fig. 15.

C. tellinaria. Lamarck, Ann. du Mus. VII. p. 135, No. 6 et XII. pl. 40, fig. 4. Ib. Ann. Sans. Part V. p. 582, No. 9. Deshayes, Coq. Foss. I. p. 130, pl. 22, figs. 4, 5.

Shell transversely-ovate, trigonal, smooth, sub-striated, transversely and posteriorly sinuated; lunule large, and ovately oblong; hinge with three cardinal teeth; the two anterior ones approximate.

In the London Clay at Barton.

10. Cytherea sulcataria.—The Furrowed Cytherea, pl. LXXXVI. fig. 21.

C. sulcataria. Deshayes, Coq. Foss. I. p. 133, pl. 20, figs. 14, 15.

Shell ovate, tumid, sub-transverse, inequilateral; transversely furrowed; umbones small and oblique; lunule large, ovate; hinge with three teeth; left valve with the posterior one bifid; that of the right valve lamellose.

Found in the London Clay at Bracklesham Bay.

11. Cytherea trigonula.—The Trigonal Cytherea, pl. LXXXVI. fig. 23.

C. trigonula. Deshayes, Coq. Foss. I. p. 139, pl. 21, figs. 12, 13.

Shell trigonal, sub-equilateral, smooth, and transversely sub-striated; umbones small, acuminated, and oblique; lunule heart-shaped and deep; hinge with three teeth; the lateral ones large and elongated.

In the London Clay at Bracklesham Bay.

12. Cytherea rugosa.—The Rough Cytherea, pl. LXXXIV. fig. 11.

C. rugosa. Sowerby, Geo. Tr. 2d Ser. IV. p. 346, pl. 322, fig. 13.

Sub-triangular, acuminated towards the beaks, which are produced; posterior extremity pointed; valves very convex near the beaks; surface with many concentric furrows, which are more numerous on the anterior side.

The Portland Stone, Chicksgrove and Swindon.

13. Cytherea dolobra.—The Axe-shaped Cytherea, pl. LXXXIV. fig. 13.

C. dolobra. Phillips, Geo. York, pl. 9, fig. 12.

Sub-triangular; moderately convex; beaks produced; lunette very narrow; posterior side a little concave under the beaks; posterior side rather straight; surface smooth, with a few remote lines of growth.

The Cave Oolite, Cloughton Wyke, Yorkshire.

14. Cytherea elegans.—The Elegant Cytherea, pl. LXXXIV. fig. 21.

C. elegans. Deshayes, Fos. Coq. pl. 20, fig. 89. *Venus.* Sowerby, V. p. 26, pl. 422, fig. 3.

Obovate, moderately convex; beaks obtuse, lunette oval; surface glossy, and concentrically furrowed, the intervening spaces a little rounded.

The London Clay, Barton and Bracklesham Bay.

15. Cytherea tenui-striata.—The Thin-striated Cytherea, pl. LXXXIV. figs. 22, 23.

Venus tenui-striata. Sowerby, Geo. Trans. 2d Ser. V. p. 136, pl. 8, fig. 8.

Sub-triangular, gibbose; nearly smooth; anterior side a little concave; beaks prominent; lunette rather broad, and pointed at both extremities; surface with numerous very close concentric striæ.

The London Clay, Hampstead, Highgate, and Sheppy.

16. Cytherea Chione.—Chione's Cytherea, pl. LXXXIV. fig. 18.

C. Chione. Brown, Illust. Rec. Conch. Brit. p. 91, pl. 37, fig. 2.

Obliquely ovate, moderately convex; beaks small, a little incurved; lunette cordiform; surface smooth and shining, with a few concentric shallow lines of growth; margins thick and rounded; pallial impression with a broad transverse sinus, acuminated at the point.

The Coral Crag, Ramshot.

17. Cytherea truncata.—The Truncated Cytherea, pl. LXXXIV. fig. 26.

Venus (?) truncata. Sowerby, Geo. Tr. 2d Ser. IV. p. 341, pl. 17, fig. 3.

Sub-quadrate; beaks placed near the anterior extremity, which is exceedingly short; posterior side large, and obliquely

truncated; back arcuated; base nearly straight; lunette lanceolate and obscure; surface with strong lines of growth.

The London Clay, Barton.

18. CYTHEREA SUB-ROTUNDA.—The Half-Round Cytherea, pl. LXXXIV. fig. 29.

C. sub-rotunda. Sowerby, Geo. Tr. 2d Ser. IV. p. 341, pl. 17, fig. 2.

Lenticular, nearly orbicular; much compressed; lunette narrow and lanceolate; back arcuated; beaks obtuse; surface smooth.

The Greensand, Blackdown.

19. CYTHEREA PLANA.—The Plain Cytherea, pl. LXXXIV. fig. 27.

Venus planus. Sowerby, I. p. 58, pl. 20, lower figs.

Somewhat elongated, its length slightly exceeding its width; sub-depressed; anterior side a little concave under the beaks, and rounded below; posterior side arcuated; surface smooth; lunette lanceolate.

The Greensand, Blackdown and Lyme Regis.

20. CYTHEREA TRANSVERSA.—The Transverse Cytherea, pl. LXXXVI. fig. 22.

Venus transversa. Sowerby, V. p. 25, pl. 422, fig. 1.

Transversely elongated, oblong-ovate; gibbose; posterior side a little pointed; surface smooth, with a few concentric lines of growth; beaks considerably incurved; lunette elongated and narrow.

21. CYTHEREA ROTUNDATA.—The Rounded Cytherea, pl. LXXXIV. fig. 7.

Venus linceolata. Sowerby, V. p. 25, pl. 422, fig. 2. Brander, fig. 91.

Nearly orbicular; gibbose; surface with numerous, deep, regular, concentric striæ.

The London Clay, Barton.

GENUS XXXI.—ARTEMIS.—*Poli.*

Shell nearly orbicular and lenticular, externally and concentrically grooved; beaks much turned to one side, beneath which is a short, strongly-marked, cordiform depression; three cardinal teeth in each valve, two of which are contiguous, and the other divergent, which is broad in the right valve, cleft in the centre, to receive that of the opposite valve, which is slender, with a small lateral and closely approximated tooth; pallial impression with a large, oblique, and straight-sided sinus; cartilage external.

1. ARTEMIS LENTIFORMIS.—The Lentil-shaped Artemis, pl. LXXXV. fig. 5.

A. lentiformis. Wood, Cat. *Venus lentiformis.* Sowerby, III. p. 235, pl. 203.

Orbicular, compressed; anterior side slightly angulated, and somewhat compressed; surface with numerous, fine, imbricated, narrow, concentric ridges.

The Red Crag, Walton Naze.

2. ARTEMIS EXOLETA.—The Worn Artemis, pl. LXXXV. fig. 6.

A. exoleta. Brown, Illust. Rec. Conch. Brit. p. 92, pl. 36, figs. 1, 3, 19, 20.

Orbicular, lentiform, moderately convex; anterior side with a nearly obsolete longitudinal furrow; surface with numerous concentric filiform striæ, those on the disk, and as far as the umbones, smooth, slightly depressed, and thin and elevated on the sides; lunette cordiform, with fine longitudinal striæ.

The Pleistocene Marine Formation, Dalmuir and Ayr.

3. ARTEMIS SINUATA.—The Sinuated Artemis, pl. LXXXV. fig. 4.

A. lincta. Brown, Ill. Rec. Conch. Brit. p. 92, pl. 36, figs. 2 and 4.

Lentiform, slightly elongated, and moderately gibbose; surface with numerous, very fine, filiform, concentric striæ on the disk, and sub-lamellated on the sides; posterior side with a longitudinal furrow; lunette cordiform, with extremely fine, concentric, longitudinal striæ.

The Red Crag, Walton, Walton Naze; and the Coral Crag, Ramshot.

This species is at once distinguished from any of the former two, by the striæ being much finer, and by its lengthened form.

4. ARTEMIS PARVA.—The Small Artemis, pl. LXXXV. fig. 9.

A. parva. Brown, Manchester Geo. Tr. I. p. 1, pl. 7, fig. 77.

Nearly orbicular; surface smooth, with a few distant, distinct lines of growth; diameter somewhat more than an eighth of an inch.

The Coal Shale, Vale of Todmorden, Yorkshire.

GENUS XXXII.—CYPRINA.—*Lamarck.*

Shell ventricose, equivalve, inequilateral, sub-orbicular, obliquely heart-shaped; umbones obliquely curved anteriorly; three cardinal teeth in each valve, approximated at their bases, and divergent above, with a posterior lateral tooth remote from the primary teeth; external surface covered by a thick, rough, dark, horny epidermis; each valve with two lateral, remote, muscular impressions; pallial impression with a slight sinus; ligament external, inserted into a deep, marginal, posterior, dorsal sinus.

1. CYPRINA CUNEATA.—The Wedge-shaped Cyprina, pl. LXXXV. fig. 1.

C. cuneata. Sowerby, Geo. Tr. 2d Ser. IV. p. 341, pl. 16, fig. 19.

Transversely elongated, wedge-shaped; posterior side lengthened and acuminated; anterior side short, concave under the prominent and curved beaks; lunette heart-shaped and hollow; back convex; base nearly straight; surface even, with shallow lines of growth; valves deep; substance of the shell thin.

The Greensand, Blackdown.

2. CYPRINA TRIANGULARIS.—The Triangular Cyprina, pl. LXXXV. fig 2.

C. cuneata. Var. Sowerby, Geo. Tr. 2d Ser. IV. pl. 16, fig. 19, the smaller figure.

Triangular, elongated; beaks almost central; sides nearly equal, the posterior one sub-truncated below; surface smooth, with distant, shallow lines of growth.

The Greensand, Blackdown.

3. CYPRINA EQUALIS.—The Equal Cyprina, pl. LXXXV. fig. 7.

Venus equalis. Sowerby, I. p. 59, pl. 21.

Sub-orbicular, convex; beaks obtuse, incurved; hinge very strong; surface covered with numerous concentric striæ, and a few shallow lines of growth; substance of the shell very thick.

From the Crag, Suffolk.

4. CYPRINA PLANATA.—The Plain Cyprina, pl. LXXXV. fig. 8.

C. planata. Sowerby, VII. pl. 619.

Nearly orbicular and sub-cordiform; gibbose; beaks obtuse; on the posterior side a furrow, emanating from the back of the beaks, terminates on the margin; surface with shallow, unequal lines of growth.

The London Clay, Nuneham, Brentford, and Bracklesham.

5. CYPRINA MORRISII.—Morris's Cyprina, pl. LXXXVI. fig. 17.

C. Morrisii. Sowerby, VII. pl. 620, fig. 1.

Sub-orbicular; moderately gibbose; beaks obtuse, incurved; surface with shallow concentric lines of growth; back rather straight; base arcuated.

The London Clay, Herne Bay, Watford, Plumstead, and Reading.

6. CYPRINA ANGULATA.—The Angulated Cyprina, pl. LXXXV. fig. 10.

Venus angulata. Sowerby, I. p. 145, pl. 65.

Transversely ovate; beaks short, very obtuse, and incurved; anterior side with a slight longitudinal ridge, and a very little truncated; surface smooth.

The Greensand, Blackdown.

7. CYPRINA TRANSVERSA.—The Transverse Cyprina, pl. XXXV. fig. 3.

C. Morrisii. Var. Sowerby, VII. pl. 620, figs. 2, 3.

Transversely ovate, gibbose; beaks obtuse, slightly incurved; anterior side short and rounded; posterior side elongated; back arcuated, and bending suddenly downwards, forming an angle where it meets the basal line; an elevation extends from the beaks to the posterior margin; surface smooth, with unequal shallow lines of growth.

The London Clay, Watford.

8. CYPRINA ROSTRATA.—The Beaked Cyprina, pl. LXXXVI. fig. 18.

C. rostrata. Sowerby, Geo. Tr. 2d Ser. IV. p. 341, pl. 17, fig. 1.

Obliquely triangular; beaks large, much produced, and incurved, projecting nearly in a line with the margin, and under them the side is very concave, hollow; dorsal line very little curved; posterior side considerably lengthened, and narrowed at the extremity, with a gentle ridge running from the beaks to the margin; basal line arcuated; surface rather smooth.

The Greensand, Blackdown.

9. CYPRINA RUSTICA.—The Rude Cyprina, pl. LXXXVI. fig. 31.

C. rustica. Sowerby, II. p. 217, pl. 196.

Sub-orbicular, transverse, gibbose; beaks obtuse, a concave space under them; anterior side narrowed; dorsal line nearly straight; anterior side large and rounded; base arcuated; surface smooth; lines of growth rather strongly marked.

Red Crag, Sutton, and the Coral Crag, Ramshot.

10. CYPRINA VULGARIS.—The Common Venus, pl. LXXXVI. fig. 29.

C. vulgaris. Brown, Ill. Rec. Conch. Brit. p. 93, pl. 37, fig. 1, and pl. 38, fig. 11.

Obliquely sub-orbicular, gibbose; beaks rather large; surface covered with numerous fine, concentric striæ; dorsal and basal line arcuated; posterior side a little narrowed.

The Pleistocene Marine Formations, on the Clyde; and the Coral Crag, Ramshot.

SUB-DIVISION II.—FLUVIATILE.

Shell covered with a spurious epidermis, and the hinge provided with lateral teeth.

GENUS XXXIII.—CYRENA.—*Lamarck.*

Shell sub-orbicular, sub-trigonal, equivalve, ventricose, inequilateral, and solid; external surface covered with a strong epidermis, and the umbones usually decorticated; three cardinal, and two remote lateral teeth in each valve; in one valve the posterior one is situate near the primary teeth, the anterior one being more remote, and placed before the ligament; in the opposite valve a deep groove intervenes between two teeth, one of which is large, and the other nearly obsolete; two lateral remote muscular impressions; pallial impression destitute of a sinus; ligament external.

1. CYRENA TRIGONULA.—The Trigonal Cyrena, pl. LXXXVI. fig. 5.

Cyrena trigonula. Wood, Mag. Nat. Hist. VII. p. 275, fig. 45, *a* and *b*.

Ovately trigonal, sub-equilateral, thick, with sub-imbricated transverse lines of growth, with three cardinal teeth in each valve; lateral teeth largely serrated; umbones obtuse; margin plain.

Found in the Lacustrine Formations at Stutton, where it is very abundant.

2. CYRENA CYCLADIFORME.—The Cyclas-formed Cyrena, pl. LXXXIII. fig. 28.

C. cycladiformis. Deshayes, Coq. Fos. pl. 19, figs. 7, 8, 9.

Ovate; anterior side rounded, posterior side somewhat acuminated; surface smooth.

The London Clay, Barton.

3. CYRENA DEPERDITA.—The Lost Cyrena, pl. LXXXVI. fig. 2.

Cyclas deperdita. (?) Sowerby, III. p. 139, pl. 162, fig. 1.

Transversely oval, rather gibbose; umbonate; anterior side a little angulated; surface with elevated, irregular lines of growth; hinge with three bifid cardinal teeth and two lateral ones, which are sometimes striated perpendicularly.

The Plastic Clay, Charlton and Plumstead.

4. CYRENA CUNEIFORMIS.—The Wedged-shaped Cyrena, pl. LXXXVI. fig. 3.

Cyclas cuneiformis. Sowerby, II. p. 140, pl. 172, figs. 2, 3.

Transversely wedge-shaped; anterior side considerably angulated; surface with numerous fine lines of growth.

The Plastic Clay, Charlton, Upnor, Plumstead, and Newcross.

5. Cyrena obovata.—The Egg-ovate Cyrena, pl. LXXXVI. fig. 1.

Cyclas obovata. Sowerby, II. p. 140, pl. 162, figs. 4, 5, 6.

Obovate, length and breadth equal; gibbose; anterior side obtuse; beaks large; surface with rather strong, irregular lines of growth.

Upper Marl, Colwell Bay, and Barton.

6. Cyrena pulchra.—The Beautiful Cyrena, pl. LXXXIII. fig. 30.

Cyclas pulcher. Sowerby, VI. p. 51, pl. 527, fig. 1.

Sub-orbicular, convex; posterior side truncated; surface smooth; hinge with one sharp-edged and two bifid teeth; lateral teeth obtuse and plain; substance thin and slender.

The Upper Marl, Hampstead Cliff and Isle of Wight.

Genus XXXIV.—CYCLAS.—*Bruguèire.*

Shell generally sub-orbicular; ventricose, equivalve, nearly equilateral, transverse, and thin, covered with a delicate olivaceous epidermis; two very minute, divergent, cardinal teeth in both valves, one of which is double in the left one; lateral teeth two, remote and a little elongated, laminar, compressed, and acute; and four in the other, two of which are very small, situate on each side of the hinge; two lateral ovate muscular impressions in both valves, that of the mantle entire, and destitute of a sinus; ligament external and slender.

1. Cyclas media (?.)—The Middle Cyclas, pl. LXXXVI. fig. 14.

C. medius. Sowerby, p. 51, pl. 527, fig. 2.

Depressed, thick, transversely obovate; anterior side small, posterior side somewhat pointed; surface smooth; one tooth under the beaks in both valves.

The Weald, of which it is the characteristic, Kent, Sussex, and Surry.

2. Cyclas membranacea.—The Membranaceous Cyclas, pl. LXXXVI. fig. 28.

C. membranacea. Sowerby, VI. p. 52, pl. 527, fig. 3.

Depressed; very thin; transversely ovate; anterior side small; posterior side a little pointed.

The Weald, Dorset, Sussex, and Wiltshire.

3. Cyclas angulata.—The Angular Cyclas, pl. LXXVI. fig. 6.

C. angulata. Sowerby, Geo. Tr. 2d Ser. IV. pl. 21, f. 12.

Sub-triangular; beaks prominent; anterior side rounded, posterior side truncated; its line from the beaks to the truncation nearly straight; surface smooth, with shallow lines of growth.

The Weald, Sussex, the Isle of Purbeck, and South Wiltshire.

4. Cyclas sub-quadrata.—The Half-square Cyclas, pl. LXXXVI. fig. 13.

C. sub-quadrata. Sowerby, Geo. Tr. 2d Ser. IV. pl. 21, fig. 8.

Transversely elongated; an oblong square; both sides nearly straight; beaks central and small; back and base straight and parallel; surface with strong concentric furrows.

The Weald Hastings, and St Leonards.

5. Cyclas elongata.—The Elongated Cyclas, pl. LXXXVI. fig. 12.

C. elongata. Sowerby, Geo. Tr. 2d Ser. IV. pl. 21, fig. 9.

Transversely elongated; beaks nearly central; anterior side rounded, posterior side obliquely truncated, and angular above, rounded beneath; dorsal and basal lines nearly straight and parallel; surface smooth, with three or four distinct lines of growth.

The Weald, Sussex, and the Purbeck Beds, Whitchurch and Teffont.

6. Cyclas major.—The Greater Cyclas, pl. LXXXVI. fig. 7.

C. Major. Sowerby, Geo. Tr. 2d Ser. IV. pl. 21, fig. 13.

Sub-rotund; rather convex; beaks nearly central, and produced; one side rounded, the other a little narrow, with a slight angle; basal line undulous; surface smooth.

The Weald, Kent, Pulborough, Henhurst, &c.

7. Cyclas gibbosa. The Gibbous Cyclas, pl. LXXXVI. figs. 8, 9.

C. gibbosa. Sowerby, Geo. Tr. 2d Ser. IV. pl. 21, fig. 11.

Slightly ovate transversely; beaks nearly central, large, and produced; a concave space under them; anterior side rounded; posterior side narrowed, a little truncated, and acute below; surface smooth.

The Weald, Sussex, and Purbeck Beds, Whitchurch.

8. Cyclas parva.—The Small Cyclas, pl. LXXXVI. fig. 16.

C. parva. Sowerby, Geo. Tr. 2d Ser. IV. pl. 21, fig. 7.

Sub-orbicular, slightly oblique; posterior side a little narrowed below; surface smooth.

The Purbeck Beds, Whitchurch, Quainton, and Chicksgrove.

9. Cyclas cornea.—The Horny Cyclas, pl. LXXXVI. fig. 20.

C. cornea. Brown, Illust. Rec. Conch. Brit. p. 93, pl. 39, fig. 19.

Sub-globose, ventricose; beaks obtuse, with extremely fine, concentric, nearly obsolete striæ.

The Pleistocene Marine Formations, Clapton, Clockthorn, Grays, and Stutton.

10. Cyclas rivicola.—The River Cyclas, pl. LXXXVI. fig. 26.

C. rivicola. Brown, Rec. Conch. Brit. p. 93, pl. 39, figs. 16, 17, 18.

Transversely ovate, gibbose; beaks central; both sides equally rounded; surface with strong, close, regular, concentric striæ.

The Pleistocene Fresh-water Formation, Felversham and Southend.

Genus XXXV.—PISCIDIUM.—*Pfeiffer.*

Shell equivalve, transverse; sides unequal, completely closing; in the right valve one, and in the left two opposite, very small, primary teeth; behind and before two thin lamellar

side teeth; those of the latter cleft in the right valve, in order to receive the opposite ones.

1. Piscidium Henslowiana.—Henslow's Piscidium, pl. LXXXVI. fig. 27.

P. Henslowiana. Thompson, Ann. Nat. Hist. VI. p. 54. *P. appendiculata.* Brown, Ill. Rec. Conch. Brit. p. 95, pl. 39, fig. 25.

Obliquely oval, much inflated; beaks tumid, considerably produced, and somewhat tuberculated; surface with regular, well-defined, concentric grooves.

The Pleistocene Fresh-water Formations, Clackton, Stutton, Crapthorn, and Grays.

2. Piscidium amnicum.—The Favourite Piscidium, pl. LXXXVI. fig. 10.

P. obliquum. Brown, Ill. Rec. Conch. Brit. p. 94, pl. 39, fig. 22.

Obliquely oval; beaks tumid, a little produced; surface with numerous concentric furrows, which are finely striated.

The Pleistocene Fresh-water Formations, Grays, Erith, Crapthorn, Clackton, Stutton, and Feversham.

3. Piscidium pusillum.—The Weak Piscidium, pl. LXXXVI. fig. 11.

P. pusillum. Brown, Ill. Rec. Conch. Brit. p. 95, pl. 29, fig. 28.

Slightly ovate, nearly orbicular, sub-compressed, with prominent beaks, obtuse at the points; sides somewhat flattened; surface with very fine concentric striæ.

The Pleistocene Fresh-water Formations, Harwich, Copford, Grays, Clackton, Stutton, and Crapthorn.

Grand Division III.—TENUIPEDES.

The mantle barely united before; foot small, narrow, and compressed; shell having but a moderate gape.

Tribe I.—NYMPHACEA.

Having never more than two primary teeth in the same valve; shell often gaping slightly at the lateral extremities; ligament external; umbones generally projecting outwards.

Sub-division I.—Destitute of lateral teeth.

Genus XXXVI.—ASTARTE—*Sowerby.*

Shell sub-orbicular, transverse, equivalve, inequilateral; hinge with two strong, divergent, cardinal teeth in the right valve, and two unequal primary teeth, and one small, nearly obsolete tooth, together with an indistinct lateral one in the left valve; two ovate or oblong, remote, lateral, simple muscular impressions in each valve, with a third very small one, situate immediately below the indistinct lateral tooth, or at the end of the posterior external depression, and, in some instances, mingling with the lower termination of the posterior muscular impression, which is always simple and not sinuated; ligament external.

1. Astarte lurida.—The Pale Astarte, pl. LXXXVII. figs. 10 and 42.

A. lurida. Sowerby, II. pl. 137, fig. 1.

Convex, transversely oblong, its width being one and a half its length; depressed; surface with numerous transverse, unequal ribs; margin internally crenulated; lunette elliptical.

Oxford Clay, Scarborough, and Inferior Oolite, Dundry, Oxfordshire.

2. Astarte elegans.—The Elegant Astarte, pl. LXXXVII. fig. 12.

A. elegans. Sowerby, II. p. 86, pl. 137, fig. 3.

Convex, transversely oblong; disk depressed; surface with numerous small, transverse ribs; lunette cordate; margin internally crenulated.

Differs from *C. lurida*, in the front being more rounded, the back less rounded, and the teeth are more distant.

Coralline Oolite, Malton, Yorkshire; the Inferior Oolite, Yeovel and Brora, and the Lias, Prees and Whitby.

3. Astarte cuneata.—The Wedge-shaped Astarte, pl. LXXXVII. fig. 31.

A. cuneata. Sowerby, II. p. 86, pl. 137, fig. 2.

Gibbose, somewhat heart-shaped, or sub-triangular; back broad and flattened; anterior side produced; lunette heart-shaped; margin entire within.

The Greensand, Blackdown, and Portland Sand, Tisbury and Garsington.

4. Astarte excavata.—The Excavated Astarte, pl. LXXXVII. fig. 22.

A. excavata Sowerby, I. p. 57, pl. 233.

Convex, obovate, nearly one-third wider than long; anterior side truncated; back arched; beaks ill-defined, greatly inclined to the posterior side, which is small; lunette hemispherical; excavated; cartilage enclosed in a deep furrow, bounded by sharp edges, which nearly approach each other; margin toothed; surface with flat, transverse ribs, which, in the anterior side, run into irregular undulations; teeth slightly striate.

The Inferior Oolite, Dundry, Somersetshire, and the Lias of Banz.

5. Astarte nitida.—Shining Astarte, pl. LXXXVII. f. 8.

A. nitida. Sowerby, I. p. 37, pl. 521, fig. 2.

Somewhat depressed, transversely obovate; angular above; beaks pointed; lunette lanceolate; surface plain, and rather minutely sulcated near the beaks; edge crenulated.

Coralline Crag, Ramshot.

6. Astarte bipartita.—The Double-parted Astarte, pl. XXXVII. fig. 7.

A. bipartita. Sowerby, VI. p. 38, pl. 521, fig. 3.

Globose; obcordate; beaks acute; lunette large, short, concave, and smooth; surface with from six to eight large, flat, transverse ribs, placed on the flat space near the beaks; internal edge crenulated.

Coralline Crag, Ramshot.

7. Astarte oblonga.—The Oblong Astarte, pl. LXXXVII. fig. 15.

A. oblonga. Sowerby, VI. p. 38, pl. 521, fig. 4.

Convex; transversely oblong; beaks small, and not very prominent; lunette heart-shaped, pointed, and concave; surface with large, transverse ribs; interior edge crenated.

Coral Crag and Mammiferous Crag, Sutton, &c.

8. ASTARTE OBOVATA.—The Obovate Astarte, pl. LXXXVII. fig. 21.

A. obovata. Sowerby, IV. p. 73, pl. 353.

Uniformly convex, obovate; anterior margin sub-truncated; lunette impressed; surface corrugated, with the transverse obscure ribs most visible on the anterior portion; interior margin crenated.

The Lower Greensand, Hythe and Sandown Bay.

9. ASTARTE BOREALIS.—The Northern Astarte, pl. LXXXVII. fig. 1.

A. plana. Sowerby, II. p. 173, pl. 179, fig. 2.

Depressed, sub-orbicular, and nearly equilateral; beaks rather small and pointed; lunette elongated, acute, and deep; surface with irregular fine lines of growth; margin entire.

Pleistocene Marine Formation, Bridington, Bramerton, and Wick.

10. ASTARTE OBLIQUATA.—The Somewhat Oblique Astarte, pl. LXXXVII. fig. 19.

A. obliquata. Sowerby, II. p. 173, pl. 179, fig. 3.

Obovate, transverse, depressed; surface with many oblique, concentric striæ, which traverse a few obscure ribs or lines of growth; internal margin crenulated; spaces between the striæ rounded and smooth; substance of the shell slender.

The Red Crag, Sutton.

11. ASTARTE LINEATA.—The Lineated Astarte, pl. LXXXVII. fig. 37.

A. lineata. Sowerby, II. p. 174, pl. 179, fig. 1.

Obovate, nearly lenticular, depressed; anterior side smallest and slightly truncated; lunette lanceolate and small; cartilage slope long and straight; surface with about thirty concentric, acute, transverse ribs; the intervening furrows with numerous fine, minute striæ; substance of the shell thin; margin entire.

Greensand, Blackdown, and the Kimmerage Clay, Heddington.

2. ASTARTE OBLIQUA.—The Oblique Astarte, pl. LXI.***, fig. 27.

A. planata. Sowerby, III. p. 103, pl. 257.

Gibbose, transversely obovate; anterior side slightly truncated; lunette concave, somewhat heart-shaped; surface with many small, obtuse, close-set, concentric ridges; edge frequently broad and flat, and crossed by furrows, which are a continuation of the crenulations; substance of the shell thick.

The Inferior Oolite, Barton and Dundry.

13. ASTARTE RUGATA.—The Wrinkled Astarte pl. LXXXVII. fig. 30.

A. rugatus. Sowerby, III. p. 13, pl. 316.

Obovate, rather gibbose; anterior side sub-truncated; lunette, obovate, concave, and pointed; a few ribs at and below the beaks, under which the surface is slightly wrinkled transversely; edge internally crenated.

In the young state, the surface is covered with distinct transverse ribs, which become obsolete in the adult.

London Clay, Highgate and Sheppy.

14. ASTARTE STRIATA.—The Striated Astarte, pl. LXXXVI. fig. 40.

A. striata. Sowerby, VI. p. 35, pl. 520, fig. 1.

Lenticular; beaks small, approaching near to each other; lunette ovate, flat, deeply impressed; surface with very numerous, regular, transverse striæ; margins obtuse; substance of the shell thick.

The Greensand, Blackdown and Lyme Regis.

15. ASTARTE ROTUNDA.—The Rounded Astarte, pl. LXXXVII. figs. 35, 36.

A. orbicularis. Sowerby, VI. p. 35, pl. 520, fig. 2.

Lenticular, somewhat inflated, particularly towards the beaks; lunette elongated and very deeply seated, and composed of two planes, which meet in an acute angle in the middle; surface with small concentric furrows; posterior surface plaited, with an angle at its edge; internal edge with elongated crenulations; substance of the shell very thick.

Great Oolite, Hampton Cliff, Bath.

16. ASTARTE TRIGONALIS.—The Trigonal Astarte, pl. LXXXVII. fig. 29.

A. trigonalis. Sowerby, V. p. 63,* pl. 444, fig. 1.

Triangularly heart-shaped, compressed; beaks rather acute; anterior side smooth, and separated by an angle; posterior edge concave near the beaks; surface somewhat flattened; disk with numerous, rather shallow, transverse furrows, which terminate on the ridge.

The Inferior Oolite, Dundry.

17. ASTARTE ORBICULARIS.—The Orbicular Astarte, pl. LXXXVII. figs. 27, 28.

A. orbicularis. Sowerby, V. p. 64,* pl. 444, figs. 2, 3.

Lenticular; hinge-line terminating in a projecting angle; surface with numerous concentric, slightly elevated, reflected lamellæ; edge smooth.

Great Oolite, Ancliffe.

18. ASTARTE PUMILA.—The Dwarf Astarte, pl. LXXXVII. figs. 2, 3, 4.

A. pumila. Sowerby, V. p. 64,* pl. 444, figs. 4, 5, 6.

Obliquely ovate, slightly convex; anterior side produced and obtuse; posterior side small, with a semicircular edge; surface with numerous concentric, narrow, slightly raised ridges, to which the intervening furrows are equal in width; edge strongly crenulated within; when old, the length exceeds the width.

The Great Oolite, Ancliffe, Wiltshire.

19. ASTARTE IMPOLITA.—The Unpolished Astarte, pl. LXXXVII. figs. 5, 6.

A. impolita. Sowerby, Geo. Tr. 2d Ser. IV. p. 341, pl. 16, fig. 18.

Obovate, convex, somewhat wedge-shaped; rather angular at the beaks; lunette situate in a lanceolate groove; surface with numerous antiquated transverse grooves.

The Greensand, Blackdown.

20. ASTARTE MULTISTRIATA.—The Many Striated Astarte, pl. LXXXVII. figs. 32, 33.

A. multistriata. Sowerby, Geo. Tr. 2d Ser. IV. p. 341, pl. 16, fig. 17.

Sub-triangular, very convex, somewhat wedge-shaped; beaks turned much to one side, and a considerable concavity below them; surface with many concentric, elevated ribs, the intervening spaces with fine longitudinal striæ; lunette very large and broad.

The Greensand, Blackdown.

21. Astarte concinna. — The Neat Astarte, plate LXXXVII. fig. 38.

A. concinna. Sowerby, Geo. Tr. 2d Ser. IV. p. 341, pl. 16, fig. 15.

Oblong-ovate, rather convex; beaks oblique; a concave space on the posterior side near the base; lunette elongated and deeply sunk; surface with numerous concentric furrows.

The Greensand, Blackdown.

22. Astarte formosa. — The Handsome Astarte, pl. LXXXVII. figs. 23, 24.

A. formosa. Sowerby, Geo. Tr. 2d Ser. IV. p. 341, pl. 16, fig. 16.

Sub-triangular, rather compressed, with the edges thickened; beaks obtuse; lunette elongated and concave; surface with about ten prominent transverse reflected ribs.

The Greensand, Blackdown.

23. Astarte extensa. — The Extended Astarte, pl. LXXXVI. fig. 13.

A. extensa. Phillips, Geo. York, I. pl. 3, fig. 21.

Sub-trigonal, elongated obliquely; beaks obtuse; surface smooth, with an elevated ridge extending from the beak to the base; three or four remote concentric furrows, which take the abruptly angular form of the valves.

The Coral Rag, Malton, Oxon, and Wiltshire.

24. Astarte carinata. — The Keeled Astarte, pl. LXXXVI. fig. 26.

A. carinata. Phillips, Geo. York, I. pl. 5, fig. 3.

Sub-triangular, sides rather straight; a pretty prominent ridge emanates from the beak, and terminates on the margin; surface with broad concentric ribs and narrow furrows.

The Kelloways Rock, South Cave; and the Calcareous Grit, Scarborough.

25. Astarte triangulata.—The Triangular Astarte, pl. LXXXVI. fig. 9.

A. rugatus. Sowerby, IV. p. 13, pl. 316, fig. 3.

Triangular; beaks much produced, with a concave space under them; posterior side very slightly curved; rounded on the lower portion of the sides; basal line straight; surface with rude transverse, antiquated ribs and furrows.

The London Clay, Highgate.

26. Astarte aliena. — The Alienated Astarte, pl. LXXXVII. fig. 39.

A. aliena. Phillips, Geo. York, I. pl. 3, fig. 22.

Sub-orbicular, a little elongated; beaks nearly central and rather acute; sides sloping, and nearly equal; surface with nearly obsolete transverse furrows.

The Coral Rag, Malton, Yorkshire.

27. Astarte lævis.—The Smooth Astarte, pl. LXXXVII. fig. 11.

A. lævis. Phillips, Geo. York, I. pl. 2, figs. 18, 19.

Sub-orbicular, convex, a little elongated; beaks rather acute; surface smooth.

28. Astarte minima.—Least Astarte, pl. LXXXVII. f. 33.

A. minima. Phillips, Geo. York, I. pl. 9, fig. 33. Goldfuss, pl. 134, fig. 15.

Sub-orbicular; beaks obtuse, nearly central; sides nearly equal; surface with strong concentric ribs.

The Great Oolite, Bransby; Inferior Oolite, Blue Wick, Rosebury.

29. Astarte multi-costata.—The Many-Ribbed Astarte, pl. LXXXVII. fig. 16.

Crassina multi-costata. Brown, Wernerian Mem. VIII. p. 56, pl. 1, fig. 20.

Sub-orbicular, somewhat compressed; beaks prominent, considerably turned to one side; lunette lanceolate; surface with many close-set concentric ribs.

Pleistocene Marine Formation, Dalmuir.

30. Astarte Gairensis.—The Gairloch Astarte, pl. LXXXVII. fig. 14.

Crassina ovata. Brown, Edinburgh Jour. Nat. Geo. Sec. 1, p. 12, pl. 1, fig. 8.

Transversely ovate; sub-compressed; beaks small and pointed; lunette lanceolate and deep; surface with numerous broad, elevated, concentric ribs, which become nearly obsolete as they approach the base of the valves; external margin broad and plain.

The Pleistocene Marine Formations, Bute and Ayrshire.

31. Astarte Scotica. — The Scottish Astarte, plate LXXXVII. figs. 17, 18.

Crassina Scotica. Brown, Ill. Rec. Conch. Brit. p. 95, pl. 38, fig. 9.

Sub-cordiform, sub-compressed; umbones nearly central; lunette somewhat heart-shaped; surface with many parallel, transverse ribs, which are narrowed towards the posterior side.

The Pleistocene Marine Formations, Ayr and Banff.

32. Astarte ovata.—The Ovate Astarte, pl. LXXXVII. fig. 34.

A. ovata. Phillips, Geo. York, pl. 3, fig. 25.

Obovate; beaks obtuse; lunette lanceolate and very narrow; surface with nearly obsolete, antiquated, concentric wrinkles.

The Coral Rag, Malton; Wiltshire and Oxon.

33. Astarte sulcata.—The Furrowed Astarte, plate LXXXVII. fig. 41.

Crassina sulcata. Brown, Ill. Rec. Conch. Brit. p. 96, pl. 38, fig. 10.

Sub-orbicular, considerably compressed; beaks very prominent, and nearly central; lunette lanceolate and shallow; surface with a series of flat, broad, concentric ribs; internal margin finely crenulated.

The Pleistocene Formations, Clyde; and the Red Crag, Sutton.

34. Astarte gracilis.—The Slender Astarte.

A. gracilis. Goldfuss, pl. 134, fig. 4.

Nearly orbicular; beaks almost central and acute; lunette large, lanceolate; surface with numerous, very regular, elevated, concentric ribs, which become narrower and less defined as they approach the base; internal margin with strong crenulations.

The Coral Crag, Gedgrave, Suffolk.

35. Astarte lenticularis.—The Lens-shaped Astarte.

A. lenticularis. Portlock, Geo. Rep. p. 442.

Transversely sub-cylindrical; anterior side defined by a ridge, the extremity contracted and pointed; posterior side much rounded; beaks approximate; surface radiated.

The Chalk, Tamlaght, Ireland.

36. Astarte pygmæa.—The Pigmy Astarte.

A. pygmæa. Goldfuss, pl. 135, fig. 5.

Sub-orbicular; beaks nearly central; sides sloping almost equally; surface with many strong concentric ridges; external edge with large prominent crenulations.

The Coral Crag, Sutton.

GENUS XXXVII.—CARDINIA.—*Agassiz.*

Shell transverse, elliptical, equivalve, inequilateral, thick; hinge very strong, with one oblique, thickened, cardinal tooth in the right valve, and a pit for its reception in the left valve; anterior lateral tooth in the right valve obtusely conical; the posterior tooth in the left valve elongated, and attenuated towards the umbo; right valve with a flattened fold lying parallel to the ligament, and divided obliquely near the umbo by a faint groove; from the anterior extremity of this fold a depression extends beneath the lunule, in front of the anterior lateral tooth, with a corresponding elevation; umbones closely approximating; muscular impressions deep; pallial impressions entire, deeply defined, and destitute of a sinus; ligament external, situate in a deep, marginal, dorsal sinus.

1. CARDINIA ABDUCTA.—The Distant Cardinia, pl. LXXIV. fig. 9.

Pachyodon abducta. Stutchbury, Ann. Nat. Hist. 1842, p. 484, pl. 10, figs. 9, 10. *Unio abductus.* Phillips, Geo. York, I. p. 127, pl. 11, fig. 42.

Sub-trigonal, inflated; beaks small and approximating; anteriorly produced, nearly central, and considerably turned to one side; lunule cordate; surface smooth, with a few remote, nearly obsolete transverse lines of growth.

The Inferior Oolite, Dundry and Yorkshire; and the Lias, Cheltenham.

2. CARDINIA CUNEATA.—The Wedge-shaped Cardinia, pl. LXXXVIII. figs. 3, 4.

Pachyodon cuneata. Stutchbury, Ann. Nat. Hist. VIII. Suppt. p. 484–9, figs. 10, 11.

Sub-triangular, cuneiform; beaks acute, with a deep cordiform lunule under them; anterior side short, rounded; posterior side long, acute; surface covered with numerous, nearly equidistant, and rather deeply defined transverse furrows.

The Lias, Frethern, Gloucestershire.

3. CARDINIA IMBRICATA.—The Imbricated Cardinia.

Pachyodon imbricatus. Stutchbury, An. Nat. Hist. VIII. Suppt. p. 483, pl. 9, figs. 5, 6.

Sub-triangular, with numerous transverse, imbricated, deeply defined ribs; beaks acute, with a heart-shaped lunule; basal line slightly bent.

In the Lias, on the banks of the Severn, Gloucestershire; and at Bridport, Somersetshire.

4. CARDINIA ATTENUATA.—The Attenuated Cardinia, pl. LXXXVIII. fig. 20.

Cuneiform, transverse; posterior side considerably elongated and attenuated; anterior side rounded, and of medium length; beaks rather acute, but not inflected; lunule small and deep; basal line rather arcuated; breadth of the shell once and a half its length.

In the Lias at Battledown, near Cheltenham.

This species has much the aspect of a Unio, but the teeth at once point out its connection with the present genus.

5. CARDINIA OVALIS.—The Oval Cardinia, pl. LXXXVIII. figs. 11, 12.

Pachyodon ovalis. Stutchbury, Ann. Nat. Hist. VIII. Suppt. p. 485, pl. 10, figs. 17, 18, 19.

Elliptical, transverse; beaks obtuse, approximate; lunule small and narrow; anterior side rounded; posterior side a little attenuated and sub-acute; back and basal margin arcuated; external surface with irregular, concentric, rather shallow lines of growth.

The Lias, Frethern, Gloucestershire.

6. CARDINIA LANCEOLATA.—The Spear-shaped Cardinia, pl. LXXXVIII. figs. 18, 19.

Pachyodon lanceolata. Stutchbury, Ann. Nat. Hist. VIII. Suppt. p. 484, No. 8.

Lanceolate, thick, transverse; anterior side short and rounded; posterior side very long and produced; hinge-line nearly straight; beaks obtuse; lunule small and narrow; back and basal line arcuated; external surface with irregular, concentric, well-defined lines of growth.

The Lias, Scarborough.

This is nearly allied to *P. attenuata*, but differs in the posterior side being more acute, in the hinge-line being straighter, and in its superior thickness. Its external contour has much the form of a true Unio.

7. CARDINIA LISTERI.—Lister's Cardinia, pl. LXXIV. f. 20.

Pachyodon Listeri. Stutchbury, Ann. Nat. Hist. VIII. p. 482, pl. 9, figs. 1, 2. *Unio Listeri.* Sowerby, II. p. 123, pl. 154, figs. 1, 3, 4.

Heart-shaped, somewhat wedge-shaped, thick; beaks depressed, recurved, acute, and nearly central; lunule rather deep but small; back considerably rounded; base with a slight flexure; surface with sub-imbricated, concentric ridges, and somewhat flattened on the disk; length and breadth nearly equal.

The Inferior Oolite, Durham and Norfolk; the Lias, Frethern, Gloucestershire, and Battledown, near Cheltenham.

8. CARDINIA CONCINNA.—The Neat Cardinia, pl. LXXIV. fig. 4.

Unio concinnus. Sowerby, III. p. 43, pl. 223.

Transversely oblong-ovate; beaks small, rather pointed, and approximate; hinge-line a little curved; anterior side short, somewhat narrowed; posterior side lengthened and rounded; surface smooth, with transverse, nearly regular, somewhat sharp wrinkles and intervening lines; cardinal teeth small; lateral tooth large and long; back and base gently curved; muscular impressions very deep.

The Inferior Oolite, Cropredy, near Bambury, Oxfordshire.

9. CARDINIA SCUTULA.—The Scuttle-shaped Cardinia, p. LXXXVIII. figs. 13, 14.

Pachyodon concinna. Stutchbury, Ann. Nat. Hist. VIII. p. 485, pl. 10, fig. 15. *Unio concinnus.* Goldfuss, pl. 132, f. 2.

Much elongated transversely; compressed; beaks obtuse and approximate; hinge-line gently curved; lunule long and very narrow; anterior side short and rounded; posterior side lengthened, and somewhat acute; back and base moderately arcuated; the point of the basal line a little turned up behind; surface smooth, with nearly equidistant lines of growth, and intervening shallow lines.

In the Lias, Langar, Nottinghamshire, and Saltford and Weston.

This is not the *Unio concinna* of Sowerby—that shell being more regularly ovate and considerably shorter in proportion than *Cardinia scutula*, which is also more acuminated and inclining upwards at the posterior side than *P. concinna*.

10. CARDINIA CRASSISSIMA.—The Very Thick Cardinia, pl. LXXIV. fig. 8.

Pachyodon crassissima. Stutchbury, Ann. Nat. Hist. VIII. p. 483, pl. 9, fig. 7. *Unio crassissimus.* Sowerby, II. p. 121, pl. 153.

Ovate, very thick; beaks much incurved and acute; hinge-line considerably arcuated, with a large triangular cardinal tooth fitted into a pit in the opposite valve, and a very broad, curved, and long lateral tooth in each valve, with grooves for their reception in the opposing valves; anterior side rather short and rounded; posterior side long, and slightly narrowed at its lower angle; beak convex, the base nearly straight; surface with rather regular, equidistant, transverse lines of growth; muscular impressions deep.

The Inferior Oolite, Dundry, Somersetshire.

11. CARDINIA CRASSIUSCULA.—The Thickened Cardinia, pl. LXXIV. fig. 18.

Pachyodon crassiusculus. Stutchbury, Ann. Nat. Hist. Supp. VIII. p. 483, pl. 9, fig. 8. *Unio crassiusculus*, Sowerby, II. p. 191, pl. 185. *Pullastra antiqua*, Phillips, Geo. York, I. pl. 13, fig. 16.

Regularly elliptical, sub-compressed; valves very thick; beaks depressed, and projecting beyond the elliptical line, with fine, very slightly incurved points; hinge-line undulous, much thickened; muscular impressions deep; pallial impressions strongly defined; both sides almost equally rounded; back and base moderately arcuated; surface smooth, with a few equidistant, remote, shallow lines of growth.

In the Lias at Langar, Cheltenham, Blue Anchor, Somersetshire, and Robin Hood's Bay, Yorkshire.

12. CARDINIA HYBRIDA.—The Mongrel Cardinia, pl. LXXIV. fig. 19.

Pachyodon hybridus, Stutchbury, Ann. Nat. Hist. VIII. Supp. p. 482, pl. 9, figs. 3, 4. *Unio hybrida.* Sowerby, II. p. 123, pl. 154, fig. 2.

Cuneiform, sub-triangular; hinge-line curved; beaks closely approximating; the lunule elongated, lanceolate, and deeply impressed; anterior side concave below the beaks, and rounded beneath; posterior side considerably arcuated from the beaks to the base, which is concave; surface smooth, with transverse, rather deep furrows, or lines of growth.

The Lias at Langar, Nottinghamshire, and near Cheltenham.

SUB-DIVISION II.—With one or two lateral teeth.

GENUS XXXVIII.—DONAX.—*Linnæus.*

Shell transverse, trigonal, equivalve, inequilateral; outer surface generally covered with a thin horny epidermis; anterior side for the most part the shorter; left valve with two more or less distinct cardinal teeth; right valve with only one cardinal tooth, which is generally cleft at its extremity; lateral teeth variable, either one or two very minute and remote; two muscular impressions in each valve, that of the mantle with a large sinus; ligament external and short.

1. DONAX TRUNCULUS.—The Little Stock Donax, pl. LXXXIX. figs. 6, 7.

D. trunculus. Brown, Ill. Rec. Conch. Brit. p. 97, pl. 39, fig. 11.

Transversely oblong, somewhat compressed; beaks small; anterior side nearly straight above, and rather contracted; posteriorly rounded; surface smooth, with fine radiating, longitudinal striæ; internal margin crenulated.

The Mammiferous Crag, Bramerton.

GENUS XXXIX.—TRIGONELLITES.—*Parkinson.*

Shell slightly rounded, trigonal, thick; gaping on each side; anterior side nearly straight; posterior side gently waving; hinge-line quite linear; destitute of teeth; with an appropriate surface on the anterior margin of each valve, for the attachment of the cartilage externally; no visible muscular impressions; substance of the shell very thick.

1. TRIGONELLITES LATUS.—The Broad Trigonellites, pl. LXXV. fig. 6.

T. latus. Parkinson, Org. Rem. III. p. 184, pl. 13, figs. 9, 10, 11.

Sub-triangular; anterior side concave below the beaks, and rounded beneath; posterior side nearly straight, with a longitudinal shallow furrow extending from the beaks to the side; basal line arcuated; surface smooth, with concentric shallow lines of growth; beaks acute; inside of the valves porous.

The Kimmeridge Clay, Whitchurch, Buckinghamshire, and Southrey.

2. TRIGONELLITES POLITUS.—The Polished Trigonellites, pl. LXXII.* fig. 16.

T. politus. Phillips, Geo. York, I. pl. 5, fig. 8.

Considerably elongated transversely, its breadth being more than twice its length; anterior side extremely short, and nearly in a straight line with the very obtuse beaks, which are quite terminal; posterior side lengthened, with a very wide, shallow, obliquely, longitudinal furrow, emanating from the back of the umbones, and terminating on the margin, which is a little cleft. Surface smooth, with minute, shallow lines of growth; back nearly straight; base a little curved.

The Oxford Clay, Yorkshire and Wiltshire.

3. TRIGONELLITES ANTIQUATUS.—The Antiquated Trigonellites, pl. LXXII.* fig. 12.

T. antiquatus. Phillips, Geo. York, I. pl. 3, fig. 26.

Transversely oblong-ovate; anterior side very short, rounded, and hardly extending beyond the obtuse beaks; posterior side long and rounded, a deep furrow extending from behind the beaks, and terminating on the margin; beneath this a shallow furrow; back arcuated, with many rather wide, transverse, equidistant furrows; the other portions of the shell with wide-set, concentric, very narrow furrows, crossed by several radiations; basal line a little concave in the middle.

Genus XL.—LUCINA.—*Bruguière.*

Shell equivalve, inequilateral, usually orbicular, lenticular, and sub-depressed; teeth variable, most commonly two minute cardinal teeth divergent from the umbo, frequently nearly obsolete; in one valve one lateral tooth on each side of the umbo, and two on each side in the other; the anterior lateral ones being situate near the primary teeth, and the posterior immediately behind the ligament; two muscular impressions remote from each other, the anterior one generally extruded backwards and downwards in the form of an elongated band; pallial impression destitute of a sinus; ligament external, elongated, and partly hidden by the inflected margins of the valves when closed, consequently, the internal tendinous portion is frequently sunk into a deep, elongated cavity, situate between the teeth and hinge margin.

1. Lucina despecta.—The Despised Lucina, pl. LXXXIX. fig. 5.

L. despectus. Phillips, Geo. York, I. pl. 9, fig. 8.

Nearly orbicular; beaks large and obtuse; anterior side a little smaller than the posterior; surface smooth, with remote lines of growth.

The Great Oolite, Cloughton Wyke, and the Inferior Oolite, Blue Wick.

2. Lucina lirata.

L. lirata. Phillips, Geo. York, pl. 6, fig. 11.

Sub-orbicular, anterior side short, the line from the apex being very slightly bent; a longitudinal furrow close to the side line; posterior side rounded; surface with many concentric, narrow furrows, nearly straight, in the centre of the valves, and turning abruptly up at both ends, those in the posterior side bounded by the furrow.

The Kelloways Rock, Scarborough.

3. Lucina Goodhallii.—Goodhall's Lucina, pl. LXXXIX. figs. 1, 2, 3.

L. Goodhallii. Sowerby, Geo. Tr. 2d Ser. V. p. 136, pl. 8, fig. 6.

Sub-globose; anterior side concave, posteriorly rounded; lunette broad, flat, and rather deeply sunk, meeting near the edge, with a broad and a narrow groove on each side of it; surface nearly smooth.

The London Clay, Highgate and Sheppy.

4. Lucina globosa.—The Globular Lucina, pl. LXXXIX. fig. 17.

L. globosa. Sowerby, Geo. Tr. 2d Ser. IV. p. 335, pl. 11, fig. 2.

Nearly globular, anterior side straight for a short distance below the beak; posteriorly with a long flattened space; beaks sub-acute; base much arcuated; surface smooth, with some shallow lines of growth, which are peculiarly waved near the posterior margin.

The Upper Greensand, Kent and Sussex.

5. Lucina mites.—The Gentle Lucina, pl. LXXXIX. fig. 16.

L. mites. Sowerby, VI. p. 107, pl. 557, fig. 1.

Circular, convex; lunette oval, and very deep; surface covered with minute, longitudinal, numerous striæ, crossed by very regular laminæ; cardinal teeth obscure, and destitute of a lateral tooth; inside rough, but not punctated like many of its congeners.

The London Clay, Barton and Highgate.

6. Lucina gigantea.—The Gigantic Lucina, pl. LXXXIX. fig. 33.

L. gigantea. Deshayes, Coq. Foss. p. 91, pl. 15, fs. 11, 12.

Very broad, smooth, sometimes sub-striated, and internally punctated; hinge toothless, umbones large; length frequently upwards of three inches and a-half; breadth three inches and three quarters.

The London Clay, Barton.

7. Lucina divaricata.—The Divergent Lucina, pl. LXXXIX. fig. 25.

L. divaricata. Lamarck, Env. de Paris, p. 244, Sowerby, V. p. 18, pl. 417.

Circular, gibbose; surface with two sets of arcuated, oblique, convergent striæ, crossed by three or four deep, well-marked lines of growth; inside dull, and a little granulated; substance of the shell thick.

The Mammiferous Crag, Bramerton, and the Red Crag, Sutton and Barton.

8. Lucina radula.—The Rasp Lucina, pl. LXXXIX. fig. 19.

L. radula. Brown's Illust. Conch. Brit. and Ireland. *L. antiquata.* Sowerby, VI. p. 108, pl. 557, fig. 2.

Circular, convex; lunette lanceolate, flat; surface with many irregular, concentric, sharp laminæ; anterior side angular; substance of the shell moderately thick.

The Red Crag, Sutton and Ramshot; Mammiferous Crag, Thorpe.

9. Lucina crassa.—The Thick Lucina, pl. LXXXIX. figs. 9, 10.

L. crassa. Sowerby, VI. p. 108, pl. 557, fig. 3.

Nearly circular, somewhat broader than long; convex; beaks very small, superior margin obtuse; lunette linear, sunk; surface with slightly elevated, concentric laminæ; valves thick.

The Calcareous Grit, Cloughton Wyke, Yorkshire.

10. Lucina orbicularis.—The Orbicular Lucina, pl. LXXXIX. figs. 11, 12.

L. orbicularis. Sowerby, Geo. Tr. 2d Ser. p. 341, pl. 16, fig. 13.

Nearly orbicular; a little elongated; convex; beaks small, central, remote; sides equal; surface with numerous, divergent, longitudinal, frequently forked striæ, and a few distant lines of growth.

The Greensand, Blackdown.

11. Lucina pisum.—The Pea Lucina, pl. LXXXIX. fig. 13.

L. pisum. Sowerby, Geo. Trans. 2d Ser. IV. p. 341, pl. 16, fig. 14.

Nearly orbicular; beaks obtuse; surface with fifteen or more concentric, reflected ridges.

The Greensand, Blackdown.

12. Lucina Portlandica.—The Portland Lucina, pl. LXXXIX. fig. 15.

L. Portlandica. Sowerby, Geo. Tr. 2d Ser. p. 347, pl. 22, fig. 12.

Orbicular, compressed; beaks nearly central and small; sides equal; surface with fine, very regular, concentric striæ.

The Portland Stone, Swindon.

13. LUCINA LAMINATA.—The Laminated Lucina, pl. LXXXIX. fig. 20.

L. laminata. Phillips, Geo. York, II. p. 209, pl. 5, f. 12.

Transversely ovate, much compressed, slightly oblique; anterior side very short; beaks obtuse; posterior side large and rounded; surface with transverse imbricated ridges.

The Carboniferous Limestone, Bolland, Yorkshire.

14. LUCINA SCULPTA.—The Engraven Lucina, pl. LXXXIX. fig. 8.

L. sculpta. Phillips, Geo. York, I. pl. 2, fig. 15.

Sub-trigonal, transversely elongated; anterior side extremely short and straight, not extending beyond the obtuse beaks; back nearly straight; posterior side truncated; a ridge extending obliquely from the lower side of the beaks to the basal margin, which is straight; surface with transverse curved ridges posteriorly, which are abruptly angulated from the ridge.

The London Clay, Speeton, Yorkshire.

15. LUCINA DU NOYERI.—Du Noyer's Lucina, pl. LXXXIX. fig. 21.

L. du Noyeri Portlock, Geo. Rep. p. 571, pl. 38, fig. 12.

Orbicular, slightly oblique, compressed; beaks placed a little towards the anterior side, and protruding a little beyond the hinge line; surface with fine concentric, thread-like striæ.

The Carboniferous Limestone, Eifel, Tyrone, Ireland.

16. LUCINA FLEXUOSA.—The Flexuous Lucina, pl. LXXXIX. fig. 22.

L. flexuosa. Fleming, Brit. An. p. 442. *Cryptodon flexuosa.* Brown, Illust. Brit. Conch. p. 99, pl. 39, figs. 4, 5.

Transversely sub-globular, with a furrow, or flexure, emanating from the back and terminating on the margin; surface smooth; substance of the shell thin.

The Pleistocene Marine Formation, Dalmuir, Clyde.

17. LUCINA UNDATA.—The Waved Lucina, pl. LXXXIX. fig. 24.

L. undata. Brown, Illust. Rec. Conch. Brit. p. 98, pl. 39, figs. 1, 2.

Nearly orbicular, moderately convex, flexuous; beaks prominent and slightly inflated; surface with numerous fine, close-set, irregular, concentric striæ, which, in some instances, run into irregular wrinkles.

The Pleistocene Marine Formation, Ayrshire.

18. LUCINA ROTUNDATA.—The Rounded Lucina, pl. LXXXIX. fig. 18.

L. rotundata. Brown, Rec. Con. Brit. p. 98. pl. 40, f. 11.

Orbicular, moderately convex; beaks small, nearly central and obtuse, slightly inflated; surface with very fine concentric striæ.

The Red and Coral Crags, Sutton.

19. LUCINA DIGITARIA.—The Finger-Striated Lucina.

Fellina digitaria. Turton, Ann. King. IV. p. 196. Chemnitz, VI. pl. 12, figs. 120, 121.

Sub-globular; surface surrounded with uniform striæ, which incline obliquely towards the outer margin, like the lines at the ends of the fingers, giving it the appearance of being spirally striated.

GENUS XLI.—CORBIS.—*Cuvier.*

Shell transverse, equivalve, free, oval, thick, extremely ventricose, and sub-equilateral; umbones small and incurved, two cardinal and two lateral teeth in each valve, the posterior one placed nearer to the cardinal teeth than the other, which is rather remote from the umbones, and situate near the termination of the ligament; two lunulate muscular impressions in each valve, simple, somewhat oblong in form, and placed close behind the umbones; pallial impression entire, and destitute of a sinus; ligament external, the parts to which it adheres forming a deep groove when the valves are closed.

C. lævis. Plate IX. fig. 17.

1. CORBIS LÆVIS.—The Smooth Corbis, pl. LXXXIX. fig. 32.

C. lævis. Sowerby, VI. p. 156, pl. 580.

Slightly gibbose, transversely oval, its breadth considerably exceeding its length; posterior extremity with transverse imbrications, the other portions smooth; margin entire.

The Coralline Rag, Malton, and near Oxford; and the Kelloways Rock, South Cave.

2. CORBIS OVALIS.—The Oval Corbis, pl. LXXXIX. f. 28.

C. ovalis. Phillips, Geo. York, I. pl. 5, fig. 29.

Transversely oblong-oval; beaks rather large, prominent, and incurved; surface smooth, with distinct concentric lines of growth.

The Kelloways Rock, Scarborough.

3. CORBIS UNIFORMIS.—The Uniform Corbis, pl. LXXXIX. fig. 4.

C. uniformis. Phillips, Geo. York, I. pl. 12, fig. 3.

Oval, slightly contracted at both extremities; beaks central, and hardly produced; surface smooth, with indistinct lines of growth.

The Upper Lias Shale, Whitby, Yorkshire.

GENUS XLII.—TELLINA.—*Linnæus.*

Shell compressed, transverse, sub-equivalve, inequilateral; posterior side usually rounded; the anterior somewhat produced, or beaked and angular; anterior ventral margin with an irregular flexuosity; generally with two cardinal teeth in each valve, but only one in some instances; usually two lateral teeth in both valves; but sometimes with only one, and, for the most part, remote from the primaries; two distant muscular impressions; pallial impression with a very large sinus; ligament external.

1. TELLINA DONACIALES.—The Donax-like Tellina, pl. LXXXIX. fig. 51.

Tellina donaciales. Lamarck, Ann. du Mus. VII. p. 233, No. 5. Deshayes, Coq. Foss. p. 83, pl. 12, figs. 7, 8, 11, 12.

Shell obliquely ovate; sub-trigonal, inequilateral, smooth and thin; anterior side short and rounded; very slightly inflexed and sub-angulated.

Found in the London Clay at Hedgerly.

2. TELLINA SUB-ROTUNDUS.—The Half-rounded Tellina, pl. LXXXIX. fig. 46.

Tellina sub-rotundus. Deshayes, Coq. Foss. p. 81, pl. 12, figs. 16, 17.

Shell orbicular, deep, thick; surface covered with numerous thin concentric striæ; sub-plicated on the anterior side; hinge with two teeth in one valve and one in the other; and with one lateral tooth.

Found in the London Clay at Bracklesham.

3. Tellina tenuis.—The Thin Tellina, pl. LXXXIX. f. 26.

T. tenuis. Brown, Ill. Rec. Conch. Brit. p. 100, pl. 40, fig. 19.

Transversely ovate, much compressed, extremely thin and fragile; beaks small, nearly central; surface with extremely fine, concentric, irregular striæ.

The Pleistocene Marine Formation, Dalmuir, the Forth and Ayrshire.

4. Tellina fabula.—False Tellina, pl. LXXXIX. fig. 34.

T. fabula. Brown, Ill. Rec. Con. Brit. p. 101, pl. 40, f. 18.

Transversely elongated, much compressed, and flexuous, thin; posterior side narrowed, and obliquely truncated; anterior side rounded; beaks very small, and nearly central; left valve with very fine, regular, diagonal striæ; right valve plain, with remote irregular concentric striæ.

The Mammiferous Crag, Bramerton.

5. Tellina donacina.—Donax Tellina, pl. LXXXIX. f. 31.

T. donacina. Brown, Ill. Rec. Conch. Brit. p. 101, pl. 40, fig. 16.

Transversely oblong ovate, thin, compressed; beaks small, placed much to one side, which is sub-truncated and angular below; opposite side much rounded; surface with fine concentric striæ.

The Coral Crag, Sutton.

6. Tellina inæqualis.—The Unequal Tellina, pl. LXXXIX. fig. 30.

T. inæqualis. Sowerby, V. p. 80, pl. 456, fig. 2.

Oval, convex, smooth; anterior side obtuse, its surface with fine striæ radiating from the beak, a little angular below; posterior side longer and rounded; beaks nearly central.

The Lower Greensand, Parham.

7. Tellina Branderi.—Brander's Tellina, pl. LXXXIX. fig. 27.

T. Branderi. Sowerby, IV. p. 143, pl. 402, fig. 1.

Sub-orbicular, slightly transverse, compressed; anterior margin with a small sinus; beaks nearly central, and produced.

The London Clay, Barton.

8. Tellina obliqua.—The Oblique Tellina, pl. LXXXIX. fig. 37.

T. obliqua. Sowerby, II. p. 137, pl. 161, fig. 1.

Sub-orbicular, oblique; beaks nearly central, anterior side gently curving to near the centre of the valve, where there is a small angle; posterior side with a slight ridge; surface smooth, muscular impressions large.

The Mammiferous Crag, Postwick and Ramsbot; the Red Crag, Sutton.

9. Tellina ovata.—Ovate Tellina, pl. LXXXIX. fig. 40.

T. ovata. Sowerby, II. p. 138, pl. 161, fig. 2.

Transversely ovate; anterior side with furrow, and a little contracted; posterior side rounded; surface smooth, with rather regular, deeply marked lines of growth; beaks small.

The Mammiferous Crag, Bramerton, and the Red Crag, Sutton.

10. Tellina splendens.—The Splendid Tellina, pl. LXXXIX. figs. 35, 36.

T. splendens. Sowerby, Geo. Tr. V. p. 136, pl. 8, fig. 6.

Transversely ovate, convex; beaks central, small; posterior side pointed and bent to the right; surface highly polished.

The London Clay, Highgate.

11. Tellina filosa.—The Threaded Tellina, pl. LXXXIX. fig. 38.

T. filosa. Sowerby, IV. p. 143, pl. 402, fig. 2.

Sub-triangular; anterior side gently sloping above; truncated, with an angular point beneath; a slight ridge and furrow emanating from the beak terminates on the base; posterior side rounded; surface covered with numerous acute, elevated, thread-like, concentric striæ, which are enlarged anteriorly, and curved upwards as they pass over the elevation.

The London Clay, Barton.

12. Tellina calcarea.—The Chalky Tellina, pl. LXXXIX. fig. 41.

T. calcarea. Chemnitz, VI. pl. 13, fig. 136. *T. proxima.* Brown, Wern. Mem. VIII. pl. 1, fig. 21.

Transversely ovate, compressed, thin; beaks small, nearly central; surface with many irregular, concentric striæ; anterior side narrowed, posterior side rounded.

The Pleistocene Marine Formation, Dalmuir and Bute; the Mammiferous Crag, Bramerton, and the Red Crag, Sutton.

13. Tellina ambigua.—The Ambiguous Tellina, pl. LXXXIX. fig. 42.

T. ambigua. Sowerby, IV. p. 144, pl. 403.

Transversely oblong-oval, rather convex, valves unequal, right valve thicker, curved, and more convex than the other, with one tooth only; both sides equally rounded, beaks obtuse and small; surface obscurely sulcated, deeper at the sides.

The Upper Marine Formation, Bramerton, and Colwell Bay.

14. Tellina ampliata.—The Enlarged Tellina, pl. LXXXIX. fig. 47.

T. ampliata. Phillips, Geo. York, I. pl. 3, fig. 24.

Sub-orbicular; beaks nearly central; surface with many lines of growth; anterior side straight from the beaks, with a gentle ridge; posterior side large and rounded.

The Coral Rag, Malton, Yorkshire.

15. Tellina striatula.—The Partly-striated Tellina, pl. LXXXIX. fig. 29.

T. striatula. Sowerby, V. p. 79, pl. 456, fig. 1.

Much elongated transversely; its width double its length; rather convex, anterior side shortest, a little pointed, with a slight elevation on its surface which is smooth, with a few longitudinal indistinct striæ, posterior side rounded.

The Greensand, Blackdown.

16. Tellina solidula.—The Thick Tellina, pl. LXXXIX. fig. 55.

T. solidula. Brown, Ill. Rec. Conch. Brit. p. 101, pl. 40, fig. 14.

Sub-orbicular, strong, thick, convex; anterior side arcuated, with a longitudinal furrow terminating below in an angle, posterior side rounded; beaks nearly central and straight; surface smooth, with a few transverse, obsolete wrinkles.

The Upper Marine Formation, Headon Hill.

GENUS XLIII.—ARCOPAGIA.—*Leach.*

Shell thick, transverse, slightly inequivalve, inequilateral; right valve sub-depressed; beaks very small, nearly straight; with two primary teeth in both valves, each of the larger ones cleft; left valve with two remote, lateral teeth, that on the anterior side large, with a sinus betwixt it and the margin, for the reception of the lateral tooth of the opposite valve, muscular impressions large and deep; pallial impression interrupted by a broad, very large, tongue-shaped, oblique, nearly central sinus, reaching two-thirds across the valves, both defined by a broad, deep, irregular groove; which passes through the muscular impressions; margin very broad and glossy, as far as the pallial impressions; ligament sub-external, near the centre punctated.

1. ARCOPAGIA CRASSA.—Thick Arcopagia, pl. LXXXIX. fig. 39.

Tellina crassa. Turton, Brit. Bia. p. 109, pl. 7, f. 2, *Arcopagia crassa*, Brown, Ill. Rec. Conch. Brit. p. 99, pl. 40, f. 8.

Transversely sub-ovate, somewhat oblique and twisted, and slightly unequal valved, the left one being the longer, and considerably more convex than the other; beaks short and rather obtuse, and sub-central; whole surface with pretty regular, strong, concentric striæ, which become wider as they approach the base, with irregular lines of growth; from the beaks a well-marked furrow emanates, and terminates on the margin.

Mammiferous Crag, Postwick, and the Red Crag, Sutton.

SUB-DIVISION III.—SOLENAIRES.

GENUS XLIV.—PSAMMOBIA.—*Lamarck.*

Shell transverse, oblong, somewhat angular, gaping at each extremity, and covered with a thin horny epidermis; with two short, bifid, cardinal teeth, in the left valve, and one in the right; two distant, sub-orbicular, muscular impressions in both valves, situate near each end of the valve; pallial impressions with a very large sinus; ligament external, and supported upon a prominent fulcrum.

1. PSAMMOBIA RIGIDIA.—The Rigid Psammobia, pl. LXXXIII. fig. 16, and pl. LXXXIX. fig. 48.

P. rigida. Sowerby, Sil. Syst. pt. II. p. 617, pl. 8, fig. 3.

Considerably elongated transversely, its length not half its width; anterior side somewhat attenuated; posterior side truncated; beaks obtuse, situate nearest the anterior side; base straight; surface with from ten to twelve sharp transverse ribs and furrows; and three divergent ridges emanating from the beaks and passing towards the base.

The Lower Ludlow Rock, near Aymestry.

2. PSAMMOBIA FERROENSIS.—The Ferro Psammobia, pl. LXXXIX. fig. 44.

P. Ferroensis. Brown, Ill. Rec. Conch. Brit. p. 101, pl. 40, figs. 1, 2.

Transversely elongated, compressed; anterior side obliquely truncated, and with an elevated ridge running from the beaks to the base; posteriorly a little contracted and rounded; surface with strong transverse striæ, which are angulated on the truncations.

The Coral Rag, Sutton.

3. PSAMMOBIA VESPERTINA.—The Bat's-wing Psammobia, pl. LXXXIX. fig. 54.

P. vespertina. Brown, Ill. Rec. Conch. Brit. p. 102, pl. 29, figs. 30, 31.

Transversely oblong ovate, both sides rounded; beaks small, nearly central; surface with fine concentric striæ.

The Coral Crag, Ramshot.

4. PSAMMOBIA SOLIDA. — The Solid Psammobia, pl. LXXXIX. fig. 47.

P. solida. Sowerby, IV. p. 55, pl. 342.

Transversely elongated, compressed, slightly twisted; anterior side obliquely truncated, with a ridge running from the beaks to the margins, and forming a point; surface smooth.

The Upper Marine Formation, Headon Hill.

5. PSAMMOBIA TELLINOIDES.—The Tellina-like Psammobia, pl. LXXXIX. fig. 49.

P. tellinoides. Sowerby, Geo. Tr. 2d Ser. IV. p. 176, pl. 21, fig. 6.

Oblong ovate; anteriorly slightly rounded, with a few short longitudinal striæ; the rest of the shell smooth; posterior side rounded; beaks nearly central.

The Wealden, Pomiesfield, Sussex.

6. PSAMMOBIA GRACILIS.—The Slender Psammobia, pl. LXXXIX. fig. 45.

P. gracilis. Sowerby, Geo. Tr. 2d Ser. IV. p. 341, pl. 16, fig. 12.

Transversely elongated, the breadth double the length, nearly cylindrical; anterior side obliquely truncated, with an acute point below; surface with many transverse striæ, which are elevated at their extremities, and abruptly angular on the truncations.

The Greensand, Blackdown.

7. PSAMMOBIA SCOPULA.—The Scopula's Psammobia, pl. LXXXIX. fig. 50.

P. Scopula. Turton, Brit. Biv. p. 98, pl. 6, fig. 5.

Transversely oblong; kidney-shaped; beaks nearly central; sides equally rounded; anterior side striated in two directions; the rest of the surface smooth.

The Coral Crag, Sutton.

8. PSAMMOBIA FLORIDA.—The Florid Psammobia, pl. LXXXIX. fig. 53.

P. florida. Turton, Brit. Biv. p. 86, pl. 6, fig. 9.

Transversely oblong oval; beaks nearly central; both sides almost equally rounded; surface with close-set, concentric striæ, and minute longitudinal ones.

The Coral Crag, Sutton.

9. PSAMMOBIA LÆVIGATA.—The Smooth Psammobia, pl. LXXXIX. fig. 52.

P. lævigata. Phillips, Geo. York, I. pl. 4, fig. 5.

Transversely elongated; obliquely truncated anteriorly, and rounded posteriorly; beaks small, sub-central; surface smooth.

The Great Oolite, Cloughton and Scarborough; and the Inferior Oolite, Blue Wick.

GENUS XLV.—SANGUINOLARIA.—*Lamarck.*

Shell equivalve, inequilateral, transverse, sub-elliptical, or ovate; sometimes transversely oblong, compressed, and for the most part thin, and generally covered with a glossy, olivaceous epidermis; length of the two sides of each valve varying in different species, and gaping at both extremities; margins generally rounded, but not parallel to each other; both valves provided with two cardinal teeth, but destitute of lateral teeth; ligament external, the fulcrum or space to which it is attached generally prominent; two very irregularly shaped, lateral, muscular impressions in each valve, pallial impressions with a large sinus.

1. SANGUINOLARIA ATTENUATA.—Attenuated Sanguinolaria, pl. XC. fig. 11.

S. attenuata. Portlock, Geo. Rep. p. 435, pl. 36, fig. 3.

Much elongated transversely; rounded at the anterior side, and attenuated posteriorly; rounded at the terminations; surface smooth; destitute of a diagonal ridge.

The Carboniferous Limestone, Errigle Keerogue, Tyrone, Ireland.

2. SANGUINOLARIA LIRATA.—The Ridged Sanguinolaria, pl. XC. fig. 8.

S. lirata. Phillips, Pal. Foss. p. 136, pl. 58, fig. 53*, *a*, *b*.

Transversely elongated, width more than double the length; convex; anteriorly rounded, and posteriorly sub-truncated and ridged; surface smooth, with acute thread-like striæ parallel to the margin; strongest on the posterior portion.

Devonian Rocks, Pilton, North Devonshire.

3. SANGUINOLARIA VETUSTA.—The Ancient Sanguinolaria, pl. XC. fig. 15.

S. vetusta. Phillips, Geo. York, I. pl. 14, fig. 1.

Oblong ovate; anteriorly short and narrowed, and long and expanded posteriorly; with strong, concentric lines of growth.

The Lias, Robin Hood's Bay, Yorkshire.

4. SANGUINOLARIA HOLLOWAYSII.—Holloway's Sanguinolaria.

S. Hollowaysii. Sowerby, II. p. 133, pl. 159.

Much elongated transversely; beaks very small, situate near the posterior side, which is short; anterior side lengthened and expanded; surface smooth, with rather short lines of growth; a furrow extends from the beak on the anterior side to the margin; shell thin.

The London Clay, Bracklesham Bay.

5. SANGUINOLARIA COMPRESSA.—Compressed Sanguinolaria, pl. XC. fig. 20.

S. compressa. Sowerby, V. p. 91, pl. 462.

Transversely oblong ovate, compressed; anterior side largest, with a rounded truncation; surface rather smooth; several obscure rays emanate from the beaks and terminate on the margins; posterior side obliquely truncated; shell thin.

The London Clay, Barton and Bracklesham.

6. SANGUINOLARIA TUMIDA.—The Tumid Sanguinolaria, pl. XC. fig. 13.

S. tumida. Phillips, Geo. York, II. p. 208, pl. 5, fig. 5.

Transversely elongated; diagonally gibbous; hinge-line straight; surface supposed to be imbricated.

The Carboniferous Limestone, Bolland, Coalbrook Dale, Kirby, Lonsdale, and Kildare, Ireland.

7. SANGUINOLARIA ARCUATA.—The Arcuated Sanguinolaria, pl. XC. fig. 16.

S. arcuata. Phillips, Geo. York, II. p. 208, pl. 5, fig. 4.

Transversely elongated; anterior side short and attenuated; posteriorly lengthened and expanded; hinge-line arcuated; surface smooth.

The Carboniferous Limestone, Harelaw, Northumberland.

8. SANGUINOLARIA ANGUSTATA.—The Narrowed Sanguinolaria, pl. XC. fig. 12.

S. angustata. Phillips, Geo. York, II. p. 208, pl. 5, fig. 2.

Much elongated transversely; compressed; posterior side smooth, with a diagonal ridge from the beak to the margin; hinge-line straight; surface with furrows parallel to the margin.

The Carboniferous Limestone, Bolland.

9. SANGUINOLARIA MAXIMA.—The Large Sanguinolaria, pl. XC. fig. 14.

S. maxima. Portlock, Geo. Rep. p. 434, pl. 36, fig. 1.

Transversely elongated and sub-quadrate; beaks situate close to the anterior side, which is extremely short and nearly square; hinge and basal lines quite parallel; surface with many concentric furrows and striæ.

The Carboniferous Limestone, Donaghery, Tyrone.

10. SANGUINOLARIA OBLONGA.—The Oblong Sanguinolaria, pl. XC. fig. 43.

S. oblonga. Portlock, Geo. Rep. p. 434, pl. 36, fig. 2.

Transversely sub-quadrate; anterior side extremely short, the beaks close to that side, and rounded; posterior side lengthened, and nearly straight at the end; hinge and basal lines parallel; surface concentrically furrowed and striated.

The Carboniferous Limestone, Errigle and Keerogue, Tyrone.

11. SANGUINOLARIA PLICATA.—The Plaited Sanguinolaria, pl. XC. fig. 19.

S. plicata. Portlock, Geo. Rep. p. 433, pl. 34, fig. 18.

Transversely elongated; compressed; anteriorly rounded, and obliquely sub-truncated posteriorly; beak near the anterior side, from which a faint ridge proceeds to the margin; hinge-line straight, with a slight furrow below it; surface with many transverse folds, parallel to the margin, until they reach the ridge, where they run abruptly angular towards the hinge-line.

The Carboniferous Limestone, Benburb, Tyrone.

12. SANGUINOLARIA UNDATA.—The Waved Sanguinolaria.

S. undata. Portlock, Geo. Rep. p. 434, pl. 34, fig. 20.

Transversely elongated; narrow; hinge-line quite straight; a furrow extends from the beak to the posterior margin below and almost parallel to the hinge-line; surface with broad furrows.

The Carboniferous Limestone, Tyrone and North Sunderland.

13. SANGUINOLARIA TRANSVERSA.—The Transverse Sanguinolaria, pl. XC. fig. 33.

S. transversa. Portlock, Geo. Rep. p. 434, pl. 34, fig. 21.

Extremely elongated transversely, compressed and short; anteriorly rounded and short; beaks near to this side; posterior side much lengthened, obliquely truncated, with a diagonal ridge extending from the beaks to the margins; hinge-line

nearly straight; surface with concentric furrows, which become suddenly angular as they pass over the ridge and proceed to the hinge-line.

The Carboniferous Limestone, Fermanagh, Ireland, and Lowick.

14. SANGUINOLARIA PARVULA.—The Small Sanguinolaria, pl. XC. fig. 38.

S. parvula. Bean, Mag. Nat. Hist. N. S. III. p. 59, f. 18.

Transversely oblong oval, compressed, smooth, with a few remote lines of growth; anterior side somewhat rounded; posteriorly more acute and sub-truncated; beaks nearly central, and very obtuse; length, a quarter of an inch; breadth, half an inch.

The Cornbrash, Scarborough, Yorkshire.

15. SANGUINOLARIA ELEGANS.—The Elegant Sanguinolaria, pl. XC. fig. 28.

S. elegans. Phillips, Geo. York, I. pl. 12, fig. 9.

Elliptical; anterior side a little narrowed and rounded; posterior side obliquely sub-truncated; hinge-line nearly straight; beaks obtuse; surface with many regular transverse furrows emanating from the anterior side, and terminating where the diagonal sides pass from the beak to the margin, where it produces an angle.

The Lias, Upper Shale, Yorkshire.

16. SANGUINOLARIA ELLIPTICA.—The Elliptical Sanguinolaria, pl. XC. fig. 18.

S. elliptica. Phillips, Pal. Foss. p. 34, pl. 17. fig. 53.

Nearly elliptical and equilateral; hinge-line almost straight; the sides rounded; beaks obtuse; surface concentrically striated.

The Devonian Rocks, Combe, near Ashburton, and Yealm Bridge, near Launceston.

17. SANGUINOLARIA GIBBOSA.—The Gibbous Sanguinolaria, pl. XC. fig. 29.

S. gibbosa. Sowerby, V. p. 92, pl. 548, fig. 3.

Much elongated transversely; gibbose, smooth; sides slightly gaping and rounded; beaks obtuse, situated near the anterior side; surface smooth.

The Carboniferous Limestone, Ireland.

18. SANGUINOLARIA SULCATA.—The Furrowed Sanguinolaria, pl. XC. fig. 41.

S. sulcata. Phillips, II. p. 209, pl. 5, fig. 5.

Transversely elongated; anteriorly short and narrowed; posteriorly lengthened, and somewhat expanded; beaks obtuse, situate near the anterior side; hinge-line a little curved and hollow; surface transversely furrowed, which become broad at the posterior side; a few obsolete, longitudinal striæ.

The Carboniferous Limestone, Otterburn and Kendal.

TRIBE II.—LITHOPHAGI.

Boring shells, destitute of accessory pieces, and more or less gaping at their anterior side; ligament of the valves external.

GENUS XLVI.—PETRICOLA.—*Lamarck.*

Shell equivalve, inequilateral, transverse, for the most part rather triangular; but some species are transversely elongated, and others sub-quadrate; posterior side rounded; anterior side somewhat produced, more or less attenuated, and generally gaping; each valve provided with two cardinal teeth, which, in some instances, are curved and acute, especially the posterior tooth in the left valve, and the anterior tooth in the right; the teeth are sometimes grooved internally, and the anterior tooth in one valve is broad and bifid; and in some instances the teeth are obtuse and short; two muscular impressions in each valve, that on the posterior side somewhat oblong, and the anterior one sub-orbicular; pallial impression with a large sinus; ligament external, but, in some species, nearly concealed by the prominent anterior margin of the valves near the beaks.

1. PETRICOLA INFLATA.—The Inflated Petricola, pl. XC. figs. 1, 2, 3.

Sub-triangular, gibbose, and somewhat cordiform; beaks produced and approximate, anteriorly short, rounded below; posterior side with the hinge-line angular, and obliquely truncated at the terminations; surface smooth, with an obscure ridge on the posterior side from the beaks to the margin, and with remote shallow lines of growth.

Found in the Lias, while cutting for Kirby Tunnel beyond Coventry.

2. PETRICOLA LÆVIS.—The Smooth Petricola, pl. XC. f. 6, 7.

Obovate, sub-compressed; beaks rather produced and approximate; anterior side rounded and shortest; posteriorly lengthened, and a little narrowed; surface smooth, with remote, irregular lines of growth.

In the Lias, at Barrow.

3. PETRICOLA LAMINOSA.—The Laminated Petricola, pl. XC. figs. 4, 5.

P. laminosa. Sowerby, VI. p. 142, pl. 573.

Ovate, gibbose, anterior side shortest and rounded; posterior side somewhat acuminate; beaks obtuse and approximate; one broad cleft tooth in the left valve, and two small ones in the other; surface with erect, laminated, concentric, narrow ribs.

Fig. 5 is probably a distinct species.

In the Red Crag, Sutton, and the Coral Crag, Ramsbot.

4. PETRICOLA CANALICULATA.—The Canaled Petricola.

P. canaliculata. Sowerby, Geo. Tr. 2d Ser. IV. p. 16, f. 11.

Orbicular, very convex; beaks nearly central, and approximate; surface with numerous longitudinal furrows, which are nearly covered over; internal edge granulated.

In the Greensand, Blackdown.

5. PETRICOLA NUCIFORMIS.—The Nut-shaped Petricola.

P. nuciformis. Sowerby, Geo. Tr. 2d Ser. IV. p. 341, pl. 16, fig. 10.

Sub-orbicular, very convex; beaks nearly central, and quite approximate; surface longitudinally striated; the internal edge serrated.

The Greensand, Blackdown.

GENUS XLVII.—SPHENIA.—*Turton.*

Shell transverse, inequivalve, inequilateral; general form

flattish, wedge-shaped, gaping at the anterior end; hinge of the left valve with an elevated, transversely dilated tooth—that of the right valve with a concave tooth, and a small denticle behind it, destitute of lateral teeth; two small muscular impressions in each valve; pallial impression with a large, tongue-shaped sinus, emanating from the anterior side, and reaching nearly the middle of the valves; ligament external.

1. Sphenia Binghami.—Bingham's Sphenia, pl. XC. figs. 44, 45.

S. Binghami. Brown, Ill. Rec. Conch. p. 104, pl. 42, figs. 17, 18, and 22.

Transversely oblong ovate; anterior side short and rounded; posteriorly truncated; beaks rather prominent, and not quite opposite; surface smooth.

The Coral Crag, Sutton.

2. Sphenia Swainsoni.—Swainson's Sphenia, pl. XC. f. 37.

S. Swainsoni. Brown, Ill. Rec. Conch. Brit. p. 104, pl. 42, figs. 16, 23, 24.

Transversely oblong oval, wedge-shaped; anteriorly rounded and short; posteriorly elongated and truncate; a concave tooth lying horizontally and pointing inwards; surface smooth.

The Pleistocene Marine Formation, Bute.

Genus XLVIII.—SAXICAVA.—*Lamarck.*

Shell transverse, irregular in form, generally oblong, inequilateral, sub-equivalve, gaping anteriorly; ligament exterior; two lateral muscular impressions in each valve; pallial impression interrupted, but not sinuated; hinge in the young condition with sometimes two or three minute, obtuse, mostly indistinct cardinal teeth, which become obsolete in the adult.

1. Saxicava rugosa.—The Rugged Saxicava, pl. XC. fig. 17.

S. rugosa. Sowerby, V. p. 101, pl. 466. Brown, Ill. Rec. Conch. Brit. p. 103, pl. 47, fig. 1.

Transversely oblong ovate, gaping at one side; beaks small, obtuse, and placed near the anterior side; posterior side subtruncated; surface with irregular, rugged, concentric wrinkles.

The Pleistocene Marine Formation, Dalmuir and Bute, Mammiferous Crag, Thompe, and the Red and Coral Crags, Sutton.

Genus XLIX.—AGINA.—*Turton.*

Shell transverse, oval, equivalve, inequilateral, open at the anterior side; hinge with a single erect, conic, penetrating cardinal tooth in each valve, destitute of lateral teeth; ligament external.

1. Agina purpura.—The Purple Agina, pl. XC. fs. 26, 27.

A. purpura. Turton, Brit. Biv. p. 55, pl. 4, fig. 9.

Transversely oval; posterior side obliquely truncated; beaks prominent, close to the shorter anterior side; surface with irregular, transverse striæ; length one-eighth of an inch, breadth one-quarter.

The Coral Crag, Sutton.

Tribe III.—CORBULACEA.

Shells inequivalve, the ligament interior.

Genus L.—PANDORA.—*Bruguière.*

Shell free, thin, internally pearlaceous, inequivalve, transverse, inequilateral, the anterior side the longer, sub-rostrated, and slightly gaping at its extremity; one valve flat, with two internal anterior ribs, and with its anterior margin turned downwards, provided with a single, oblong, obtuse, cardinal or hinge tooth, situate behind the ligament; the opposite valve concave and destitute of teeth, but furnished with an indistinct cicatrice on which the tooth of the flat valve rests when the shell is closed; in each valve are two distant, lateral, muscular impressions; ligament internal, its sides lodged in, and attached to an elongated cicatrice, which lies inclined to the anterior side of the valves; in some species the cicatrice is produced into an elongated divergent lamina, stretching from the umbo towards the anterior side of the shell, and terminating near the inner side of the anterior muscular impression.

1. Pandora margaritacea.—The Pearly Pandora, pl. XC. figs. 23, 24, 25.

P. margaritacea. Turton, Brit. Biv. p. 40, pl. 3, figs. 11-14.

Transversely oblong; arcuated; one valve nearly flat, the other moderately convex; beaks situate near the anterior side, which is rounded; surface rather smooth and pearly.

The Red Crag, Walton Naze, and the Coral Crag, Sutton.

Genus LI.—CORBULA.—*Bruguière.*

Shell inequivalve, one valve being generally small and flattened, the other large and convex; sub-equilateral, transverse, generally gibbose and close; each valve usually furnished with a single conical, recurved, ascending, pointed tooth, at the side of which is a small concave depression, very deep in some species, which serves either for the reception of the ligament, or the tooth of the opposite valve; two distant, lateral, somewhat irregular muscular impressions in each valve; pallial impression posteriorly angulated, with a very small sinus; ligament internal, fixed to the tooth of the lesser valve, and inserted in the depression by the side of the tooth in the larger valve.

1. Corbula gallica.—The Maple-like Corbula, pl. XC. figs. 1, 2, 3.

C. gallica. Lamarck, Ann. du Mus. VIII. p. 466, No. 1. Ib. An. Son. Vert. V. p. 497, No. 10. Ency. Meth. pl. 230, fig. 5, *a*, *b*, *c*. Deshayes, Coq. Foss. p. 49, pl. 7, figs. 1, 2, 3.

Shell transversely ovate; the larger valve turgid; the umbones with thin, transverse striæ; beaks smooth; smaller valve with longitudinal remote rays.

Found in the London Clay at Bracklesham.

2. Corbula longirostrum.—The Long-beaked Corbula, pl. XCI. figs. 6, 7.

C. longirostrum. Deshayes, Coq. Foss. p. 52, pl. 7, figs. 20, 21. *Tellina cuspidata,* (?) Olivi, Zoologia Adriatica, p. 101, pl. 4, fig. 3.

Shell transversely ovate, with thin concentric striæ; a long beak in front; umbones very small.

Found in the London Clay at Bracklesham.

3. Corbula striata.—Striated Corbula, pl. XCI. fig. 15.

C. striata. Lamarck, Ann. du Mus. VIII. p. 467, No. 3. Ib. An. San. Ver. V. p. 497, No. 13.

Shell transversely oval, with a short beak; surface covered with numerous fine, thin, transverse striæ.

Found in the London Clay at Bracklesham and Barton.

4. Corbula umbonella.—The Little Shield Corbula, pl. XCI. fig. 89.

C. umbonella. Deshayes, Coq. Fos. p. 52, pl. 7, figs. 18, 19.

Shell transversely ovate, thick, and globose, with a short beak in front; umbones large, recurved, and prominent; surface with strong scaleriform striæ.

Found in the London Clay at Bracklesham.

5. Corbula gigantea.—Gigantic Corbula, pl. XCI. f. 38.

C. gigantea. Sowerby, III. p. 13, pl. 209, figs. 5, 6, 7.

Gibbose, transversely oblong; anterior side produced and recurved; posterior and part of the front side furnished with short spines, placed in longitudinal rows; surface concentrically furrowed near the beaks; this side very concave, and separated by an obscure ridge.

Young shells gibbose, with very equal ribs between furrows, being broadest in the middle, and narrowing towards the sides.

The Greensand, Hants and Blackdown.

6. Corbula globosa.—Globular Corbula, pl. XCI. fig. 19.

C. globosa. Sowerby, III. p. 14, pl. 209, fig. 3.

Globular, smooth; its thickness equal to its length; anterior side of the larger valve produced into a lip, and obtuse in front; posterior side round, and the front obtuse; beaks equal.

London Clay, Highgate and Wandsworth.

7. Corbula elegans.—The Elegant Corbula, pl. XCI. figs. 23, 24.

C. elegans. Sowerby, VI. p. 139, pl. 572, fig. 1.

Sub-globular; right valve more convex than the left; concentrically sulcated; posterior side somewhat produced, smooth, and truncated; left valve sub-triangular, smooth; the beak of the sulcated valve is somewhat curved, and destitute of a beak.

Greensand, Blackdown.

8. Corbula striatula.—The Minutely Striated Corbula, pl. XCI. figs. 21, 22.

C. striatula. Sowerby, VI. p. 139, pl. 572, figs. 2, 3.

Slightly ovate, ventricose; valves nearly equal; minutely striated; beak long, straight, and doubly channeled internally.

In the Gault, Folkstone.

9. Corbula rotundata.—The Rounded Corbula, pl. XCI. fig. 31.

C. rotundata. Sowerby, VI. p. 140, pl. 572, fig. 4.

Gibbose, ovate, sides nearly equal, the posterior one slightly truncated; beaks produced; concentrically furrowed; sides nearly equal.

The Red Crag, Sutton; Pleistocene Marine, Ayr and Forth; and Norwich Crag, Bramerton.

10. Corbula obscura.—Obscure Corbula, pl. XCI. f. 25.

C. obscura. Geo. Tr. 2d Ser. II. p. 320. Sowerby, VI. p. 140, pl. 572, fig. 5.

Gibbose, ovate, smooth; posterior side flattened.

Inferior Oolite, Brora, Sutherlandshire.

11. Corbula nitida.—Shining Corbula, pl. XCI. fig. 29.

C. nitida. Sowerby, IV. p. 85, pl. 362, figs. 1, 2, 3.

Gibbose, ovate, sub-trigonal, equilateral; anterior side truncated, smooth, and shining; valves nearly equal; beak produced and rather inflated.

This species hardly exceeds three-tenths of an inch.

Upper Marl, Isle of Wight.

12. Corbula cuspidata.—The Pointed Corbula, pl. XCI. figs. 13, 14.

C. cuspidata. Sowerby, IV. p. 85, pl. 362, figs. 4, 5, 6.

Tumid, transversely oblong, sub-equilateral; anterior side carinated and pointed; lower margin of left valve expanded and inflated, bending over the margin of the opposite valve; disk somewhat rugged; length not quite two-eighths of an inch; breadth two and a-half eighths.

Upper Marl, Colwell and Whitecliff Bay.

13. Corbula complanata.—The Flattened Corbula, pl. XCI. fig. 30.

C. complanata. Sowerby, p. 86, pl. 362, figs. 7, 8.

Depressed, transversely ovate, elongated, its length about half its width; anterior side smaller than the posterior; subtruncated, and defined by an obtuse ridge; posterior portion of the right valve exceedingly depressed and thickened; surface with seven or eight transverse furrows, the interstices being smooth; left valve most convex, and enveloping the right.

Red Crag, Sutton.

14. Corbula pisum.—The Pea-shaped Corbula, pl. XCI. fig. 20.

C. pisum. Sowerby, III. p. 15, pl. 209, fig. 4.

Sub-globular; anterior side slightly truncated; margin of one valve produced; beaks unequal, that of the larger valve very prominent and ventricose; surface concentrically furrowed; margin extending beyond the anterior side of the larger valve and a portion of the front.

The London Clay, Barton.

15. Corbula revoluta.—The Revolved Corbula, pl. XCI. figs. 16, 17, 18.

C. revoluta. Sowerby, III. 16, pl. 209, figs. 8, 9, 10.

Tumid, transversely oblong, its width double its length; anterior side produced and truncated, with a keel running to the beak; margin of larger valve prominent and inflected; beaks unequal; transversely furrowed; larger valve enveloping the edge of the lesser one, and with the front expanding, and revolving inwards.

The London Clay, Barton, and Herne Bay.

A variety of this species has fewer and deeper furrows, with the anterior side somewhat pointed.

16. Corbula curtansata.—The Shortened Corbula, pl. XCI. fig. 4.

C. curtansata. Phillips, Geo. York, I. pl. 3, fig. 27.

Transverse; anterior side large and rounded; posteriorly acuminated; beaks almost central; surface smooth, with well-marked lines of growth; basal line triangular.

The Coral Rag, Malton, and South Cave, Yorkshire.

17. Corbula depressa.—Depressed Corbula, pl. XCI. f. 5.

C. depressa. Phillips, Geo. York, I. pl. 9, fig. 16.

Sub-orbicular; beaks nearly central and much produced; slightly arcuated posteriorly from the beaks downwards; anteriorly finely rounded; the basal line arcuated; surface with regular concentric ridges, and a few lines of growth.

The Great Oolite, Cloughton Wyke, Yorkshire.

18. Corbula Hennahii.—Hennah's Corbula, pl. XCI. f. 10.

Sowerby, Geo. Tr. 2d Ser. V. pl. 56, fig. 1.

Transversely elongated, ovate; posterior side projecting into a short beak; moderately convex; valves rather unequal; posterior side obliquely truncated; surface smooth.

The Devonian Rocks, Plymouth.

19. Corbula ficus.—The Fig Corbula, pl. XCI. fig. 12.

Solen ficus. Brander, fig. 103.

Orbicular, with the posterior side projecting into a beak; whole surface with strong transverse ribs; beaks obtuse.

The London Clay, Barton.

20. Corbula alata.—The Winged Corbula, pl. XCI. fig. 34.

C. alata. Sowerby, Geo. Tr. 2d Ser. IV. p. 176, pl. 21, fig. 5.

Sub-orbicular, convex; anteriorly rounded; posteriorly contracted and truncated; surface smooth; beaks incurved.

The Weald, Pouncefield, Burwash.

21. Corbula costata.—The Ribbed Corbula, pl. XCI. figs. 26, 27, 28.

C. revoluta. Var. B. Sowerby, III. p. 16, pl. 209, figs. 11, 12, 13.

Transversely oblong; tumid; anterior side narrowed, produced, pointed, and obliquely truncated; surface with a few deep transverse furrows.

The London Clay, Barton Cliff.

22. Corbula truncata.—The Truncated Corbula, pl. XCI. figs. 32, 33.

C. truncata. Sowerby, Geo. Tr. 2d Ser. IV. p. 341, pl. 16, fig. 8.

Transversely oblong ovate; beaks large, nearly central; posterior side produced, obliquely truncated, and pointed towards the front; surface transversely striated.

The Greensand, Blackdown.

23. Corbula punctum.—The Punctured Corbula, pl. XCI. fig. 36.

C. punctum. Phillips, Geo. York, I. pl. 2, fig. 6.

Triangular, convex, oblique; beaks produced; sides nearly straight; surface with fine, longitudinal, and transverse striæ, which, without the aid of a lens, seem to be punctures.

The Speeton Clay, Specten, Yorkshire.

24. Corbula limosa.—The Mudd Corbula.

C. limosa. Fleming, Brit. An. p. 426.

Transversely sub-triangular, and longitudinally heart-shaped; beaks gibbous; surface slightly grooved by the lines of growth; shell thin.

The Carboniferous Limestone, Scotland.

25. Corbula cardioides.—The Cardium-like Corbula, pl. XC. fig. 42.

C. cardioides. Phillips, Geo. York, I. pl. 14, fig. 12.

Mactromga globosa. Agassiz et Crit. (Myes) pl. 9 *d*, figs. 9-14, (?)

Slightly transversely ovate, much inflated; anterior side the larger, and rounded; posteriorly shorter and truncated; beaks large, and greatly produced and incurved; surface smooth, with regular, almost equidistant lines of growth.

The Lias, Robin Hood's Bay and Cheltenham.

Genus LII.—NÆARA—*Gray.*

Transversely oblong ovate; shell very convex; posterior side large and rounded; anterior side abruptly tapering to a lengthened and acuminated beak-like elongation; beaks small, inflected; hinge-teeth with one large, elevated, and recurved cardinal tooth in the right valve, which fits into a pit under the edge of the superior margin of the left valve; cartilage attached in central pits beneath the beaks; two muscular impressions in each valve; pallial impression obsolete.

1. Næara dispar.—The Differing Næara, pl. XCIII. f. 21.

Corbula dispar. Deshayes, Coq. Foss. p. 57, pl. 18, figs. 36, 37, 38.

Transversely and acutely oval, thin, biangulated in front, and acuminated into a beak-like elongation; the right valve concentrically furrowed, and the left smooth.

In the London Clay, Barton.

Genus LIII.—POTOMOMYA.—*J. Sowerby.*

Shell sub-triangular, inequivalve, gaping, and generally sub-truncated at the anterior side; left valve encompassing the other all round, receiving its edges upon the thickened parts on each side of the hinge; right valve with a large, erect, spoon-shaped double tooth; left valve with small hollow for the reception of the ligament; pallial impression with a small rounded sinus, forming a quarter of a circle, situate close to the anterior muscular impression.

The remote tooth, with its accompanying hollow, forming a secure nest from the edges of the opposite valves; the inequality of the valves, and the form and situation of the sinus, are the chief characters which distinguish this genus from that of Mya.

1. Potomomya gregaria.—The Gregareous Potomomya, pl. XC. figs. 8 and 10.

P. gregaria. Sowerby, IV. p. 87, pl. 383.

Sub-triangular, its breadth being about one and a half its length; anterior side of the right valve slightly produced and truncated; left valve somewhat larger than the other, and receiving it within its entire margin upon the thickened parts on each side of the hinge, with the lower margin a little incurved; posterior side with a remote tooth, and with a slight furrow within the anterior edge; beaks depressed and obtuse; surface smooth.

Fresh Water, top of Headon Hill, Isle of Wight, and Calbourne.

2. Potomomya plana.—The Plain Potomomya, pl. XCII. fig. 31.

Mya plana. Sowerby, I. p. 173, pl. 76, fig. 2.

Ovate, somewhat depressed, nearly equilateral; anterior side rather elongated, gaping very slightly, and very little truncated; front rounded; beaks much depressed and obtuse; surface smooth, and somewhat polished internally.

The London Clay, Plumstead, near Woolwich, Kent.

8. POTOMOMYA SUB-ANGULATA.—The Sub-angulated Potomomya, pl. XCII. fig. 30.

Mya sub-angulata. Sowerby, I. p. 174, pl. 76, fig. 3.

Transversely oblong ovate, somewhat compressed, nearly equilateral; anterior side angulated above, and a little acuminated and slightly gaping; front a little marginate; cardinal tooth very large; surface smooth.

The London Clay, Barton.

FAMILY IV.—MACTRACEA.

Shells equivalve, often gaping at the lateral extremities; ligament interior, or partly external; animal with the foot small and compressed.

SUB-DIVISION I.—Ligament seen externally, or double.

GENUS LIV.—AMPHIDESMA.—*Lamarck.*

Shell equivalve, transverse, slightly inequilateral, somewhat ovate or orbicular; some species gaping at the sides; each valve provided with one, or, in some instances, two small, slender, cardinal teeth, and two distinct, elongated, lateral teeth, situate near the hinge in one valve, and are nearly obsolete in the other; pallial impression with a very large sinus; ligament double, its external portion slender, and rather short, and the internal cartilage generally longer and larger, adherent in both valves to an elongated groove or pit, which varies in length in different species, and takes its rise immediately within the umbo, and is prolonged within the anterior lateral tooth.

1. AMPHIDESMA TENUISTRIATUM.—The Thin-striated Amphidesma, pl. XCI. fig. 48.

A. tenuistriatum. Sowerby, Geo. Tr. 2d Ser. IV. p. 314, pl. 16, fig 7.

Transversely elongated, sub-ovate, very flat, posteriorly sub-truncated; beaks nearly central, very obtuse; surface with numerous concentric striæ.

The Greensand, Blackdown.

2. AMPHIDESMA SECURIFORME.—The Hatchet-shaped Amphidesma, pl. XCI. fig. 37.

A. securiforme. Phillips, Geo. York, I. pl. 7, fig. 10.

Transversely oblong ovate; beaks obtuse, nearly central, narrowed and rounded at both extremities; surface smooth, with remote lines of growth.

The Inferior Oolite, Glaizedale.

3. AMPHIDESMA DELTOIDE.—The Deltoidal Amphidesma, pl. XCI. fig. 39.

A. deltoide. Portlock, Geo. Sur. p. 439, pl. 36, fig. 7.

Nearly orbicular, much inflated, regularly rounded anteriorly; sharply truncated posteriorly; a well defined diagonal ridge proceeds from the beak to the margin.

The Carboniferous Limestone, Derry and Tyrone.

4. AMPHIDESMA AXINIFORMIS.—The Axe-shaped Amphidesma, pl. XCI. fig. 41.

A. axiniformis. Portlock, Geo. Rep. p. 439, pl. 36, fig. 6.

Nearly triangular; beaks almost central; truncated posteriorly, and straight anteriorly; surface smooth.

The Carboniferous Limestone, Clogher, Tyrone, Ireland.

5. AMPHIDESMA ALBUM.—The White Amphidesma, pl. XCI. fig. 46.

A. album. Fleming, Brit. An. p. 432. *Mactra alba.* Wood, Linn. Trans. VI. p. 174, pl. 16, figs. 9, 10.

Transversely ovate, sub-triangular, rounded at both extremities; beaks sub-central; surface smooth.

The Mammiferous Crag, Bulcham; the Red Crag, Bawdsay, and Coral Crag, Sutton.

6. AMPHIDESMA CARBONARIUM.—The Coal Amphidesma, pl. XCI. figs. 44, 45.

Venus carbonarium. Sowerby, Geo. Tr. 2d Ser. IV. pl. 39, fig. 2.

Nearly orbicular, very convex, most so towards the beaks; anterior side rounded; posterior side truncated, and rather square; beaks rather prominent, inflected, and remote.

The Coal Measures, Coalbrookdale.

7. AMPHIDESMA PORTLOCKII.—Portlock's Amphidesma, pl. XCI. fig. 40.

A. carbonaria. Portlock, Geo. Rep. p. 438, pl. 36, fig. 8.

Sub-orbicular, rounded anteriorly; very slightly truncated posteriorly, with a slight inflection of the margin below the truncation; beaks nearly central and obtuse; surface appears to have been concentrically and finely striated.

The Carboniferous Limestone, Clogher, Tyrone.

8. AMPHIDESMA PRISMATICUM.—Prismatic Amphidesma, pl. XCI. fig. 47.

A. prismatica. Brown, Ill. Rec. Conch. Brit. p. 105, pl. 42, fig. 5.

Transversely oblong ovate, much compressed, thin, and fragile; rounded anteriorly, and acuminated posteriorly, with a slight oblique sub-truncation; surface with very minute concentric striæ.

The Coral Crag, Sutton.

9. AMPHIDESMA RECURVUM.—The Recurved Amphidesma, pl. XCI. fig. 49.

A. recurvum. Phillips, Geo. York, pl. 5, fig. 25.

Transversely oblong oval; beaks large, produced, and subcentral, both sides somewhat recurved; surface smooth, with shallow lines of growth.

The Coral Rag, Malton, and the Kelloways Rock, near Scarborough.

SUB-DIVISION II.—Shell not gaping at the side; ligament external.

Genus LV.—CRASSATELLA.—*Lamarck.*

Shell thick, equivalve, transverse, inequilateral; external surface generally covered with a brown horny epidermis, and more or less transversely grooved; one valve provided with two strong cuneiform, rugose, cardinal teeth, which are sometimes perpendicularly grooved, and one primary tooth in the opposite valve; lateral teeth awanting or nearly obsolete, two strong oblong depressions, the one on the anterior side of the umbo somewhat elongated, and not so well marked as that in the posterior side; two remote, lateral, rather oblong muscular impressions; ligament internal, attached to a concave pit situate on the anterior side of the hinge, this space is divided by a rib into two portions, the outer half of the ligament is externally visible when the valves are closed.

1. Crassatella sulcata.—The Furrowed Crassatella, pl. XC. fig. 31.

C. sulcata. Sowerby, IV. p. 62, pl. 345, fig. 1. *Tellina sulcata.* Brander, fig. 89.

Ovate, transversely elongated; anterior side produced, obliquely truncated, and defined by a moderately distinct ridge; posterior side rounded; surface covered with transverse ribs with deep intervening furrows, which are but faintly marked on the truncated side; beaks rather pointed; internal edge crenated.

The London Clay, Barton.

2. Crassatella plicata.—The Plaited Crassatella, pl. XC. fig. 22.

C. plicata. Sowerby, IV. p. 62, pl. 345, fig. 2.

Oblong-ovate; anterior side defined by an oblique, obtuse ridge, and slightly truncated; whole surface with numerous fine transverse plaits; margin crenated within.

The London Clay, Barton.

3. Crassatella compressa.—The Compressed Crassatella, pl. XC. fig. 36.

C. compressa. Lamarck, An. du Mus. 6, p. 410, pl. 20, fig. 5. *Deshayes*, Coq. Fos. pl. 3, figs. 8, 9.

Sub-triangular; anterior side shortest and rounded; posterior side nearly straight from the two-thirds downwards, from thence obliquely truncated; the diagonal ridge terminating in an acute angle; surface with many transverse narrow furrows, which become abruptly angular after passing the ridge; internal margin destitute of crenulations.

Genus LVI.—TELLIMYA.—*Brown.*

Shell equivalve, slightly inequilateral; sub-orbicular; convex; close all round; left valve destitute of cardinal teeth, but provided with a pretty large hiatus, and two projecting lateral teeth, each having a groove in its centre; sometimes with one or two rather long teeth on the right side; right valve with two recurved, prominent teeth, which occupy the vacant space below the beak in the opposite valve; muscular impressions large and distinct; pallial impressions entire; ligament internal.

1. Tellimya sub-orbicularis.—The Sub-orbicular Tellimya, pl. XC. figs. 34, 35.

Kellia sub-orbicularis. Turton, Brit. Bio. p. 57, pl. 11, figs. 5, 6.

Sub-orbicular, very convex, thin; beaks nearly central, and slightly inflected; sides nearly equal and rounded; basal margin rather straight, a single tooth in one valve immediately under the beak, locking into a double incurved one in the other; with a laminated tooth behind the umbo in each valve.

The Pleistocene Marine Formation, Largs, and the Coral Crag, Sutton.

Genus LVII.—MONTACUTA.—*Turton.*

Shell oval or oblong, equivalve, inequilateral, mostly closed; hinge with two teeth in each valve, and a cavity between them; destitute of lateral teeth; ligament internal.

1. Montacuta sub-striata.—The Sub-striated Montacuta.

M. sub-striata. Turton, Brit. Biv. p. 59, pl. 11, figs. 10, 11. *Tellimya.* Brown, Ill. Rec. Conch. Brit. p. 107, pl. 40, f. 23.

Sub-ovate, somewhat oblique, a little inflated, slightly contracted in the middle of the valves; beaks prominent, straight, and not quite central; anterior side large and rounded, the other short and narrowed; surface with nearly obsolete distant strie.

The Coral Crag, Sutton.

2. Montacuta glabra.—The Smooth Montacuta, pl. XC. fig. 32.

Tellimya glabra. Brown, Ill. Rec. Conch. p. 107, pl. 42, figs. 20, 21.

Elliptical, moderately convex, thin, and smooth; anterior side rounded, and posteriorly sub-truncated; beaks placed considerably to one side; one broad primary tooth in each valve; with a central hiatus.

The Coral Crag, Sutton.

3. Montacuta ferruginosa.—The Rusty Montacuta.

M. ferruginosa. Turton, Brit. Biv. p. 60. *Tellimya elliptica.* Brown, Ill. Rec. Conch. Brit. p. 106, pl. 42, figs. 16, 17.

Transversely sub-ovate, moderately convex, with obsolete concentric wrinkles; beaks obtuse, sub-central, basal margin nearly straight; hinge with two projecting teeth, one of which is erect, the other slopes inwards and downward, separated by a triangular hiatus.

The Pleistocene Marine Formation, Ireland.

Genus LVIII.—THETIS.—*Sowerby.*

Shell bivalve, equivalve, sub-equilateral, more or less orbicular and convex; ligament marginal; hinge with three or four acuminated teeth; line of attachment of the mantle (?) with a deep sinus, extending nearly to the beak; muscular impressions round, small, and remote from the hinge.

1. Thetis minor.—The Small Thetis, pl. XCII. f. 3, 4, 5.

T. minor. Sowerby, VI. p. 21, pl. 513, figs. 5 and 6. *Corbula lævigata.* Ib. p. 14, pl. 209, figs. 1 and 2. Venus, Mantell. Geology of Sussex, p. 73, No. 12.

Shell gibbose, wider than long; beaks pointed, nearly ap-

proximate, and incurved; margin plain; posterior edge rounded.

In the Lower Greensand, at Parham Park, Sussex, and at Shanklin Chine, Isle of Wight; in the Lower Greensand, Lyme Regis and Blackdown.

2. THETIS MAJOR.—The Large Thetis, pl. XCII. figs. 1, 2.

T. major. Sowerby, VI. p. 20, pl. 513, figs. 1, 2, 3, 4.

Orbicular, or oblong oval, very convex; beaks produced, and nearly central, much incurved and approximate; posterior side rather angular; surface smooth.

The Upper Greensand, Devizes and Blackdown; and the Lower Greensand, Isle of Wight, North Wiltshire, &c.

It will be seen from our figures that there is considerable difference of form in the species.

SUB-DIVISION III.—Ligament internal; shell gaping at the sides.

GENUS LIX.—MACTRA.—*Linnæus.*

Shell generally thin, sometimes thick; equivalve—for the most part nearly equilateral, and more or less regularly triangular, slightly gaping at one end, and almost imperceptibly so at the other; each valve with one V-shaped cardinal tooth, the point being next the umbo, and diverging from it, and in some species the limbs are disunited at the base, so as to give the appearance of two distinct teeth; close on the posterior side is situate a very thin sharp tooth; immediately behind the angular tooth is situate the pit for the reception of the ligament, and projecting somewhat within the shell; one valve with two lateral teeth on each side, and one on both sides in the other, diverging from the beaks, placed near the margin of the shell, and fitting into the space between the two in the opposite valve; two lateral, remote, muscular impressions; mantle muscular impression with a small sinus; ligament consisting of two portions, the one considerably larger than the other, and internal, and the other half external.

1. MACTRA ANGULATA.—The Angulated Mactra, pl. XCI. fig. 37*.

M. angulata. Sowerby, Geo. Tr. 2d Ser. IV. p. 341, pl. 16, fig. 9.

Nearly triangular, convex; posterior side defined by a ridge; beaks small, nearly central, and approximating; surface smooth.

The Greensand, Blackdown.

2. MACTRA STRIATA.—The Striated Mactra, pl. XCI. f. 42.

M. striata. Brown, Wern. Mem. VIII. p. 93, pl. I. f. 22.

Sub-triangular, convex, with nearly equal sides; beaks central, and slightly turned to one side; lateral teeth prominent; surface with very strong concentric striæ.

The Pleistocene Marine Formation, Stevenston, Ayrshire.

3. MACTRA DEPRESSA.—Depressed Mactra, pl. XCI. f. 51.

M. depressa. Deshayes, Coq. Foss. p. 31, pl. 4, fs. 11-14.

Shell thin, trigonal, depressed; umbones somewhat prominent; cardinal teeth simple, and not plicated; lateral teeth close to the cardinal ones; lunule depressed and plain.

The London Clay, Bracklesham.

4. MACTRA ARCUATA.—The Arcuated Mactra, pl. XCI. f. 56.

M. arcuata. Sowerby, p. 135, pl. 160, figs. 1 and 6.

Ovate, length equal to about four-fifths its width; both sides arched, the posterior one smallest; hinge narrow; lateral teeth striated; surface smooth, with a few well-defined lines of growth.

In the Mammiferous, Red, and Coralline Crags, Sutton.

5. MACTRA SOLIDA.—The Strong Macra, pl. XCI. figs. 53, 57, 58.

M. ovalis. Sowerby, II. p. 136, pl. 160, fig. 5. Brown's Illust. Rec. Conch. Brit. p. 108, pl. 41, figs. 3, 4.

Sub-triangular, strong; sides nearly equal; surface smooth, with a few concentric wrinkles.

The Mammiferous Crag, Thorpe; the Red and Coral Crags, Sutton.

6. MACTRA SUB-TRUNCATA.—The Sub-truncated Mactra, pl. XCI. fig. 43.

M. cuneata. Sowerby, II. p. 136, pl. 160, fig. 7. *Mactra sub-truncata.* Brown, Illust. Rec. Conch. Great Britain and Ireland, p. 108, pl. XCI. fig. 43.

Sub-triangular, inequilateral, strong, and moderately convex; anterior side rounded; posteriorly somewhat acuminated and flattened; surface with strong transverse striæ.

The Mammiferous Crag, Thorpe, and Red Crag, Sutton.

7. MACTRA DEAURATA.—The Gilded Mactra, pl. XCI. f. 53.

M. deaurata. Turton, Brit. Biv. p. 71, pl. 5, fig. 8.

Oblong oval, inequilateral, rather flat; beaks obtuse and incurved, placed a little to the posterior side, which is sub-truncated; anteriorly rounded; surface smooth.

The Red Crag, Sutton.

8. MACTRA GLAUCA.—The Grey Mactra, pl. XCI. fig. 50.

M. glauca. Brown, Illus. Rec. Conch. Brit. pl. 41, fig. 1.

Sub-triangular, convex, thin; beaks central, obtuse, and inflected; anterior side slightly wrinkled; surface with very fine concentric striæ.

The Red Crag, Sutton.

9. MACTRA STULTORUM.—The Foolish Mactra, pl. XCI. f. 55.

M. stultorum. Brown, Illus. Rec. Conch. Brit. p. 108, pl. 41, fig. 2.

Sub-triangular, thin, moderately convex; beaks central, rather prominent, and inflected; sides nearly equal; surface with very fine, rather irregular, concentric striæ.

The Mammiferous Crag, Thorpe, and the Red Crag, Sutton.

9. MACTRA TRUNCATA.—The Truncated Mactra, pl. XCI. fig. 55.

M. truncata. Brown, Illust. Rec. Conch. Brit. p. 108, pl. 41, fig. 5.

Triangular, moderately convex, strong, and thick; sides nearly equal and straight; surface smooth, with a few obsolete lines of growth.

Pleistocene Marine Formation, Ayrshire, and Frith of Forth.

GENUS LX.—MACTRINA.—*Brown.*

Shell sub-triangular, equivalve, nearly equilateral; beaks

almost central; left valve with a strong, central, triangular, slightly bifid tooth, which locks into a corresponding pit in the opposite valve, on each side of which are triangular transverse pits for receiving two small, depressed, cardinal teeth in the right valve; ligament external; two strong muscular impressions in each valve; pallial impressions entire.

1. Mactra triangularis.—The Triangular Mactrina.

M. triangularis. Brown, Illus. Rec. Conch. Brit. p. 108, pl. 40, fig. 25. *Goodallia triangularis.* Turton, Brit. Biv. p. 77, pl. 6, fig. 14.

Sub-triangular, rather strong; sides slightly unequal; surface smooth; internal margin strongly crenated; diameter about a quarter of an inch.

The Pleistocene Marine Formation, Ireland.

Genus LXI.—LUTRARIA.—*Lamarck.*

Shell equivalve, inequilateral, thin, transversely ovate or oblong; gaping at both sides; the posterior side generally the longer, and always gaping more than the other; one valve with two thin laminar teeth, one of which is sometimes compound; the opposite valve with three teeth, the central one compound in some instances, and the posterior one slender and compressed; two distant lateral muscular impressions; muscular impression of the mantle with a large sinus; ligament internal, situate in a deltoidal, oblique, internally projecting, spoon-shaped pit, with a prominent margin placed next to the teeth in each valve.

1. Lutraria carinifera.—The Keeled Lutraria, pl. XCII. figs. 6, 7.

L. carinifera. Sowerby, VI. p. 66, pl. 534, fig. 2.

Transversely oval; its width about twice its length; convex; surface longitudinally striated; posterior side truncated, smooth, bounded by an obtuse keel, and with its edge straight.

The Lower Chalk, Dowlands, Devonshire.

2. Lutraria striata.—The Striated Lutraria, pl. XCII. figs. 8, 9.

L. striata. Sowerby, VI. p. 65, pl. 534, fig. 1.

Transversely oval, its length being two-thirds its width; compressed; posterior side smallest, rather pointed, gaping, and turned outwards; beaks prominent; surface with numerous equidistant concentric striæ.

Greensand, Blackdown and Lyme Regis.

3. Lutraria decurtata.—The Divided Lutraria, pl. XCII. fig. 12.

L. decurtata. Phillips, Geo. York, I. pl. 7, fig. 11.

Transversely oblong, elongated; beaks obtuse and incurved; placed towards the anterior side; both sides rounded, surface with several strong transverse furrows below the beaks; disk divided by a strong line of growth; remaining portion smooth.

The Cornbrash, Scarborough and Gristhorpe; Great Oolite, White Nab, Wiltshire; and the Lias, Rosebury, Yorkshire.

4. Lutraria primæva.—The Primeval Lutraria, pl. XCII. fig. 15.

L. primæva. Portlock, Geo. Sur. p. 441, pl. 36. fig. 5.

Transversely elongated, somewhat square, and a little twisted; beaks tumid, situate near the posterior side, which is flattened above and a little curved below; anterior side a little rounded; back and basal lines nearly parallel; surface with irregular concentric striæ, and some indistinct lines of growth.

The Carboniferous Limestone, Carnteel, Tyrone.

5. Lutraria rotundata.—The Rounded Lutraria, pl. XCII. fig. 16.

L. rotundata. Phillips, Geo. York, I. pl. 12, fig. 6.

Transversely ovate; beaks obtuse and incurved; both sides a little narrowed; surface with strong irregular lines of growth.

The Lias, Yorkshire.

6. Lutraria donaciforme.—The Donax-shaped Lutraria, pl. XCII. fig. 17.

L. donaciforme. Phillips, Geo. York, I. pl. 12, fig. 5.

Transversely oblong ovate; rather convex; a ridge, extending from the obtuse beaks, terminates on the base; surface smooth, with strong lines of growth; basal lines nearly straight, with a slight hollow.

The Lias, Rosebury, Yorkshire.

7. Lutraria gibbosa.—The Gibbous Lutraria, pl. XCII. fig. 10.

L. gibbosa. Phillips, Geo. York, I. pl. 9, fig. 6.

Transversely elongated, gibbous; both sides rounded; the posterior one a little produced below; beaks depressed, surface smooth, with strong, regular, concentric lines of growth; on the posterior side a few remote radiations extending from the beaks.

The Great Oolite, Cloughton.

8. Lutraria elliptica.—The Elliptical Lutraria, pl. XCII. fig. 14.

L. elliptica. Brown, Ill. Rec. Conch. Brit. p. 109, pl. 43, figs. 2, 3.

Transversely oblong ovate, compressed; longer side with a shallow groove, emanating from the beak and extending to the basal line, over which there are some irregular striæ-like lines; surface with fine, nearly obsolete, concentric striæ, and a few wrinkles.

The Red Crag, Sutton; Coral Crag, Ramshot; and the Great Oolite, Cloughton.

9. Lutraria compressa.—The compressed Lutraria, pl. XCII. fig. 19.

L. compressa. Brown, Ill. Rec. Conch, Brit. p. 109, pl. 43, fig. 4.

Transversely sub-ovate; beaks rather obtuse; anterior side rounded; the other slightly acuminated; surface covered with pretty strong transverse striæ-like wrinkles; pallial impression very large.

The Mammiferous Crag, Bramerton, and the Red Crag, Sutton.

Grand Division IV.—CRASSIPEDES.

Mantle entirely or partly united before, foot thick, placed posteriorly, shell gaping when closed.

Tribe I.—MYARIA.

Ligament internal; a broad, spoon-shaped tooth in each valve, or in one only; shell gaping at both sides, or at one only.

Genus LXII.—MYA.—*Linnæus.*

Shell transverse, nearly equivalve, gaping at both extremities, but widest at the posterior end; one valve with a large compressed, dilated, spoon-shaped, vertically projecting tooth; the opposite valve destitute of teeth; two lateral, distant, muscular impressions, the anterior one narrow, and the posterior one orbicular; mantle muscular impression with a large sinus; ligament internal, large, and fixed in the cavity of the tooth, in one valve, and to a large sub-umbonal cicatrice in the other.

1. Mya rotundata.—The Rounded Mya, pl. XCII. f. 22.

M. rotundata. Sowerby, Silur. Syst. pt. II. p. 613, pl. 6, fig. 1.

Shell transversely oblong, convex; beaks obtuse, and situate near the anterior side, which is separated by a concave space from the middle of the valves; posterior side rounded; surface wrinkled transversely.

This species strongly resembles *Cypricardia undata*, but will at once be distinguished by its want of a lunette.

From the Aymestry Limestone, or Middle Ludlow Rocks, at Caynham Camp, near Ludlow.

2. Mya mandibula.—The Jaw Mya, pl. XCII. fig. 13.

M. mandibula. Sowerby, I. p. 93, pl. 43.

Transversely elongated, its breadth being once and a half its length; gibbose; disk flattened in the middle; anterior side square, gaping, the opening oblong; posterior side somewhat straight; depth about two thirds its length; surface with about 25 transverse undulations; beaks pointed and incurved.

Upper Greensand, Devizes and Blackdown; the Gault, Isle of Wight and Dorsetshire; and the Lower Greensand, Pulborough and Lyme.

3. Mya augustata.—The Narrowed Mya, pl. XCII. figs. 26, 27, 28, 29.

M. augustata. Sowerby, VI. p. 57, pl. 531, fig. 1.

Transversely elongated; its width sometimes thrice its length; valves unequal; shell thin and antiquated; irregularly compressed; both sides obtuse and gaping; base of the lesser or right valve concave; beaks small, placed nearest the anterior side. Hinge like those of *M. sub-angulata* and *plana*.

The Upper Marl, Colwell Bay.

4. Mya ovalis.—The Oval Mya, pl. XCII. figs. 24, 25.

M. ovalis. Turton's Brit. Bia. pl. 3, fig. 1, 2. *Mya pullus.* Sowerby, VI. p. 58, pl. 531, fig. 2.

Transversely ovate; its length a little more than half its width; anterior side longest and rounded; posterior side somewhat pointed; surface concentrically striated, and a little compressed; lines of growth well defined.

Mammiferous Crag, Postwick; the Red Crag, Butley, and and the Pleistocene Marine Series, Isle of Bute.

5. Mya arenaria.—The Sand Mya, pl. XCII. fig. 23.

M. arenaria. Sowerby IV. p. 88, pl. 364.

Transversely ovate; anterior side pointed; posterior side rounded; surface with concentrical sub-striæ and undulations.

The Pleistocene Marine Formation, Ayr and Dalmuir, Dumbartonshire; the Mammiferous Crag, Bramerton, and Red Crag, Sutton.

6. Mya lata.—The Broad Mya, pl. XCIII. fig. 4.

M. lata. Sowerby, I. p. 185, pl. 81.

Ovate; length about two thirds its width, compressed; anterior side acuminated and truncated, having an arcuated margin, slightly gaping; beaks rather produced and acute; surface smooth, with a few shallow undulations; tooth very large.

The Mammiferous Crag, Bramerton, and the Red Crag, Sutton.

7. Mya æquata.—The Equal Mya, pl. XCII. fig. 20.

M. æquata. Phillips, Geo. York, I. pl. 11, fig. 12.

Transversely oblong ovate; beaks nearly central, and obtuse; sides equally rounded; surface smooth.

The Inferior Oolite, Blue Wick, Coldmoor.

8. Mya calciformis.—The Shoe-Shaped Mya, pl. XCIII. fig. 6.

M. calciformis. Phillips, Geo. York, I. pl. 11, fig. 3.

Transversely lengthened, short, rounded at both extremities; the posterior side a little narrowed; a slight inflection towards the centre at the base; surface smooth.

The Kelloways Rock, Scarborough, and the Inferior Oolite, Blue Wick, Cheltenham.

9. Mya dilata.—The Dilated Mya, pl. XCII. fig. 18.

M. dilata. Phillips, Geo. York, I. pl. 11, fig. 4.

Much elongated transversely, a little twisted; anterior side a little narrow at the extremity; posterior side considerably dilated and truncated, acute above and below; beaks sub-central, curved backwards, between which and the angle the back is concave; basal line nearly straight.

The Inferior Oolite, Glaizedale.

10. Mya læviuscula.—Smooth Mya, pl. XCII. fig. 11.

M. læviuscula. Sowerby, Geo. Tr. 2d Ser. IV. p. 340, pl. 16, fig. 6.

Transversely oblong, somewhat square; a depression from the beaks to the base in the centre of the valves; beaks rather prominent; sides bluntly rounded; surface smooth, with a few transverse wrinkles.

The Greensand, Blackdown.

11. Mya phasiolina.—The Little Pheasant Mya, pl. XCII. fig. 21.

M. phasiolina. Phillips, Geo. York, I. pl. 2, fig. 13.

An elongated ellipsis, both sides equally rounded; beaks obtuse; surface smooth.

The Specton Clay, Specten, Yorkshire.

12. Mya truncata.—The Truncated Mya, pl. XCIII. f. 1.

M. truncata. Brown, Illust. Rec. Conch. Brit., p. 111, pl. 45, fig. 2.

Sub-ovate; anterior side rounded; posterior side much truncated, and gaping widely; hinge line nearly straight; basal line almost parallel to the back, and slightly hollow in the middle; surface with numerous concentric wrinkles.

Pleistocene Marine Formation, Ayrshire, the Red Crag, Sutton, and the Coral Crag, Ramshot.

GENUS LXIII.—THRACIA.—*Leach.*

Shell very thin, transverse, inequivalve, inequilateral, one valve usually more convex than the other; beaks generally obtuse, and sub-central; hinge with a broad, transverse, frequently thickened tooth in the centre, in which the cartilage is situate; surface covered with a very thin epidermis; two well-marked but dissimilar muscular impressions in both valves; pallial impression interrupted by an arcuated sinus at the posterior side, which is truncated.

1. THRACIA OBLATA.—The Brought-up Thracia, pl. XCIII. figs. 2, 3.

Lutraria (?) oblata. Sowerby, VI. p. 66, pl. 534, fig. 3.

Transversely oval, compressed; both sides obtuse and slightly bent; beaks prominent; both sides obtuse; surface small; near the posterior side a small keel; pallial impression with a deep sinus.

The London Clay, Pegwell, Herne Bridge, and Bognor.

2. THRACIA DEPRESSA.—The Depressed Thracia, pl. XCIII. fig. 5.

Mya depressa. Sowerby, V. p. 19, pl. 418.

Obovate, compressed, very slightly gaping, anterior side shorter than the other; hinge-line straight and depressed; ligament external and short; beaks prominent and incurved; surface smooth, with many undulating lines of growth; substance of the shell thin.

The Portland Stone, Brill, and Isle of Purbeck, and the Kimmeridge Clay, Weymouth and Specten.

3. THRACIA DECLIVES.—Bent-Down Thracia.

F. declivis. Brown, Illust. Rec. Conch. Brit. p. 109, pl. 44, fig. 5.

Transversely oblong ovate; rather compressed and thin; beaks large, very obtuse, and not quite central, that of the larger valve with a hiatus for the reception of the beak of the other valve, not to prevent the opening of the shell; posterior side rounded; anterior side truncated, with a shallow, oblique furrow near the hinge line; basal line nearly straight; surface strongly wrinkled, and irregularly striated concentrically.

The Red Crag, Sutton; and the Coral Crag, Ramshot.

4. THRACIA DUBIA.—The Dubious Thracia, pl. XCIII. figs. 7, 8, 9.

Transversely ovate; beaks approximate; a flexure from the beaks to the base; surface smooth.

The London Clay, Bognor.

GENUS LXIV.—ANATINA.—*Lamarck.*

Shell transverse, free, inequilateral, generally with unequal valves; sometimes gaping at both ends, and in some species nearly closed; generally provided with a small accessory spoon-shaped appendage, internally, in each valve, to which the ligament is attached; connected with this, and also adhering to the ligament, is a small irregularly-shaped testaceous internal process, which serves to assist in strengthening the adhesion between the valves.

1. ANATINA UNDULATA.—The Waved Anatina, pl. XC. fig. 30.

Sanguinolaria undulata. Sowerby, VI. p. 91, pl. 548, figs. 1, 2. Phillips, Geo. York, I. pl. 5, fig. 1.

Much elongated transversely; its width being considerably more than twice its length; thin, convex, rounded before and sub-truncated behind; gaping slightly; surface with transverse undulations, which generally become obsolete towards the posterior side; slightly pearlaceous within.

The Calcareous Grit, Malton and Brora; the Oxford Clay and Cornbrash, Scarborough.

GENUS LXV.—LYSIANASSA.—*Münster.*

Shell thin, transverse, inequilateral, oval, convex, or ventricose; gaping at both sides; surface ribbed; those on the cardinal margin anteriorly bent backwards, and the ribs on the posterior side bent forwards, and radiated on the middle of the back; beaks sub-central; hinge unknown.

1. LYSIANASSA ANGUILIFERA.—The Angled Lysianassa, pl. XCII. fig. 32.

Mya anguilifera. Sowerby, III. p. 46, pl. 224, figs. 6, 7.

Transversely elongated; width nearly thrice its length; gibbose; anterior side broadest and gaping; posterior side being small; surface with obtuse angularly bent ridges, which extend beyond the central portion, many of them reaching the front without bending; beaks a little produced, but obtuse.

The Fuller's Earth, Smallcomb; Bath and Bathford Hill.

2. LYSIANASSA LITERATA.—The Lettered Lysianassa, pl. XCII. fig. 34.

M. literata. Sowerby III. p. 45, pl. 224, fig. 1.

Transversely elongated; its width more than twice its length; sub-equilateral, convex; surface smooth, with obtuse angularly bent ridges, their angles upon the central portion in a longitudinal direction; substance of the shell thin.

Coral Rag, Malton; Cornbrash, Scarborough; the Inferior Oolite, Coldmoor, Yorkshire.

3. LYSIANASSA V. SCRIPTA.—The Letter V. Lysianassa, pl. XCII. fig. 33.

M. V. scripta. Sowerby, III. p. 46, pl. 224, f. 2, 3, 4, 5.

Transversely elongated, sub-equilateral, convex, smooth, with obtuse, angularly bent ridges upon the central portion; angles of the ridges acute, in an oblique direction.

Distinguished from *L. anguilifera*, by the oblique direction of the angles of the ridges, which are likewise more acute.

There is another variety which has an oblique elevation bounding the anterior side.

The Kelloways Rock, Wiltshire; the Cornbrash, Bedford; and the Inferior Oolite, Claydon and Brora.

4. LYSIANASSA RHOMBIFERA.—The Rounded Lysianassa, pl. LXI.*** fig. 28.

Ovately trapeziform; narrow in front; obliquely truncated and gaping posteriorly; beaks sub-central; the ribs angulated, truncated, and bent backwards.

The Lias, Antrim, Ireland.

TRIBE II.—SOLENIDES.

Shell transversely elongated, destitute of accessory pieces, and gaping only at the lateral extremities; ligament external.

GENUS LXVI.—SOLEMYA.—*Lamarck.*

Shell equivalve, inequilateral, transversely oblong, rounded at the extremities; beaks near the posterior side; hinge destitute of teeth; ligament partly internal, situate in the margin of an oblique, flattish, posterior rib; two distant lateral muscular impressions.

1. SOLEMYA PRIMÆVA.—The Primeval Solemya, pl. XCIII. fig. 10.

S. primæva. Phillips, Geo. York, II. p. 209, pl. 5, fig. 6.

Transversely oblong oval, compressed, rounded at both sides; beaks depressed; surface with rather wide radiating striæ.

The Carboniferous Limestone, Heiton; Lowick and Fermanagh, Ireland.

GENUS LXVII.—PANOPÆA.—*Menard.*

Equivalve, oval, inequilateral, gaping unequally at both extremities; hinge with an acute erect primary tooth in each valve, and a large callosity near the umbones supporting the ligament; two distant, oval, muscular impressions, pallial impression with a large sinus; ligament large, external, adhering to an ample prominent fulcrum.

1. PANOPÆA INTERMEDIA.—The Intermediate Panopæa, pl. XCIII. figs. 14, 15.

Mya intermedia. Sowerby, VII. p. 4, pl. 602, Ib. I. p. 76, fig. 1, and p. 173, pl. 419, fig. 2. *Corbula dubia.* Deshayes, Coq. Foss. p. 59, pl. 9, figs. 13, 14.

Shell ovate, depressed, inequilateral, thin, longitudinally ribbed; hinge with one cardinal tooth close to the pit of the hinge.

The London Clay at Reading, Watford, Plumstead, and Bognor.

2. PANOPÆA GIBBOSA.—The Gibbous Panopæa, pl. XCIII. fig. 13.

Mactra gibbosa. Sowerby, I. p. 91, pl. 42.

Gibbose, transversely elongated, its breadth twice its length, anterior side considerably wider than the posterior, recurved, truncated, and gaping; posterior side rounded; length and depth nearly equal; beaks greatly incurved, and pointed.

The Portland Stone, Brill, Buckinghamshire; the Inferior Oolite, near Bath.

3. PANOPÆA OBLATA.—Raised Panopæa, pl. XCIII. fig. 22.

Mya gibbosa. Sowerby, V. p. 19, pl. 419, fig. 1.

Sub-triangular, gibbose and gaping, posterior side short; anterior side somewhat attenuated, beaks prominent and incurved; surface with transverse regular furrows.

The Kimmeridge Clay, Osmington, Dorsetshire.

4. PANOPÆA PLICATA.—Plicated Panopæa, pl. XCIV. f. 10.

Mya plicata. Sowerby, V. p. 20, pl. 419, fig. 3.

Transversely oblong, its width nearly twice its length; almost cylindrical, and ventricose; anterior side truncated and gaping; posterior side very short, and a little narrowed, beaks rather obtuse; surface with distinct concentric shallow ridges; which are straight towards the beaks.

The Upper Greensand, Rowde Hill; the Gault, Folkstone; the Lower Greensand, Sandgate, Isle of Wight and Lyme Regis.

5. PANOPÆA NORWEGICA.—The Norwegian Panopæa, pl. XCIII. figs. 17, 18, 19.

P. Norwegica. Sowerby, VII. p. 1, pl. 610, figs. 2 and 611, figs. 1, 2.

P. bivonæ. Forbes, Mem. Wern. Soc. VIII. p. 94, pl. 2, figs. 4, 4.

Transversely oblong, compressed, thick; anteriorly shortest and rounded; posteriorly obliquely truncated above and rounded below; two longitudinal shallow furrows emanate from the beak, the one near the middle of the posterior side, and the other from the centre of the beaks, terminating on the margins, dividing the valve into three parts; beaks placed on the anterior side; back and basal lines parallel; surface with concentric wrinkles; muscular impressions deep, pallial impressions large and unconnected with a shallow sinus.

The Pleistocene Marine Formation, the Clyde and Bute, and the Red Crag, Sutton.

6. PANOPÆA ELONGATA.—The Elongated Panopæa, pl. XCIII. fig. 16.

P. elongata. Portlock, Geo. Rep. p. 119, pl. 34, fig. 19.

Much elongated transversely; beaks sub-central, obtuse, anterior side shortest; both extremities rounded, posteriorly a little dilated, an oblique ridge from the beak to the margin, cardinal margin straight; surface with concentric wrinkles.

The Portland Oolite, Ballintoy, Ireland.

7. PANOPÆA ROTUNDATA.—The Rounded Panopæa, pl. XCIII. figs. 11, 12.

P. rotundata. Sowerby, Geo. Tr. 2d Ser. IV. p. 338, pl. 13, fig. 2.

Nearly orbicular; considerably gibbose, beaks obtuse, central, and approximate, anterior side rounded; posterior side with a short, curved ridge from the beak to the margin, above which it is obliquely truncated, the termination of the beak forming an acute angle; basal line much arcuated.

The Lower Greensand, Sandgate.

8. PANOPÆA OVALIS.—The Oval Panopæa, pl. XCIV. figs. 6, 7.

P. ovalis. Sowerby, Geo. Tr. 2d Ser. IV. p. 340, pl. 16, f. 5.

Transversely oval; moderately convex; beaks situate nearest the anterior side, which is closed; posterior sides rounded and gaping; surface smooth.

The Greensand, Blackdown.

9. PANOPÆA GENTILIS.—The Gentle Panopæa.

P. gentilis. Sowerby, VII. p. 1, pl. 510.

Transversely elongated; oblong ovate; sides flattened; posteriorly acuminated; anteriorly rounded and expanded upwards; beaks nearly central and inflected; gaping at both extremities; width nearly twice the length.

In the Red Crag, Alderton.

10. PANOPÆA IPSVICIENSIS.—The Ipswich Panopæa.

P. Ipsviciensis. Sowerby, VII. p. 3, pl. 11, figs. 3, 4.

Transversely elongated, sub-cylindrical; somewhat compressed; thin; posterior side truncated, and rounded anteriorly, with a slight protrusion of the edge; beaks central; surface slightly wrinkled concentrically; basal line nearly straight.

In the Coralline Crag, Ramshot, and at Ipswich.

GENUS LXVIII.—SOLEN.—*Linnæus.*

Shell equivalve, transversely elongated; sub-cylindrical, prodigiously inequilateral, umbones nearly terminal, situate close to the anterior side, and gaping widely at both extremities; truncated or sub-truncated, sometimes rounded; hinge linear, with several small cardinal teeth, various in form, often acute and recurved; lateral teeth somewhat elongated and crooked; muscular impressions distant, tongue-shaped, the anterior one joined a little behind the umbones; the posterior one irregular and sub-oval; pallial impression elongated, straight, and bifurcated behind; ligament long and exterior; external surface covered with a thick horny epidermis.

1. SOLEN SILIQUA.—The Pod Solen, pl. XCIV. fig. 14.

S. siliqua. Brown, Ill. Rec. Conch. Brit. p. 112, pl. 46, fig. 1.

Very much elongated transversely, straight, sub-cylindrical; greatly inequilateral; hinge situate at one side, with a single thin, compressed, upright tooth in one valve, and an elongated, remote, lateral laminæ; the opposite valve with two teeth, a primary and a lateral one, corresponding to the lateral laminæ opposite; lower area striated transversely, with distant lines of growth, both of which suddenly cross the area longitudinally; surface smooth.

The Pleistocene Marine Formation, Clyde, and the Mammiferous Crag, Bramerton.

2. SOLEN PARISIENSIS.—The Parisian Solen, pl. XCIV. f. 9.

Solen strigillatus. Lamarck, An. du Mus. VII. p. 428, pl. 43, fig. 5. Deshayes, Coq. Foss. p. 26, pl. 2, figs. 22, 23.

Shell transversely oblong ovate, with the medial subsinus somewhat rugose; surface, towards the centre of the valves, with obliquely longitudinal imbricated striæ; hinge with a single tooth in one valve and two in the opposite one.

Found in the London Clay, Bracklesham and Barton.

3. SOLEN VAGINALIS.—The Vagina-like Solen, pl. XCIV. fig. 18.

S. vaginalis. Deshayes, Elem. Conch. p. 108, pl. 6, fig. 7. Coq. Foss. p. 25, pl. 2, figs. 20, 21.

Shell linear, straight, the termination of the margin oblique; hinge with one triangular tooth.

Found in the London Clay at Barton.

4. SOLEN ENSIS.—The Sabre Solen, pl. XCIV. fig. 17.

S. Ensis. Brown, Ill. Rec. Conch. Brit. p. 113, pl. 47, figs. 10, 10.

Greatly lengthened transversely; considerably arcuated and truncated at both extremities; hinge with a single cardinal tooth in one valve, locking between two in the opposite one, which is provided with a strong, lateral, elevated, slightly recurved, cleft tooth, for the reception of the opposite simple one, striated like *S. siliqua.*

The Pleistocene Marine Formation, Ireland.

5. SOLEN LEGUMEN.—The Pea-pod Solen, pl. XCIV. f. 13.

Solenocurtus legumen. Brown, Ill. Rec. Con. Brit. p. 113. pl. 47, figs. 8, 9, 9.*

Greatly elongated transversely, much compressed and thin; umbones placed to one side, but hardly marked; hinge with two small, erect, recurved, cardinal teeth in one valve, between which an erect thin tooth in the opposite valve is locked; surface very smooth; rounded at both sides.

The Pleistocene Marine Formation, Ayr.

6. SOLEN AFFINIS.—The Allied Solen, pl. XCIV. fig. 16.

S. affinis. Sowerby, I. p. 15, pl. 3.

Transversely elongated, arcuated, thin and much compressed; gaping at both sides; hinge placed near one side; surface smooth.

The London Clay, Highgate and Kingston.

7. SOLEN PELAGICUS.—The Sea Solen, pl. XCIV. fig. 15.

S. pelagicus. Portland, Geo. Rep. p. 441, pl. 36, fig. 4.

Transversely elongated; straight, lancet-shaped, rounded at both extremities; a small beak near the broader end, producing a bend under the margin; a keel-like ridge from the beak to the posterior margin.

The Carboniferous Limestone, Clogher, Tyrone.

GENUS LXIX.—PHOLADOMYA.—*J. Sowerby.*

Shell transverse, inequilateral, equivalve, ventricose, very thin and hyaline; anterior side more or less elongated and gaping; posterior side sometimes very short, rounded; upper edge slightly gaping; hinge with a small, rather elongated, triangular pit, and a marginal lamina in each valve; to the outer surface of which is attached a somewhat short external ligament; inside pearlaceous; two indistinct muscular impressions; muscular impression of the mantle nearly obsolete, and with a large sinus.

1. PHOLADOMYA MARGARITACEA.—The Pearly Pholadomya, pl. LXXX. figs. 8, 9.

Cardita margaritacea. Sowerby, III. p. 175, pl. 297, f. 2.

Transversely ovate, its width exceeding its length; inflated; anterior side a little produced, provided with an obscure, longitudinal keel, and several small ridges, concentrically and irregularly undulated; beaks prominent, greatly incurved, and with a considerable hollow beneath them.

London Clay, Bognor; Richmond, Isle of Wight, and Brentford.

2. PHOLADOMYA PRODUCTA.—The Produced Pholadomya, pl. XCV. fig. 8.

Cardita (?) producta. Sowerby, III. p. 219, pl. 197, f. 1.

Gibbose, transversely oblong, being about a third wider than long; surface with six or seven longitudinal ridges, which are higher towards their posterior half; anterior side produced and plain; beaks rather prominent.

Lias, Bath, and Peterborough.

3. PHOLADOMYA OBTUSA.—The Obtuse Pholadomya, pl. XCV. fig. 6.

Cardita (?) obtusa. Sowerby, III. p. 219, pl. 197, fig. 2.

Gibbose, transversely obovate; length but little less than the width, and somewhat recurved; anterior side longest, obtuse, and plain, with from seven to ten longitudinal, nearly equal, tuberculated ridges.

Inferior Oolite, Dundry, and Cotswold Hills.

4. PHOLADOMYA LIRATA.—The Ridged Pholadomya, pl. XCV. fig. 9.

Cardita (?) lirata. Sowerby, III. p. 220, pl. 197, fig. 3.

Gibbose, transversely oblong, width nearly double its length; posterior side convex, provided with a large ridge, and two or three tuberculated ridges; whole surface with nine or ten tuberculated ridges, and that separating the posterior side the highest of the whole.

Inferior Oolite, Cotswold Hills; the Lias, at Bath and Peterborough, and the Fuller's Earth, Alford, Wiltshire.

5. PHOLADOMYA DELTOIDEA.—The Lurking Pholadomya, pl. XCV. fig. 10.

Cardita (?) deltoidea. Sowerby, II. p. 220.

Very gibbose, obtusely triangular, with eight or nine longitudinal, rugged, very irregularly tuberculated ridges, which are longest near the posterior end; anterior side pointed; beaks rather prominent.

Coral Rag, Heddington and Malton.

6. PHOLADOMYA DECUSSATA.—The Decussated Pholadomya, pl. XCVI. fig. 5.

Cardium decussatum. Sowerby, VI. p. 99, pl. 552, fig. 1.

Cordiform; posterior side with a broad area elevated in the middle, bounded by an obtuse keel; length and breadth nearly equal; anterior side more prominent than the posterior; beaks incurved; surface with strong longitudinal ribs, and decussated by irregular transverse ones, becoming closer as they approach the base of the valves.

Chalk Marl, Hamsey, Sussex, and Speeton.

7. PHOLADOMYA AMBIGUA.—The Ambiguous Pholadomya, pl. XCV. fig. 4.

Lutraria ambigua. Sowerby, III. p. 48, pl. 227.

Transversely elongated, gibbose, a little recurved, gaping anteriorly; surface with several oblique divergent furrows.

This species is variable in width, some specimens being nearly obovate and teeth stronger, and, in general, knotted ribs.

The Inferior Oolite, Cotswold Hills, and the Lias, Weston, Yorkshire.

8. PHOLADOMYA FIDICULA.—The Harp Pholadomya, pl. XCVI. fig. 2.

Lutraria lirata. Sowerby, III. p. 47, pl. 225.

Transversely elongated, its width twice and a half its length; gibbose, recurved; surface with numerous obliquely longitudinal ridges; the anterior side almost smooth, and somewhat compressed.

The Inferior Oolite, Cotswold, and the Blue Wick.

9. PHOLADOMYA OVALIS.—The Oval Pholadomya, pl. XCVI. fig. 4.

Lutraria ovalis. Sowerby, III. p. 47, pl. 226.

Transversely elongated, elliptical and mostly straight, somewhat convex; curvature of front and back nearly equal; sides rounded and slightly gaping, the posterior one considerably the smallest, with only one furrow on it; surface with about nine divergent longitudinal ridges.

The Portland Stone, Felmersham, Portland, and the Cornbrash, Scarborough.

10. PHOLADOMYA ANGUSTATA.—The Narrow Pholadomya, pl. XCVI. fig. 8.

Lutraria angustata. Sowerby, IV. p. 29, pl. 327.

Transversely elongated, gibbose, anterior side rather compressed; posterior side rounded, and extends a little way from the beaks; surface with about twelve oblique acute ribs, which, as well as the intervening furrows, are decussated by numerous irregular transverse striæ; substance of the shell thin, and in consequence the ribs are nearly as conspicuous internally as without.

The Inferior Oolite, Dundry.

11. PHOLADOMYA MURCHISONI.—Murchison's Pholadomya, pl. XCVI. fig. 6.

P. Murchisoni. Sowerby, VI. p. 87, pl. 545, fig. 1.

Oval, beaks large; posterior side short, provided with six or seven elevated, obtusely round, divergent, longitudinal ribs, intersected by strong, undulating, wide-set furrows, giving the ribs a knotted appearance.

From the Roof of the Coal Workings, Brora.

12. PHOLADOMYA NANA.—The Dwarf Pholadomya, pl. XCV. fig. 2.

P. nana. Phillips, Geo. York, I. pl. 9, fig. 7.

Transversely elongated; posterior side nearly straight; beaks large and obtuse; anterior side rounded; surface with concentric lines of growth, and a few nearly obsolete radiating furrows towards the base, in the middle of the valves; basal line nearly straight.

The Great Oolite, White Nab, Yorkshire.

13. PHOLADOMYA OBSOLETA.—The Obsolete Pholadomya, pl. XCV. fig. 3.

P. obsoleta. Phillips, Geo. York, 1 pl. 5, fig. 24.

Transversely elongated; beaks obtuse, situate towards the posterior side, which is short and a little narrowed; anterior side somewhat wider and rounded; surface with concentric furrows, and four radiating narrow furrows from the beaks to the basal line.

The Great Oolite, Brandsby.

14. PHOLADOMYA PHILLIPSII.—Phillip's Pholadomya, pl. XCV. fig. 11.

P. Murchesoni. Phillips, Geo. York, I. p. 27, fig. 9.

Transversely oval, much inflated; beaks produced, considerably incurved, situate nearest the posterior sides, which is shortest, and with long, longitudinal, narrow ribs, which radiate from the beaks to the basal margin, projecting a little beyond it, giving a scolloped aspect, and occupying about half the valve; anterior to these, two radiating narrow furrows; the anterior side rounded, and slightly contracted below.

The Cornbrash, Scarborough.

15. PHOLADOMYA COMPRESSA.—The Compressed Pholadomya, pl. XCV. fig. 5.

Transversely elongated, somewhat heart-shaped, oblique, compressed; beaks large, prominent, and quite approximating; surface with six large distant radiating ribs, leaving a large bare space between them and the beaks.

The Great Oolite, Kettering, Northamptonshire.

16. PHOLADOMYA CUNEATA.—The Wedge-Shaped Pholadomya, pl. XCV. fig. 7.

Cardita margaritacea. Sowerby, III. p. 175. pl. 29, fig. 1.

Transversely obovate, somewhat heart-shaped, and gibbose; anterior side a little produced, very short posteriorly, with an obscure longitudinal keel, and several narrow ridges, concentrically undulated.

The London Clay, Pegwell Bay.

17. Pholadomya simplex.—The Simple Pholadomya, pl. XCV. fig. 12.

P. simplex. Phillips, Geo. York, I. pl. 4, fig. 31.

Obliquely oblong-ovate; a ridge extending from the beak to the base; surface smooth, with narrow concentric lines of growth, which form an acute angle on the ridge; beaks rather produced.

The Calcareous Grit, Gristhorpe, Yorkshire.

18. Pholadomya obliquata.—The Oblique Pholadomya, pl. XCVI. fig. 3.

P. obliquata. Phillips, Geo. York, I. pl. 13, fig. 15.

Obliquely transversely elongated; posterior side very short; beaks placed quite to that side, and much incurved; anterior very large and dilated, a little compressed towards the margin; surface with nearly equidistant concentric grooves and very flat ribs.

The Great Oolite, Brandsby, and the Lias, Bilsdale.

19. Pholadomya acuticosta.—The Acute Ribbed Pholadomya, pl. XCVI. fig. 1.

P. acuticosta. Sowerby, VI. p. 88, pl. 546, figs. 1, 2.

Transversely oblong-oval; beaks obtuse and much incurved; anterior side short, with four or five keel-shaped, longitudinal, divergent ribs, and many gradually lessening ones from them to the posterior side, which is gradually narrowed; basal line nearly straight.

20. Pholadomya æqualis.—The Equal Pholadomya, pl. XCVI. fig. 7.

P. æqualis. Sowerby, VI. p. 88, pl. 546, fig. 3.

Transversely and regularly oval, equally rounded at both extremities, and straight; beaks obtuse, incurved, and approximate; with from six to eight slightly elevated, equal, divergent ribs, passing from the beaks over the centre of each valve, and terminating on the margin; basal line gently curved.

The Portland Stone, Weymouth, Dorsetshire.

Family III.—PHOLADARIA.

Shell bivalve, with accessory pieces to the valves; gaping much anteriorly.

Genus LXX.—PHOLAS.—*Linnæus.*

Shell transversely oblong, equivalve, greatly inequilateral, nearly the whole species gaping at both ends, and most of them with the opening very large at the anterior end, and extending along the basal margin; in some species, however, it is nearly closed by a testaceous, almost smooth, somewhat tubular prolongation of the valves; hinge in various species with an unequally sized small recurved tooth in each valve; external surface generally roughened with muricated striæ, presenting a rasp or file-like appearance; most of the species provided with a greater or lesser number of accessory valves, situate near the fulcrum of the hinge, and connected with the shell only by the epidermis which passes over them; each valve furnished with a long curved, flat, tooth-like testaceous process, projecting from the interior of the shell, immediately within the umbones; in some species this is expanded and spoonshaped; anterior dorsal margin near the beaks reflected, close, and flattened down upon the umbones in some species, and in others a second margin is produced, situate remote from the first, with the intervening space divided by a series of transverse septa; two principal impressions, formed by the adductor muscle, one of which is placed on the reflected margin over the beaks, and the other intermediate between the umbones and the posterior side; muscular impression with a large sinus in its narrow part, the impression being somewhat expanded near to the sinus.

1. Pholas cylindricus.—The Cylindrical Pholas, pl. XCIV. figs. 1, 2.

P. cylindricus. Sowerby, II. p. 88, pl. 198.

Transversely elongated, slightly compressed, and nearly cylindrical; anterior side plain; posterior side muricated and pointed, with a small sinus in the edge; beaks concealed by a reflection of the edges of the back; surface transversely striated; with many longituginal elevations, rising with flat spines, where they decussate the transverse elevations.

The Red Crag, Walton, and the Coral Crag, Sutton.

2. Pholas compressa.—The Compressed Pholas, pl. XCIV. figs. 3, 4.

P. compressa. Sowerby, VI. p. 213, pl. 603.

Transversely obovate compressed; sides almost equally rounded; gaping at each extremity; along the middle of one valve is a longitudinal rounded ridge, with a corresponding furrow in the other; surface with many sharp, concentric ridges, these are decussated by eight or ten longitudinal ones on the anterior side; whole surface with extremely minute longitudinal striæ.

The Kimmeridge Clay, Shotover, Oxfordshire.

3. Pholas prisca.—The Ancient Pholas, pl. XCIV. f. 25.

P. priscus. Sowerby, VI. p. 157, pl. 581.

Oblong oval, anterior side very short and rounded, with a deep angular sinus in its edge, which is closed up in the adult shell; posterior side lengthened and truncated; beaks covered by a heart-shaped accessory valve; in the middle of each valve a longitudinal band is formed by a series of scales.

The Lower Greensand, Sandgate, Kent.

4. Pholas candida.—White Pholas, pl. XCIV. p. 23, 24.

P. candida. Brown, Ill. Rec. Conch. Brit. p. 115, pl. 48, figs. 6 to 10.

Transversely elongated; anterior side pointed; posteriorly rounded; umbonal region covered by an elongated accessory plate; surface covered with wide-set longitudinal and transverse striæ, prickly at the anterior side.

The Red Crag, Walton, Wood.

5. Pholas crispata.—The Crisped Pholas, pl. XCIV. figs. 8, 19, 20.

P. crispata. Brown, Ill. Rec. Conch. Brit. p. 114, pl. 48, figs. 1 to 5.

Transversely sub-oval; one side rounded, the anterior one acuminated and folded back with a hollow behind; a longitudinal furrow emanates from behind the reflection, and terminates on the margin; posterior side nearly plain, or with a few concentric wrinkles; anteriorly with numerous thin undulating, sharp-angled wrinkles, and longitudinal divergent grooves, producing a reticulated appearance; inside with a large much curved tooth, below the umbonal region in both valves.

The Pleistocene Marine Formation, Houth, Ayr; the Coral Crag, Sutton; the Red Crag, Walton; and Mammiferous Crag, Postdam.

6. Pholas constricta.—The Constricted Pholas, pl. XCIV. fig. 21.

P. constricta. Phillips, Geo. York, I. pl. 2, fig. 17.

Transversely elongated; anteriorly short, rounded, and truncated; posteriorly constricted and acuminated; a furrow from the internal region to the base; whole surface with longitudinal ribs.

The Gault, Speeton, Yorkshire.

7. Pholas dactylus.—Date Pholas, pl. XCIV. fs. 11, 12.

P. dactylus. Brown, Ill. Rec. Conch. Brit. p. 115, pl. 49, figs. 1, 2, 3.

Greatly elongated transversely; umbonal region placed much to one side, reflected, with a series of cells externally, and covered with two concentrically striated valves; posterior to them a long, spatuliform, accessorial valve; surface anteriorly rough, with waved ribs decussated by longitudinal striæ; posterior side smooth, with some shallow lines of growth.

The Pleistocene Marine Formation, Ayr.

8. Pholas recondita.—Recondite Pholas, pl. XCIV. f. 22.

P. recondita. Phillips, Geo. York, I. pl. 3, fig. 19.

Transversely ovate, rounded at both sides, an oblique, longitudinal, nearly central furrow, transversely striated.

The Coral Rag, Malton, Yorkshire.

9. Pholas papyracea.—The Papyrus Pholas.

P. papyracea. Brown, Ill. Rec. Conch. Brit. p. 114, pl. 49, figs. 4, 6, 7, 9.

Transversely ovate, anterior side ventricose and rounded, closed when the valves are shut; posterior side acuminated, truncated, and with an accessory ring; each valve with an oblique, longitudinal groove, with coarse and parallel striæ beyond it; posterior half with closer set, slightly oblique, crenate ribs.

The Coral Crag, Sutton.

10. Pholas gigantea.—Gigantic Pholas, pl. XCV. fig. 1.

P. gigantea. Sowerby, Geo. Tr. 2d Ser. IV. p. 338, pl. 14, f. 1.

Transversely elongated; nearly cylindrical; anterior side short and rounded; posterior side elongated and angular below; surface with oblique radiating furrows and ribs; margin crenated.

The Gault, Folkstone and Lympne.

Family IV.—TUBICOLA.

Animal contained in a testaceous sheath, distinct from its valves, incrusted entirely or in part in the wall of this tube, or projecting outwards.

Genus LXX.—GASTROCHÆNA.—*Spengler.*

Shell equivalve, inequilateral, somewhat wedge-shaped; anterior side rounded, when viewed in front, and posteriorly acuminated; anterior side gaping widely, its aperture being sub-ovate, and acute behind; hinge marginal and linear, destitute of teeth, but in their stead a small laminated appendage, emanating from the umbo, allied to the same tooth-like process in the genus *Pholas;* ligament external.

This shell is enclosed in a testaceous, irregular, claviform tube, situate at its broader extremity; it is open and attenuated anteriorly, with an oblong, bilobate aperture, which is nearly sub-divided by a projecting septum, that does not quite reach across the opening; these serve for the passage of the two tubes of the animal; the posterior end of the tube is closed. This club-shaped tube is found either within the perforated cavities of rocks, or in old shells or corals, the testaceous tube always protruding beyond the surface.

1. Gastrochæna contorta.—The Contorted Gastrochæna, pl. XCVI. figs. 22, 23, 24.

G. contorta. Sowerby, VI. p. 50, pl. 526, fig. 2.

Sheath club-shaped, bent nearly at a right angle, its aperture divided by two opposite ridges; valves ovate, elongated; surface with very fine striæ, the intervening lines wide, oval, and pointed.

In the London Clay, Barton.

2. Gastrochæna tortuosa.—The Tortuous Gastrochæna, pl. XCVI. figs. 29, 30.

G. tortuosa. Sowerby, IV. p. 49, pl. 526, fig. 1.

Its longest diameter four times the united depth of both valves, obliquely lanceolate, and twisted; hinge line straight; surface nearly smooth.

Inferior Oolite, Blue Wick, Robin Hood's Bay.

3. Gastrochæna pholadea.—The Pholas-like Gastrochæna, pl. XCVI. figs. 20, 21.

G. pholadia. Brown, Ill. Rec. Conch. Brit. p. 116, pl. 48, figs. 13, 14.

Transversely sub-ovate and wedge-shaped; broadly and widly gaping at the anterior side, from which it gradually decreases until it reaches the opposite extremity; beaks rather prominent and obtuse; hinge with an obscure, laminar, transverse tooth in both valves.

The Coral Crag, Sutton.

Genus LXXI.—TERIDINA.—*Lamarck.*

Shell orbicular, and entirely external, equivalve, inequilateral; umbones greatly incurved, and covered by a somewhat quadrangular, accessory process, which seems to be fixed to the valves in front of the beak, with a subulate process in front, and gaping at both extremities; anterior opening angular at the back, and the posterior rounded in front; tube thick, fistulous, posterior extremity smaller, and open, and nearly divided into two from an interior projection on both sides, and provided with an operculum; anterior termination

of the tube entirely closed by a trapezoidal plate, which fills up the space left by the sinus in the two valves.

The posterior portion of the tube is of a different consistence from the anterior part, having a horny texture and appearance; the interior of the valves is thickly lined with the same testaceous matter as the tubes. The testaceous substance is generally so much thickened in front, that it almost entirely conceals the tooth-like processes.

1. Teredina personata.—The Masque Teredina, pl. XCVI. figs. 14, 15, 24, 26, 27, 28.

T. personata. Sowerby, I. p. 232, pl. 102, figs. 1 to 4.

Valves transversely striated on the posterior side; anterior side smooth, with a few lines of growth; the accessory plate pentangular and smooth; tube as thick as the valves.

In the London Clay, Sheppy and Epernay.

Genus LXXII.—TEREDO.—*Linnæus.*

Shell equivalve, inequilateral, and orbicular, with a subulate process in front, and gaping at both sides; anterior opening angular at the back, and the posterior one rounded in front; an elongated, curved, tooth-like process emanates from the inside, in both valves, protruding from the beaks; anterior muscular impression situate upon the subulate process; shell placed on the anterior extremity of a testaceous accessory tube, which is secreted by the animal in its progress through wood, &c., and forms a lining to the perforated cavity, becoming gradually wider as the animal advances, and is frequently furnished internally with a vaulted septa; aperture of the tube round, and posteriorly divided into a double tube, which the animal has the power of closing by means of two palmate, sometimes pennated apercula.

1. Teredo navalis.—The Ship Teredo, pl. XCVI. fig. 13.

T. navalis. Brown, Ill. Rec. Conch. Brit. p. 116, pl. 50, figs. 1 to 7.

Valves triangular, ear-shaped behind, and hemispherical when closed, with a curved tooth on the margin of the umbonal region; surface of the valves striated in various directions, each with a triangular projection in front, inclining inwards and conforming to the angular form of the valves, with a lengthened flat curved tooth, projecting inwards under the beaks; tube flexous, and without any regular form.

The Coral Crag, Sutton.

2. Teredo amphisbæna.—The Blind-Worm Teredo, pl. XCVI. figs. 16-19.

T. amphisbæna. Sowerby, VII. p. 17, pl. 618.

Valves unknown; tube much lengthened, tapering, tortuous, strong, and smooth, composed of short segments with sharp edges, and concave imbricated surfaces.

The London Clay, Marham and Gayton.

3. Teredo antenautæ.—Pl. XCVI. figs. 31-33.

T. antenautæ. Sowerby, I. p. 231, pl. 102.

Valves transversely striated, those on the anterior side numerous, zig-zag, minutely toothed, smooth, with dorsal posterior accessory valves testaceous.

The London Clay, Sheppy and Nuneham.

Genus LXXIII.—FISTULANA.—*Bruguière.*

Shell equivalve, inequilateral, transversely elongated, and gaping widely at the basal margin; anterior side very short; valves attached by a ligament, and situate in the lower part of a testaceous tube, which is closed at the lower or anterior extremity, and to which they are confined by the septum, and open at the centre; the posterior end attenuated and open.

1. Fistulana ampullaria.—The Ample Fistulana, pl. XCVI. figs. 9-12.

F. ampullaria. Deshayes, Coq. Fos. pl. I. figs. 17-21.

Sheath sandy, bottle-shaped, and continuous; aperture internally bicarinated; shell ovate, gaping widely, the hiatus oval, with sinuosities.

The London Clay, Barton.

Genus LXXIV.—CLAVAGELLA.—*Lamarck.*

Shell consisting of a testaceous tube, somewhat attenuated, and open at its anterior extremity, irregularly ovate, sub-compressed, claviform, and closed at its lower end, excepting by a number of irregularly formed minute tubes; clavate termination provided with an irregular, thin, flattened, pearly adherent valve, on one side, with a loose, extremely thin valve at the bottom of the tube, which is supposed to be united to the fixed valve by a ligament in a living state; an irregular muscular impression near one side.

The tube of the Clavagellæ is sometimes free, and, at others, it lines sub-marine bodies, such as madrepores, stones, and clay.

1. Clavagella coronata.—The Crowned Clavagella, pl. XCVI. figs. 35-37.

C. coronata. Deshayes, Coq. Foss. I. p. 8, pl. 5, figs. 15, 16. Sowerby, V. p. 128, pl. 480.

Tube straight, elongated, club-shaped, and crowned with about eight antler-like branched tubes, arranged in sets; the included valves oblong, sulcated, with strong lines of growth, and gaping widely; beaks acute and large; inside of both valves pearlaceous; the sulcus which divides the two sets of tubes, with a branch that descends the side of the sheath in which the free valve is contained.

The London Clay, Hampshire.

CLASS THIRD.

CIRRIPEDA; OR, BARNACLES.

The animals are soft, destitute of a head, and consequently eyes; covered with a shell, and are incapable of locomotion, being always affixed to extraneous bodies. The whole of the Cirripedes are multivalve—that is, consisting of more than two pieces or valves.

ORDER I.—PEDUNCULATA.

Body supported on a tubular, membranaceous, moveable peduncle, the base of which is affixed to stones and other marine bodies, or timber floating in the ocean.

Genus I.—POLLICIPES.—*Leach.*

Body covered by a shell, and supported by a tubular, tendinous, squamiferous peduncle, which seldom exceeds two inches in length; shell multivalve, compressed on the sides, with the valves nearly contiguous and unequal; valves thirteen or more in number, those on the sides smallest; five upper valves much larger than the others, the anterior pair conical, elongated, with their sides reflected backwards, situate on each side of the opening; the central or terminal pair largest, and trapeziform, with an acute angle at the posterior extremity; dorsal valve greatly elongated, broad at the base, rounded on the back, with on acute apex; between these, in the peduncle, are a number of smaller, testaceous, generally triangular studs.—*Pollicipes Cornucopia*, pl. XCVII. fig. 12.

1. Pollicipes rigidus.—The Rigid Pollicipes, pl. XCVII. figs. 7, 8, 9.

P. rigidus. Sowerby, Geo. Tr. 2d Ser. IV. p. 335, pl. 11, fig. 6*.

Posterior valves furnished with thin, transverse, very prominent elevations; lateral valves somewhat elongated.

The Gault, Folkstone.

2. Pollicipes lævis.—The Smooth Pollicipes, pl. XCVII. figs. 19 to 24.

P. lævis. Sowerby, Geo. Tr. 2d Ser. IV. p. 335, pl. 11, f. 5.

Lateral valves rhomboidal, smooth, thin, and almost flat.

The Gault, Folkstone, and the Greensand, Blackdown.

3. Pollicipes unguis.—The Claw Pollicipes, pl. XCVII. figs. 4, 5, 6.

P. unguis. Sowerby, Geo. Tr. 2d Ser. IV. p. 335, pl. 11, f. 6*.

Valves all remarkably curved, broad in proportion to their length, and smooth.

The Gault, Folkstone.

4. Pollicipes radiatus.—The Radiated Pollicipes, pl. XCVII. figs. 10, 11.

P. radiatus. Sowerby, Geo. Tr. 2d Ser. IV. p. 335, pl. 11, f. 6.

Valves wedge-shaped, flat, with sharp, elevated rays diverging from their apices.

The Lower Greensand, near Lympne, Kent.

5. Pollicipes antiquus.—The Ancient Pollicipes, pl. XCVII. fig. 5.

P. (?) Sowerby, Geo. Tr. 2d Ser. V. p. 136, pl. VIII. figs. 34-36.

Posterior valves long, curved, narrow, and striated transversely; lateral valve obliquely sub-quadrate; striæ triangular.

The London Clay, Highgate.

6. Pollicipes minutus.—The Minute Pollicipes, pl. XCVII. figs. 36 to 45.

P. (?) Sowerby, Geo. Trans. 2d Ser. V. p. 136, pl. 9, f. 2.

Posterior valves elongated and straight; lateral valves triangular, with waved striæ.

The London Clay, Hampstead.

7. Pollicipes maximus.—The Large Pollicipes, pl. XCVII. figs. 17, 18.

P. maximus. Sowerby, VI. p. 222, pl. 606, figs. 3-6.

Terminal valves plain and rhomboidal, sometimes with a central ridge and lines of growth; posterior valve lanceolate, much elongated, and arcuated; posterior valve, figs. 13 and 18, terminal; valve 17, anterior valve.

In the Chalk, Northfleet and Norwich.

8. Pollicipes reflexus.—The Reflected Pollicipes, pl. XCVII. figs. 25 to 33.

P. reflexus. Sowerby, VI. p. 222, pl. 606, fig. 8.

Posterior valve lanceolate, straight, or recurved; lateral valves almost flat and smooth.

Upper Marine Formation, Colwell Bay, Isle of Wight.

9. Pollicipes sulcatus.—The Furrowed Pollicipes, pl. XCVII. fig. 12, 13.

P. sulcatus. Sowerby, VI. p. 221, pl. 606, figs. 1, 2, and 7.

Valves with longitudinal, elevated striæ; the terminal valve, fig. 2, elongated and rhomboidal; posterior valves, 1 and 3, are acuminated, broad, lanceolate, and somewhat carinated; both are furnished with irregular, sharp, elevated, longitudinal striæ.

In the Chalk, Lewis and Norwich.

ORDER II.—SESSILIA.

Destitute of a peduncle; body enclosed in a multivalve shell, attached by its base to marine bodies; mouth situated at the upper and interior portion of the body.

GENUS I.—BALANUS.—*Lamarck.*

Shell sessile, conical, or subconic, closed at the base by a testaceous plate, which adheres to extraneous substances, conconsisting of four articulated valves; aperture subtrigonal, or elliptical, and shut by an operculum composed of four valves.

1. BALANUS TESSELLATUS.—The Chequered Balanus, pl. XCVII. fig. 49.

B. tessellatus. Sowerby, I. p. 193, pl. 84, fig. 1.

Obliquely conical, thin, with six obscurely ribbed, smooth valves; interstices finely tessellated; aperture oval, its longest diameter being about half an inch high, somewhat less than its basal diameter.

Mammiferous Crag, Bramerton, Norfolk.

2. BALANUS CRASSUS.—The Thick Balanus, pl. XCVII. fig. 52 to 56.

B. crassus. Sowerby I. p. 194, pl. 84, fig. 2, 3, 4.

Oblique, thick, with six smooth, obscurely ribbed valves; aperture triangular.

The Coralline Crag, Ramshot, and the Red Crag, Sutton.

3. BALANUS BALANOIDES.—The Acorn Balanus, pl. XCVII. fig. 49.

B. balanoides. Brown, Ill. Rec. Conch. Brit. p. 120, pl. 53, fig. 17 and 54, figs. 4, 5.

Sub-conic, sub-depressed, smooth; aperture wide; operculum with the two anterior valves slightly striated transversely; the posterior ones smooth.

The Raised Beaches, Bute, &c.

4. BALANUS COMMUNIS.—The Common Balanus, pl. XCVII. fig. 63.

B. communis. Brown, Ill. Rec. Conch. Brit. p. 120, pl. 53, fig. 23, and pl. 54, fig. 1.

Strong rugged, conic, compartments unequal, with many irregular longitudinal squamous ribs; the interstices transversely wrinkled; aperture contracted.

The Red and Coral Crags, Sutton, and the Raised Beaches, Clyde, &c.

5. BALANUS COSTATUS.—The Ribbed Balanus, pl. XCVII. fig. 62.

B. costatus. Brown, Ill. Rec. Conch. Brit. p. 120, pl. 54, figs. 2, 3.

Sub-conic, depressed; nearly circular at the base; with from seventeen to nineteen nearly equidistant, divergent, smooth ribs; all of which extend considerably beyond the basal margin; aperture small and sub-ovate.

The Raised Beach, Clyde.

6. BALANUS PUNCTATUS.—The Punctured Balanus, pl. XCVII. fig. 58.

B. punctatus. Brown, Ill. Rec. Conch. Brit. p. 121, pl. 53, figs. 5, 6, 13, 20.

Sub-conic, with indistinct compartments; generally with numerous longitudinal, narrow ribs, and several transverse irregular lines of growth; aperture wide, rather plain on the edge, operculum punctured.

Raised Beach, Ayr.

7. BALANUS RUGOSUS.—The Rough Balanus, pl. XCVII. fig. 57.

B. rugosus. Brown, Ill. Rec. Conch. Brit. p. 121, pl. 53, figs. 4, 7, 8, and 21.

Sub-conic, divided into six compartments by irregular inequidistant furrows; those of the posterior side broadest, and crossed by deep divisions, formed by the lines of growth; these are sometimes wrinkled or striated, longitudinally; aperture very large; inner margin transversely ridged.

Raised Beaches, Clyde, &c., and the Coral Crag, Sutton.

8. BALANUS TINTINNABULUM.—The Little Bell Balanus, pl. XCVII. fig. 60.

B. tintinnabulum. Donovan, Brit. Sh., pl. 148.

Obtusely sub-conic, with three raised compartments, contracting to a point upwards, and longitudinally striate, and three depressed ones, contracting to a point downwards, and transversely striate; aperture rather wide.

The Raised Beaches, Scotland, and Norfolk.

9. BALANUS SPONGEOSUS.—The Sponge Balanus, pl. XCVII. fig. 51.

B. Spongeosus. Montague, Sup. p. 2, *Acasta Montagui.* Leach.

Ovate, with six angulated compartments, their points extending considerably above the margin of the aperture; three anterior divisions, broader, and not so long as the posterior ones; external surface wrinkled, and provided with numerous spiniform processes; aperculum four-valved, the anterior pair with strong regular, deep, but narrow ridges, crossed by longitudinal striæ; internal margins deeply serrated; posterior pair longer than the others, with their points sharp, and considerably arcuated; base of the shell, cup-shaped.

The Coral Crag, Sutton.

GENUS II.—ADNA.—*Leach.*

Shell consisting of an upper valve, supported on a funnel-shaped base, which is not sunk in the substance to which it is attached, but is seen externally, the operculum consisting of four valves.

1. ADNA SULCATA.—The Furrowed Adna, pl. XCVII. f. 59.

Wood pyrgoma. Phillipi En. Mol. Sicily, p. 252, pl. 12, fig. 24.

Sub-conic, with many longitudinal plain ribs; aperture wide.

The Coral Crag, Ramshot.

GENUS III.—CLITIA.—*Leach.*

Shell, a depressed, irregular-shaped cone, attached by the base, and consisting of four unequal, dissimilar valves, two larger and two smaller, laterally united by the interlocking of their dentated margins; aperture somewhat trapeziform, laterally placed, and entirely filled by a bipartite operculum, one of the pieces of which is irrregularly quadrate, and the other nearly triangular.

1. CLITIA VERRUCA.—The Wart-like Clitia, pl. XCVII. fig. 61, 61*.

C. Verruca. Brown, Ill. Rec. Conch. Brit. p. 122, pl. 53, fig. 30.

Much depressed, compartments strongly ribbed diagonally, and oblique to each other, and finely striated transversely; margin of the base irregularly serrated; aperture quite closed by the operculum.

The Red Crag. Walton, Coral Crag, Sutton, and Raised Beaches, Clyde, &c.

GENUS IV.—CORONULA.—*Lamarck.*

Shell seated, sub-orbicular; valves apparent, indivisible, conoidal; with very thick walls, and interiorly hollowed in radiating cells, eighteen in number; aperture regular, of a rounded oval, and interiorly funnel-shaped; operculum, with four obtuse valves.

1. CORONULA DIADEMA.—The Crown-shaped Coronula, pl. XCVII. fig. 47, 48.

Donovan, Brit. Sh. pl. 56.

Somewhat compressed, with six prominent longitudinally ribbed valves; alternating with as many transversely striated ones.

The Red Crag, Sutton.

GENUS V.—ACIDASPIS.—*Murchison.*

ACIDASPIS BRIGHTII.—Bright's Acidaspis, pl. XCVII. f. 65.

A. Brightii. Murchison, Sil. Syst. p. 658, pl. 14, fig. 15.

GENUS VI.—AGNOSTUS.—*Brongniarte.*

1. AGNOSTUS PISIFORMIS.—The Fish-shaped Agnostus, pl. XCVII. fig. 64.

A. pisiformis. Murchison, Sil. Syst. p. 664, pl. 25, fig. 4.

2. AGNOSTUS TUBERCULATUS.—The Tuberculated Agnostus, pl. XCVII. fig. 66.

A. Tuberculatus. Murchison, Sil. Syst. p. 604, pl. 3, fig. 17, 17*a*.

CLASS FOURTH.

ANNELIDA.

Animal with a more or less elongated body, having no blood, and inhabiting a testaceous tube, from which they never depart.

ORDER I.—SEDENTARIA.

Tube elongated and testaceous.

TRIBE I.—SERPULACEA.

Tube solid and calcareous.

GENUS I.—SERPULA.—*Linnæus.*

Shell tubular, narrow, gradually widening towards the aperture, and pointed towards the apex; attached irregularly to other bodies; sometimes wound spirally; keeled, imbricated, or plain, aperture round, for the most part, or angulated in the ribbed species.

1. SERPULA PLEXUS.—The Woven Serpula, pl. XCVIII. fig. 8.

S. plexus. Sowerby, VI. p. 201, pl. 598, fig. 1.

Cylindrical, smooth, greatly curved, much interwoven into masses; tube diminishing gradually.

The Upper Chalk, Norwich, the Lower Chalk, Dover, and the Greensand, Blackdown.

2. SERPULA CARINELLA.—The Small-keeled Serpula, pl. XCVIII. fig. 7.

S. carinella. Sowerby, VI. p. 201, pl. 598, fig. 2.

Cylindrical, adherent, tortuous, gradually tapering towards the apex; a small longitudinal keel, becoming obsolete towards the aperture.

The Greensand, Blackdown.

3. SERPULA COMPRESSA.—The Compressed Serpula, pl. XCVIII. fig. 26.

S. compressa. Sowerby, VI. p. 201, pl. 598, fig. 3.

Lanceolate, somewhat compressed, rapidly diminishing, and smooth; very slightly tortuous; a portion of the tube free.

The Carboniferous Limestone, Lothian and Ireland.

4. SERPULA ANTIQUATA.—The Antiquated Serpula, pl. XCVIII. fig. 40.

S. antiquata. Sowerby, VI. p. 202, pl. 598, fig. 4.

Cylindrical, very gradually decreasing, surface uneven, with transverse, irregular rings; a portion adherent, by an expansion of the tube; margin of the aperture obtuse.

The Upper Greensand, Kent, Dorsetshire and Wiltshire; the Chalk, Hunstanton and Dorking, and the Lower Greensand, Isle of Wight and Kent.

5. SERPULA CONTRACTA.—The Contracted Serpula, pl. XCVIII. fig. 34.

S. contracta. Woodward, Geo. Nor. pl. 5, fig. 19.

Tube circular, gradually decreasing, considerably and abruptly contracted at the smaller end.

The Upper Chalk, Norwich.

6. SERPULA TENUIS.—The Thin Serpula, pl. XCVIII. figs. 9, 10.

S. tenuis. Sowerby, VI. p. 202, pl. 598, fig. 5.

Cylindrical, with a very minute keel upon the back, and a few distinct acute rings; substance of the shell thin; occurs in groups, and either attached to each other or to extraneous bodies.

The Fresh Water Formation, Hordwell.

7. SERPULA TRICARINATA.—The Three-Keeled Serpula, pl. XCVIII. fig. 28.

S. tricarinata. Sowerby, VI. p. 226, pl. 608, figs. 3, 4.

Aperture generally turned back, surface somewhat smooth, with three thick uninterrupted keels, the central one largest; sometimes becoming obsolete; aperture circular, furnished with two thickened lobes at the base; edge thin.

The Kimmeridge Clay, near Leighton, Buckinghamshire, and the Calcareous Grit, Shotover Hill.

8. SERPULA TRIANGULATA.—The Triangular Serpula, pl. XCVIII. fig. 42.

S. triangulata. Sowerby, VI. p. 227, pl. 608, fig. 7.

Somewhat rounded, smooth, triangular upon the back; the central angle elevated into a keel; surface with circular lines of growth; always adherent.

The Great Oolite, Bradford, Wiltshire.

9. SERPULA RUNCINATA.—The Saw-like Serpula, pl. XCVIII. fig. 35.

S. runcinata. Sowerby, VI. p. 227, pl. 608, fig. 6,

Sub-triangular, tortuous, with three regularly and strongly serrated longitudinal keels upon its back; aperture round; base expanded.

The Coral Rag, Shotover Hill.

10. SERPULA OBTUSA.—The Obtuse Serpula, pl. XCVIII. fig. 6.

S. obtusa. Sowerby, VI. p. 228, pl. 608, fig. 8.

Obtusely quadrangular, smooth, with an obtuse, thick keel along the back, which is flattened; edges of the margin produced as a short cylinder, beyond the margin, which is bilobate and thickened; base expanded.

The Middle Chalk, Saham, Norfolkshire.

11. SERPULA FLUCTUATA.—The Fluctuating Serpula, pl. XCVIII. fig. 35.

S. fluctuata. Sowerby, VI. p. 228, pl. 608, fig. 5.

Circular, surface smooth, with five regularly undulating wire-like low keels; surface of attachment small.

The Upper Chalk, Norwich, and the Middle Chalk, Swaffham, and Dorking.

12. SERPULA TETRAGONA.—The Tetragonal Serpula, pl. XCVIII. fig. 12.

Sowerby, VI. p. 203, pl. 599, figs. 1, 2.

Tube very long, narrow, and for the greater part of its length, unattached; four-sided and nearly flat externally, with prominent angles; aperture round.

The Kimmeridge Clay, Clophill, Bedfordshire.

13. SERPULA RUSTICA.—The Rude Serpula, pl. XCVIII. fig. 11.

S. rustica. Sowerby, VI. p. 203, pl. 599, fig. 3.

Tube quadrangular, the angles obtuse; as the tube increases in length, the angles become variously curved and interrupted, and finally assume the form of irregular nodules, surrounding the tube, which becomes cylindrical.

The Upper Greensand, Folkstone.

14. SERPULA ARTICULATA.—The Articulated Serpula, pl. XCVIII. fig. 23.

Sowerby, VI. p. 204, pl. 599, fig. 4.

Tube quadrangular, provided with rings, each having four oval tubercles, situate at distant irregular intervals; angles rounded; aperture circular.

The Gualt, Folkstone.

15. SERPULA VERTEBRALIS.—The Vertebral Serpula, pl. XCVIII. fig. 75.

S. vertebralis. Sowerby, VI. p, 204, pl. 599, fig. 5.

Tube quadrangular, with obtuse longitudinal tubercles, set in rings, at short regular distances, four on each ring.

The Oxford Clay, Christian Malford.

16. SERPULA CARINATA.—The Keeled Serpula, pl. XCVIII. fig. 29.

S. carinata. Woodward, Geo. Nor. pl. 5, fig. 13.

Tube with three elevated, sharp, serrated keels; aperture circular.

The Upper Chalk, Norwich.

17. SERPULA CAPITATA.—The Headed Serpula, pl. XCVIII. fig. 43.

S. capitata. Phillips, Geo. York. I. pl. 14. fig. 16.

Tube circular, smooth, variously bent, with irregular rings, both in size and disposition; a large termination in the form of a head.

The Lias, Robin Hood's Bay, Yorkshire, and Lyme Regis.

18. SERPULA DEPLEXA.—The Winding Serpula, pl. XCVIII. fig. 13.

S. deplexa. Phillips, Geo. York. I. pl. 11, fig. 66.

Tube cylindrical, smooth, winding in different directions.

The Inferior Oolite, Blue Wick, Yorkshire.

19. SERPULA EXTENSA.—The Swollen Serpula, pl. XCVIII. fig. 38.

S. extensa. Brander, Fos. Hant. pl. 1, fig. 12.

Cylindrical, tumid, smooth, with obscure lines of growth; aperture circular.

The London Clay, Hordwell.

20. SERPULA PLANA.—The Flat Serpula, pl. XCVIII. fig. 41.

S. plana. Woodward, Geo. Norf. pl. 5, fig. 9.

Convoluted, depressed, surface smooth; aperture circular.

The Chalk, Norwich.

21. SERPULA FILIFORMIS.—The Thread-shaped Serpula, pl. XCVIII. fig. 14.

S. filiformis. Sowerby, Geo. Tr. 2nd Ser. IV. pl. 16, fig. 2.

Tube smooth, cylindrical, of nearly equal diameter throughout; slightly curved, generally consisting of masses laid side by side, a certain number taking the same curvature, and laid in one direction; sometimes in branched masses.

The Greensand, Blackdown.

22. SERPULA SOCIALIS.—The Associated Serpula, pl. XCVIII. fig. 22.

S. socialis. Portlock, Geo. Rep. p. 362, pl. 25, A, fig. 9, *a. b.*

Tube long, thin, smooth, thread-like, and almost straight, loose or bent in all directions, aggregated together in bundles of from two to four inches long; single tubes are of equal thickness throughout; but the fasciculi are of different dimensions.

The Carboniferous Limestone, Clogher, Tyrone.

23. SERPULA TUBA.—The Tubular Serpula, pl. XCVIII. fig. 17.

S. tuba. Sowerby, Geo. Trans. 2nd Ser. IV. p. 340, pl. 16, fig. 3.

Tubes simple, generally solitary, or seldom exceeding two united; of uniform diameter throughout; shell thin.

The Greensand, Blackdown.

24. SERPULA VERMES.—The Worm Serpula, pl. XCVIII. fig. 11*.

S. vermes. Sowerby, Geo. Tr. 2nd Ser. IV. p. 340, pl. 16, fig. 4.

Tube gradually increasing in size, as it advances in age, and provided with a pretty deep keel along its surface, which is wrinkled transversely.

The Greensand, Blackdown.

25. SERPULA HEPTAGONA.—The Seven-sided Serpula, pl. XCVIII. fig. 33.

Dentalium elephantinum. Brander, Fos. Hant, pl. I. fig. 11.

Tube gradually tapering, with seven rounded longitudinal keels, or projections; aperture heptagonal.

The London Clay, Hordwell.

26. SERPULA TRISERRATA.—The Three-serrated Serpula, pl. XCVIII. figs. 1, 2.

S. triserrata. Sowerby, Geo. Tr. 2nd Ser. p. 347, pl. 23, fig. 8.

Tube attached, thick, triangular, with three thin serrated keels upon its upper angle.

The Portland Stone, East side of Portland.

27. SERPULA VARIABILIS.—The variable Serpula, pl. XCVIII. fig. 18

S. variabilis. Sowerby, Geo. Tr. 2nd Ser. IV. p. 347, pl. 23, fig. 7.

Tube cylindrical, rough, and having an irregular suture on one or more sides; a considerable portion attached to extraneous bodies; when young the attached portion is triangular.

28. SERPULA INTESTINALIS.—The Intestinal Serpula, pl. XCVIII. fig. 46.

S. intestinalis. Phillips, Geo. York. I. pl. 5, fig. 21.

The outer portion of the tube straight, the lower part twisted; surface rather rough, with a waved keel on its back; aperture round; shell strong.

The Oxford Clay, and Cornbrash, Scarborough.

29. SERPULA LACERATA.—The Lacerated Serpula, pl. XCVIII. fig. 32.

S. lacerata. Phillips, Geo. York. I. pl. 4, fig. 35.

Tube moderately curved, circular, and rather rough; aperture round, with a slight scar; shell thick.

The Calcareous Grit, and the Great Oolite, Scarborough.

30. SERPULA SQUAMOSA.—The Scaly Serpula, pl. XCVIII. fig. 37.

S. Squamosa. Phillips, Geo. York. I. pl. 4, fig. 15.

Compressed; rapidly increasing in width, the surface with a keel along the back; surface covered with scales.

The Coral Rag, Scarborough.

31. SERPULA VORTEX.—The Whirled Serpula, pl. XCVIII. fig. 47.

S. vortex. Woodward, Geo. Nor. pl. 5. figs. 10, 11, 12.

Sub-conic, with four spiral, rounded, smooth volutions, flattened below.

The Upper Chalk, Norwich.

GENUS II.—VERMILIA.—*Lamarck.*

Tube cylindrical, posteriorly narrowed, more or less twisted, and adhering by the side to extraneous bodies; aperture round, and the margin frequently provided with from one to three denticles.

1. VERMILIA AMPULLACEA.—The Bottle-shaped Vermilia, pl. XCVIII. figs. 31 and 45.

Serpula ampullacea. Sowerby, VI. p. 199, pl. 597, f. 1—5.

Tube thick, irregular, antiquated, with an orbicular enlargement near the aperture, which is circular, with a notched keel on the back.

The Chalk, Norwich and Lewes, and the Greensand, Blackdown.

2. VERMILIA VERMICULARIS.—The Worm-like Vermilia, pl. XCVIII. fig. 3.

S. Vermicularis. Brown, Ill. Rec. Conch. Brit. p. 123, pl. 55, figs, 2, 3.

Tube cylindrical, transversely wrinkled, gradually enlarging, the smaller end terminating in a fine point.

The Coral Crag, Sutton, and the Red Crag, Bamerton, &c.

3. VERMILIA TRIQUETRA.—The Triangular Vermilia, pl. XCVIII. fig. 4.

S triquetra. Brown, Ill. Rec. Conch. Brit. p. 123, pl. 55, figs. 1 and 5.

Tube strong, irregularly wrinkled, twisted, and contorted; sometimes nearly straight, or a little flexuous, usually more or less carinated; base spreading, and giving it a triangular appearance.

The Red Crag, Sutton.

4. VERMILIA CRASSA.—The Thick Vermilia, pl. XCVIII. figs. 24, 25.

Serpula crassa. Sowerby, I. p. 73, pl. 30.

Tube acutely conical; three-sided externally, and round within; edges slightly waved, two of them attached to the extraneous substance.

The London Clay, Highgate, and Barton.

5. VERMILIA MACROPUS.—The Mocrops Vermilia, pl. XCVIII. fig. 30.

V. macropus. Sowerby, VI. p. 200, pl. 597, fig. 6.

Tube thick, slightly waved, increasing rapidly, a little triquetrous; front sulcated; aperture very small, round, and elevated by a thick mass of adhering testaceous substance, by which it is attached.

The Chalk, Norwich, and Dorking.

6. VERMILIA MINUTA.—The Minute Vermilia, pl. XCVIII. fig. 5.

V. minuta. Brown, Trans. Manchester Geo. Soc. I. p. 229, pl. 7, fig. 79.

Tube smooth, generally semilunar; aperture sub-triangular, gradually increasing from a sharp point; exceedingly minute, and can only be seen distinctly with a strong lens.

The Magnesian Limestone, Vale of Todmorden.

7. VERMILIA PENTANGULATA. — The Five-sided Vermilia, pl. XCVIII. fig. 15.

V. pentangulata. Woodward, Geo. Nor. pl. 7, fig. 17.

Tube five-sided, smooth; the keel acute; aperture small and circular.

The Chalk, Trimmingham.

8. VERMILIA STRIATA.—The Striated Vermilia, pl. XCVIII. fig. 36.

V. striata. Woodward, Geo. Nor. pl. 7, fig. 14.

Tube gradually increasing from an acute point; slightly flexuous; surface slightly striated; aperture circular.

The Chalk, Norwich.

9. VERMILIA SULCATA.—The Furrowed Vermilia, pl. XCVIII. fig. 28.

V. sulcata. Sowerby VI. p. 225, pl. 608, figs. 1, 2.

Tube much elevated; back and sides compressed; an irregular, thick, longitudinal keel traverses the centre of the back, along each side of which is a narrow furrow; surface rather irregular, with strong lines of growth.

The Calcareous Grit, Shotover, and Garsington.

10. VERMILIA TRICUSPIDATA.—The Three-pointed Vermilia, pl. XCVIII. fig. 19.

Serpula serrulata. Brown, Ill. Rec. Conch. Brit. p. 123, pl. 55, fig. 8.

Smooth, glossy, diaphanous, sub-triangular, slightly contorted; base spreading rather widely, and tapering somewhat abruptly to a fine point; back with an elevated sharp ridge, finely but irregularly serrated; aperture large, nearly orbicular, with the tooth-like termination of the keel projecting over it.

The Coral Crag, Sutton.

11. VERMILIA CONCAVA. — The Concave Vermilia, pl. XCVIII. fig. 54.

V. Vermicularis. Sowerby, I. p. 125, pl. 57.

Discoidal, involute, concave on the flattened side; surface smooth and even; the last volution but slightly attached.

Greensand, Dilton, near Westbury.

12. VERMILIA UMBONATA. — The Shield Vermilia, pl. XCVIII. fig. 57.

V. umbonata. Sowerby, I. p. 126, pl. 57, figs. 6, 7.

Discoidal, involute, umbonated above, and concave on the lower side; the smaller volution lost in the umbo.

Marl, near Hamsey.

13. VERMILIA OVATA.—The Ovate Vermilia, pl. XCVIII. fig. 55.

V. ovata. Sowerby, I. p. 126, pl. 57, fig. 8.

Discoidal, involute, rudely ovate, somewhat more concave beneath than above.

Limestone, Shotover Hill, near Oxford.

GENUS III.—SPIRORBIS.—*Lamarck.*

Shell consisting of a testaceous tube, spirally twisted into an orbicular form, on a horizontal plane, depressed, and adhering below; aperture terminal, rounded or angular.

1. SPIRORBIS SINISTRORSUS.—The Sinistral Spirorbis, pl. XCVIII. fig. 53.

Serpula sinistrorsa. Montague, p. 504.

Sub-depressed, with two or three sub-cylindrical sinistral volutions, slightly wrinkled, and somewhat lateral; aperture sub-triangular, diameter about an eighth of an inch.

The Coral Crag, Sutton.

2. SPIRORBIS CORRUGATUS.—The Wrinkled Spirorbis, pl. XCVIII. fig. 51.

S. corrugatus. Brown, Ill. Rec. Conch. Brit. p. 124, pl. 56, fig. 46.

Strong, the last and second volutions only being visible, deeply umbilicated; base hardly spreading, aperture orbicular; diameter an eighth of an inch.

The Pleistocene Marine Formation, Bute.

3. SPIRORBIS CARINATUS.—The Keeled Spirorbis, pl. XCVIII. fig. 49.

S. carinatus. Brown, Ill. Rec. Conch. Brit. p. 124, pl. 56, fig. 48.

Exterior volution angulated, and provided with a dorsal keel; interior volutions entirely concealed; umbilicated; aperture orbicular.

The Coral and Red Crags, Sutton.

4. SPIRORBIS GRANULATUS.—The Grained Spirorbis, pl. XCVIII. fig. 52.

S. granulatus. Brown, Ill. Rec. Conch. Brit. p. 123, pl. 56, fig. 48.

Sub-depressed, with the volutions deeply grooved spirally, and transversely wrinkled, more so in the furrows; umbilicated; aperture orbicular, with an annular margin; diameter an eighth of an inch.

The Coral Crag, Sutton.

5. SPIRORBIS HETEROSTROPHUS.—The Reversed Spirorbis, pl. XCVIII. fig. 56.

S. heterostrophus. Brown, Ill. Rec. Conch. Brit. p. 123, pl. 56, fig. 55.

With two or three reversed volutions, and three lateral spiral ridges, crossed by strong wrinkles; base flat, spreading; aperture orbicular, diameter not an eighth of an inch.

The Coral Crag, Sutton.

6. SPIRORBIS NAUTILOIDES.—The Nautilus-like Spirorbis, pl. XCVIII. fig. 48.

S. Nautiloides. Brown, Ill. Rec. Conch. Brit. p. 123, pl. 56. fig. 45.

With three or four lateral volutions, rounded above, and slightly wrinkled transversely; the central volution lower than the others, forming an umbilicus; base flat, expanded; aperture sub-triangular.

The Pleistocene Marine Formation, Ayr.

7. SPIRORBIS MINUTUS.—The Minute Spirorbis, pl. XCVIII. fig, 44.

S. minuta. Portlock, Geo. Rep. p. 363, pl. 12, fig. 93, *b.*

Sinistral, inner volutions concealed; surface smooth, not a tenth of an inch in diameter.

Carboniferous Limestone Shale, Tyrone.

GENUS IV.—CYCLOGYRA.—*S. Wood.*

1. CYCLOGYRA GRANULATA.—The Grained Cyclogyra, pl. XCVIII. fig. 27.

C. granulata. Wood, An. Nat. Hist. 1842, p. 458, pl. 5, fig. 8. *Serpula granulata*, Sowerby, VI. p. 200, pl. 597, figs. 7, 8.

Discoidal, thick; surface with rows of very prominent grains; aperture nearly circular, its lip fringed with protuberant grains, diameter something more than an eighth of an inch.

The Chalk, Norwich and Swaffham.

GENUS V.—CORNUOIDES.—*Brown.*

Shell tubular cylindrical, erect, abruptly tapering, and slightly convoluted at the smaller end, which is imperforate; aperture circular.

1. CORNUOIDES MAJOR.—The Greater Cornuoides, pl. XCVIII. fig. 50.

Serpula recta. Walker, Minute Shells, pl. 1. fig. 14.

Smooth, with three nearly cylindrical volutions, the exterior one abrubtly enlarging, and prolonged in a lengthened, nearly cylindrical, straight tube; aperture orbicular, diameter an eighth of an inch.

The Coral Crag, Sutton.

GENUS VI.—SERPULITES.

1. SERPULITES LONGISSISIMUS.—The very Long Serpulites, pl. XCVIII. fig. 39.

S. longissisimus. Sowerby, Murchison, Sil. Syst. p. 608, pl. 5, fig. 1.

Much lengthened, hardly diminishing in diameter, compressed, smooth, and a little tortuous, composed of thin laminæ of shell combined with much animal matter.

The Upper Ludlow Rock, Ludlow and Kington.

FAMILY II.—MALDANIÆ.

Branchiæ of the animal intermediate; tube open at both ends.

GENUS III.—DENTALIUM.—*Linnæus.*

Shell tubular, open at both ends, arcuated, increasing in diameter towards the anterior extremity, where the aperture is large and round; opening of the pointed end very small, and with a lateral fissure in some species; external surface ribbed, striated, or smooth.

1. DENTALIUM NITENS.—The Shining Dentalium, pl. XCVIII. fig. 62.

D. nitens. Sowerby, I. p. 159, pl. 70, figs. 1, 2.

Almost straight, gradually tapering to the smaller end, which is somewhat thickened; opening at the point, circular; aperture expanded; surface even and shining.

In the London Clay, Highgate.

2. DENTALIUM ACUMINATUM.—The Pointed Dentalium, pl. XCVIII. fig. 74.

D. entalis. Sowerby, I. p. 159, pl. 70, fig. 3.

Slightly arcuated, nearly smooth, with the lines of growth on the surface a little waved; opening of smaller end, smooth; the aperture acute in the edge.

The London Clay, Hordwell Cliff, &c.

3. DENTALIUM STRIATUM.—The Striated Dentalium, pl. XCVIII. fig. 69.

D. striatum. Sowerby, I. p. 160, pl. 70, fig. 4.

Surface with ten or eleven very regular, longitudinal, acute, prominent striæ, which are most elevated at the smaller end of the shell, giving it a triangular appearance; between each of the larger striæ are from one to four very minute intervening ones, which are most conspicuous towards the middle of the shell, with numerous fine lines of growth; aperture circular; length, about two inches.

The London Clay, Barton.

4. DENTALIUM DECUSSATUM.—The Decussated Dentalium, pl. XCVIII. fig. 59.

D. decussatum. Sowerby, I. p. 161, pl. 70, fig. 5.

Surface with upwards of twenty longitudinal striæ, and several obscure intervening ones, with numerous distinct oblique lines of growth; aperture elliptical; diameter of the shell nearly double that of *D. striatum*.

Chalk Marl, Newtimber, Sussex; the Gault, Westerham, and Ridge, Sussex.

5. DENTALIUM ELLIPTICUM.—The Elliptical Dentalium, pl. XCVIII. fig. 63.

D. ellipticum. Sowerby, I. p. 161, pl. 70, figs. 6, 7.

Nearly straight, abruptly tapering, and somewhat compressed; surface rather uneven, covered with rough lines of growth; aperture circular, with the external edge elliptical; diameter of aperture nearly half an inch in some specimens.

The Gault, Folkestone, and Greensand, Blackdown.

6. DENTALIUM COSTATUM.—The Ribbed Dentalium, pl. XCVIII. fig. 73.

D. costatum. Sowerby, I. p. 162, pl. 70, fig. 8.

Surface with from twelve to fifteen close set ribs, the furrows being about equal in width; crossed by obscure lines of growth; aperture circular.

The Red Crag, Holywell, and Coralline Crag, Sutton.

7. DENTALIUM PLANUM.—The Plain Dentalium, pl. XCVIII. fig. 72.

D. planum. Sowerby, I. p. 179, pl. 79, fig. 1.

Gradually tapering, and gently curving; surface smooth; aperture circular, with the lip a little thickened, and sharp at the edge; small end rather acute; length about an inch.

The London Clay, Bognor, Reading, &c.

8. DENTALIUM CYLINDRICUM.—The Cylindrical Dentalium, pl. XCVIII. fig. 71.

D. cylindricum. Sowerby, p. 179, pl. 79, fig. 2.

Nearly straight, hardly tapering, the smaller end being nearly as wide as the other; cylindrical, smooth; aperture circular.

The Greensand, Exmouth, Devon.

9. DENTALIUM INCRASSATUM.—The Thickened Dentalium, pl. XCVIII. fig. 76.

D. incrassatum. Sowerby, I. p. 180, pl. 79, figs. 3, 4.

Greatly tapered, curved, swelling near the aperture, which is circular, with a sharp lip; surface smooth.

The London Clay, Highgate.

10. DENTALIUM MEDIUM.—The Middle-sized Dentalium, pl. XCVIII. fig. 65.

D. medium. Sowerby, I. p. 181, pl. 79, fig. 5.

Gradually tapering, somewhat trumpet-shaped internally; aperture circular, wide, lip sharp, and becoming suddenly small; external surface covered with transverse striæ, or conspicuous lines of growth; substance of the shell thin.

Lower Greensand, Blackdown.

11. DENTALIUM ANCEPS.—The Obscure Dentalium, pl. XCVIII. fiig. 7.

D. anceps. Sowerby, Geo. Tr. 2nd Ser. V. p. 136, pl. 8, fig. 17.

Slightly arcuated; longitudinally ribbed for a third of its length from the apex; one rib on each side being prominent and sharp; the lower portion smooth; aperture round.

The London Clay, Hampstead.

12. DENTALIUM ENTALE.—The Entalis Dentalium, pl. XCVIII. fig. 64.

D. entale. Deshayes, Mon. pl. 15, fig. 7.

Slender, smooth, glossy, and somewhat arcuated, tapering to a small pervious point, sometimes with a few transverse wrinkles.

The Pleistocene Marine Formation, Ireland.

13. DENTALIUM GIGANTEUM.—The Gigantic Dentalium, pl. XCVIIII. fig. 68.

D. giganteum. Phillips, Geo. York. I. pl. 14, fig. 8.

Considerably arcuated, smooth; with several strong furrows at the narrowed, apical end; a narrow line extending more than half the length from the base; surface smooth.

The Lias, Robin Hood's Bay, Yorkshire.

14. DENTALIUM SEPTANGULARE.—The Seven-angled Dentalium, pl. XCVIII. fig. 58.

D. septangulare. Edinburgh Phil. Journal, XII. pl. 9.

Smooth, shining, gradually tapering to a pervious point, with seven strong, longitudinal, smooth, even ribs.

The Greensand, Belfast.

15. DENTALIUM STRANGULATUM.—The Strangled Dentalium, pl. XCVIII. fig. 60.

D. strangulatum. Deshayes, Monog. pl. 16, fig. 28.

Cylindrical; scarcely tapering; smooth; a compressed, narrowed space near the base.

The London Clay, Barton.

APPENDIX.

CLASS MOLLUSCA.

1. AMMONITES ALLASII.—Allas's Ammonite, pl. XX.* fig. 1.

Six rounded volutions, which are wholly exposed, and crossed by numerous transverse, equidistant bent ribs.

In the Lias, Yorkshire.

2. AMMONITES FURCATUS.—The Forked Ammonite, pl. XX.* fig. 2.

A. furcatus. Sowerby, Geo. Tr. 2nd Ser. IV. p. 339, pl. 14, fig. 17.

Discoidal, sides and front flat; inner volutions partly visible; aperture with a square front, rather oblong, and deeply impressed by the preceding volution; lateral angles truncate; ribs rather distant, thick, curved, many of them forked, and passing at right angles over the front.

The Lower Greensand, Hythe and Atherfield.

3. AMMONITES CRISTATUS.—The Crested Ammonite, pl. XX.*

A. cristatus. Sowerby, Geo. Tr. 2nd Ser. IV. p. 377, pl. 11, fig. 23.

Moderately compressed, with a sharp smooth keel; transverse ribs very irregular, some being largely furcated, and bent, while some are single, and others only extend over half the volution.

In the Gault, Folkestone.

4. AMMONITES CRENATUS.—The Crenated Ammonite, pl. XX.* figs. 5, 6.

A. crenatus. Sowerby, Geo. Tr. 2nd Ser. IV. p. 337, pl. 11, fig. 22.

Sides flattened, inner volutions much exposed, with nearly smooth and rounded margins; those of the outer volutions crenated on each side, of a concave space over the siphuncle.

In the Gault, Folkestone.

5. AMMONITES SYMMETRICUS.—The Symmetrical Ammonite, pl. XX.* figs. 17, 18.

A. symmetricus. Sowerby, Geo. Tr. IV. p. 337, pl. 11, f. 21.

Aperture almost square; provided with a rounded and notched keel; ribs obtuse; a little tumid as they approach the hollow in which the keel is immersed, and very uniform in point of elevation; sides of the volutions flattened.

The Gault, Folkestone.

6. AMMONITES CIRCULARIS.—The Circular Ammonite, pl. XX.* figs. 9, 10.

A. circularis. Sowerby, Geo. Tr. 2nd Ser. IV. p. 337, pl. 11, fig. 20.

Aperture circular; volutions just touching each other; nearly close, acute, and circular; surface sometimes with transverse ridges.

The Gault, Barham and Maidstone, and the Oxford Oolite, Abbotsford, Dorsetshire.

7. AMMONITES TRISERCALIS.—The Three-Tubercled Ammonite, pl. XX.* figs. 20, 21.

A trisercalis. Sowerby, Geo. Tr. 2nd Ser. IV. p. 344.

Discoidal, with a flattened margin; umbilicate; sides with a series of straight transverse ribs, each provided with a rounded obtuse tubercle on its outer end; the marginal portion of the rays provided with three rows of tubercular protuberance, and about ten tubercles around the umbilicus; aperture nearly square.

The Greensand, Blackdown.

8. AMMONITES COOKII.—Cook's Ammonite, pl. XX.* fig. 7.

Aperture oblong; volutions moderately inflated, rapidly increasing, the inner ones more than half concealed; surface smooth, with narrow ribs extending from one side to the other, every alternate one forked, and the intermediate ones only extending two-thirds across the volutions, from the ambit, which is slightly flattened with the ribs passing over it; four volutions.

9. AMMONITES COMPTONI.—Compton's Ammonite, pl. XX.** fig. 7.

A. Comptoni. Pratt, Ann. Nat. Hist. VIII. p. 163, pl. 4, f. 1.

Discoidal, with six or seven volutions, two-thirds exposed, smooth; transversely ribbed, alternately two short, reaching half across the volution, and one long, emanating from the dorsal margin, the longer ones becoming thickened towards the inner margin; shorter ones curved backwards, near the dorsal edge; ambit or back rounded, with a slight depression in the middle, formed by the ribs, which nearly meet; aperture terminating on each side with a spatulate projection of about one and a half inch in length, and three-eighths in width.

In the Oxford Clay, Christian Malford.

10. AMMONITES ELIZABETHÆ.—Elizabeth's Ammonite, pl. XX.** figs. 1, 2, 3.

A. Elizabethæ. Pratt, Ann. Nat. Hist. VIII. p. 162, pl. 3, figs. 1—4.

Volutions six or seven, about two-thirds exposed; angular, arising from a series of spines on each dorsal edge, and two rows of tubercles on the sides of the volutions, one near the middle, another smaller and compressed, near the inner margin; sides with transverse ribs, varying much in elevation, curvatures, and number; in some they are nearly straight, in others curved, and in another variety undulating, but generally becoming angular near the aperture in the adult shell; some form loops on the surface; aperture provided with a lengthened spatulate projection, its surface deeply marked by lines of growth; back narrow, concave, the ribs passing over it; siphuncle not visible.

The great difference in those figured certainly would lead to the supposition that they are specifically distinct. I yield, however, to the opinion of Mr. Pratt, who has had an opportunity of examining more varieties than I have done. He says, that their characters "appear to indicate several distinct species, but on close examination, it is seen that all the varieties pass into each other, the same specimen sometimes containing more than one form."

The spines and rays (ribs) vary from sixteen to upwards of sixty on the last volution, and they are large and elongated in proportion to the smallness of their number.

The Oxford Clay, Christian Malford.

11. AMMONITES STUTCHBURII.—Stutchbury's Ammonites.

A. Stutchburii. Pratt, Ann. Nat. Hist. VIII. p. 163, pl. 4, f. 1, 2.

Discoidal, with four two-thirds exposed volutions; sides with a series of short, distant, curved ribs, emanating from the inner sides of the volutions, terminating in compressed tubercles; beyond these, to the outer margin, are very numerous close-set waved ribs; back narrowed, with the smaller ribs passing over it, and with a series of sharp serrated projections on both sides; aperture with a projecting beak.

The Oxford Clay, Christian Malford.

12. AMMONITES FLUCTUOSUS.—The Fluctuating Ammonites, pl. XX.** fig. 16.

A. fluctuosus. Pratt, Ann. Nat. Hist. VIII. p. 164, pl. 6, figs. 1, 2.

Discoidal or lenticular, surface smooth, with six two-thirds exposed volutions; crossed by thick, distant ribs, which, with a few exceptions, are forked for nearly their outer half; back plain.

In the young condition there are numerous sharp, alternately long and short, ribs, the short ones combining in twos or threes with the longer ones about the middle of the sides, some remaining distinct.

The Oxford Clay, Christian Malford.

13. AMMONITES SEDGWICKII.—Sedgwick's Ammonite.

A. Sedgwickii. Pratt, Ann. Nat. Hist. VIII. p. 163, pl. 5, fig. 1.

Discoidal, smooth, with five one-fourth exposed volutions, with a row of distant tubercles on the inner side, situated a little way from the margin; outer sides with numerous flat, close-set ribs, which do not reach half way across the volutions.

The Oxford Clay, Christian Malford.

14. AMMONITES BRIGHTII.—Bright's Ammonite, pl. XX.** figs. 4 and 10.

A. Brightii. Pratt, Ann. Nat. Hist. VIII. p. 164, pl. 6, figs. 3, 4.

Discoidal, nearly smooth, with about seven two-thirds exposed volutions; with several flat, obtuse ribs emanating from the dorsal edge, which combine a little beyond the middle of the volutions into compressed, elongated tubercles, which reach the inner margin; the tubercles being about one-third as numerous as the ribs, and meet them in a rounded right angle; the siphuncle is distinguished by a sharp ridge on the back.

The Oxford Clay, Christian Malford.

15. AMMONITES LONSDALII.—Lonsdal's Ammonite, pl. XX.** fig. 15.

A. Lonsdalii. Pratt, Ann. Nat. Hist. VIII. p. 164, pl. 5, f. 2.

Discoidal, three or four one-third exposed volutions, the last being more than half the diameter of the shell; surface with numerous transverse waved ribs, which emanate from the back, and hardly reach the middle of the volutions, become fewer and more obtuse as the shell increases in size, and pass into fine striæ near the aperture, which forms a regular concave termination, except on the inner edge, where it bends back, somewhat like the handle of a sickle.

The Oxford Clay, Christian Malford.

16. AMMONITES SULCATUS.—The Furrowed Ammonites, pl. XX.** figs. 5, 6, 11, 12.

A. sulcatus. Strickland, Geo. Chelt. p. 105, pl. 11, figs. 1, 2, 3.

Moderately convex, with three or four volutions, almost wholly exposed; crossed by alternately long and short curved strong ribs, increasing in thickness from the inner to the outer side; back with a deep furrow in the young state, which becomes obliterated when old; when young, the ribs are fine and close; back square in the adult; aperture oblong.

The Lias Shales, Vale of Gloucester.

17. AMMONITES LACUNATUS.—The Fretted Ammonites, pl. XX.** figs. 8, 9.

A. lacunatus. Murchison, Geo. Chelt. p. 105, pl. 11, f. 4, 5.

Discoidal, with four or five half-concealed, slightly compressed volutions, crossed by rather close, curved, alternately long and short ribs, sometimes anastomosing; back with a single, narrow furrow, which is wanting in young specimens; aperture small, oblong.

The Lias Shale, Dowdswell Hill.

18. AMMONITES BOBLAYEI.—Boblaye's Ammonite, pl. XX.** figs. 13, 14.

A. Boblayei. Murchison, Geo. Chelt. pl. 12, fig. 3.

Compressed, with five rapidly increasing two-thirds concealed volutions; deeply umbilicate; volutions crossed by very thick curved ribs, which project considerably beyond the dorsal line; these become more flattened on the outer volutions.

The Lias Shale, Cheltenham.

19. AMMONITES DISSIMILIS.—The Dissimilar Ammonite, pl. XX.* figs. 11, 12, 13.

Inflated, with rapidly increasing volutions, the smaller ones entirely concealed; largely umbilicate; crossed by broad furrows, and flattened curved ribs passing over the thick back, with a few elongated nodules on the inner edges of the volutions; aperture wide and sub-orbicular.

The Calcareous Grit, Scarborough.

In the Manchester Museum.

20. AMMONITES CALCAR.—The Spur Ammonites, pl. XX.* fig. 4.

Discoidal; inner volutions entirely concealed; sides with irregular alternately long and short curved ribs, and a central series of round tubercles; back with a double keel, consisting of close-set sharp tubercles, each series pointing outwards.

The Lias, Scarborough.

In the Cabinet of Thomas Allis, Esq., York.

21. AMMONITES ROTIFER.—The Wheel-like Ammonite, pl. XX.* figs. 14, 15.

Discoidal, with five moderately rounded, smooth volutions, which are one-third concealed; a series of close-set ribs pass over the rounded back, and reach nearly the middle of the volutions on either side, where they are met by wide-set, thick ribs, which emanate from the inner margins; aperture nearly orbicular.

The Calcareous Grit, Scarborough.

In the Manchester Museum.

22. AMMONITES MULGRAVIUS.—Mulgrave's Ammonites, pl. XX.* fig. 16.

A. Mulgravius. Young and Bird, Geo. York. p. 251, pl. 13, fig. 8.

Discoidal; umbilicated; volutions more than half concealed, and rapidly increasing; internal sides bevelled inwards, the inner edges defined by a perpendicular flat margin; back narrow, with a central smooth, narrow, and low keel; surface covered with a series of elegantly falcated furrows, emanating from the inner edges in extremely fine lines, which gradually increase in width after passing the centre of the volutions.

The Lias, Lythe, Saltwick.

23. AMMONITES FIMBRIATUS.—The Fringed Ammonites, p. 28, pl. XX. fig. 12, and pl. XX.* fig. 8.

Discoidal, with four cylindrical, rapidly enlarging volutions, the inner ones entirely exposed; surface with many raised transverse and spiral narrow ribs, dividing it into sub-quadrangular hollow spaces; the tranverse divisions being all curved, and producing a fringed appearance; aperture orbicular, provided with an undulating frill.

The beautiful specimen from which we drew fig. 8, pl. XX.* was obtained in the Lias at Whitby, by my friend James Cook, Esq., of York, and is in his cabinet. Its diameter is ten inches, and the thickness of the outer volution, three and a half inches.

GENUS GONIATITES.—*Von Buch.*

1. GONIATITES UNDULATUS.—The Waved Goniatites, pl. XXI.* figs. 1, 2, 3, 4, 5.

G. undulatus. Brown, Tr. Man. Geo. Soc. I. p. 213, pl. 7, figs. 1, 2, 3, 4, 5.

Sub-globose, glabrous, and shining; crossed by numerous transverse, irregular, undulating, continuous raised lines, which bend downwards as they pass over the ambit; also provided with deep, straight, transverse constrictions; ambit rounded; umbilicus very small, deep, and angulated; aperture wide and expansive.

In the very young state this species is destitute of the transverse lines and constrictions; the umbilicus is large, and exhibits the volutions. Diameter nine lines, thickness a third less.

This beautiful species occurs in fragments at Lambert's Clough, near Todmorden, and at Crosshills, near Skipton, Yorkshire. The distinct and bold undulating lines distinguish this from all its congeners.

2. GONIATITES INTERMEDIUS.—The Intermediate Goniatites, pl. XXI.* figs. 6, 7.

G. intermedius. Brown, Tr. Man. Geo. Soc. I. p. 213, pl. 7, figs. 6, 7.

Shell discoidal, sub-compressed; crossed by indistinct, wide-set, continuous, doubly-bent undulations, which dip rapidly in an arcuated manner as they pass over the sub-carinated ambit, which is a little compressed; constrictions regular, broad, shallow, and greatly arcuated on the sides, and in passing over the ambit; volutions three, and rapidly increasing; umbilicus large and deep, with raised angular edges, and exhibiting the three volutions. Septa, the dorsal lobes single, sole-shaped, with a truncated point; a single, pointed lateral sinus, and two

rounded lateral lobes; aperture wide and deep. Greatest diameter two inches, thickness nine lines.

This rare Goniatite is found at High-Green Wood, near Hebden Bridge, Vale of Todmorden, Yorkshire.

3. GONIATITES SUBSULCATUS.—The Half-Furrowed Goniatites, pl. XXI.* figs. 8, 9, 10.

G. subsulcatus. Brown, Tr. Man. Geo. Soc. I. p. 214, pl. 7, figs. 9, 10.

Sub-rotund; ambit broad, sub-depressed, with a deep sulcus in its centre; constrictions wide, nearly equi-distant, rather deep, plain, rounded, narrow, below them on the surface smooth, and arcuated as they pass over the ambit; surface covered with transverse, strong, bifurcate, gently bending striæ, which emanate from the umbilicus, where they are strong, the bifurcations terminating on the margin of the dorsal sulcus; umbilicus rounded, rather wide; aperture semi-lunar and rather small; dorsal lobe short, the whole lateral lobes rounded. Diameter five lines, thickness three lines.

Found in nodules of Limestone Shale, in the neighbourhood of Hebden Bridge. Rare.

4. GONIATITES DORSALIS.—The Back-ridged Goniatites, pl. XXI.* figs. 11, 12, 13.

G. Dorsalis. Brown, Tr. Man. Geo. Soc. I. p. 214, pl. 7, figs. 11, 12, 13.

Discoidal, sub-compressed; ambit somewhat flattened, and sub-carinated in the centre; aperture longer than wide; whole shell covered by numerous, fine, acute, transverse striæ, thick as they emanate from the umbilicus, and become bifurcate as they diverge outwards, and are abruptly arcuated as they pass over the side towards the ambit; these are crossed by rather wide-set, spiral, and nearly obsolete striæ; constrictions irregular, shallow, and striated, and considerably arcuated, as they approach the ambit; septa with two rounded lateral lobes; one pointed lateral sinus, and a simple, rounded, central dorsal lobe. Diameter seven lines, thickness about one line and a half.

Found in nodules of Limestone Shale, at High-Green Wood, Vale of Todmorden.

5. GONIATITES JUGOSUS.—The Ridged Goniatites, pl. XXI.* figs. 14, 15.

G. jugosus. Brown, Man. Geo. Tr. I. p. 215, pl. 7, f. 14, 15.

Discoidal; with five gradually enlarging volutions, crossed by numerous, elevated, sharp, strong, oblique ribs, which emanate from the umbilicus, and become bifurcate, or trifurcate, gradually thickening as they approach the ambit, terminating in a gentle curve on the margin of the broad, smooth, dorsal sulcus with which the slightly-rounded ambit is invested; the sides of the shell rise abruptly, and have a carinated aspect; constrictions irregular, shallow, and partaking of the same curvature as the ribs; aperture compressed and semi-lunar; umbilicus very small and shallow; dorsal lobe of the septa narrow, truncate, with parallel sides, lateral lobes, and sinuses rounded. Diameter three lines, thickness one line and a half.

This species has somewhat the aspect of *G. Gibsoni*, but differs in the dorsal groove being smooth, and in the form of the septa.

A rare species, found in the Limestone Shales in the neighbourhood of Hebden Bridge.

6. GONIATITES SPLENDIDUS.—The Splendid Goniatites, pl. XXI.* figs. 16, 17, 18.

G. splendidus. Brown, Man. Geo. Tr. I. p. 215, pl. 7, figs. 16, 17, 18.

Discoidal, smooth, glossy; inner volutions enveloped in the outer one; umbilicus minute; ambit subacute; aperture large, wide, oblong-ovate; surface covered with sigmoidal striæ; septa numerous, the dorsal lobe long and truncate, with the sides parallel; dorsal sinuses trifid, with the first lobe very long, and rounded; second acute; third short, and obtusely angular; lateral sinuses very wide, divided into two parts by a very deep acute lobe, the first part bifid, the second rounded. Diameter nearly half an inch, thickness a quarter. The young form is unknown.

Found at High-Green Wood, near Hebden Bridge, and is in the cabinet of Mr. Gibson.

7. GONIATITES KENYONI.—Kenyon's Goniatites, pl. XXI.* figs. 19, 20.

G. Kenyoni. Brown, Tr. Man. Geo. Soc. I. p. 216, pl. 7, figs. 19, 20.

Somewhat ovate, compressed, smooth, the outer volution enveloping the others; ambit rounded, with a thin sharp carina along its centre; umbilicus small, shallow; surface covered with very minute, spiral striæ, which can only be detected by the aid of a strong lens; septa numerous, with rounded lobes and sinuses; lateral sinus wide, double; dorsal sinus simple. Diameter two lines and a half, thickness a third less.

This species differs from *G. Looneyi* in its dorsal sinus being simple; and from *G. Gilbertsoni* in having double lateral sinuses, and in the dorsal sinus being simple; and from both in being spirally striated.

Found in the Limestone Shales, near Hebden Bridge.

8. GONIATITES PARADOXICUS.—The Paradoxical Goniatites, pl. XXI.* figs. 21, 22.

G. Paradoxicus. Brown, Tr. Man. Geo. Soc. I. p. 216, pl. 7, figs. 21, 22.

Elliptical, sub-depressed, smooth, shining; aperture sub-rotund; umbilicus of moderate size, shallow, the sides gradually rising from it; ambit sub-compressed, gently rounded; surface covered with very minute spiral striæ; septa with rounded lobes and sinuses; the dorsal sinus double, lateral sinus simple. Diameter two lines, thickness a line and a half.

Distinguished from the *G. Kenyoni* by the form of its septa; and from the *G. Gilbertsoni* in being spirally striated.

Found in the Shale at the bottom of High-Green Wood, Vale of Todmorden.

9. GONIATITES LONGTHORNI.—Longthorn's Goniatites, pl. XXI.* figs. 24, 25, 26.

G. Longthorni. Brown, Tr. Man. Geo. Soc. I. p. 216, pl. 7, figs. 23, 24, 25, 26.

Elliptical, sub-compressed; with three rapidly increasing volutions; aperture ovate; umbilicus small; sides covered with numerous, doubly arcuated, flat, indistinct ribs, septa with all the lobes and sinuses rounded and equal. Diameter twelve lines; thickness half its diameter.

In the young condition it is smooth, with directly transverse constrictions.

Found in the soft Shale, near Hebden Bridge.

10. GONIATITES PROTEUS.—Proteus's Goniatites, pl. XXI.* figs. 27, 28.

G. Proteus. Tr. Man. Geo. Soc. I. p. 217, pl. 7. f. 27, 28.

Discoidal, compressed, lenticular; volutions numerous; umbilicus deep, funnel-shaped, exhibiting the margins of the volutions, the external margins of which are enveloped in the outer one; margin of umbilicus with an elevated ridge; ambit produced, slightly flattened in the centre, sides spirally striated, and crossed by numerous, nearly obsolete, lines of growth; constrictions indistinct; aperture oblong-ovate, equal to a third of the diameter of the shell; septa with all the lobes and sinuses rounded. Diameter seven lines; thickness two lines and a fourth.

In the young condition it is considerably compressed, and the constrictions are distinct, broad, and deep; these fill up as the shell advances in growth.

This shell may be distinguished from our *G. Spirorbis*, p. 30, pl. 21, figs. 45, 46, in the umbilicus being smaller, and angular, and in its being spirally striated, in the aperture being much more elongated, in the ambit being more produced, and in the indentations from the volutions being more acute, and following the form of the septa.

Found at Lob Mill, near Todmorden.

11. GONIATITES PARVUS.—The Small Goniatites, pl. XXI.* figs. 32, 33.

G. parvus. Brown, Tr. Man. Geo. Soc. I. p. 217, f. 32, 33.

Spheroidal, with straight constrictions; umbilicus large; surface covered with exceedingly minute, transverse striæ; aperture semilunar; septa with all the undulations low and rounded; dorsal sinuses very wide. Diameter three-fourths of a line, thickness about the same.

Found at Hoole Bottom, near Todmorden.

12. GONIATITES MINUTISSIMUS.—The Very Minute Goniatites, pl. XXI.* figs. 29, 30, 31.

G. minutissimus. Brown, Tr. Man. Geo. Soc. I. p. 218, pl. 7, figs. 29, 30, 31.

Discoidal, sub-globose, smooth; with three rounded volutions, the inner ones only half concealed; aperture semilunar; umbilicus large, moderately deep; septa unknown. Diameter one-third of a line.

Found in the Carboniferous Shale at Millwood, near Todmorden.

13. GONIATITES SMITHII.—Smith's Goniatites, pl. XXI.* figs. 34, 35.

G. Smithii. Brown, Tr. Man. Geo. Soc. I. p. 218, pl. 7, figs. 34, 35.

Discoidal, sub-globose, very thick; sides narrow; ambit very broad, slightly produced in the centre; umbilicus very large, funnel-shaped, and deep, exposing the margins of the inner volutions, and with an acute margin; aperture semilunar; constrictions directly transverse; the whole surface covered with strong, regular, transverse, slightly waved striæ; aperture semilunar, narrow. Septa dorsal lobe simple and rounded, dorsal sinus rounded and very small; first and second lateral lobes angular, with their edges parallel; lateral sinus rounded. Diameter eight lines, thickness about six lines and a half.

This species differs from *G. Listeri* in the form of its septa.

Found associated with the *G. Proteus*, at Millwood, near Todmorden.

14. GONIATITES MICRONOTUS.—The Small Umbilicated Goniatites, pl. XXI. figs. 11, 11*a*, 12.

G. micronotus. Phillips, Geo. York. II. p. 234, pl. 19, figs. 22, 23.

Sub-compressed; surface with transverse striæ, and the constrictions but slightly bent; septa with the dorsal lobe small, the first lateral lobes large and rounded, with their dorsal edges parallel; umbilicus small and rounded.

The Carboniferous Limestone, Bolland.

---

1. BELEMNITES ELLIPTICUS.—The Elliptical Belemnites, pl. XXIX.* figs. 1, 2, and 22.

B. ellipticus. Miller, Geo. Tr. 2nd Ser. II. p. 60, pl. 8, figs. 14, 15, 16, 17.

Guard much elongated, elliptical; opaque, greyish-brown, terminating in a mucronated point.

In an early stage of growth, the guard is generally round, as may be seen in the transverse sections, but becomes subsequently, by an opposition of laminæ, of irregular thickness, of an elliptical form.

Fig. 2, a transverse section, and fig. 22 is a variety.

Inferior Oolite, Dundry, Somersetshire.

2. BELEMNITES ELONGATUS.—The Elongated Belemnites, pl. XXIX.* fig. 7.

See page 42, No. 13, pl. XXIX. fig. 11.

3. BELEMNITES ABBREVIATUS.—The Shortened Belemnites, pl. XXIX.* figs. 6, 8, p. 42, pl. XXIX. figs. 18, 19.

4. BELEMNITES SULCATUS.—The Furrowed Belemnites, pl. XXIX.* figs. 9 and 11.

B. sulcatus. Miller, Geo. Tr. 2nd Ser. II. p. 59, pl. 8, figs. 3, 4, 5. Platt. Hist. Oxford, pl. 3, fig. 6.

Guard sub-cylindrical, elongated, and provided with a longitudinal furrow, and terminating in an acute apex.

The Inferior Oolite, Daudry, Somersetshire.

5. BELEMNITES LONGISSIMUS.—The Lengthened Belemnites, pl. XXIX.* figs. 13, 14.

B. longissimus. Miller, Geo. Tr. 2nd. Ser. II. p. 60, pl. 8, figs. 1, 2.

Guard very strong, much lengthened, smooth, and terminating in a conic point.

The Lias, Lyme Regis, Weston and Bolland.

6. BELEMNITES JACULUM.—The Dart Belemnites, pl. XXIX.* fig. 14.

B. jaculum. Phillips, Geo. York. I. pl. 3, fig. 1.

Spindle shaped, much accumunated behind, and terminating in a rounded sub-conic point.

The Specton Clay, Specton, Yorkshire.

7. BELEMNITES TRIPARTITUS.—The Three-parted Belemnites, pl. XXIX.* figs. 15, 16, 17, 18.

B. tripartitus. Miller, Geo. Tr. 2nd Ser. II. p. 60, pl. 8, figs. 10, 11, 12, 13.

Guard formed of three longitudinal portions, exhibiting, near the apex, three distinct longitudinal ridges.

The Lias, Lyme Regis, Dorsetshire.

8. BELEMNITES ADUNCATUS.—The Hooked Belemnites. pl. XXIX.* figs. 19, 20, 21.

B. aduncatus. Miller, Geo. Tr. 2nd Ser. II. p. 59, pl. 8, figs. 6, 7, 8.

Guard cylindrical, very smooth, sometimes finely striated, terminating in a hooked apex, which is furnished with four or five ridges, the intervening furrows are sometimes slightly tuberculated.

This species has a considerable resemblance to *B. abbreviatus*, but is considerably more slender.

The Lias, Lyme Regis and Weston.

9. BELEMNITES ELECTRINUS.—The Amber Belemnites, pl. XXIX.* figs. 23, 24.

Guard cylindrical, the lower extremity conical, with a mammillated point; amber coloured.

When specimens are perfect, where the guard adheres to the chambered cone, there is a longitudinal groove in the centre. On the surface there are generally traces of blood-vessels. An outline of these blood-vessels is represented in fig. 12.

In the Lias, Lyme Regis, Dorsetshire.

10. BELEMNITES GIBSONI.—Gibson's Belemnites, pl. XXIX.* fig. 28.

B. Gibsoni. Brown, Tr. Man. Geo. Soc. I. p. 220, pl. 7, f. 41.

Shell tapering gradually, smooth, and shining; aperture nearly circular. Length five-eighths of an inch, diameter at aperture an eighth of an inch.

Found at Crimsworth Dean, in the Limestone Shale.

---

1. ORTHOCERA OBTUSA.—The Obtuse Orthocera, pl. XXIX.* fig. 30.

O. obtusa. Brown, Tr. Man. Geo. Soc. I. p. 219, pl. 7, f. 36.

Shell erect, taper, slightly compressed; surface smooth, covered with undulating, transverse striæ; the point for a quarter of an inch destitute of striæ, next which the striæ are very fine and close-set, gradually widening as they ascend, and becoming more undulous. Diameter near the base three-quarters of an inch, greatest known diameter an inch and an eighth.

In the Carboniferous Shale, High-Green Wood, near Hebden Bridge, Vale of Todmorden.

2. ORTHOCERA MICROSCOPICA.—The Microscopic Orthocera, pl. XXIX.* figs. 26, 27.

O. microscopica. Brown, Tr. Man. Geo. Soc. I. p. 219, pl. 7, figs. 37, 38.

Shell taper, smooth; with the septa remote; aperture semi-oval. Length a line, thickness not the fourth of a line.

In the Carboniferous Shale, High-Green Wood, Vale of Todmorden.

3. ORTHOCERA ASCICULARIS.—The Ascicular Orthocera, pl. XXIX.* fig. 29.

O. ascicularis. Brown, Tr. Man. Geo. Soc. I. p. 219, pl. 7, fig. 39.

Shell very long, and tapering rather abruptly; smooth; septa numerous, transversely parallel, regular, and increasing with age; aperture circular; siphuncle near to one side. Length almost an inch and an eighth, diameter at aperture not an eighth of an inch, and a third of an eighth at the base.

Found in the soft Shale at Todmorden.

4. ORTHOCERA BROWNII.—Brown's Orthocera, pl. XXIX.* fig. 31.

O. Brownii. Tr. Man. Geo. Soc. I. p. 219, pl. 7, fig. 40.

Shell subulate, arcuated; with seven longitudinal, elevated ribs; giving the shell a septangular form; general surface smooth; septa numerous, undulating, more remote as they ascend. Length one inch and a quarter, diameter one sixth.

Found in the Carboniferous Shale, Todmorden.

5. ORTHOCERA ELONGATUS.—The Elongated Orthoceras, pl. XXIX.* fig. 25.

O. elongatus. Miller, Geo. Tr. 2nd Ser. II. p. 60, pl. 8, fig. 19.

Much elongated and accumunated, the chambered cone and guard both terminating in a sharp point.

The guard is very thin, and in external appearance much resembling a Belemnite, the surface being quite smooth, and polished.

The Inferior Oolite, Dundry, Somersetshire.

---

1. LITUITES GIGANTEUS.—The Gigantic Lituites, pl. III.* figs. 1, 2, 3.

L. Giganteus. Sowerby, Sil. Syst. p. 622, pl. 11, fig. 4.

With about three rather compressed volutions, the inner ones slightly indenting those around them; surface with numerous transverse arcuated ribs, which are lost over the margin; aperture somewhat quadrangular, with rounded corners; siphuncle nearly central. Diameter of last volution four and a half inches, length of aperture one inch and three-fourths, width eight lines.

Fig. 3 represents a portion of the back, and fig. 2 a section.

The Wenlock Limestone, Mocktree Hays, and Churn Bank, near Ludlow.

---

1. NUMMULITES ELEGANS.—The Elegant Nummulites, pl. XXVI. figs. 9, 10, 11.

N. elegans. Sowerby, VI. p. 76, pl. 538, fig. 2.

Greatly compressed, smooth, consisting of about six volutions; septa numerous, and gently curved from the axis; aperture rather prominent.

This species differs from *N. lævigata* in being smaller and having fewer volutions, which increase more rapidly, and in the regular curvature of the septa. In the young condition it is very smooth and lenticular.

In the London Clay, Emsworth, Sussex.

---

1. CYRTOCERAS NAUTILOIDEUM.—The Nautilus-shaped Cyrtoceras, pl. III.* figs. 7, 8, 9.

C. Nautiloideum. Phillips, Pal. Fos. p. 116, pl. 46, fig. 200.

Involute, tapering; section nearly circular; septa slightly oblique; siphuncle situate near the back, almost half way from the centre toward the convex line of the shell.

Fig. 8, a chamber of *C. marginale*, seen on the face; fig. 9, ditto on the edge.

In the Devonian Shales, Newton Bushel.

---

1. CRIOCERAS BOWERBANKII.—Bowerbank's Criocerus, pl. III.* figs. 12, 13.

C. Bowerbankii. Sowerby, Geo. Tr. 2nd Ser. V. p. 410, pl. 34, fig. 1.

With four volutions, slightly flattened on the sides, and nearly close; the inner ones with numerous radiating furrows, which, gradually disappearing upon the outer volution, are succeeded by eight or ten thick, arcuated ribs, extending across the volution, and are largest and most elevated towards the aperture, which is thinly edged and transversely oblong. Diameter seven and a half inches; breadth of aperture two and a half inches.

In the Lower Greensand, Isle of Wight.

---

1. CLYMENIA LINEARIS.—The Lined Clymenia, pl. III.* figs. 4, 5.

C. linearis. Sowerby, Geo. Tr. 2nd. Ser. V. pl. 54, fig. 19.
Endosiphonites carinatus. Ansted, Camb. Tr. VI. pl. 8, figs. 1, 2, 3.

Discoidal, convolute, the inner volutions; back with a smooth, narrow, central keel; section of the volution elliptical, oblong, impressed by the inner volution; siphuncle small; surface covered with gently bent transverse striæ; septa obsolete.

In the Devonian Shales, Petherwin.

---

1. ACTINOCERAS SIMMSII.—Simm's Actinoceras, pl. III.* fig. 6.

A. Simmsii. Stokes, Geo. Tr. 2nd Ser. V. p. 708, pl. 59, fig. 4.

Shell large, conical, the upper chamber very deep; siphuncle large, continuous, and contracted at the attachments; septa composed of several laminæ, and rather thick. Length upwards of two feet.

In the Carboniferous Limestone, Castle Espie, Ireland.

---

1. GOMPHOCERAS PYRIFORME.—The Pear-shaped Gomphoceras, pl. III.* fig. 10.

Orthoceras pyriforme. Sowerby, Sil. Syst. p. 620, pl. 8, figs. 19, 20.

Ovate, pear-shaped, with chambered portion elongated; septa numerous, and even; siphuncle rather large, situate half way between the centre and margin, and inflated between the septa; aperture narrow, enlarged at one extremity where the ridge is reflected; surface smooth. Length of inflated portion four inches, diameter of ditto two and a half inches.

The Upper Silurian Series, Aymstrey, Ledbury, &c.

---

1. PHRAGMOCERAS VENTRICOSUM.—The Bellied Phragmoceras, pl. III.* fig. 11.

P. ventricosum. Sowerby, Sil. Sys. p. 621, pl. 10, f. 4, 5, 6.

Compressed, slightly arcuated, and somewhat hooked near the apex; aperture nearly closed in the middle; beak produced; surface with many ridges, which cross the edges of the numerous septa.

The Lower Ludlow Rock, Aymestry, Dudley, &c

---

1. VOLUTA CITHARA.—The Harp Voluta, pl. XXXVII.* figs. 1, 2.

V. Cithara. Sowerby, VII. pl. 625, figs. 1, 2, 3.

Oblong-ovate; spire depressed; volutions a little concave; with remote ribs, acutely pointed on their outward edges, those are continued along the body to the base; pillar lip reflected; and with six plaits; a few transeversely spiral narrow striæ on the lower part of the body.

The London Clay, Barton, and Bracklesham Bay.

2. VOLUTA LABRELLA.—The Small-lipped Voluta, plate XXXVII.* fig.

V. Labrella. Sowerby, VII. p. 8, pl. 614, fig. 2.

Pyriform, ventricose above, and narrowed below, pointed at the base, where it is transversely furrowed; spire short, consisting of five slightly-ribbed volutions; body furrowed above; columella with one large and various small plaits; aperture as long as the body; outer lip tumid above.

The London Clay, Bracklesham.

3. VOLUTA ANGUSTA.—The Narrow Voluta, pl. XXXVII.* figs. 8, 9.

V. angusta. Sowerby, VII. pl. 626, figs. 1, 2, 3.

Much elongated; spire lengthened, volutions obliquely depressed, occupying a third of the shell, and terminating in an acute point; with seven or eight longitudinal raised ribs; with about five very small plaits on the columella; aperture narrow.

The London Clay, Bracklesham.

GENUS PSEUDOLIVA.—*Swainson.*

Shell thick, ventricose, somewhat oliviform; spire very short; aperture large, longitudinal, oval, with a broad short canal at the base, and a narrow canal at the opposite extremity; outer lip with a tooth on its sharp edge, corresponding to a groove around the outside of the lower part of the volution; inner lip thick, tumid at the upper part.

1. PSEUDOLIVA OBTUSA.—The Obtuse Pseudoliva, plate XXXVII. figs. 13, 14.

P. obtusa. Sowerby, VII. p. 23, pl. 622.

Slightly obovate, smooth, ventricose; spire short, small, and a little concealed by the expansion of the inner lip; canal a little projecting; a transverse furrow below the middle of the body, with a few striæ beneath it.

The London Clay, Bracklesham.

---

1. TEREBRA PORTLANDICA.—The Portland Terebra, pl. XXXIII.* figs. 48, 49.*

T. Portlandica. Sowerby, Geo. Tr. 2nd Ser. IV. p. 347, pl. 23, fig. 6.

Turreted, volutions rather concave near the upper edge, where they are likewise longitudinally furrowed; whole surface longitudinally striated; aperture acutely elliptical; beak curved, and very short.

The Portland Stone, Portland and Swindon.

2. TEREBRA SINUOSA.—The Sinuous Terebra, pl. XXXIII.* fig. 62.

T. sinuosa. Sowerby, Sil. Syst. p. 619, pl. 8, fig. 15.

Turreted, subulate, with numerous convex volutions; surface smooth, with sharp lines of growth; edge of the lip with an angular sinus, the angle a little above the middle.

The Lower Ludlow Rock, Garden House Quarry, Aymestry.

---

1. BUCCINUM MANNI.—Mann's Buccinum, pl. XXI.* figs. 53, 54.

B. Manni. Brown, Tr. Man. Geo. Soc. I. p. 221, pl. 7, figs. 53, 54.

Shell oblong-ovate; body and spire of equal length; the latter furnished with four gradually tapering volutions, not very deeply divided, terminating in an acute apex; aperture with a short central canal at its base. Length two-tenths of an inch, diameter half its length.

Found at High-Green Wood.

2. BUCCINUM GIBSONI.—Gibson's Buccinum, pl. XX.* figs. 48, 49.

B. Gibsoni. Brown, Tr. Man. Geo. Soc. I. p. 221, pl. 7, figs. 48, 49.

Shell ovate, smooth; body large; spire very small, consisting of three rapidly diminishing volutions, terminating in an acute apex; aperture oblong-ovate, a little contracted both above and below; outer lip sharp, even; pillar lip slightly reflected on the columella. Length half an inch, diameter about three-quarters of an inch.

In the Coal Shales, High-Green Wood, near Todmorden, and is in the Manchester Museum.

3. BUCCINUM ELEGANS.—The Elegant Buccinum, pl. XXI.* figs. 50, 51.

B. elegans. Brown, Tr. Man. Geo. Soc. I. p. 221, pl. 7, figs. 50, 51.

Shell oblong-ovate, smooth, glossy; body large, ventricose; spire of medium length, consisting of four rapidly diminishing, but not deeply divided, volutions, terminating in an acute apex; aperture oblong-ovate, contracted above and rounded below; outer lip sharp and even. Length a quarter of an inch, diameter one-eighth of an inch.

In the Coal Shale, High-Green Wood, near Todmorden, and is in the Manchester Museum.

4. BUCCINUM FLEMINGII.—Fleming's Buccinum, pl. XXI.* fig. 52.

B. Flemingii. Brown, Tr. Man. Geo. Soc. I. p. 222, pl. 7, fig. 52.

Shell oblong-ovate, smooth, glossy; body large; spire short,

consisting of three well defined and rapidly diminishing volutions. Length three-eighths of an inch, diameter three-sixteenths of an inch.

In the Coal Shale, High-Green Wood, near Todmorden.

5. Buccinum Naticoideum.—The Natica-like Buccinum, pl. XXXIII.* fig. 1.

B. Naticoide. Sowerby, Geo. Tr. 2nd Ser. IV. p. 347, pl. 23, fig. 4.

Ovate, smooth, and thick; spire produced, consisting of four or five volutions, with their upper edges rounded; body very large and ventricose; aperture two-thirds the length of the shell.

The Portland Stone, Whitchurch, Swindon, Brill, and Vale of Wardour.

6. Buccinum angulatum.—The Angulated Buccinum, pl. XXXIII.* fig. 74.*

B. angulatum. Sowerby, Geo. Tr. 2nd. Ser. IV. p. 347, pl. 23, fig. 5.

Somewhat fusiform, short; spire with obliquely straight sides; body with a transverse central keel; aperture rhomboidal, with a short rounded beak.

The Portland Stone, Swindon and Quaniton.

7. Buccinum striatum.—The Striated Buccinum, plate XXXIII.* fig. 74.

B. striatum. Brown, Wernerian Mem. VIII. pl. 1, fig. 9. Sowerby, Rec. of Gen. Sec. I. p. 134.

"Volutions longitudinally undulated, transversely striated, and but slightly convex; the longitudinal ribs rather straight.

"If the *Buccinum undatum* be examined with a microscope, it will be found that the transverse ridges are elevated, broad, and distant, and there is between each of these ridges, in the upper whorls, a narrow and less elevated ridge, and in the lower or newer part of the shell generally about three. Now, in *B. striatum*, the ridges are so flat, that the shell may more properly be said to be spirally striated than covered with transverse ridges. The whorls in the new shell are also much flatter than in *B. undatum*, and the longitudinal undulations, which in that shell are considerably concave towards the mouth of the shell, are here almost quite straight."—*G. Sowerby.*

---

1. Nassa lineata.—The Lineated Nassa, pl. XXXVII.* fig. 27.

N. lineata. Sowerby, Geo. Tr. 2nd Ser. IV. p. 344, pl. 18, fig. 25.

Ovate, body considerably longer than the spire, and inflated; wide at the base, and the whole surface transversely striated; volutions a little flattened, the upper edges sharp; aperture somewhat longer than the spire.

The Greensand, Blackdown.

2. Nassa costellata.—The Small-Ribbed Nassa, plate XXXVII.* fig. 28.

N. costellata. Sowerby, Geo. Tr. 2nd. Ser. IV. p. 344, pl. 18, fig. 26.

Subulate; spire longer than the body; with about seven ventricose volutions, each provided with a varix; whole covered with longitudinal ribs and transverse striæ; aperture nearly circular, with a thickened lip.

The Greensand, Blackdown.

---

1. Pyrula Fittoni.—Fitton's Pyrula, pl. XXXIII.* figs. 32, 33.

P. Smithii. Sowerby, Geo. Tr. 2nd Series, IV. p. 336, pl. 11, fig. 15.

Oval short; body large; spire small, consisting of two or three volutions, with two spiral keels in the young state, which become obsolete in the adult; numerous fine transverse striæ cover its surface, and obscure longitudinal ribs; aperture expanded.

The Gualt, Cape Point, near Folkstone.

2. Pyrula depressa.—The Depressed Pyrula, pl. XXXIII.* fig. 43.

P. depressa. Sowerby, Geo. Tr. 2nd Series, IV. p. 344, pl. 18, fig. 20.

Pyriform; spire depressed, completely sunk beneath the top of the body volution; body ventricose; base much narrowed; surface with many transverse narrow ribs, which project beyond the margin of the outer lip.

The Greensand, Blackdown.

3. Pyrula Brightii.—Bright's Pyrula, pl. XXXIII.* figs. 44, 45.

P. Brightii. Sowerby, Geo. Tr. 2nd Series, IV. p. 344, pl. 18, fig. 21.

Pyriform, ventricose; spire about a third the length of the shell, consisting of about four volutions, the upper one small and acute; transversely bicarinated, and with many narrow spiral ribs; aperture wide, longitudinally, semi-circular, narrow both above and below.

The Greensand, Blackdown.

---

1. Fusus multicostatus.—The Many-ribbed Fusus, pl. XXXVII.* fig. 3, 4.

Fusiform; spire occupying about a third of the shell, consisting of three or four rather broad volutions, which, as well as the body, are obliquely flattened above and straight on the sides; defined above and below with a smooth regular rib; body with from ten to fourteen smooth ribs; the outer castal spoels being striated spirally and longitudinally; aperture wide above and narowed beneath; pillar-lip a little reflected.

Found in Dudley Limestone, at Dudley, Staffordshire.

2. FUSUS CLATHRATUS.—The Ladder Fusus, pl. XXXIII.* fig. 42.

F. clathratus. Sowerby, Geo. Tr. 2nd Ser. IV. p. 344, pl. 18, fig. 19.

Somewhat pyriform; spire short; body large; longitudinally ribbed and striated; four narrow, waved, transverse ribs divide the surface of each volution into three portions resembling cells; aperture rather wide.

The Greensand, Blackdown.

3. FUSUS RUSTICUS.—The Rustic Fusus, pl. XXXIII.* figs. 40, 41.

F. rusticus. Sowerby, Geo. Tr. 2nd Ser. IV. p. 344, pl. 18, fig. 18.

Short, rather ventricose; spire short, with four or five rounded volutions, which, as well as the body, are crossed by ten to twelve prominent knobbed longitudinal ribs, giving a squareness to the sides; whole surface transversely striated; aperture obliquely elongated, contracted both above and below; pillar-lip reflected.

The Greensand, Blackdown.

4. FUSUS QUADRATUS.—The Squarish Fusus, pl. XXXIII.* fig. 83.

F. quadratus. Sowerby, Geo Tr. 2nd Ser. IV. p. 343, pl. 18, fig. 17.

Fusiform; body and spire forming reverse cones from the centre of the body, which is square, with two obscure transverse keels; spire with four volutions, about a fourth of the length of the shell; base acute; the whole covered with wide-set thin striæ; aperture sub-rhomboidal.

The Greensand, Blackdown.

5. FUSUS RIGIDUS.—The Rigid Fusus, pl. XXXIII.* figs. 36, 37, 38.

F. rigidus. Sowerby, Geo. Tr. 2nd Ser. p. 343, pl. 18. f. 16.

Elongated, fusiform, with five or six volutions; body lengthened; spire occupying about a third of the shell; the whole covered with longitudinal moderately prominent roughened ribs, ventricose in the middle; compressed above, and transversely striated; aperture elliptical, rather more than half the length of the shell, and contracted both above and below; beak variously elongated, with its edge sometimes a little reflected.

The Greensand, Blackdown.

6. FUSUS IMBRICATUS.—The Imbricated Fusus, pl. XXXIII.* figs. 70, 71.

F. imbricatus. Brown, Wern. Mem. VIII. pl. 1, figs. 5, 6.

Turreted, with six volutions, flattened above; spire abruptly tapering to an acute apex; the whole with broad, lamellar, unequally long thin ribs, broadest above, and slightly inflected at the edges, terminating at the base of the body in front, and running to the point of the back behind; aperture semi-ovate, rounded above and contracted below, slightly twisted to the right; pillar-lip broad, well defined, and replicate at its base; outer-lip thin and slightly reflected.

The Pleistocene Marine Formation, Dalmuir, on the Clyde.

---

1. CANCELLARIA MINUTA.—The Minute Cancellaria, pl. XXXIII.* fig. 73.

Turreted; spire shorter than the body, with three volutions; aperture oblong, somewhat contracted; surface with considerably raised smooth longitudinal ribs, the interstices with transverse striæ.

---

1. PLEUROTOMA ARTICULATA.—The Articulated Pleurotoma, pl. XXXVII.* fig. 20.

P. articulata. Sowerby, Sil. Syst. p. 612, pl. 5, fig. 2.

Turreted, with eight or ten very convex, deeply divided volutions, with the sinus nearly in the middle, forming rather a broad band; surface smooth, with a few sharp lines of growth.

The Upper Ludlow Rock, Ludlow, and near Ledbury.

---

1. TURRITELLA GREGARIA.—The Gregarious Turritella, pl. XXXIII.* figs. 81, 82.

T. Gregaria. Sowerby, Sil. Syst. p. 603, pl. 3. fig. 1.

Subulate, with six convex smooth volutions; aperture orbicular; length from four to six lines, width two to three lines.

The Upper Ludlow Rock, Horeb Chapel.

2. TURRITELLA OBSOLETA.—The Obsolete Turritella, pl. XXXIII.* fig. 88.

T. obsoleta. Sowerby, Sil. Syst. p. 603, pl. 3, figs. 7*a*.

Subulate, smooth, with nine convex volutions; aperture round; length one inch and a fourth, width five lines.

The Upper Ludlow Rock, Horeb Chapel, and Felindre.

3. TURRITELLA CANCELLATA.—The Cancellated Turritella, pl. XXXIII.* fig. 75.

T. cancellata. Sowerby, Sil. Syst. p. 642, pl. 20, fig. 18.

Subulate; longitudinally striated, with spiral unequal ribs on each volution.

The Lower Silurian Rocks, Mandinam, Llandovery, Hope Mill Shelve.

---

1. TURBO PRYCEÆ.—Price's Turbo, pl. XXXIII.* fig. 90.

T. Priceæ. Sowerby, Sil. Syst. p. 642, pl. 21, fig. 19.

Body large, with an angular middle; spire short; umbilicus deep and curved.

The Lower Silurian Rocks, Mandinam, Llandovery.

2. TURBO CORALLII.—The Coral Turbo, pl. XXXIII.* f. 76.

T. corallii. Sowerby, Sill. Syst. p. 612, pl. 5, fig. 27.

Conical; spire abruptly tapering, with about five rounded volutions; aperture orbicular; umbilicus closed; length one inch, width four lines.

The Upper Ludlow Rocks, Larden, near Ludlow, &c. &c.

3. TURBO EXPANSA.—The Expanded Turbo, pl. XXXIII. figs. 54, 55.

T. expansa. Brown, Wern. Mem. VIII. pl. 1, figs. 12, 13.

Body very large; spire small, with an acute apex; aperture sub-orbicular; inner lip thickened and slightly concave; surface minutely striated spirally, alternately larger and smaller.

The Pleistocene Marine Formation, Dalmuir, on the Clyde.

GENUS PYRAMIS.—*Brown.*

Shell generally subulate, gradually tapering to a point; body usually short, and the spire long; volutions but slightly divided by the suture in most species, and seldom inflated; aperture mostly oblong-ovate, placed nearly perpendicular, with its upper angle contracted for the most part; outer lip rarely continuous.

1. PYRAMIS RETICULATUS.—The Reticulated Pyramis, pl. XXI.* figs. 42, 43.

P. reticulatus. Brown, Tr. Man. Geo. Soc. p. 222, pl. 7, figs. 42, 43.

Shell subulate; body shorter than the spire, which consists of six inflated, rapidly decreasing volutions, well defined by a deep suture, and terminating in an acute apex; aperture slightly ovate, contracted above, and rounded below; pillar lip not reflected on the columella; outer lip thin, plain, and sharp on the margin; whole shell decussated with fine distinct, spiral, and longitudinal striæ. Length five-eighths of an inch, diameter nearly three-eighths.

In the Coal Shale, Crimsworth Dean, near Hebden Bridge, and is in the Manchester Museum.

2. PYRAMIS OWENI.—Owen's Pyramis, pl. XXI.* f. 44, 45.

P. Oweni. Brown, Tr. Man. Geo. Soc. I. p. 223, pl. 7, figs. 44, 45.

Shell subulate, smooth; body short, about a third of the length of the shell; spire long, and consisting of six well defined, moderately inflated, and slightly oblique volutions, terminating in an obtuse apex; aperture sub-rotund, a little contracted above, rounded beneath; outer lip strong, and even. Length a quarter of an inch, diameter a tenth of an inch.

In the Coal Shale, Crimsworth Dean, near Hebden Bridge, and is in the Manchester Museum.

---

1. LITTORINA STRIATELLA.—The Fine-Striated Littorina, pl. XXXIII.* fig. 72.

L. striatella. Sowerby, Sil. Syst. p. 642, pl. 19, fig. 12.

Conical, with three or four much-inflated volutions; base convex; surface with fine longitudinal lines of growth.

The Lower Silurian Rocks, Horderly and Wistantow, Wales.

2. LITTORINA PUNCTURA.—The Punctured Littorina, plate XXXIII.* fig. 57.

L. punctura. Bean, Mag. Nat. Hist. 1839, p. 62, fig. 23.

Sub-conic, ventricose; body and spire nearly of equal length, the latter with five inflated volutions; surface with numerous regular longitudinal lines of small punctures.

In the Cornbrash, Scarborough.

3. LITTORINA BREVE.—The Short Littorina, pl. XXXII. fig. 14.

Buccinum breve. Sowerby, VI. p. 128, pl. 566, fig. 3.

Nearly globular; spire short, consisting of three moderately rounded volutions, scalloped on their upper edges as they pass over a row of obtuse tubercles; body with three or four transverse remote rows of blunt tubercles; aperture sub-orbicular, with a slight hollow at its upper angle.

In the Carboniferous Limestone, Bradley, near Newton Bushel, Devonshire.

---

1. TROCHUS TATHAMI.—Tatham's Trochus, pl. XXXIII.* figs. 50, 51, 52.

Sub-conic, with five slightly inflated volutions, terminating in a rather obtuse apex; aperture transversely ovate; outer lip blunt; surface smooth, with a few slight lines of growth, and a hollow zone around the body.

The Carboniferous Limestone, near Settle, Yorkshire.

2. TROCHUS INFLATUS.—The Inflated Trochus, pl. XXXIII. figs. 60, 61.

T. inflatus. Brown, Wern. Mem. VIII. pl. 1, figs. 10, 11.

Sub-conic, with five tumid volutions, deeply defined by the suture; base largely umbilicate; aperture somewhat quadrangular, pearly within surface covered with strong spiral striæ, and intermediate smaller ones, crossed by extremely minute longitudinal striæ; the superior edge of each volution with a series of indistinct tubercles.

The Pleistocene Marine Formation, Dalmuir, on the Clyde.

3. TROCHUS HELICITES.—The Helix-like Trochus, plate XXXIII.* figs. 59 and 64.

T. helicites. Sowerby, Sil. Syst. p. 603, pl. 3, figs. 1*e* and 5.

Depressed above, convex beneath; smooth, with four volutions, which are rather flattened above, obtusely angular at the margin of the base; umbilicus small and deep.

In the Old Red Limestone, Horeb Chapel, Felindre.

---

1. SCALARIA PULCHRA.—The Handsome Scalaria, plate XXXIII.* fig. 63.

S. pulchra. Sowerby, Geo. Tr. 2nd Ser. IV. p. 343, pl. 18, fig. 11.

Elongated, with ten close volutions, crossed by blunt longitudinal ribs; a band connecting the ribs, passes along the bases of the volutions; spire acute, aperture sub-ovate.

The Greensand, Blackdown.

---

1. CIRRUS GLOVERI.—Glover's Cirrus, pl. XXI.* f. 46, 47.

C. Gloveri. Brown, Tr. Man. Geo. Soc. I. p. 223, pl. 7, figs. 46, 47.

Shell conoidal, smooth, glossy; body very large, much inflated; spire very small, consisting of three rapidly diminishing, ventricose volutions; aperture round; inner lip slightly reflected on the columella, with a shallow umbilicus behind it; outer lip thin, and even. Length three-eighths of an inch, diameter three-sixteenths of an inch.

Found at High-Green Wood, near Hebden Bridge. In the Manchester Museum.

Named in honour of my much respected friend, Thomas Glover, Esq., of Smedley Hill, Manchester.

---

1. TORNATELLA STRIATA.—The Striated Tornatella, plate XLIII. figs. 14, 15.

Actæon striatus. Sowerby, IV. p. 37, pl. 460, fig. 2.

Regularly ovate; spire with four rather flat volutions, terminating in rather an acute apex; columella with an indistinct plait; whole surface covered by rather regular transverse striæ, which are nearly obsolete on the middle of the body, but strong on the base; aperture ovate, pointed above, and occupying more than half the length of the shell.

The Red and Coral Crags, Sutton.

---

1. PLEUROTOMARIA UNDATA.—The Waved Pleurotomaria, pl. XXXIII.* fig. 12.

P. undata. Sowerby, Sil. Syst. p. 619, pl. 8, fig. 13.

Ventricose, sub-conic, consisting of four inflated volutions; body large, spire small, with an obtuse apex; base convex; surface with many longitudinal curved, oblique, slightly prominent undulations; lip with a deep sinus, forming a narrow, hardly elevated, band around the volutions; aperture orbicular.

The Lower Ludlow Rock, near Ludlow, Presteign, and Dean's Corner.

2. PLEUROTOMARIA LLOYDII.—Lloyd's Pleurotomaria, pl. XXXIII.* fig. 85.

P. Lloydii. Sowerby, Sil. Syst. p. 619, pl. 8, fig. 14.

Conical, sub-turreted; body long, spire short, consisting of four volutions, ending in an obtuse apex; a narrow prominent band, formed by the filling up of the marginal sinus; surface with five transverse keels, or ribs, the intercostal spaces numerously striated; aperture oblong-ovate, a little narrowed above.

The Lower Ludlow Rocks, Shelderton Hills, near Aymestry, and Dean's Corner.

3. PLEUROTOMARIA ANGULATA.—The Angled Pleurotomaria, pl. XXXIII.* fig. 84.

P. angulata. Sowerby, Sil. Syst. p. 641, pl. 21, fig. 20.

Conical, acutely angled in the middle of the volutions; the surface probably striated; aperture nearly circular, with an angle at its upper part. A cast only.

In the Lower Silurian Rocks, Mandinam, Llandovery.

4. PLEUROTOMARIA GIGANTEA.—The Gigantic Pleurotomaria, pl. XXXVII.* fig. 29.

P. gigantea. Sowerby, Geo. Tr. 2nd Ser. IV. p. 339, pl. 14, fig. 16.

Conical, with straight sides, and the volutions over-lapping each other; lip with a deep sinus; band transversely striated; whole surface concentrically striated; height and breadth nearly equal.

The Lower Greensand, Boughton, Kent.

---

1. VELUTINA UNDATA.—The Waved Velutina, pl. XXXIII.* fig. 80.

V. undata. Brown, Wern. Mem. VIII. pl. 1, fig. 15.

Nearly orbicular; spire exceedingly small, placed laterally and sunk beneath the expansion of the outer lip; apex depressed; the whole shell covered with strong longitudinal wrinkles, following the lines of growth, and crossed by wide obsolete, spiral striæ; aperture sub-orbicular, extremely large; pillar-lip broadly reflected on the columella, distinctly relieved from the body behind, and a semi-lunate broad groove in its centre.

In the Pleistocene Marine Formation, Dalmuir, Renfrewshire.

---

1. NATICA CLAUSA.—The Close Natica, pl. XXXIII.* f. 79.

N. clausa. Brown, Wern. Mem. VIII. pl. 4, fig. 16.

Ovate, with five volutions, those of the spire, which is very short, slightly produced; somewhat depressed; grooved above, and well-defined by the suture; aperture oblique, semi-ovate, a little flattened on its interior side; pillar-lip broadly reflected on the columella, behind which is a closed umbilicus; surface with very delicate longitudinally oblique striæ.

In the Pleistocene Marine Formation, Dalmuir.

2. NATICA MINIMA.—The Least Natica, pl. XXI.* figs. 63, 64, 65.

N. minima. Brown, Tr. Man. Geo. Soc. I. p. 64, pl. 6, figs. 22, 23, 24.

Ovate; body large; spire small, consisting of two depressed volutions; aperture semi-lunar; surface smooth.

In the Red Marl, Newtown, near Manchester.

---

1. GLOBULUS SMITHII.—Smith's Globulus, pl. XXXIII.* fig. 77.

G. Smithii. Brown, Wern. Mem. VIII. [pl. 1, fig. 18.

Ventricose, sub-globose, smooth, glossy; spire with three obtuse depressed volutions, separated by a deep groove; aperture oblong-ovate, narrowed and pointed above; pillar-lip broadly reflected on the columella.

Found by the Duchess of Argyle, in the Pleistocene Marine Formation at Ardencaple.

---

1. BULLA UNDULATA.—The Waved Bulla, pl. XXXIII.* fig. 78.

B. undulata. Bean, Mag. Nat. Hist. 1839, pl. 7, fig. 9.

Oviform, ventricose; aperture expanded; surface smooth, with a few longitudinal, waved, shallow, irregular furrows.

The Cornbrash, Scarborough.

---

1. PILEOPSIS MINUTA.—The Minute Pileopsis, pl. XXI.* figs. 55, 56, 57.

P. minuta. Brown, Tr. Man. Geo. Soc. I. p. 223, pl. 7, figs. 55, 56, 57.

Shell smooth, glossy, conical, with the vertex slightly spiral and inflected; aperture sub-obvate, and expansive. Diameter about a line.

In the Coal Shale, High-Green Wood, near Todmorden.

In the Manchester Museum.

---

1. PATELLA GREENWOODI.—Greenwood's Patella, pl. XXI.* figs. 58, 59.

P. Greenwoodi. Brown, Tr. Man. Geo. Soc. p. 224, pl. 7, figs. 58, 59.

Shell sub-ovate, conical, smooth, slightly wrinkled transversely, sub-depressed; the vertex inclined anteriorly.

In the Limestone Shale, near Hebden Bridge.

---

1. EUOMPHALUS CORNDENSIS.—The Corndon Euomphalus, pl. XXXIII.* fig. 58.

E. Corndensis. Sowerby, Sil. Syst. p. 641, pl. 22, fig. 16.

Discoidal, smooth, with three volutions; the keel with a series of nodules; aperture transversely oval. Diameter two and a half lines.

In Volcanic Grit, Lower Silurian Rocks, Leigh Hall, Corndon Hills, Wales.

2. EUOMPHALUS TENUISTRIATUS.—The Thin Striated Euomphalus, pl. XXXIII.* fig. 53.

E. tenuistriatus. Sowerby, Sil. Syst. p. 641, pl. 22, fig. 14.

Discoidal, with three rapidly increasing volutions, crossed by very fine, thickly set, regular striæ; aperture round, equal in diameter to half the width of the shell. Diameter four and a half lines.

Lower Silurian Rocks, Middleton, Corndon Hills.

---

1. CERITHITIUM GIGANTEUM.—The Gigantic Cerithium, pl. XXXVII. figs. 18 and 15, p. 66.

CLASS CONCHIFERA.

1. CRANIA ANTIQUIOR.—The Ancient Crania, pl. LVI.* fig. 39.

C. antiquior. Jelly. MSS.

Orbicular, compressed, with the umbo large, extended, rounded at the termination, and quite straight.

In the Great Oolite, Hampton Cliffs.

2. CRANIA STRIATA.—The Striated Crania, pl. LVI.* fig. 60.

C. striata. Woodward, Geo. Nor. pl. 6, fig. 15.

Nearly orbicular, the upper valve conical; with about fifteen strong divergent furrows, and smaller intervening ones; the intermediate ribs rounded, and producing a scolloped margin all round: the interior strongly marked.

The Upper Chalk, Gravesend.

3. CRANIA OVALIS.—The Oval Crania, pl. LVI.* fig. 59.

C. ovalis. Woodward, Geo. Nor. pl. 6, fig. 16.

Oval; base somewhat wider than the apical end; centre of superior valve conical; the vertex a little curved; surface with numerous strong divergent furrows and intermediate ribs: margin nearly plain.

The Upper Chalk, Harford Bridge, Norfolk.

1. TEREBRATULA VIRGO.—The Virgin Terebratula, pl. LIV.* figs. 17, 18.

T. virgo. Phillips, Pal. Fos. p. 91, pl. 35, fig. 167.

Ovato-lanceolate; uniformly convex; beak prominent, slightly curved; front margin somewhat contracted, and nearly straight: surface with very faint longitudinal and transverse striæ, which, viewed through a lens, produces a beautifully reticulated appearance.

This species somewhat resembles *T. hastata*, but differs from it in the beak being more prominent, without an angulation, and in the curvature being so slight.

In the Devonian Shales, Barton, South Devon.

2. TEREBRATULA SIMILIS.—The Similar Terebratula, plate LV.* figs. 8, 9.

Sub-triangular, inflated; with three indistinct furrows towards the base of the valve.

The Carboniferous Limestone, Dovedale, Derbyshire.

3. TEREBRATULA ANNULARIS.—The Ringed Terebratula, pl. LV.* figs. 61, 62.

Sub-triangular; hinge line nearly straight, beak short; a broad, central, longitudinal furrow in the larger valve: whole surface covered with numerous divergent striæ.

The Carboniferous Limestone, Dovedale, Derbyshire.

---

1. OSTREA DURIUSCULA.—The Rough Ostrea, pl. LIX. fig. 1.

O. duriuscula. Phillips, Geo. York. I. pl. 4, fig. 1.

Ovoid, compressed, with rough undulating longitudinal foliations.

The Coral Rag, Malton, Scarborough.

---

1. AVICULA LONGIAXIS.—The Lengthened Axis Avicula, pl. LXI.** fig. 1.

A. longiaxis. Buckman and Strickland, Geo. Cheltenham, p. 97, pl. 10, fig. 2.

Valves equal; hinge line straight; anterior side much accuminated; the posterior very short: surface with fine transverse striæ; substance of the shell thin.

The Lias, foot of Battledown Hill, Hewlett's Road, near Cheltenham.

2. AVICULA COMPLICATA.—The Complicated Avicula, plate LXI.** fig. 9.

A. complicata. Buckman and Strickland, Geo. Chelt. p. 97, pl. 6, fig. 5.

Hinge line somewhat oblique; the right beak short, transversely ribbed, and a little acute; left beak rounded; valves considerably twisted, and covered with longitudinal nodulous ribs.

The Oolite, Leckhampton and Crickley Hills, near Cheltenham.

3. AVICULA LONGIAREA.—The Long-Areaed Avicula, plate LXI.** fig. 14.

Hinge line lengthened and quite straight; anterior auricle long, broad, and notched; posterior auricle shorter, narrow, and acute: valves moderately inflated; surface with longitudinal, rather wide, furrows, diminishing as they recede from the anterior side; posterior side destitute of furrows.

---

1. GERVILLIA ACUTA.—The Modiola-formed Gervillia, plate LXIX. fig 4.

Gervillia acuta. Phillips, Geo. York. I. pl. 9, fig. 36.

Lanceolate, hinge line oblique and lengthened, with a rounded termination; apical extremity gradually tapering; base rounded, surface smooth, with nearly obsolete lines of growth.

The Great Oolite, Cloughton.

---

1. LITHOPHAGUS ANTIQUUS.—The Ancient Lithophagus, pl. LXXII. figs. 44, 45.

Cylindrical; beaks blunt, surface smooth, with a few transverse striæ towards the umbones.

Found embedded in a silicious mass of Asteria, from the Coral Rag, Malton, Yorkshire.

---

1. VENUS TENERA.—The Tender Venus, pl. LXXXIV. figs. 14, 15.

V. tenera. Sowerby, Geo. Tr. 2nd Ser. IV. p. 335, pl. 11, fig. 7.

Somewhat lenticular; slightly transverse; beaks acute; whole surface curved with fine, regular, concentric striæ; lunette lanceolate.

The Gualt, Folkston.

---

1. CYTHEREA CAPERATA.—The Wrinkled Cytherea, plate LXXXIV. fig. 30.

Venus caperata. Sowerby IV. p. 31, pl. 518, fig. 1.

Orbicular, compressed, somewhat lenticular; lunette heart-shaped; whole surface covered with numerous small, rounded, well defined, concentric ridges; with pretty wide intervening ribs.

The Greensand, Blackdown.

DESCRIPTION OF THE PLATES.

Plate I.

		Page.
1.	Baculites Faujasii	1
2, 5.	Hamites attenuatus and tenuis	2
3.	Lyelli	3
4.	incurvatus	3
6, 7.	Baculites baculoides obliquatus	1
8.	Hamites costatus	3
9, 13.	gigas	1
10.	annulatus	3
11.	rectus	3
12.	inflexus	3
14.	maximus	2

Plate II.

1.	Hamites ellipticus	3
2.	Bucklandi	3
3.	tuberculatus	2
4.	adpressus	3
5.	nodosus	2
6.	armatus	2
7.	rotundus	2
8.	turgidus	2
9.	multicostatus	9
10.	plicatiles	1
11.	undulatus	1
12.	spiniger	2
13.	alternatus	3

Plate III.

1.	Hamites gibbosus	3
2.	intermedius	2
3.	spinulosus	2
4, 9.	Turrilites undulatus	4
5.	tuberculatus	3
6.	obliquus	4
7.	Hamites compressus	2
8.	Turrilites Bergeri	4
10.	costatus	4

Plate III.*

1, 2, 3.	Lituites giganteus	249
4, 5.	Clymenia linearis	250
6.	Actinoceras Simmsii	250
7, 8, 9.	Cyrtoceras Nautiloideum	250
10.	Gomphoceras pyriforme	250
11.	Phragmoceras ventricosum	250
12. 13.	Crioceras Bowerbankii	250

Plate IV.

1.	Turrilites undulatus	4
2.	Ammonites stellaris	5
3.	Lewesensis	5
4, 9.	Mantelli	5
5.	Base of Turrilites tuberculatus	2
6, 6.	Goniatites striatus, No. 4	5
7, 7.	sphæricus, No. 5	5
8.	Ammonites obtusus, *(a longitudinal section)*	8
10.	Goniatites minutus, No. 8	6

Plate V.

1.	Ammonites Lamberti	6
2.	costatus	6
3.	acutus	6
4.	omphaloides	6
5.	quadratus	6
6.	giganteus	6
7.	ellipticus	7
8.	cornuoides	7
9.	triplicatus	7
10.	biplex	7

Plate VI.

1.	Ammonites Brongniarti	7
2.	calloviensis	7
3.	Gervillii	7
4.	obtusus	7
5.	Nutfieldensis	8
6.	triplicatus	8
7.	excavatus	8
8.	jugosus	8
9.	communis	8
10.	angulatus	8

Plate VII.

1, 2.	Ammonites Bucklandi	8
3, 5, 8.	varius	9
4.	Duncani	9
6.	Conybeari	9
7.	planicostatus	9
9.	auritus	10
10.	splendens	9
11.	binus	5

Plate VIII.

1.	Ammonites lautus	10
2.	armatus	10
3.	planus	10
4.	cordatus	11
5.	Brownii	11
6.	annulatus	11
7.	curvatus	11
8.	falcatus	11
9.	Brocchii	11
10.	serratus	12

Plate IX.

1.	Ammonites Sowerbyi	12
2.	Kœnigi	12
3, 6.	Listeri	12
4.	Nautilus discus	12
5.	Ammonites Strangewaysii	12
7, 8.	Greenoughii	12
9, 10.	vertebralis	13
11.	concavus	13
12.	Bechei	13
13.	elegans	13

Plate X.

1.	Ammonites planulatus	13
2.	Sutherlandi	13
3.	Selliguinus	13
4.	cinctus	13
5.	catillus	14
6.	Murchisoni	14
7, 8, 9.	spinosus	14
10, 11.	denarius	14
12.	curvatus	11
13.	Brodiæi	14
14.	Humphriesianus	14

Plate XI.

1.	Ammonites peramplus	14
2.	perarmatus	15
3, 4.	Smithii	15
5.	fibulatus	15
6.	subarmatus	15
7.	Davæi	15
8.	lævigatus	15
9.	parvus	15
10.	cristatus	15
11, 14.	Barkeriæ	15
12.	Herveyi	15
13.	Brookii	16

Plate XII.

1.	Ammonites varicosus	16
2.	rotomagensis	16
3.	subradiatus	16
4.	Taylori	16
5.	Hippocastanum	16
6.	brevispina	16
7.	planorbis	17
8.	Gulielmi	17
9.	Blagdeni	17
10.	Leachii	17
11.	corrugatus	17

Plate XIII.

		Page.
1.	Ammonites funiferus	17
2.	plichomphalus	17
3.	lenticularis	17
4.	catinus	18
5.	Pankinsoni	18
6.	solaris	18
7, 9.	mutabilis	18
8.	oculatus	18
10.	athleta	18
11.	plichomphalus (young)	19

Plate XIV.

1.	Ammonites tuberculatus	18
2.	Stokesii	19
3.	probosideus	19
4.	dentatus	19
5.	hystrix	19
6, 7.	Woolgari	19
8.	biplicatis	19
9.	Birchii	20
10.	Goodhallii	20

Plate XV.

1.	Ammonites Bennettiæ	20
2.	tetrammatus	20
3.	Vernoni	20
4.	Williamsoni	20
5.	vittatus	20
6.	Gowerianus	20
7.	navicularis	21
8.	crenularis	21
9.	complanatus	21
10.	undatus	21

Plate XVI.

1.	Ammonites subcarinatus	21
2.	laticostatus	21
3.	heterophyllus	21
4.	fissicostatus	22
5.	gemmatus	22
6.	sublævis	22
7.	flexicostatus	22
8.	crassus	22
9.	plicatiles	22
10.	Jamesoni	23

Plate XVII.

1.	Ammonites Johnstoni	23
2.	rotiformis	23
3.	bifrons	23
4.	longispinus	23
5.	contractus	23
6.	Turneri	23
7.	lævisculus	23
8.	striatulus	24
9.	Banksii	24
10.	rusticus	24

Plate XVIII.

		Page.
1.	Ammonites marginatus	24
2.	maculatus	24
3.	sigmifer	24
4.	discus	24
5.	compressus	24
6.	multicostatus	24
7.	monile	25
8.	crenularis	25
9.	inflatus	25
10.	Brakenridgii	25
11.	Clevlandicus	25
12.	heterogenus	25
13.	erugatus	25
14.	funatus	25
15.	anguiliferus	26

Plate XIX.

1.	Ammonites Loscombii	26
2.	geometricus	26
3.	constrictus	26
4.	Henslowi	26
5.	artigyrus	26
6.	Hawskersusis	26
7.	Walcottii or bifrons	26
8.	exaratus	26
9.	Lythensis	26
10.	rostratus	27
11.	Henleyii	27

Plate XX.

1.	Ammonites baltiatus	27
2, 9.	decipiens	27
3.	ovatus	27
4.	venustus	27
5.	concinnus	27
6.	minimus	27
7.	curvinodes	27
8.	varicostatus	28
10.	rotundus	28
11.	heterophyllus	21
12.	fimbriatus	28

Plate XX.*

1.	Ammonites Allasii	244
2.	furcatus	244
3.	cristatus	244
4.	calear	246
5, 6.	crenatus	244
7.	Cookii	244
8.	fimbriatus	246
9, 10.	circularis	244
11.	dissimilis, var.	246
12, 13.	dissimilis	246
14, 15.	rotifer	246
16.	Mulgravius	246
17, 18.	symmetricus	244
19.	gamma	244
20, 21.	triserialis	244

Plate XX.**

		Page.
1.	Ammonites Elizabethæ	245
2.	ditto, var.	245
3.	ditto, var.	245
4, 10.	Brightii	245
5, 6, 11, 12.	sulcatus	245
7.	Comptoni	244
8, 9.	lacunatus	246
13, 14.	Boblayei	246
15.	Stutchburii	245
16.	fluctuosus	245

Plate XXI.

1, 2, 3.	Goniatites Looneyii	28
4, 4a, 5.	Gilbertsoni	28
6, 6a, 7.	paucilobus	28
8, 8a, 15.	discrepans	28
9, 10, 10a.	striolatus	28
11, 11a, 12.	micronotus	248
13, 14, 14a.	nitidus	29
16, 16a, 17.	serpentinus	29
18, 18a.	discors	29
19, 20, 20a.	cyclolobus	29
21, 22, 22a.	myxolobus	29
23, 24, 25.	Gibsoni	29
26, 26a, 27.	vesica	29
28, 29.	intercostalis	29
30, 31, 31a.	rotiformis	29
32, 32a, 33.	evolutus	29
34, 34a.	Listeri	29
35, 35a, 36.	truncatus	30
37, 38.	carina	30
39, 40.	vittiger	30
41, 42, 42a.	reticulatus	30
43.	spirorbis	30
44, 44a, 57.	crenistria	30
45, 45a, 46.	spirorbis	30
47, 48, 48a.	stenolobus	30
49, 50, 50a.	excavatus	30
51, 51a, 52.	obtusus	28
53, 54, 54a.	bidorsalis	31
55, 56.	mutabilis	31
58, 58a.	implicatus	31
59, 59a.	platilobus	31
60, 60a, 61.	Calyx	31

Plate XXI.*

2, 3, 4, 5.	Goniatites undulatus	246
6, 7.	intermedius	246
8, 9.	subsulcatus	247
10, 11, 12.	dorsalis	247
13, 14, 15.	jugosus	247
16, 17, 18.	splendidus	247
19, 20.	Kenyoni	247
21, 22.	parodoxicus	247
23, 24, 25, 26.	Langthorni	247
27, 28.	proteus	248
29, 30, 31.	minutissimus	248
32, 33.	parvus	248

		Page.
34, 35.	Goniatites Smithii	248
36, 37, 68.	Rissoa Leighii	79
38, 39, 75.	Turbo Mancuniensis	74
40, 74.	minutus	74
41, 66, 67.	Risoa pusilla	79
42, 43.	Pyramis reticulatus	254
44, 45.	Oweni	254
46, 47.	Cirrus Gloveri	255
48, 49.	Buccinum Gibsoni	251
50, 51.	elegans	251
52.	Flemingi	251
53, 54.	Manni	251
55, 56, 57.	Pileopsis minuta	256
58, 59.	Patella Greenwoodi	256
60, 61, 62.	Rissoa obtusa	79
63, 64, 65.	Natica minima	255
69, 70, 76.	Rissoa Gibsoni	79
71, 72, 73.	Turbo minutissima	

Plate XXII.

		Page.
1, 2, 3.	Scaphites striatus	31
4, 5.	costatus	31
6, 14.	tuberculatus	32
7, 8, 9, 15.	equalis	32
10, 11, 12, 13.	obliquus	32
16.	Nautilus tetragonus	32
17.	inequalis	32
18.	multicarinatus	32
19.	cariniferus	32
20.	cyclostamus	33
21.	pentagonus	33
22.	sinuatus	33

Plate XXIII.

		Page.
1.	Nautilus astacoides	33
2.	undulatus	33
3.	oxystomus	33
4.	truncatus	33
5.	simplex	33
6.	excavatus	33
7.	sulcatus	34
8.	polygonalis	34
9.	triangulatus	34
10.	hexagonus	34
11.	globatus	34
12.	Bellerophon Woodwardii	38

Plate XXIV.

		Page.
1.	Nautilus centralis	34
2.	costalis	34
3.	ziczac	34
4.	striatus	35
5.	imperialis	35
6.	bilobatus	35
7.	intermedius	35
8.	obesus	35
9.	complanatus	35
10.	tuberculatus	35

Plate XXV.

		Page.
1.	Nautilus dorsalis	35
2.	bistriatus	35
3.	goniolobatus	36
4.	ingens	36
5, 9.	globatus	34
6.	biangulatus	34
7.	lineatus	36
8.	sulcatulus	36
10.	elegans	36
11.	annularis	36
12.	regalis	36
13, 14.	expansus	37
15.	radiatus	37

Plate XXVI.

		Page.
1, 2.	Nummulites Comptoni	37
3, 4, 5.	variolaria	37
6, 7, 8.	lævigata	37
9, 10, 11.	elegans	250
12, 22.	Bellerophon tangentialis	37
13, 15.	Urii	38
14, 20.	Woodwardii	38
16, 30.	tenuifascia	38
17, 19.	hiulcus	38
18.	spiralis	38
21.	decussatus	38
23, 26.	sulcatus	38
24.	costatus	38
25, 27.	apertus	38
28.	ovatus	39
29.	expansus	38
30.	tenuifascia	38
31, 32, 33.	Cornu-Arietus	39

Plate XXVII.

		Page.
1, 2.	Orthocera pyriformis	40
3.	cordiformis	39
4.	paradoxicum	40
5.	angulare	39
6.	gigantea	39
7.	inequi-septus	39
8.	reticulatus	39
9.	Gesneri	40

Plate XXVIII.

		Page.
1.	Orthocera fusiforme	40
2, 3.	circulare	39
4.	cincta	39
5.	Breynii	39
6, 7.	conica	40
8.	rugosa	41
9, 10.	undulata	40
11, 12.	annulata	40
13.	ibex	41
14.	lateral	40
15.	Steinhauerii	40
16.	unguis	41
17.	striata	40
18.	deutaloideum	41

Plate XXIX.

		Page.
1.	Belemnites lanceolatus	41
2.	acutus	42
3.	attenuatus	41
4, 12.	compressus	43
5.	penicellatus	41
6, 7.	granulatus	41
8.	Allani	41
9.	Listeri	42
10.	voluminus	42
11.	elongatus	42
13.	gracilis	41
14.	fusiformis	41
15, 16.	mucronatus	42
17.	tubularis	43
18, 19.	abbriviatus	42
20, 21.	minimus	42
22.	pistilliformis	42
23, 24.	Beloptera anomala	43
25, 26.	Amplexus coralloides	43
27.	Conularia quadrisulcata	43
28.	teres	43

Plate XXIX.*

		Page.
1, 2.	Bellemnites ellipticus	248
3, 4.	Actinoceras verus	
5, 7, 25.	Belemnites elongatus	42
6, 8.	abbriviatus	42
9, 11.	sulcatus	248
10.	ditto variety	248
12.	blood-vessels on the guard of B. electrinus	249
13, 14.	longissimus	248
15, 16.	tripartitus	249
17, 18.	ditto variety	249
19, 20.	aduncatus	249
21.	apex of ditto	249
22.	ellipticus, variety	248
23, 24.	electrinus	249
26, 27.	Orthocera microscopica	249
28.	Bellemnites Gibsonii	249
29.	Orthocera ascicularis	249
30.	obtusa	249
31.	Brownii	249

Plate XXX.

		Page.
1, 10.	Conus concinnus	44
2, 3.	scabriusculus	44
4, 5.	Highgatensis	44
6, 7.	dormitor	44
8.	cingillus	44
9, 11.	Bartonensis	44
12.	Ancillaria aveniformis	45
13, 14.	turritella	45
15.	Anglica	45
16, 17.	Oliva Salisburniana	44
18, 19.	Branderi	44
20, 21.	Ancillaria subulata	45
22, 23.	Voluta Lamberti	48

		Page.
24, 25.	Terebellum convolutum	45
26, 27.	fusiforme	45
28, 29.	Cypræa coccinelloides	46
30, 31.	Volvaria acutisulca	46
32, 33.	Ovula Leathesi	46
34, 35.	Cypræa oviformis	45
36, 37.	avellana	46
38, 39.	retusa	46

Plate XXXI.

1, 5.	Voluta nodosa	48
2.	depauperata	47
3.	suspensa	47
4.	geminata	47
6, 7.	lima	47
8, 11.	ambigua	48
9, 10.	luctator	46
12, 13.	dubia	47
14, 15.	athleta	47
16, 17.*	majorum	48
18, 19.	spinosa	47
20, 25.	Mitra scabra	48
21, 22.	Voluta costata	48
23, 26.	Mitra pumila	49
24, 27.	parva	49

Plate XXXII.

1, 2.	Buccinum lavatum	49
3, 4.	Purpura deserta	49
5, 6.	Dentii	49
7.	Buccinum granulatum	49
8, 9.	uniliniatum	51
10.	imbricatum	50
11.	rugosum	50
12, 13.	tenerum	50
14.	Littorina breve	254
15.	reticosum	50
16.	globulare	50
17, 18.	Purpura tetragona	52
19.	Buccinum glabratum	50
20.	Calicndrum vittatum	52
21.	Buccinum elongatum	50
22, 23.	labiatum	50
24, 25.	spinosum	51
26, 27.	Dalei	50
28.	Leathsii	51
29.	latus	50
30.	parallele	51
31, 32.	propinquum	51
33, 34.	Purpura crispata	52
35, 36.	Buccinum elegans	51
37, 38.	labiosum	51
39, 40.	Purpura incrassata	52
41, 42.	carinata	52
43.	Terebra granulata	49
44.	vitusta	49
45.	melanoides	49

Plate XXXIII.

		Page.
1, 2.	Cassidaria carinata	53
3, 4,	striata	53
5, 6.	Rostellaria calcarata	54
7, 8.	Cassis bicatinatus	53
9, 10.	Dolium nodosum	51
12, 13.	rimosa	55
11, 15.	Rostellaria Parkinsoni	54
14.	bispinosa	54
16.	Pes Pelicani	54
17, 18, 19.	macroptera	53
20, 21.	lucida	55
22.	composita	54

Plate XXXIII.*

1.	Buccinum naticoideum	252
2.	angulatum	252
3.	Nassa lineata	252
4.	costellata	252
5.	Rostellaria elongata	55
6, 7.	marginata	55
8.	carinata	54
9.	buccinoides	55
10, 11.	Tornatella elongata	85
12, 13.	affinus	85
14, 15.	Popei	85
18.	Paludina Sussexensis	94
19, 20, 56.	Natica canaliculata	90
21.	elegans	91
22, 23.	carinata	91
24, 25.	granosa	91
26.	Melanopsis tricarinatus	95
27.	Melania scalaroidea	95
30.	Auricula inflata	99
31.	Bulla Mantelliana	
32.	Pyrula Fittoni (young)	252
33.	Pyrula Fittoni (adult)	252
34, 35.	Solarium conoideum	78
36, 37, 38.	Fusus rigidus	253
40, 41.	rusticus	253
42.	clathratus	253
43.	Pyrula depressa	252
44, 45.	Brightii	252
46.	Rostellaria retusa	55
48, 49.*	Terebra Portlandica	251
49.	Nerita spirata	91
50, 51, 52.	Trochus Tathami	254
53.	Euomphalus tenuistriatus	256
54, 55.	Turbo expansa	254
57.	Littorina punctura	254
58.	Euomphalus corndensis	256
59, 64.	Trochus helicites	254
60, 61.	inflatus	254
62.	Turbo sinuosa	251
63.	Scalaria pulchra	254
65, 66, 67.	Turbo bicostatus	73
68, 69.	Melania compressa	96
70, 71.	Fusus imbricatus	253
72.	Littorina striatella	254

		Page.
73.	Cancellaria minuta	253
74.	Buccinum striatum	252
74.*	angulatum	252
75.	Turritella cancellata	253
76.	Turbo coralli	253
77.	Bulbus Smithii	256
78.	Bulla undulata	256
79.	Natica clausa	253
80.	Velutina undatum	255
81.	Turritella conica	253
82.	gregaria	253
83.	Fusus quadratus	253
84.	Pleurotomaria angulata	255
85.	Lloydii	255
86, 87.	Rostellaria Parkinsoni	54
88.	Turritella obsoleta	
89.	Melania	
90.	Turbo Prycem	253

Plate XXXIV.

1, 2.	Murex cristatus	56
3, 4.	Typhis tubifer	58
5, 6.	fistulosus	58
7, 8.	Triton canaliculatum	56
9, 10.	Murex minax	56
11, 12.	defossus	57
13, 14.	tricarinatus	57
15, 16.	alviolatus	57
15.*	quadratus	67
17, 18.	sexdentatus	58
19, 20.	torosus	56
20.*	Typhis fistulosus (young)	58
21.	bullata	50
22, 23.	frondosus	57
24, 25.	bispinosus	57
26, 27.	Pyrula Smithii	59
28.	Murex Haccaensis	58
29, 30.	tortuosus	58
31, 32.	calcar	57
33, 34.	coronatus	56
35, 36.	argutus	56

Plate XXXV.

1, 2, 3.	Ranella Bartonensis	58
4, 5.	Pyrula Greenwoodi	56
6, 7.	nexilis	59
8, 9.	Fusus ficulinus	62
10.	contrarius	63
11.	signiliniatus	63
12, 13.	bulbiformis	62
14.	longævus	63
15, 16.	regularis	59
17.	porrectus	63
18.	asper	63
19.	lima	60
20.	cornens	60
21, 23, 24.	complanatus	59
22.	acuminatus	63

PLATE XXXVI.

		Page.
1, 2.	Fusus coniferus	60
3. 4.	mitrula	61
5, 6.	curtis	62
7, 8.	gradatus	61
9, 10.	echinatus	62
11, 12.	costalliferus	61
13, 14.	Heywoodii	62
15, 16.	cancellatus	62
17.	Parkinsonii	61
18, 19.	sulcatus	61
20, 21.	Mannii	61
22, 23.	regularis	59
24, 25.	carinellus	62
26.	striatus	60
27, 28.	alviolatus	63
29, 30.	junceus	61
31, 32.	harpulus	63
33, 34.	errans	60
35, 36.	triliniatus	60
37, 38.	interruptus	61
39, 40.	Cancellaria lævinscula	64
41, 42.	quadrata	64
43, 44.	Fusus bifasciatus	60
45.	carinatus	60
46, 47.	Cancellaria evulsa	64

PLATE XXXVII.

1.	Pleurotoma attenuata	65
2.	exorta	65
3, 4.	brevirostra	65
5.	semicolon	64
6.	acuminata	65
7.	comma	64
8, 9.	lævigata	66
10.	colon	64
11.	rostrata	65
12, 13.	priscus	65
14.	fusiformis	65
15, 16.	Cerithium funatum	66
17.	cornucopiæ	66
18.	giganteum	66
19.	Potamis duplex	68
20.	dubius	67
21.	politus	67
22, 23.	Cerithium gemminatum	69
24.	Potamis plicatus	68
25.	ventricosus	59
26.	cinctus	68
27.	acutus	68
28, 29.	Cerithium pyramidatus	67
30, 31.	Potamis rigidus	67
32.	intermedius	67
33.	margaritaceus	68
34.	concavus	68
35.	funiculatus	67

PLATE XXXVII.*

1, 2.	Voluta cithara	250
3, 4.	Fusus multicostatus	252
5, 6.	Voluta labrella	251
7.	Nerita angulata	92
8, 9.	Voluta angusta	251
10, 11.	Nerinæa Goodhalli	67
12.	Pleurotomaria undata	255
13, 14.	Pseudoliva obtusa	251
15.	Cerithium giganteum	66
16, 17.	Phasianella formosa	72
18, 19.	Littorina gracilis	74
20.	Pleurotomaria articulata	253
21, 22.	Phasianella striata	72
23, 24.	Solarium ornatum	78
25.	Nerita Fittoni	92
26.	Phasianella pusilla	71
27.	Nassa lineata	252
28.	costatellata	252
29.	Pleurotomaria gigantea	255
30.	Littorina pungens	74
31.	Auricula inflata	99

PLATE XXXVIII.

1.	Turritella elongata	69
2.	suturalis	71
3.	brevis	69
4.	Phillipsii	70
5.	tristrialis	71
6.	muricata	70
7.	tæneata	71
8.	excavata	70
9.	cingenda	70
10.	sulcata	69
11.	tenuistria	70
12.	Rissoa lævis	79
13.	Turritella abbreviata	70
14, 15.	Rissoa duplicata	79
16.	Turritella quadrivittata	16
17.	spiralis	71
18.	granulata	70
19, 20.	Rissoa obliquata	79
21.	Turritella edita	69
22.	cingenda (variety)	70
23.	conoidea	69
24.	costata	70
25, 26.	acuta	79
27.	terebra	70
28.	incrassata	69
29.	Phasianella angulosa	71
30, 37.	Turbo carinatus	72
31, 33.	sulcatus	72
32.	tiara	73
34.	Paludina orbicularis	71
35, 36.	minuta	71
38.	Phasinella cincta	71
39, 40.	Turbo rotundatus	73
41, 42.	muricatus	72
43, 44.	ornatus	72
45, 46.	obtusus	73
47.	undulatus	73
48, 49.	moniliferus	72
50, 51.	Turbo conicus	72
52, 53,	lævigatus	73
54, 55.	Littorina Bartonensis	74
56.	communis	74
57, 58.	rudis	74
59.	funicalatus	73
60.	sulcostomus	73

PLATE XXXIX.

1, 2.	Trochus duplicatus	75
3, 4.	Gibsii	75
5.	dimidiatus	75
6, 7.	concavus	75
8, 9.	similis	75
9.*		
10.	dubius	75
11.	Mantelli	75
12, 13.	Tiara	75
14.	fasciatus	75
15, 16.	monilifer	75
17.	guttatus ?..	76
18.	linearis	76
19, 20.	reticulatus	76
21.	Anglicus	76
22, 23.	extensus	76
24, 25.	lævigatus	76
26.	arenosus	76
27.	promineus	76
28.	bisertus	77
29.	pyramidatus	77
30.	tornatilus	77
31.	punctatus	77
32.	Sedgwickii	77
33.	elongatus	77
34.	pallium	77
35.	imbricatus	77
36.	abbreviatus	77

PLATE XL.

1.	Pleurotomaria atomaria	85
2.	undulata	85
3, 5.	inconspicua	85
4.	depressa	85
6.	fibula	85
7.	sulcata	86
8.	expansa	86
9, 10.	lirata	86
11.	sulcatula	86
12.	acuta	86
13, 14.	abdita	86
15, 16.	striata	86
17.	glabrata	86
18.	flammigera	86
19.	ovöidea	86
20.	Helicoides	86
21.	vittata	87
22.	sculpta	87
23.	interstrialis	87
24, 25.	carinata	87

PAGE.

26. Pleurotomaria tumida 87
27. dubia 87
28, 29. gemmulifra 87
30, 34. monilifera 87
31. concentrica 87
32. conica 87
33. limbata 87
35. biserrata 88
36. tornatilis 88
37. squamula 88
38, 42. Cirriformis 88
39. excavata 88
40. fusiformis 88
41. serrilimba 88

PLATE XLI.

1, 2. Solarium discoideum 78
3, 4. canaliculatum 78
5, 6. conöideum 78
7, 8. Sowerbyii 78
9, 21. Cirrus nodosus 80
10, 11. Solarium plicatum 78
12, 13. patulum 78
14. tabulatum 78
15. calix 76
16. Cirrus pentagonalis 80
17. cingalatus 80
18. spiralis 80
19. Leachii 80
20. plicatus 80
22. pilcopsodeus 80
23, 25. acutus 80
24. turbinoides 80
26, 27. rotundatus 80
28. tabulatus 80
29, 30. depressus 81
31, 33. Pleurotomaria perspectiva 81
32. Cirrus carinatus 81

PLATE XLII.

1. Scalaria frondosa 82
2. foliacea 82
3, 4. reticulata 83
5, 6. similis 83
7, 8. interrupta 83
9, 10. subulata 83
11, 12. acuta 83
13. undoso 83
14, 15. minuta 83
16, 17. semicostata 83
18. plicata 83
19. mutica 83
20, 21, 22. Euomphalus coronatus 82
23. calyx 81
24, 25. funatus 81
26, 27. angulatus 81
28, 29. pentangularis 81
30, 31. catillus 81
32, 33. discors 82

PAGE.

34, 35. Euomphalus rugosus 82
36. cristatus 82
37, 38. nodosus 82
39. bifrons 82

PLATE XLIII.

1. Vermetus Bognoriensis 84
2. polygonalis 84
4, 5. tumidus 84
6, 7, 8. Tornatella acutus 84
9, 10. Noæ 84
11, 12. cuspidatus 85
13. retusus 85
14, 15. striatus .....
16, 17. Sigaretus canaliculatus 88
18, 19. Natica sigaratina 89
20, 21. cirriformis 89
22, 23. patula 89
24. discrepans 89
25. cincta 89
26, 27. ampliata 89
28, 29. similis 89
30, 31. glaucinoides 99
32. plicistria 89
33, 41. adducta 89
34. elliptica 90
36, 37. hemiclausa 90
38, 39. lirata 90
40. tabulata 90
42, 43. tumidula 90
44. elongata 90
45. planispira 90
46. variata 90
47, 48. striata 90
49, 50. depressa 90

PLATE XLIV.

1, 2. Nerita costata 91
3, 4. lævigata 91
5, 6, 7. minuta 91
8, 9. aperta 91
10, 11. globosa 91
12, 13, 14. Pileolus plicatus 92
15, 16, 17. lævis 92
18, 19. Neritina uniplicata 92
20, 21. concava 92
22, 23. Ampullaria patula 93
24, 25. Nerita spirata 91
26, 27. sinuosa 92
28. Ampullaria nobilis 93
29, 30. Helicoides 93
31, 32. ambulacrum 93
33, 34. acuta 93
35, 36. Sigaratina 93

PLATE XLV.

1. Paludina concinna 93
2, 3, 9. lenta 94
4, 5. extensa 94

PAGE.

6. Paludina Sedgwickii 95
7, 8. suboperta 94
10, 11. carinifera 94
12, 13. fluviorum 94
14, 15. elongata 94
16, 17. Melanopsis subulata 95
18, 19. carinata 94
20, 21. fusiformis 95
22, 23. Deptfordensis 95
24, 25. brevis 94
26. Melania sulculosa 95
27, 28. truncata 95
29, 30. minima 95
31, 32. lineata 96
33. Heddingtonensis 96
34. vittata 99
35. striata 96
36, 37, 38. fasciata 96
39, 40, 41. costata 96
42. tumida 96
43, 44. constricta 96
45. rugifera 96

PLATE XLVI.

1, 2. Lymnæa pyramidalis 97
3, 4. maxima 97
5, 6, 7. minima 97
8, 9. longiscatus 97
10, 11. fusiformis 97
12, 13. Planorbis obtusus 97
14, 15. Vermetus radiatus 84
16, 17. Lymnæa columnaris 97
18, 19, 20. Planorbis hemistoma 97
21, 22. cylindricus 97
23, 24. euomphalus 97
25. Crassidorsa equalis 98
26, 27. Planorbis lens 97
28. Auricula Sedgwickii 88
29. obsoleta 98
30, 31. Bulimus costellatus 99
32, 33. pyramidalis 98
34, 35. Auricula ventricosa 98
36, 37. Bulimus ellipticus 99
38, 39. Auricula Buccinea 98
40, 41. simulata 99
42, 43. discrepans 99
44, 45. incrassata 98
46, 47. turgida 98

PLATE XLVII.

1, 2. Cochlicarina expansa 99
3, 4. Helicina solaroides 99
5, 6. polita 100
7, 8. compressa 100
9, 10. Helix Gentii 100
11, 12. Bulla convoluta 100
13, 14. elliptica 100
15, 16. acuminata 101
17, 18. constricta 101

PAGE.

19. Bulla elongata 100
20. filosa 100
21, 22, 23. Utriculus crenatus 101
24, 25. Bulla attenuata 101
26. Utriculus humeralis 101
27, 28, 29. elongatus 101
30. glaber 101
31, 32, 35. Ancylus elegans 102
33, 34. Helix globulus 100
36, 37. Calyptræa echinatulum 102
38, 39. rectum 102
40, 41, 42. obliquum 102
43, 44. Pileopsis Unguis 102
45. Calyptræa tuberculatum 102
46, 47. spinulosum 102
48, 51. Pileopsis Neritoides 102
50, 55. trilobus 103
52. tubifer 103
53. vetustus 103
54. angustus 103

PLATE XLVIII.

1, 2. Sipho clathrata 103
3, 4. Emarginula reticulata 103
5, 6. scalaris 103
7, 8. Fissurella græca 103
9, 10. Emarginula crassa 104
11. Patella mucronata 104
12, 13. striata 104
14, 15. Emarginula tricarinata 104
16, 17. sulcata 104
18. Patella rugosa 104
19. sinuosa 104
20. scutiformis 104
21, 22. lævis 104
23. lata 104
24, 25, 26. nanus 105
27, 28, 29. ancyloides 105
30. retrorsa 105
31, 32. equalis 105
33. curvata 105
34. latissima 105
35, 40. Metoptoma imbricata 105
36. Patella lateralis 105
37. Metoptoma sulcata 105
38. oblonga 105
39. pileus 105
41. elliptica 105

PLATE XLIX.

1, 10, 21, 22. Orbicula nitida 143
2. Lingula ovalis 106
3. elliptica 106
4. squamiformis 106
5, 13. Magus pumilus 116
6. Lingula Mytiloides 106
7. Beanii 106
8, 9. Orbicula Humphriesiana 143
10, 15. Lingula parallela 106

PAGE.

12. Lingula marginata 106
14. obliqua .....
16, 26. Orbicula granulata 143
17, 18, 19. reflexa 143
20. Lingula scutiformis 106
23. tenuis .....
24. Gypidium Aylesfordi 115
25, 36, 37, 38. Spirifer cuspidatus 108
27, 28. insculpta 108
29. senilis 108
31, 32. Gypidium Knightii 115
30. Orthis crenistria 108
33, 34. Spirifer distans 108
35. septosa 108
39, 40, 41. Pentamirus lævis 115

PLATE L.

1, 2, 3, 4. Spirifer trigonalis 108
5. triangularis 108
6, 7. lineatus 110
8. Beanii 109
9, 10. octoplicatus 109
11, 12. pinguis 109
13, 14. Walcottii 109
15, 16. minimus 109
17, 18. rotundatus 109
19, 20. striatus 109
21, 22. bisulcus 109
23, 24. semicircularis 110
25, 26. attenuatus 109
27, 28. undulatus 110

PLATE LI.

1. Spirifer ovalis 110
2, 16. rhomboidea 108
3. humorosus 110
4, 5. fusiformis 108
6. planata 110
7. pyramidalis 109
8. integricostatus 110
9. trisulcosus 110
10. triradialis 110
11, 12. Gloveri 111
13. duplicosta 111
14. linguilifera 112
15. convoluta 108
17. sexradialis 110
18. mesolobus 111
19. taeniata 112
20. oblatus 112
21. elliptica 112
22. obtusa 112
23. symmetricus 112
24. lata 112
25. imbricata 112
26. decora 112
27, 28, 29. glabra 112
30, 31. filiaria 111

PLATE LII.

PAGE.

1. Spirifer squamosa 112
2. Orthis filiaria 117
3. Spirifer elongata 113
4. planisulca 112
5. expansa 112
6. resupinata 113
7. glabistria 113
8. radialis 113
9, 10. Terebratula hastata 131
11, 20. identata 131
12. globularis 112
13. connivens 117
14, 21. triquetra 132
15, 16. perovalis 132
17, 18. globata .....
19. Orthis arachnoidea 117
22, 23. Terebratula emarginata 132
24. Leptena papilionacea 122
25, 26. Terebratula bullata 132
27, 28. obtusa 132
29, 30. maxillata 132
31, 32. Sella 132
33, 34. elongata 133
35, 36. biplicata 132
37, 38. bucculenta 132
39, 40. sacculus 133

PLATE LII.*

1, 2. Orthis grandis 117
3, 4. elegantula 117
5, 6. Strigocephalus brevirostri 116
7. Orthis virgata 117
8, 9. vespertilio 117
10. testudinaria 118
11. Trigonosemus Lyra 116
12, 13. Strigocephalus giganteus 116
14. Orthis triangularis 117
15, 16. Strigocephalus Burtini 116
17, 18, 19. Spirifer heteroclitus 113
20, 21, 22. biloba 111
23. giganteus 113
24, 25. speciosus 113
26. striatulus 113
27, 60. radiatus 113
28. phalæna 113
29. obliteratus 114
30, 31. pisum 114
32, 47. pulchella .....
33. crispus 111
32,* 33.* ptychodes 111
34. affinus 114
35, 36. costatus 114
37. inornatus 114
38. extensus 114
39, 40. Orthis flabellum 117
41, 42. Spirifer interliniatus 111
43, 44. tripizoidales 111
45, 46. grandævus 114
48. disjunctus 115

		Page.
49, 58.	Spirifer simplex	115
50, 51.	partitus	115
52.	lævus	115
53.	calcaratus	115
54, 55.	Urii	115
56.	nudus	115
57.	plicatus	115
59.	subconicus	114
60.	radiatus, var.	113
61.	Orthis plicata	118

Plate LIII.

1, 2, 3.	Orthis interliniata	120
4, 5.	pinnatus	120
6, 7, 8.	orbiculata	118
9, 16.	parallela	120
10.	radians	119
11, 12.	tenuistriata	118
13, 14.	alata	120
15.	granulosa	120
17.	rustica	118
18, 19.	alternata	118
20.	compressa	118
21.	protensa	118
22.	callactis	119
23.	arcuata	120
24, 25.	antiquata	119
26.	expansa	119
27.	subarachnoidea	117
28.	anomala	117
29.	lata	119
30, 31.	semicircularis	118
32, 33.	umbraculum	120
34, 35, 36.	canalis	118
37.	longisulcata	120
38.	Actoniæ	119
39, 40.	bilobata	119
41.	concentrica	120
42.	filosa	119
43.	intercostata	121
44, 45.	lens	121
46.	cancellata	121
47.	multifurcatus	119
48.	interstrialis	121
49.	parallela	121
50.	costata	119
51, 52.	semilunata	119
53, 54.	Productus reticulatus	122
55.	Orthis calcar	121
56, 57, 58.	lunata	118
59, 60, 61.	hybrida	119
62, 63.	Productus prælonga	122

Plate LIII.*

1.	Orthis Pecten	118
2, 3, 4.	Leptæna distorta	123
5.	margaritacea	124
6.	plicatilis	123
7.	caperata	121
8, 9.	Leptæna Scotica	124
10.	analoga	121
11.	spinosa	124
12.	tenuistriata	123
13.	pugilis	125
14.	Productus scarbiculus	124
15.	Leptæna costata	119, 125
16.	comoides	126
17.	membranacea	126
18, 19.	sordida	122
20.	sulcata	125
21.	nodulosa	125
22.	Pectenoidea	125
23, 24.	sericea	123
25.	Lepisma	122
26.	deceptus	127
27.	Edelburgensis	125
28.	euglypha	122
29, 30, 31.	depressa	122
32. 33.	Hardrensis	127
34.	interrupta	127
35.	lævigata	123
36, 37.	aculeata	126
38.	latissima	126
39.	convoluta	126
40.	sarcinulata	126
41, 42.	lobata	127
43.	humerosus	127
44.	Personata	127
45, 46.	Atrypa didyma	127

Plate LIV.

1.	Atrypa hispida	129
2, 3.	transversa	123
4, 5.	cuboides	128
6, 7.	minima	123
8.	fimbriata	125
9.	fragaria	122
10, 11.	anomala	137
12.	complanata	123
13.	duplicata	123
14, 15.	hemisphærica	130
16, 17.	latissima	130
16.*	ambigua	123
18.	fallax	129
19, 20.	lata	123
21, 22.	linguifera	128
23, 24.	identata	130
25, 26.	globosa	130
27.	trilobata	129
28, 29.	orbicularis	131
30, 31.	lachryma	130
32, 33.	impleta	129
34, 35.	crenulata	129
36, 37.	subdentata	129
36.*	rogosa	122
38. 39.	crassa	131
40, 41.	obovata	131
42, 43.	gibbera	130
44, 45.	Atrypa compressa	128
46.	striatula	130
47, 48, 59.	oblonga	129
49, 50.	aspera	128
51, 52.	plebeia	130
53.	cassida	128
54.	decussata	130
55, 56.	protracta	129
57, 58.	sphærica	130
60, 61.	lineata	130
62, 63.	longispina	126
64, 65.	rotunda	128
66, 67.	imbricata	130
68, 69.	lens	131
70, 71.	expansa	128
72, 73.	fimbriata	129
74, 75.	juvenis	130
76, 77.	undata	131
78, 79, 79.*	depressa	128
80.	tenuistriata	128
81, 82.	planosulcata	128
83, 84.	implexa	129

Plate LIV.*

1, 2.	Atrypa desquamata	129
3.	affinis	128
4, 5.	Composita ambigua	131
6, 7.	Atrypa pectinifera	129
8.	triangularis	129
9, 10.	Terebratula prælonga	134
11, 12, 13, 13.*	sublobata	134
14.	lata	133
15.	trilineata	133
16.	Leptæna hemisphærica	127
17, 18.	Terebratula virgo	
19, 20, 21, 22.	variabilis	133
23.	ornithocephala	134
24.	hastata	134
25, 36.	biplicata	132
26, 27.	faba	139
28, 29.	obesa	133
30, 31, 32, 33.	carnea	133
34.	ovoides	133
35.	intermedia	133
37, 38.	Tamarindus	134
39, 40.	navicula	132
41, 42.	resupinata	133
43, 44.	subumdata	133
45, 46.	semiglobosa	133
47, 48, 49.	sacculus	133

Plate LV.

1, 10.	Productus auritus	124
2, 3.	scarbriculus	124
4.	concinna	124
5.	liratus	125
6.	spinulosus	124
7.	quincuncialis	124
8.	pustulosus	124

PAGE.

9, 19. Productus Martini 124
11. antiquatus 125
12. giganteus 126
13, 14. calvus 127
15. mesoloba 125
16. laxispinus 124
17. muricatus 125
18. setosus 125
20, 21, 22, 24. punctatus 126
23. ovalis 127

PLATE LV.*

1, 2. Terebratula cuneata 135
3, 4. coarctata 134
5. ornithocephala 134
6, 7. seminula 139
8, 9. similis .....
9.* lampas 134
10. cornuta 134
11, 12, 13. digona 134
14, 15. pentagonalis 139
16. ambigua 134
17, 18. antiquata 139
19, 20. pentaëdra 139
21, 22. decussata 134
23, 24. lentiformis 139
25, 26. fimbriata 134
27, 28. punctata 134
29, 30. rhomboidea 139
31. sacculus 133
32. lineolata 139
33. canalis 132
34, 35. ovata 134
36, 37. sphæroidalis 135
38, 39. rhomboidea 139
40, 41. subrotunda 135
42. quadrata 140
43. obovata 135
44, 45. seminula 139
46, 47. rostrata 136
48. angulata 137
49. pugnus 137
50, 51. convexa 139
52. proava 135
53, 54. oblonga 137
55. concinna 136
56, 57. psittacus 140
58, 59. orbicularis 137
60. triplicata 140
61, 62. annularis 257
63, 64. flabellulum 137
65. tumida 140
66, 67, 68, 69, 70, 71, 72, 73, 74. acuminata 137
75, 76. elegans 139
77, 78. comta 140
79, 80. Martini 137
81, 82. deflexa 135
83, 84. parvirostris 139
85. tetrahedra 137

PAGE.

86, 87. Terebratula spherica 136
88. decemplicata 135
89. imbricata 136
90, 91. Wilsoni 135
92, 93, 94. cordiformis 137
95. bidens 140
96, 97. crumena 137
98, 99. acuta-plicata 138
100. myatrima 140

PLATE LVI.

1, 2. Terebratula nucula 136
3, 4. brevirostra 136
5, 6. ferita 140
7, 8. interplicata 136
9, 10. depressa 138
11, 12, 13. inconstans 138
14, 15. angularis 141
16, 17. radialis 140
18. pusilla 135
19. læviuscula 132
20, 21. truncata 138
22, 23. probocidalis 140
24, 25. quadrata 140
26. borealis 136, 141
27, 28. subplicata 140
29. tripartita 135
30, 50. platyloba 141
31, 32. bidentata 135
33, 34. pentagona 137
35. pulchra 136
36. unguis 135
37. neglecta 136
38, 39, 40, 55. reniformis 141
41, 42. hemisphærica 140
43, 44. rigida 140
45, 46. tetrahedra 137
47, 48, 49. furcata 136
51, 52. plicatilis 141
53, 54. Mantelliana 138
56. reniformis, var. 141
57. pleurodon 141
58, 59. anisodonta 142
60, 61. chrysalis 141
62, 63. plicatilis 141
64, 65. flexistriata 141
66, 67. Gibbsiana 138
68, 69. plicatella 138
70, 71. delatata 139
72, 73. mesogona 141
74, 75. crenulata 142
76, 77. bifera 135
78, 79. gallina 135
80, 81. crispata 136
82, 83. acuta 138
84, 85. ventilabrum 142
86, 87. latissima 138
88, 89. pectita 139
90. obsoleta 139

PAGE.

91. Terebratula socialis 142

PLATE LVI.*

1. Terebratula spinosa 142
2, 3, 4, 5, 6, 7. pleurodon 141
8. obliqua 138
9, 12. sulcirostris 142
10, 11. laticosta 142
13. nuciformis 138
14. Mantiæ 138
15. lacunosa 142
17, 18. imbricatus 136
19. ditto variety .....
22, 23. demidiata 139
24, 25. serrata 183
28, 29. Stricklandii 131
30. lateralis 141
31, 32. crebicosta 136
33. ambligonia 142
36, 37. striatula 140
38. striatula, var. 140
39. Crania antiquior 256
40. Pecten Flemingii 153
41, 42, 43, 44, 45. Hipponyx cornucopiæ .. 144
46, 47, 48, 49, 50, 51. lævis 144
52, 53. Calceola sandalina 144
54. Orbicula punctata 142
55, 56. Crania Parisiensis 107
57, 58. Orbicula rugata 142
59. Crania ovalis 256
60. Crania striata 256
61, 62. Orbicula striata 142

PLATE LVII.

1. Ostrea Bellovacina 145
2, 3. acuminata 145
4. gigantea 146
5, 6, 7. Anomia lineata (young) 144
8. ditto (adult) 144
9. Ostrea canaliculata 145
10. gregaria 146
11, 12. flabellata 146
13. læviuscula 145
14. tenera 146
15. edulina 145
16. Anomia squamula 145
17. aculeata 144
18, 19. convexa 144
20, 21. lævigata 144
22. radiata 145

PLATE LVIII.

1, 2. Ostrea macroptera 146
3. Meadii 146
4. undosa 147
5. archetypa 147
6. undulata 146
7. expansa 145
8. indistincta 148
9. costata 145

Plate LIX.

		Page.
1.	Ostrea duriuscula	
2.	dorsata	145
3, 4.	obscura	145
5.	inequalis	147
6.	carinata	146
7.	semiplana	145
8, 11.	solitaria	146
9.	deltoidea	145
10.	Marshii	146
12.	pulchra	146
13.	Anomia Eppippium	144
14.	undata	144

Plate LX.

1.	Gryphæa incurva	148
2.	bullata	148
3, 12, 13.	conica	149
4.	recurvata	149
5.	sinuata	149
6, 7, 8, 9.	Haliotoidea	149
10, 11.	conica, var.	149
14, 15.	undata	149
16.	digitata	149
17.	lævigata	149
18.	Hinnus Dubissoni	153
19.	Gryphæa Macullochi	148

Plate LXI.

1, 6, 7.	Gryphæa dilatata	148
2.	globosa	143
3, 4.	nana	148
5.	gigantea	148
8, 9.	visiculosa	149
10, 11, 12.	minuta	149
13, 14.	Phillipsii	149
15.	columba	148
16, 17.	obliquata	149
18.	canaliculata	149
19.	depressa	148

Plate LXI.*

1, 2.	Ostrea alæformis	147
3, 4.	palmetta	147
5, 6, 7, 8.	lateralis	147
9, 10.	triangularis	148
11.	Plagiostoma asperum	152
12.	Mantelli	152
13.	Ostrea inæquicostatus	147
14.	sulcæ	150
15, 16.	Gryphæa decussata	150
17, 18, 19.	aquila	150
20, 21.	Ostrea lunata	147
22, 23.	Gryphæa cymbium	150
24, 25.	Pecten subulatus	158
26, 27, 28.	Gryphæa plicata	149
29, 32.	Pecten textalis	153
30, 31.	Ostrea sulcifer	147
33.	Lima plicatilis	159
34.	Limatula subauriculata	159
35.	ovata	159

Plate LXI.**

1.	Avicula longiaxis	257
2.	Pecten gentilis	157
3.	scalaris	157
4.	semicostatus	157
5.	antiqua	163
6.	Ottonis	157
7, 8.	sexcostatus	157
9.	Avicula complicata	275
10.	Pecten nexilis	157
11.	Avicula papyracea	159
12.	Pecten Valoniensis	157
13.	transversus	157
14.	Avicula longiaura	275
15.	Plagiostoma Brightonense	152
16, 17.	Pterinea ventricosa	164
17.*	Pecten calvus	157
18.	concentricus	156
18,* 19.	Monotis decussata	164
20.	subcostata	164
21.	Avicula Neptuni	163
22.	Pterinea radiata	164
23, 24.	Avicula modiolaris	162
25.	Posidonia transversa	163
26.	truncata	168
27, 28.	Avicula quadrata	162
29.	submdiata	163
30.	Gervillia crassa	
31.	minor	165
32.	minima	168
33.	Posidonia complanata	168
34.	tuberculata	168
35.	Bechari	168
36.	Pterinea lævis, magnified	
37.	ditto, natural size	
38.	Posidonia venusta	166
41.	Plagiostoma Mantelli	152

Plate LXI.***

1.	Posidonia Anadoniformi	168
2.	lateralis	168
3.	Perna rugosa	169
4.	Crenatula ventricosa	165
5.	Listeri	165
6, 6.*	producta	165
7.	Hinge of Crenatula ventricosa	
8, 9.	Catillus crispii	167
10.	Lamarckii	167
11, 12.	Modiola amygdalina	174
13.	expansa	174
14, 15, 16.	Macadami	175
17.	Nerei	175
18.	subparella	175
19, 20.	carinata	175
21.	Trigonia literata	184
24, 25, 25.*	Pleurodon ovalis	188
26.	Macradon rugosus	190
27.	Astarte obliqua	211
28.	Lysianessa rhombifera	229
29.	Pleurorhychus elongatus	201

Plate LXII.

1, 2.	Plicatula spinosa	150
3, 4.	pectinoides	150
5.	inflata	150
6.	Pecten corneus	154
7.	cinctus	153
8.	obscurus	154
9.	lamellosus	154
10.	rigidus	155
11.	lens	154
12.	Beaveri	154
13.	Princeps	156
14.	laminatus	155
15.	arcuatus	155

Plate LXIII.

1.	Pecten plicatus	156
2.	grandis	153
3.	inæquicostatus	153
4, 5, 6, 7.	obsoletus	155
8.	vimineus	155
9.	annulatus	155
10.	complanatus	154
11.	gracilis	155
12.	reconditus	154

Plate LXIV.

1.	Pecten carinatus	154
2.	nitidus	155
3.	Jacobæus	155
4, 5.	duplicatus	156
6.	orbicularis	156
7.	barbatus	153
8.	cingillatus	156
9, 10.	Millerii	157
11.	similis	155
12, 13, 14.	compositus	157
15.	opercularis	155
16.	dentatus	154
17.	maximus	155
18.	striatus	156
19.	obliquus	153
20.	vagans	156
21.	fibrosus	154

Plate LXV.

1.	Pecten Stuchburiensis	158
2.	quadricostatus	153
3.	quinquecostatus	153
4.	Avicula papyracea	159
5.	hæmispherica	160
6.	Pecten æquivalvis	154
7.	stellaris	157
8.	Avicula plicata	160

PAGE.

9. Pecten abjectus 156
10, 11. arenosus 156
12. Avicula similis 160
13. Oweni 160
14. sublævis 157
15. demissus 156
16. granosus 154
17. discrepans 157
18. virgiliferus 157
19. ellipticus 156
20, 21. dissimilis 156
22. fimbriatus 156
23. asper 153
24. anisotus 156
25. Pecten decornatus 156
26, 27. Avicula simplex 157, 163
28. Pecten interstitialis 156

PLATE LXVI.

1. Plagiostoma rusticum 151
2. concentricum 151
3. obscurum 151
4. elongatum 151
5. rigidum 151
6. duplicatum 151
7. rigidulum 152
8. ambiguum 152
9. pectinoides 152
10. giganteum 150
11. interstinctum 152
12. Hermani 152
13. ovali 151
14. cardiiformo 152
15. punctatum .....
16. dubium .....
17. læviusculum 151
18. Hoperi 151
19. punctatum 151

PLATE LXVI.*

1, 2. Dianchora striata 152
3. lata 152
4. Plagiostoma spinosum 151
5, 6, 7. Avicula inæquivalvis 160
8, 9. costata 160
10. lineata 160
11. rectangularis 161
12. Anomia radiata 145
13, 14. lævigata 144
15, 16. convexa 144
17. retroflexa 160
18. Murchisoni 161
19. Modioliforme 162
20. reticulata 161
21. Avicula orbicularis 161
22. anomala 161
23. obliqua 160

PLATE LXVI.**

1. Avicula humata 161

PAGE.

2. Avicula Pectinata 163
3. discors 163
4, 7, 8. inflata 161
5, 6, Binneyi 161
9, 10, 11, echinata 160
12. novem-costae 162
13. expansa 162
14. ovalis 162
15, 16. longicostata 163
17. Cygnipes 163
18. Ovata 160
19, 20. gryphoides 172
21. elegantissima 162
22. Gryphæa bulla 149
23, 24. Ostrea distorta 147
25, 26. Gryphæa virgula 150
27. Ostrea falcata 147
28. retusa 147
29. Avicula Samuelsii 161
30. radiata 162
31. tessellata 162
32. subulata 162
33. Bamburgensis 162
34. cycloptera 162

PLATE LXVII.

1, 2. Perna Mytiloides 169
3, 4. Lima subovalis 158
5. Catillus Mytiloides 166
6. Perna .....
7. Lima antiquatus 158
8, 9. gibosa 158
10. Gervillia laminosa 165
11. Lima rudis 158
12. Pinna inflata 169
Leptæna anomala 127
13, 14. Lima semisulcata 159
15. Posodonia vetusta 168
16. Gervillia laminosa (a cast) 165
17. Avicula lunulata 163
18. Gervillia squamosa 165
19. Pinna flabelliformis 169
20. Lima proboscidea 158
21. Catillus Cuvari 166
22. lævis 167
23. obliquatus 167
24. Kirkmani 167
25. costatus 167

PLATE LXVIII.

1. Catillus sulcatus 166
2. dubius 166
3. striatus 166
4. Hinge of Catillus Brongniarte 166
5, 6. Catillus Brongniarte 166
7. pictus 166
8. latus 166
9. Avicula tenua 161
10. squamula 161
11. Catillus concentricus 166

PAGE,

12. Catillus involutus 166
13. ditto hinge 166
14. digitatus 166
15. cordiformis 166
16. gryphoides 166
17. Kellyi 167
18. minutus 167
19. Avicula humata 161

PLATE LXIX.

1, 2. Gervillia lata 165
3. Avicula lanceolata 160
4, 5. Gervillia acuta 165
6. solenoides 164
7, 8, 9. aviculoides 165
10. Pinna lanceolata 169
11. Perna quadrata 169
12. Pinna gracilis 169
13. cuneata 169
14, 15. Perna rostrata 169

PLATE LXX.

1. Pinna arcuata 170
2. folium 170
3. tetragona 170
4. mitis 170
5. granulata 170
6. affinis 170

PLATE LXXI.

1. Mytilus edentulus 170
2. lanceolatus 171
3, 4. Dreissina Brandii 179
5, 6. Mytilus inæquivalvis 171
7, 8. tridens 171
9, 10. prælongus 171
11. edulis 170
12, 13. Madiola funata 172
14. Mytilus cuneatus 171
15. equilatus 171
16. affinis 170
17. antiquorum 170
18. pectinatus 170
19. Pinna ampla 169
20. Perna alæformis 169
21. Modiola latissima 174
22, 23. bipartita 173
24, 25. elongata or Williamsoni 172
26. Mytilus sublævis 171
27. Lyellii 171

PLATE LXXII.

1, 2. Modiola lineata 173
3. bella 173
4. Plagiostoma elongatum 151
5, 6. Modiola gibbosa 173
7. elegans 172
8. Hillana 172
9, 10. bipartita 173
11, 12. producta 173

		Page.
13, 14.	Modiola aspera	172
15, 16.	subtruncata	173
17.	Aldami	172
18.	flexuosa	173
19, 20.	curtata	173
21, 22.	subcarinata	173
23.	reversa	173
24, 25.	Robertsoni	173
26.	pulchra	174
27.	Moorii	173
28.	minima	173
29.	minuta	174
30, 31.	cuneata	174
32, 33.	reniformis	173
34.	inclusa	174
35.	æqualis	173
36.	imbricata	172
37.	lævis	172
38.	undulata	174
39.	squamifera	174
40.	pallida	172
41.	depressa	172
42.	lingualis	174
43.	elongata	174
44, 45.	Lithophagus antiquus	257

Plate LXXII.*

1.	Modiola plicata	172
2.	bipartita, var.	173
3.	Triaxus latus	
4, 5.	Chama squamosa	176
6.	Modiola scalprum	174
7.	rectus	174
8.	antiqua	172
9.	Trigonia pennata	182
10, 11.	Caprina Lonsdalii	176
12.	Trigonellites antiquatus	214
13.	Trigonia elongata	182
14.	duplicata	182
15.	striata	182
16.	Trigonellites politus	214
17.	Modiola semisulcata	172
18.	Unio humatus	179
19.	Alasmodon vetustus	181

Plate LXXIII.

1.	Unio Heyii	178
2.	Blaydsii	178
3.	Dawsoni	177
4.	amygdala	177
5.	Rhindi	187
6.	Embletoni	178
7.	nanus	177
8.	nucleus	178
9.	similis	178
10, 11.	Smithii	178
12.	subtriangularis	178
13.	dubius	177
14, 15.	rugosus	177
16, 17.	Unio turgidus	178
18.	Aldami	179
19.	pyramidatus	179
20.	agrestis	178
21.	transversus	178
22.	subrotundus	177
23, 24.	Gerardi	177
25.	exoletus	177
26.	lateralis	177
27.	bipennis	177
28, 29.	sulcatus	177
30.	Caldensis	179
31.	senex	178
32, 33.	Polmontensis	180

Plate LXXIV.

1.	Unio aduncus	180
2, 3.	Gualteri	180
4.	Cardinia concinna	213
5.	Pullastra peregrina	203
6.	Unio subtruncatus	179
7.	Martini	179
8.	Cardinia crassissima	214
9.	abducta	214
10.	Unio Solandri	179
11.	compressus	180
12.	antiquus	180
13.	acutus	180
14.	porrectus	180
15, 17	subconstrictus	181
16.	Mantelli	179
18.	Cardinia crassiuscula	214
19.	hybrida	214
20.	Listeri	214
21.	Unio cordiformis	179

Plate LXXIV.*

1, 2.	Unio pictorum	180
3, 4.	ovalis	179
5, 6.	tumidus	179
7.	Anodon Cygnea	176

Plate LXXV.

1.	Trigonia angulata	182
2, 3.	imbricata	182
4.	costata	182
5.	quadrata	182
6.	Trigonellites latus	214
7.	Trigonia Aliformis	182
8.	spinosa	183
9.	spectabilis	183
10.	nodosa	183
11.	clavellata	183
12.	pustulata	183
13.	gibbosa	183
14, 15.	cuspidata	183
16, 17.	pullus	183

Plate LXXVI.

1, 2.	Nucula variabilis	185
3, 4.	antiquata	185
5.	elongata	
6, 7.	undulata	185
8, 9, 10.	lineata	186
11, 12.	inflata	184
13, 14.	apiculata	186
15, 16.	impressa	185
17.	ovata	186
18, 19.	mucronata	185
20.	lachryma, variety	185
21.	Trigonia dædalea	184
22.	Nucula lævis	184
23, 24, 25.	lachryma	185
26.	subrecurva	186
27.	complanata	186
28, 29, 48.	similis	185
30.	dubia	186
31, 32.	angulata	186
33.	ovalis	184
34.	axiniformis	186
35, 36.	amygdaloides	185
37.	ovum	185
38.	claviformis	185
39.	palma	185
40.	elliptica	186
41.	Trigonia affinis	183
42.	incurva	184
43.	Nucula trigona	185
44.	bivirgata	186
45.	Trigonia excentrica	183
46, 47.	Nucula pisum	186
49.	obtusa	186
50.	lævigata	185
51.	deltoidea	184
52.	lanceolata	184
53.	minima	185
54.	pectinata	185
55.	Cobboldiæ	184
56, 57.	accipiens	187
58.	acuta	187
59.	æqualis	187
60, 61.	striata	187
62.	plicata	188
63, 64.	compressa	187
65.	radiata	188
66, 67.	pygmæa	188
68, 69.	longirostra	187
70.	attenuata	187
71.	lævirostra	188
72.	cuneata	187
73.	latissima	188
74.	brevirostra	187
75.	nuda	187
76, 77.	Wetherellii	187
78, 79.	gibbosa	187
80, 81.	Luciniformis	187
82, 83.	Bowerbankii	187

PAGE.

84, 85. Nucula oblongoides 188
86, 87. semi-striata 188
88, 89. Trigonula 188

PLATE LXXVII.

1. Pectunculus brevirostris 189
2, 3, 4. minimus 189
5. pilosus 189
6, 7, 8. oblongus 189
9. obliquus 189
10. sublævis 189
11. umbonatus 189
12. Arca carinata 191
13. Pectunculus delectus 189
14. Plumsteadiensis 189
15. Arca tumida 191
16. Branderii 190
17. appendiculata 190
18. cancellata 190
19. duplicata 191
20. Pectunculus decussata 189
21. Cucullæa contracta 193
22. rudis 193
23. Pectunculus scalaris 189
24. Arca depressa 191
25. Cucullæa oblonga 193
26. Arca rotundata 191
27. Eastnori 190
28. papillosa 191
29. pulchra 190
30. quadrisulcata 190
31, 32. costata 191
33. subacuta 191
34. elongata 191
35. dubia .....
36. æmula 191
37, 38. Cucullæa minuta 193
39. crassatina 193
40. fibrosa 193
41. carinata 192

PLATE LXXVIII.

1, 2. Cucullæa glabra 192
3. oviforma 193
4. ovata 192
5. pectinata 193
6. triangularis 193
7. costellata 193
8, 9. antiqua 192
10. formosa .....
11, 12. Pachymya gigas 195
13. Cucullæa reticulata 193
14, 16. cancellata 193
15. Cawdori 192
17. cylindrica 194
18. concinna 194
19. elongata 193
20. imperialis 191

PLATE LXXIX.

PAGE.

1. Axinus rotundatus 195
2, 3. minimus 195
4. latus 194
5, 6. obscurus 194
7. ditto (young) 194
8. dubius 194
9. undatus 195
10, 11. pusillus 195
12. parvus 195
13, 14. Megalodon cucullatus 196
15. Isocardia tumida 197
16. rhomboidalis 197
17. Axinus angulatus 195
18, 19. Isocardia rostrata 196
20, 21. Hippopodium ponderosum 195
22, 23. Isocardia sulcata 196
24, 25. angulata 197
26, 27. tener 196
28, 29. concentrica 196
30, 31. Cardiomorpha oblonga 197

PLATE LXXX.

1. Cardium Gentianum 199
2, 3. Isocardia minima 196
4. striata 196
5. Cor 196
6. axiniformis 197
7. abrupta 196
8, 9. Pholadomya Margaritacea 231
10. Sphæra corrugata 197
11. Isocardia triangularis 196
12. similis 196
13, 14. Opis similis 197
15, 16. lunulata 197
17. Isocardia nitida 197

PLATE LXXXI.

1, 2. Cypricardia Cymbæformis 198
3. rhombea 198
4. undata 198
5, 6. amygdalina 198
7. deltoidea 199
8. Cardiomorpha oblonga 197
9. Cypricardia Solenoides 198
10. glabrum 198
11. pectenifera 198
12. retusa 198
13. tricostata 199
14. impressa 198
15. Edmondia unioniformis 198
16. Cardium porulosum 200
17. aculeatum 200
18. globosum 200
19. proboscideum 199
20. Parkinsoni 199
21. striatum 199
22. Plumsteadiense 199
23. echinatum 200
24. acutangulum 200

PAGE.

25, 26. Cardium truncatum 200
27. striatulum 200

PLATE LXXXII.

1. Cardium gibberulum 200
2. turgidum 200
3. Hillanum 199
4, 16. edule 200
5. incertum 201
6, 7. nitens 199
8. angustatum 199
9. semistriatum 201
10. Pleurorhynchus longipennis 202
11. armatus 201
12. Cardium semiglabratum 201
13. edulinum 199
14, 15. Pleurorhynchus Hibernicus 201
17. Pleurorhynchus minax 202
18, 19. trigonalis 202
20. Cardium citrinoideum 200
21. semigranulatum 200
22, 23. dissimile 200
24, 25. Pleurorhynchus aliformis 201
26. Cardium lobatum 200
27. cognatum 201
28. lævigatum 201
29. elongatum 201
30. Grœnlandicum 201
31. Cardiola fibrosa 202
32. interrupta 202

PLATE LXXXIII.

1. Pullastra Virginea 204
2. peregrina 203
3, 4. parallela 205
5. oblita 204
6. decussata 204
7. lævis 203
8. complanata 204
9. Venus elliptica 205
10. antiqua 204
11. Pullastra recondita 204
12. elliptica 204
13. Irus 204
14. Venus ovata 205
15. fasciata 205
16. Psammobia rigida 218
17. Anomia semistriata 144
18. Avicula decepta 162
19, 20. Meadia 160
21, 22. Megalodon carinatus 176
23. Venericardia planicosta 202
24. scalaris 202
25. tenuicosta 203
26. oblonga 203
27. orbicularis 203
28. Cyrena Cycladiformis 208
29. Venericardia Chamæformis 203
30, 31. globosa 203

PAGE.

32. Venericardia acuticosta 203
33. senelis 203
34. deltoidea 203
35, 36. Myaconcha crassa 202

PLATE LXXXIV.

1. Venus turgida 205
2, 3. submersa 204
4. Cytherea incrassata 205
5. rugosa 204
6. Venus gibbosa 205
7. Cytherea roundata 207
8. Venus sublævis 204
9. immersa 204
10. gallina 205
11, 12. Cytherea rugosa 206
13. dolabra 206
14, 15. Venus tenera 257
16. ovalis 204
17. varicosa 204
18. Cytherea Chione 206
19. convexa 205
20. parva 205
21. elegans 206
22, 23. tenuistriata 206
24, 25. Venus faba 205
26. Cytherea truncata 206
27. plana 207
28. lineolata 205
29. subrotunda 207
30. caperata .....

PLATE LXXXV.

1. Cyprina cuneata 207
2. triangularis 207
3. transversa 208
4. Artemis lincta 207
5. lentiformis 207
6. exoleta 207
7. Cyprina equalis 208
8. planata 208
9. Artemis parvus 207
10. angulata 208

PLATE LXXXVI.

1. Cyrena obovata 209
2. deperdita 208
3. cuneiformis 208
4. Cytherea nitidula 206
5. Cyrena trigonula 208
6. Cyclas angulata 209
7. major 209
8, 9. gibbosa 209
10. Piscidium amnicum 210
11. pusillum 210
12. elongata 209
13. Cyclas subquadrata 209
14. media 209
15. Cytherea tellinaria 206
16. Cyclas parva 209

PAGE.

17. Cyprina Morrisii 208
18. rostrata 206
19. Cyclas pusilla 206
20. cornea 209
21. Cytherea sulcataria 206
22. transversa 207
23. trigonula 206
24. obliqua 206
25. subericinoides 206
26. Cyclas rivocula 209
27. Piscidium Henslowana 210
28. membranacea 209
29. Cyprina vulgaris 208
30. Cyrina pulchra 209
31. Cyprina rustica 208

PLATE LXXXVII.

1. Astarte borealis 211
2, 3, 4. pumila 211
5, 6. impolita 211
7. bipartita 210
8. nitida 210
9. triangulata 212
10, 42. lurida 210
11. lævis 212
12. elegans 210
13. extensa 212
14. Gaerensis 212
15. oblonga 210
16. multicostata 212
17, 18. Scotica 212
19. obliquata 211
20. Venus imbricata 205
21. Astarte obovata 211
22. excavata 210
24. formosa 212
25. minima 212
26. carinata 212
27, 28. orbicularis 211
29. trigonalis 211
30. rugata 211
31. cuneata 210
32, 33. multistriata 211
34. ovata 212
35, 36. rotunda 211
37. lineata 211
38. concinna 212
39. alliena 212
40. striata 211
41. sulcata 212
42. lurida 210

PLATE LXXXVIII.

1, 2. Pullastra peregrina 203
3, 4. Cardinia cuneata 213
5, 6. Unio modiolaris 180
7. littoralis 181
8. pictorum 180
9, 10. Urii 180

PAGE.

11, 12. Cardinia ovalis 213
13, 14. scutula 213
15. Unio centralis 180
16. robustus 181
17. dolobratus 181
18, 19. Cardinia lanceolata 213
20. attenuata 213
21, 22. Unio phasiolus 181
23. aquilinus 181
24. discrepans 181
25, 27. Ansticei 180
26. parallelus 181

PLATE LXXXIX.

1, 2, 3. Lucina Goodhallii 215
4. Corbis uniformis 216
5. Lucina dispecta 215
6. Donax trunculus variety 214
7. trunculus 214
8. Lucina sculpta 216
9, 10. crassa 215
11, 12. orbicularis 215
13. pisum 215
14. lirata 215
15. Portlandica 215
16. mitis 215
17. globosa 215
18. rotundata 216
19. radula 215
20. laminata 216
21. Du Noryei 216
22, 23. Cryptodon flexuosa 216
24. Lucina undata 216
25. divaricata 215
26. Tellina tenuis 217
27. Brandcrii 217
28. Corbis ovalis 216
29. Tellina striatula 217
30. inequalis 217
31. donacina 217
32. Corbis lævis 216
33. Lucina gigantea 215
34. Tellina fabula 217
35, 36. splendens 217
37. obliqua 217
38. filosa 217
39. Arcopagia crassa 218
40. Tellina ovata 217
41. calcarea 217
42. ambigua 217
43. ampllata 217
44. Psammobia Ferröensis 218
45. gracilis 218
46. Tellina subrotundus 216
47. Psammobia solida 218
48. rigida 218
49. Tellinoides 218
50. scopula 218
51. donacialis 216

PAGE.

52. Psammobia lævigata 218
53. florida 218
54. vespertina 218
55. solidula 217

PLATE XC.

1, 2, 3. Petricola inflata 220
4. laminosa 220
5. ditto, variety 220
6, 7. lævis 220
8. Sanguinolaria lyrata 219
9. Hollowaysii 219
10, 21. Potomomya gregaria 223
11. Sanguinolaria attenuata 219
12. angustata 219
13. tumida 219
14. maxima 210
15. vetusta 219
16. arcuata 219
17. Saxicava rugosa 221
18. Sanguinolaria elliptica 220
19. plicata 219
20. compressa 219
22. Crassatella plicata 225
23, 24, 25. Pandora margaritacia 221
26, 27. Agina purpura 221
28. Sanguinolaria elegans 220
29. gibbosa 220
30. Anatina undulata 229
31. Crassatella sulcata 225
32. Montacuta glabra 225
33. Sanguinolaria transversa 219
34, 35. Tellimya suborbicularis 225
36. Crassatella compressa 225
37. Sphenia Swainsoni 221
38. Sanguinolaria parvula 220
39, 40. Potomomya plana 223
41. Sanguinolaria sulcata 220
42. Corbula cardioides 223
43. Sanguinolaria oblonga 219
44, 45. Sphenia Binghami 221

PLATE XCI.

1, 2, 3. Corbula gallica 221
4. curtansata 222
5. depressa 223
6, 7. longirostrum 221
8, 9. umbonalla 222
10. Hennahii 223
11. Venus elliptica 205
12. ficus 223
13, 14. cuspidata 222
15. striata 222
16, 17, 18. revoluta 222
19. globosa 222
20. pisum 222
21, 22. striatula 222
23, 24. elegans 222
25. obscura 222
26, 27, 28. costata 222

PAGE.

29. Venus nitida 222
30. complanata 222
31. rotundata 222
32, 33. truncata 223
34. alata 223
35.
36. punctum 223
37. Amphidesma securiforme 224
37,* 37.* Mactra angulata 226
38. Corbula gigantea 222
39. Amphidesma deltoidea 224
40. Portlockii 224
41. axiniformis 224
42. Mactra striata 226
43. subtruncata 226
44, 45. Amphidesma carbonarium 224
46. album 224
47. prismaticum 224
48. tenuistriatum 224
49. recurvum 224
50. Mactra glauca 226
51. depressa 226
52. Mactra deaurata 226
53, 57, 58. solida 226
54. stultorum 226
55. truncata 226
56. arcuata 226

PLATE XCII.

1, 2. Thetis major 226
3, 4, 5. minor 225
6, 7. Lutraria carinifera 257
8, 9. striata 227
10. gibbosa 227
11. Mya læviuscula 228
12. Lutraria decurtata 227
13. Mya mandibula 228
14. Lutraria elliptica 227
15. primæva 227
16. rotundata 227
17. Donaciniformis 227
18. Mya dilata 228
19. Lutraria compressa 227
20. Mya æquata 226
21. phascolina 228
22. rotundata 228
23. arenaria 228
24, 25. ovalis 228
26, 27, 28, 29. Mya angustata 228
30. Potomomya subangulata 224
31. plana 223
32. Lysianassa angullifera 229
33. literata 229
34. scripta 229

PLATE XCIII.

1. Mya truncata 228
2, 3. Thracea oblata 229
4. Mya lata 223
5. Thracia depressa 229

PAGE.

6. Mya calciformis 228
7, 8, 9. Thracia dubia 229
10. Solemya primæva 230
11, 12. Panopæa rotundata 230
13. gibbosa 230
14, 15. intermedia 230
16. elongata 230
17, 18, 19. Norvegica 230
20. Solemya ovalis 230
21. Næra dispar 223
22. Panopæa oblata 230

PLATE XCIV.

1, 2. Pholas cylindrica 233
3, 4, 5. compressa 233
6, 7. Panopæa ovalis 230
8, 19, 20. Pholas crispata 233
9. Solen Parisiensis 231
10. Panopæa plicata 230
11, 12. Pholas dactylus 234
13. Solen legumen 231
14. siliqua 231
15. pellagicus 231
16. affinis 231
17. Ensis 231
18. vaginalis 231
21. constricta 234
22. recondita 234
23, 24. candida 233
25. prisca 233

PLATE XCV.

1. Pholas gigantea 234
2. Pholadomya nana 232
3. obsoleta 233
4. ambigua 232
5. compressa 232
6. obtusa 231
7. cuneata 232
8. producta 231
9. lyrata 232
10. deltoidea 232
11. Phillipsii 232
12. simplex 233

PLATE XCVI.

1. Pholadomya acuticosta 233
2. fidicula 232
3. obliquata 233
4. ovalis 232
5. decussata 232
6. Murchisoni 232
7. æqualis 233
8. angustata 232
9, 10, 11, 12. Fistulana ampullaria 235
13. Teredo navalis 235
14, 15. Teredina personata 235
16, 17, 18. Teredo amphisbæna 235
19. Amphisbæna articulata 235
20, 21. Gastrochæna pholadia 234

	Page.
22, 23, 24. Gastrochæna contorta	234
25, 26, 27, 28. Teredina discrepans	
29, 30. Gastrochæna tortuosa	234
31, 32, 33, 34. Teredo antennaute	235
35, 36, 37. Clavagella coronata	235

Plate XCVII.

1, 2, 3. Pollicipes sulcatus	236
4, 5, 6. unguis	236
7, 8, 9. rigidus	236
10, 11. radiatus	236
12. cornucopia	
13, 14, 15, 16, 17, 18. Pollicipes maximus.	236
19, 20, 21, 22, 23, 24. lævis	236
25, 26, 27, 28, 29, 30, 31, 32, 33, 34. reflexus	236
35, 36. Pollicipes antiquus	236
38, 39, 40, 41, 42, 43, 44, 45, 46. minutus.	236
47, 48. Coronula diadema	238
49. Balanus tessellatus	237
50. valanoides	237
51. spongiosus	237
52, 53, 54, 55, 56. Balanus crassus	237
57. Balanus rugosus	237
58. punctatus	237
59. Adna sulcata	237
60. Balanus tintinnabulum	237
61. Clitia verruca	238
62. Balanus costatus	237
63. communis	237
64. Agnostus pisiformis	238
65. Acidopsis Brightii	238
66. Agnostus tuberculatus	238

Plate XCVIII.

1, 2. Serpula triserrata	240
3. Vermilia Vermicularis	241
4. Vermilia triquetra	241
5. minuta	241
6. obtusa	239
7. Serpula crenella	238
8. plexus	238
9, 10. tenuis	239
11. rustica	239
11.* vermes	240
12. tetragona	239
13. deplexa	240
14. filiformis	240
15. Vermilia pentangulata	241
16. sulcata	241
17. tuba	240
18. variabilis	240
19. tricuspidata	241
20, 21. runcinata	239
22. socialis	240
23. articulata	239
24, 25. crassa	241
26. Serpula compressa	239
27. Cyclogera granulata	242
28. tricarinata	239
29. Spirorbis carinatus	242
30. Vermilia macrops	241
31, 45. ampullacia	241
32. lacerta	240
33. heptagona	240
34. Serpula contracta	239
35. runcinata	239
36. fluctuata	239
37. squamosa	240
38. extensa	240
39. Serpulites longissimus	242
40. Serpula antiquata	239
41. Serpula plana	240
42. triangulata	239
43. capitata	240
44. Spirorbis minutus	242
46. intestinalis	240
47. vortex	
48. Spirorbis Nautiloides	242
49. carinatus	242
50. Cornuoides major	242
51. Spirorbis corragatus	242
52. granulatus	242
53. sinirorsus	242
54. Vermilia concava	241
55. ovata	241
56. Spirorbis heterostrophus	242
57. Vermilia umbonata	241
58. Dentalium septangulare	243
59. decussatum	243
60. strangulatum	243
61. anceps	243
62. nitens	243
63. ellipticum	243
64. entale	243
65. medium	243
66. Serpula	
67. Tentaculites	
68. Dentalium giganteum	243
69. striatum	243
70. incrassatum	243
71. cylindricum	243
72. planum	243
73. costatum	243
74. acuminatum	243
75. Serpula vertebralis	239
76. Dentalium incrassatum	243

LIST OF AUTHORS REFERRED TO.

Agassiz (L.) Etudes Critiques sur les Mollusques fossiles, 4to, 1842.

Brard. Histoire des Coquilles terrestres et fluviatiles qui vivent aux Environs de Paris, 8vo, 1815.

Brander (G.) Fossilia Hantoniensia Collecta, 4to, 1766.

Brocchi (G.) Conchologia fossile Subapennina, 4to, 1814.

Brongniart (Al.) Mémoire sur les Terrains du Sédiment superior Calcareo-trappéen du Vincentin, 4to, 1823.

Bronn. Lethæa Geognostica, 2 vols., 8vo; Atlas in 4to, 1823.

Brown (Captain Thos.) Illustrations of the Recent Conchology of Great Britain and Ireland, second edition, royal 4to, 1845.

——————— Descriptions and Illustrations of New Fossils. (Wernerian Memoirs, vol. 8.)

——————— Illustrations of New Species of the Genus Pachyodon. (Ann. Nat. Hist.)

——————— Elements of Fossil Conchology, royal 18mo, 1843.

——————— Transactions of the Manchester Geological Society, 8vo, vol. 1.

Deshayes (M. G. P.) Description des Coquilles fossiles des Environs de Paris, 2 vols, 4to, 1837.

——————— Traité Elémentaire de Conchylio logia, 8vo, 1839.

——————— Description de Coquilles Caracteristiques des Terrains, 8vo, 1831.

D'Orbigny (Alex.) Palæontologie Française, 8vo, 1840-7.

Fleming (John). History of British Animals, 8vo, 1828.

Forbes (Edw.) Malacologia Monensis, a Catalogue of the Mollusca inhabiting the Isle of Man and the neighbouring Sea, 8vo, 1838.

Goldfuss (G. A.) Petrefacta Germaniæ, folio, 1827-44.

Lamarck (J. B.) Description des Coquilles fossiles des Environs de Paris, 4to, 1823.

Lyell (Sir Chas.) Elements of Geology, 2 vols., 12mo, 1841.

Mantell (G.) The Fossils of the South Downs, 4to, 1822.

Montagu (Colonel Geo.) Testacea Britannica, 4to, 1803, and Supplement, 1808.

Morris (J.) Catalogue of British Fossils, 8vo, 1843.

Murchison (Sir R. J.) Outline of the Geology of the neighbourhood of Cheltenham, a new edition, by J. Buckman and H. E. Strickland, 8vo, 1845.

——————— The Silurian System, 4to, 1839.

Parkinson (James). Organic Remains of a Former World, 3 vols., 4to, 1804-11.

Phillips (John). Illustrations of the Geology of Yorkshire, part 1st, 1835; part 2nd, 1836.

——————— Figures and Descriptions of the Palæozoic Fossils of Cornwall, Devon, and West Somerset, 8vo, 1841.

Portlock (Captain J. E.) Report of the Geology of the County of Londonderry, and of parts of Tyrone and Fermanagh, 8vo, 1843.

Pratt (S. P.) Description of New Ammonites. (Annals and Magazine of Natural History, 8vo, vol. 8, 1842.)

Rhind (Wm.) Age of the Earth, royal 18mo, 1838.

Risso (A.) Histoire Naturelle des principales productions de l'Europe Méridionale, 5 vols., 8vo, 1826.

Smith (James). On the Last Changes of the relative Levels of the Land and Sea in the British Isles. (Memoirs, Wernerian Society, vol. 8, 8vo, 1838.)

Sowerby (J. D. C.) Mineral Conchology of Great Britain, 6 vols., 8vo, 1812, and three Supplementary Nos., 1846-7.

Transactions of the Geological Society of London, 1st and 2nd series.

Transactions of the Linnæan Society of London, 1808-47.

Turton (Wm.) British Bivalves, 4to, 1822.

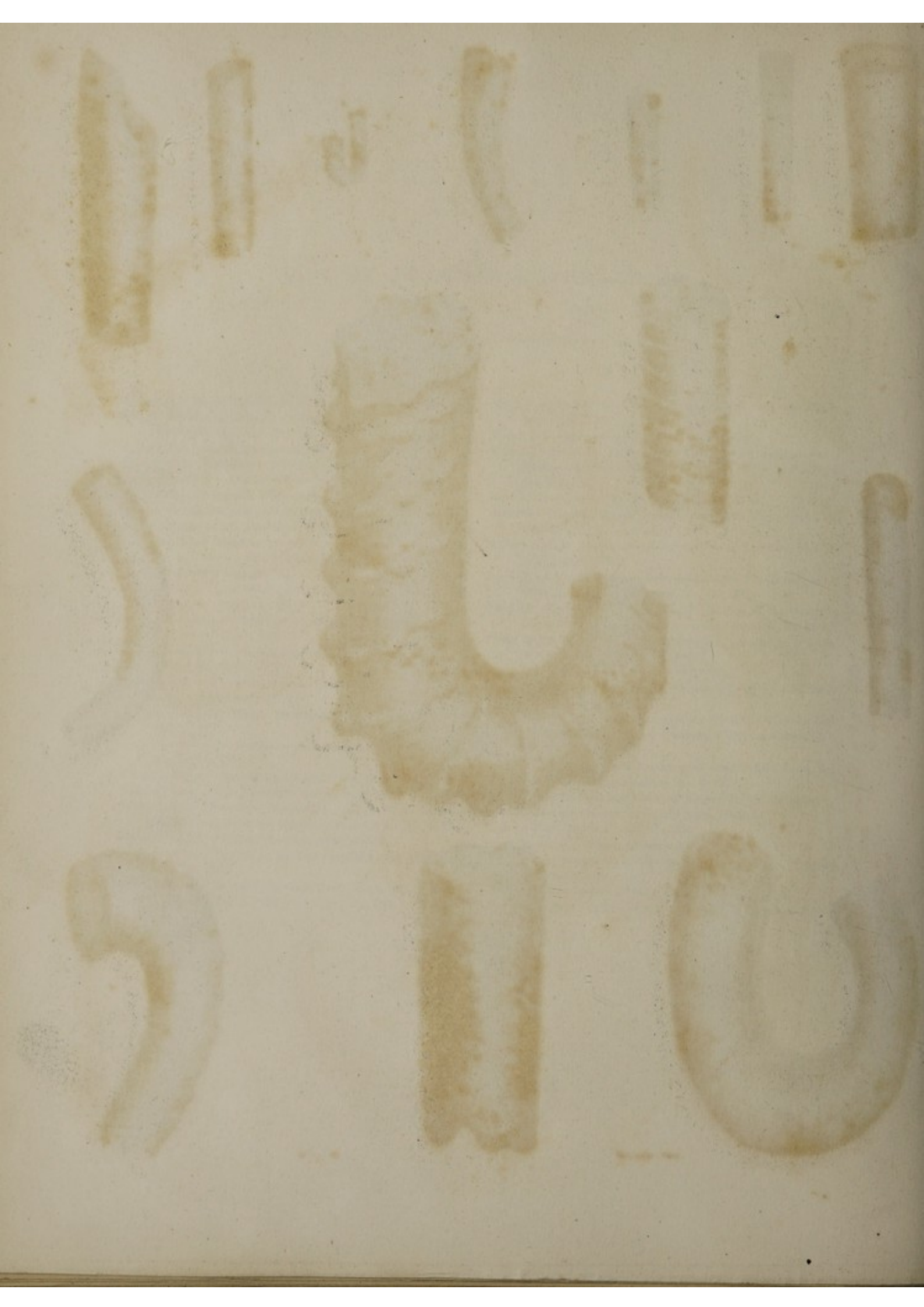
Ure (Rev. David). History of Rutherglen and Kilbride, 8vo, 1793.

Wood (S. V.) Descriptions and Illustrations of Crag Fossils. (Magazine of Natural History, 1839.)

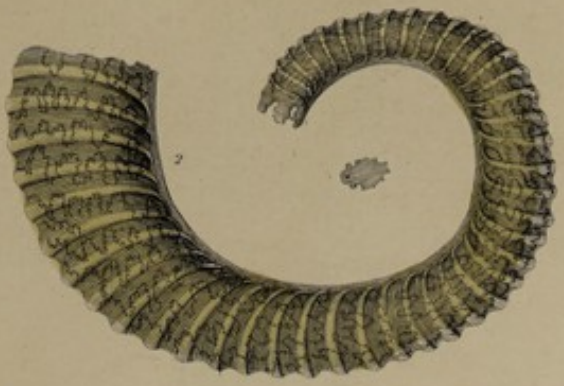
Woodward (S.) Outline of the Geology of Norfolk, 8vo, 1833.

Young and Bird. Geological Survey of the Yorkshire Coast, 4to, 1822.


Capt. Brown Delt.
J. Harvey Sc.




1


2


3


4

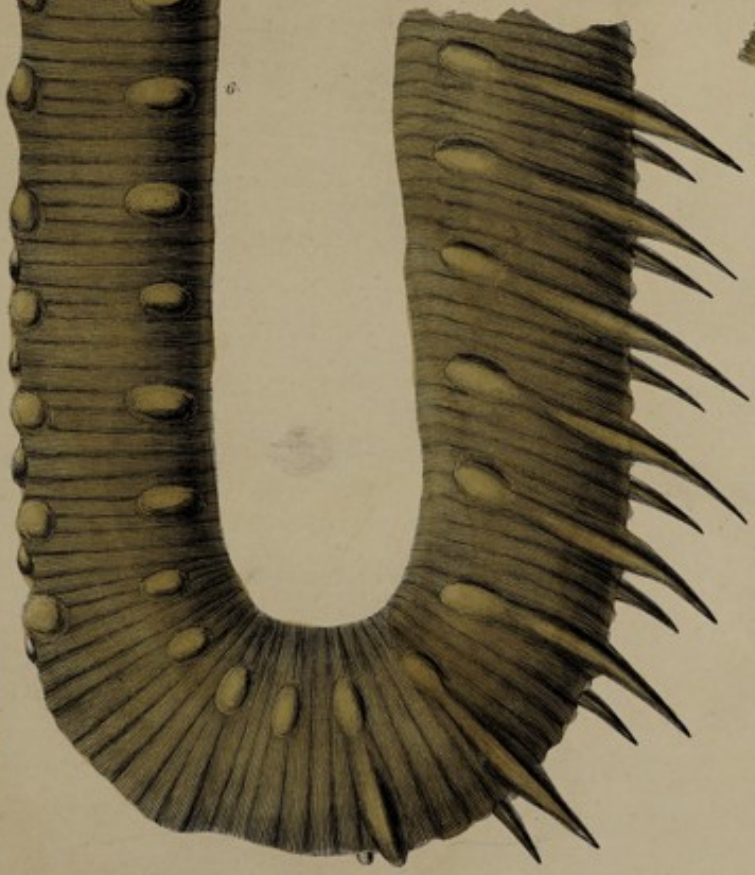

5


6


7


8


10


6


9


15

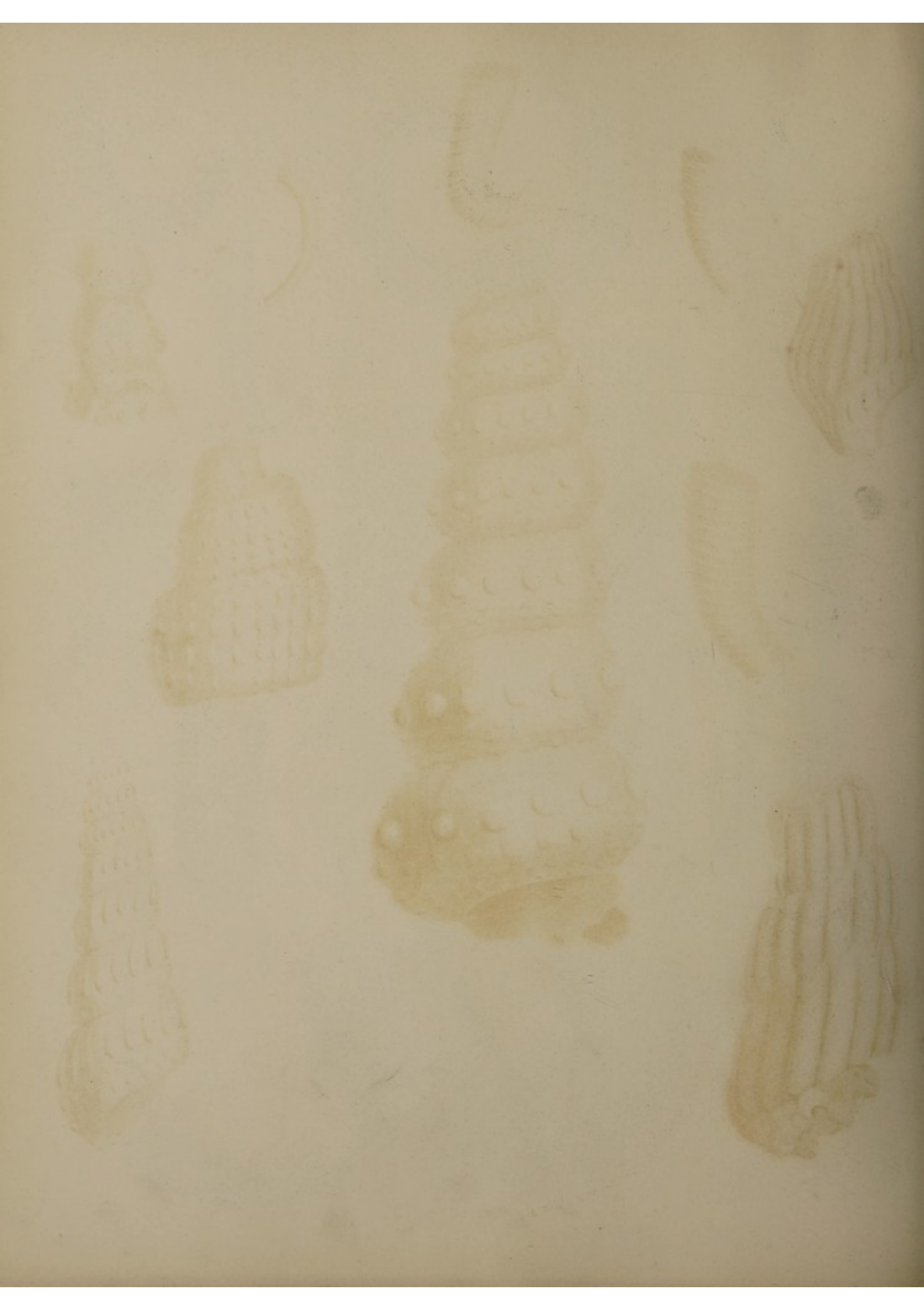

13


10


11

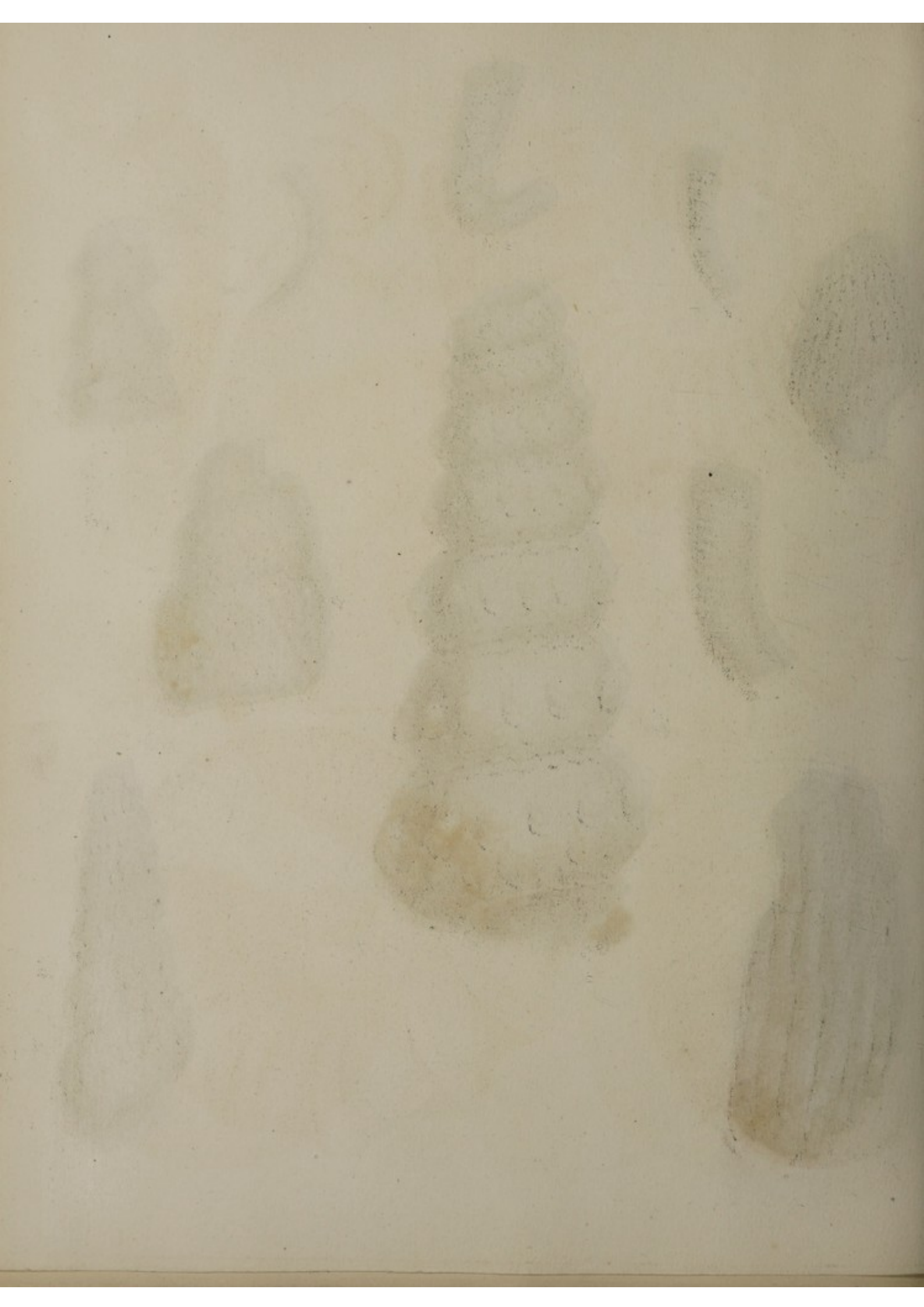

12

Drawn by Capt.n Brown. — Engraved by W.H.Lizars.





Capt.n Brown Del.t J. Turvey Sc.





Drawn by Capt.n Brown.

Engd. by J. Bower.



Drawn by Capt.ⁿ Brown.— Engraved by J. Turrey.


Capt.n Brown Del.t S.Milne Sc.



Capt.n Brown Del.t G. Cranstow Sculp.t

























Drawn by Capt.n Brown.

Engraved by W.H.Lizars

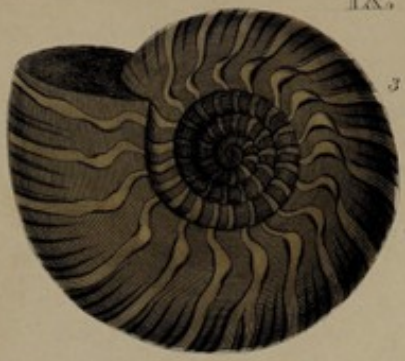


Drawn by Capt.n Brown.
Engraved by G.Cranston.




1


2


3


4


5


6


7


8


9

10


11


12


13

Drawn by Capt.n Brown.

Engraved by James Turvey.




X.
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
Drawn by Capt.n Brown.
Engraved by James Turner.





Drawn by Capt.n Brown.

Engraved by W.H.Lizars





Drawn by Capt.n Brown.

Engraved by Geo: Cranston.







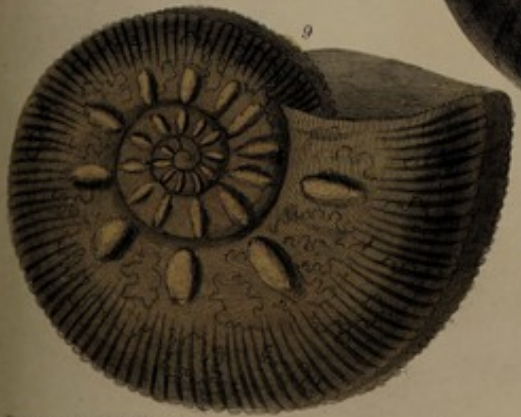




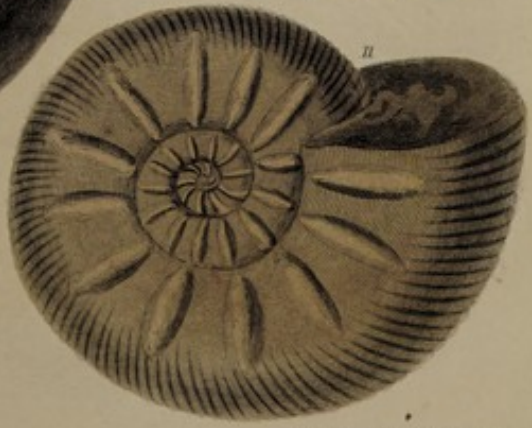












Drawn by Capt.ⁿ Brown.

Engraved by A.T. Alkman.



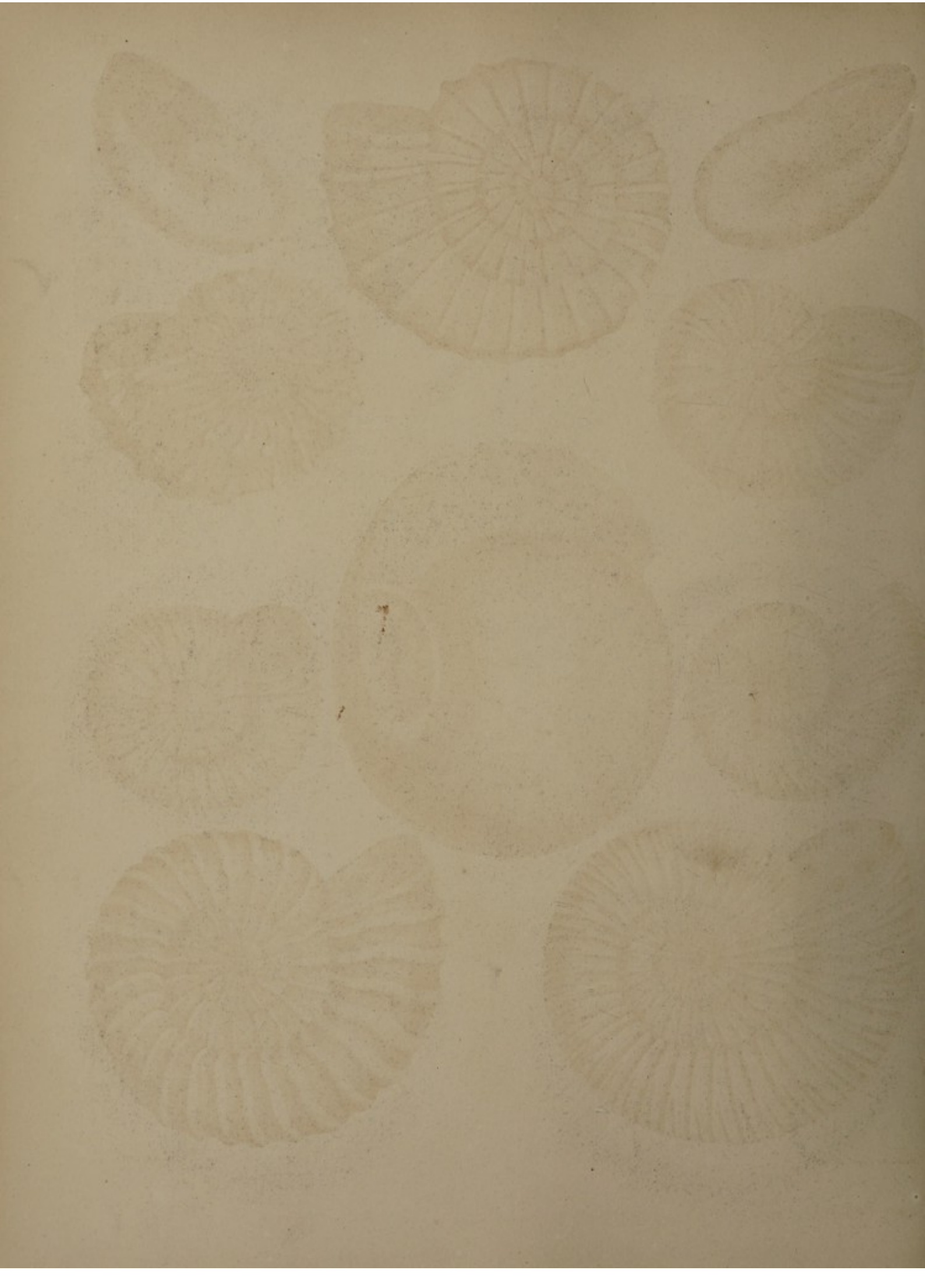
Drawn by Capt.n Brown.

Engraved by A.T.Aikman.



Drawn by Capt.n Brown.

Engraved by George Cranston.





Drawn by Capt.n Brown.

Engraved by W.H.Lizars.





















Drawn by Gen.l Brown

Engraved by R. Scott



Drawn by Capt.n Brown

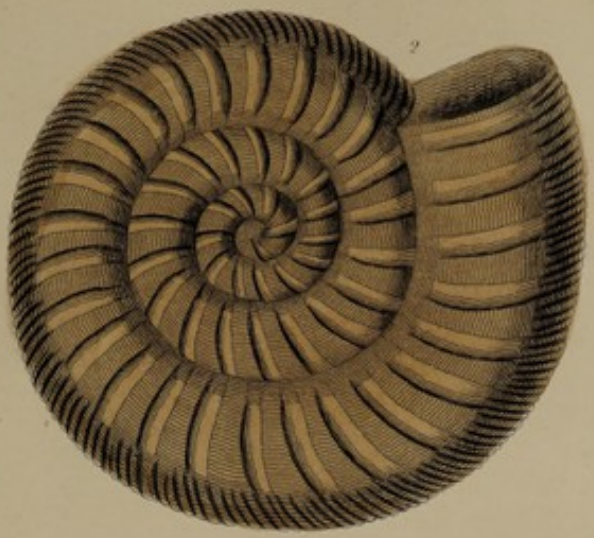
Engraved by R. Scott



Drawn by Capt.n Brown.

Engraved by James Turney.


1


2


3


4


5


6

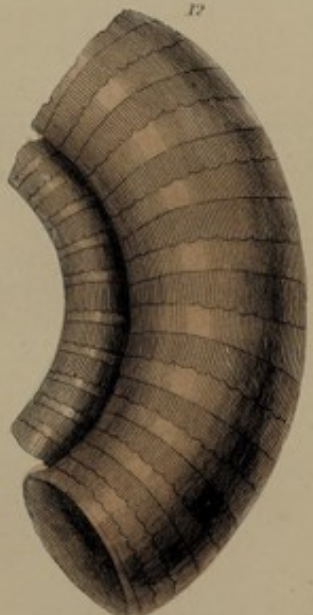

7


8


9


10


11


12

Drawn by Capt.n Brown.

Engraved by James Turvey



Drawn by Capt.n Brown.

Engraved by W.H.Lizars



Drawn by Capt.n Brown.

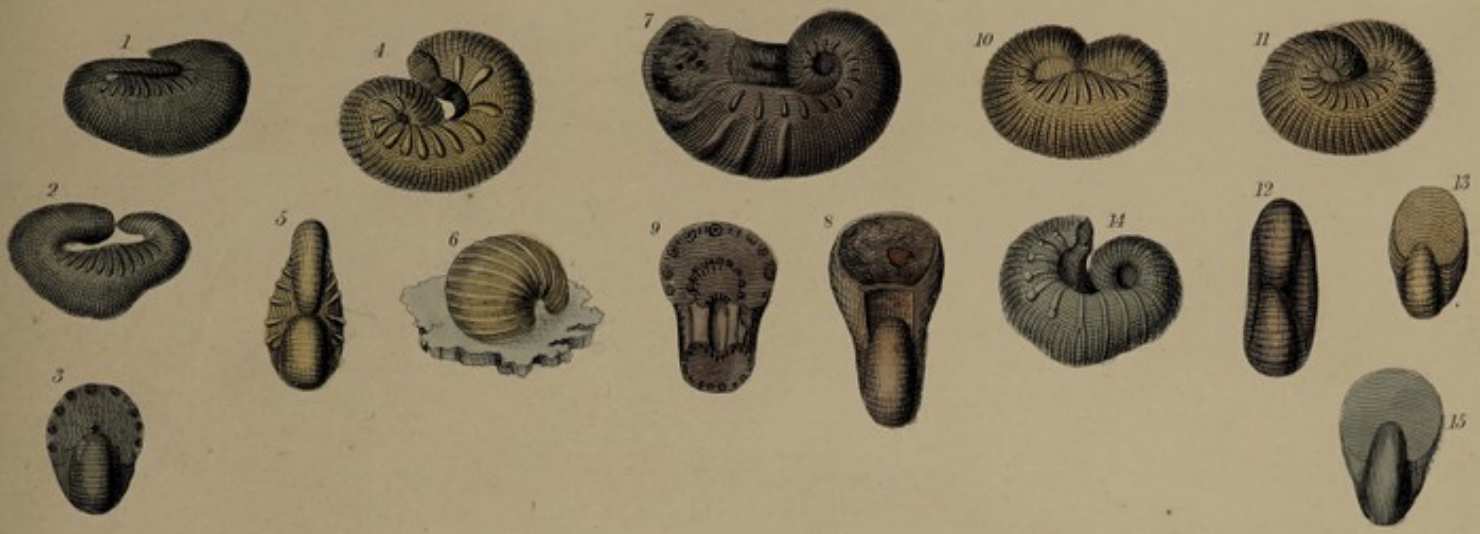
Engraved by J.Mill.



Drawn by Capt.ⁿ Brown.

Engraved by G. Cruickshank.

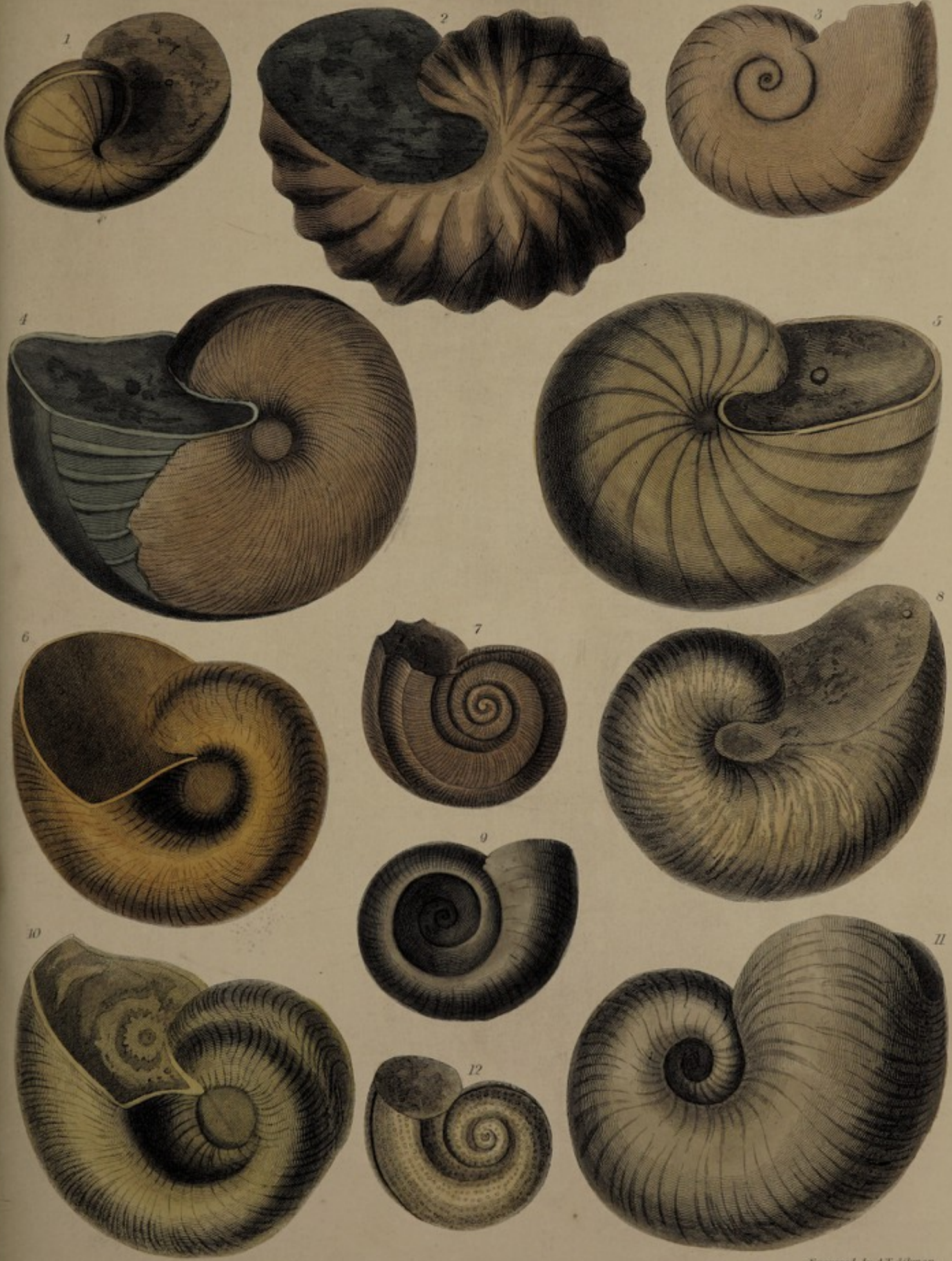






Drawn by Capt.n Brown.

Engraved by James Turner



Drawn by Capt.n Brown.

Engraved by A.T. Aikman.



Drawn by Capt.n Brown.

Engraved by A.T. Aikman.





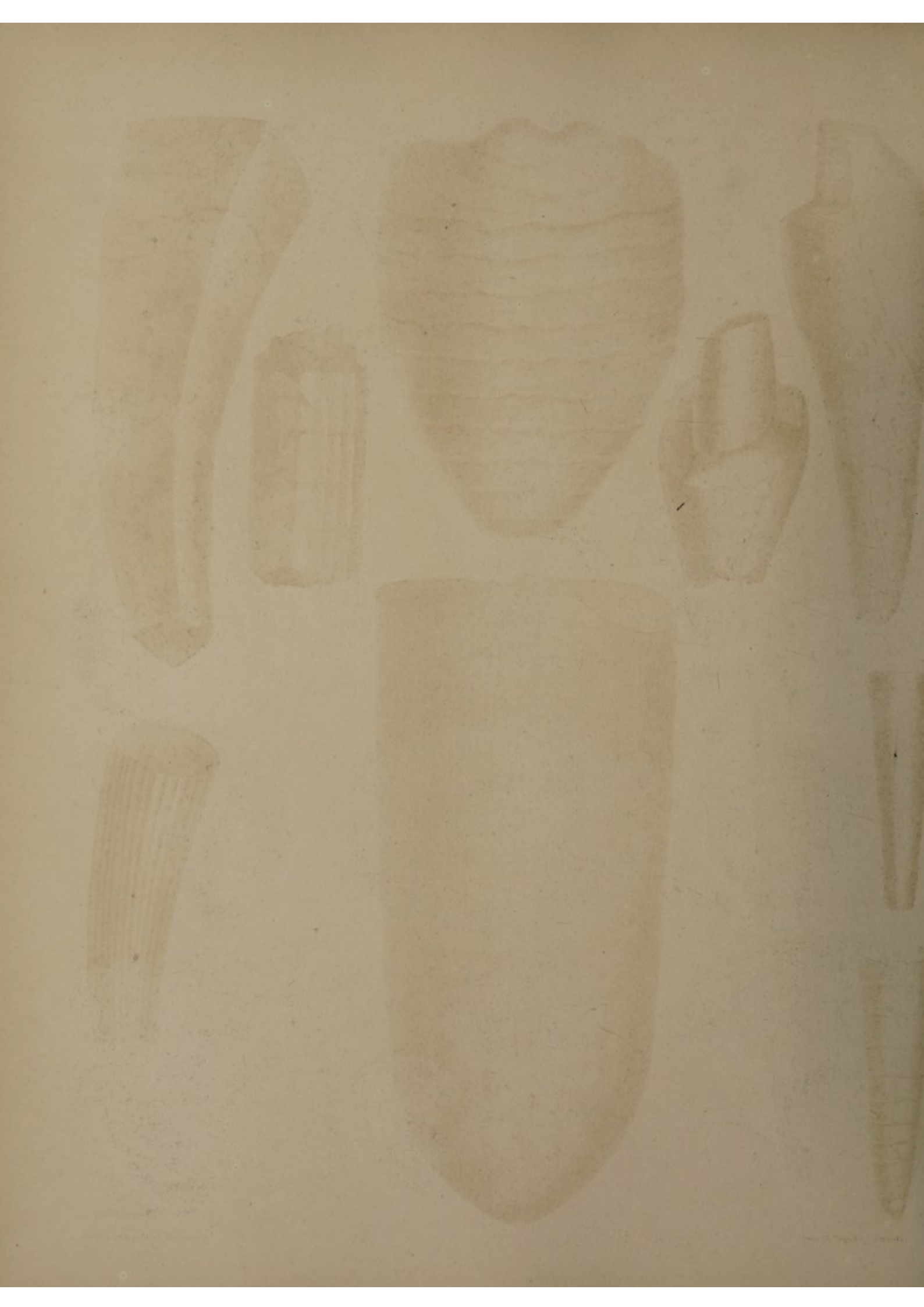
Drawn by Capt.n Brown.

Engraved by W.H.Lizars



Drawn by Capt.n Brown.

Engraved by A.T.Aikman.




1


2


3


4


5


6


7


8


9

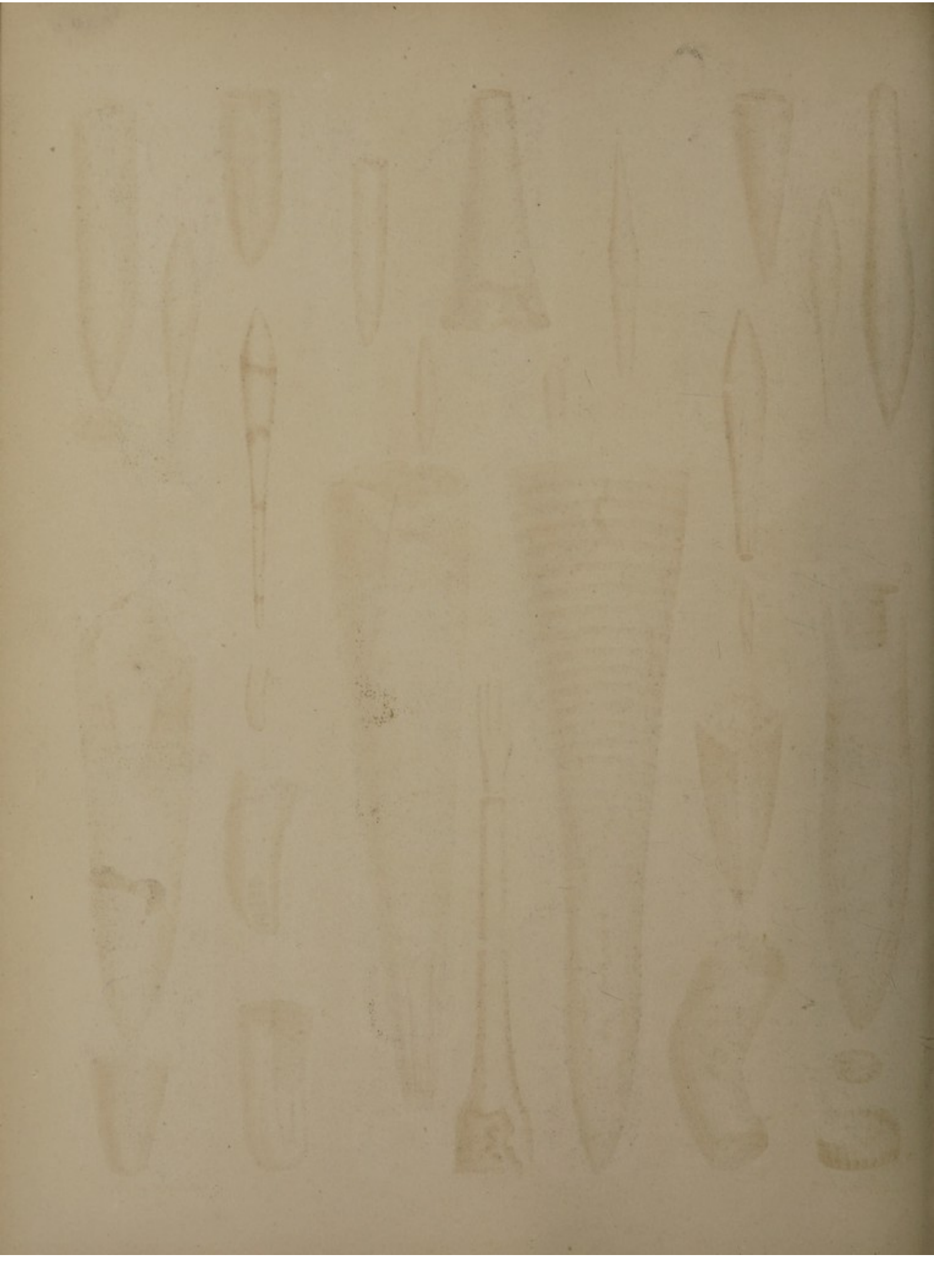
Drawn by Capt.n Brown.

Engraved by Geo. Cranston.



Drawn by Capt.n Brown.

Engraved by A.T. Aikman.





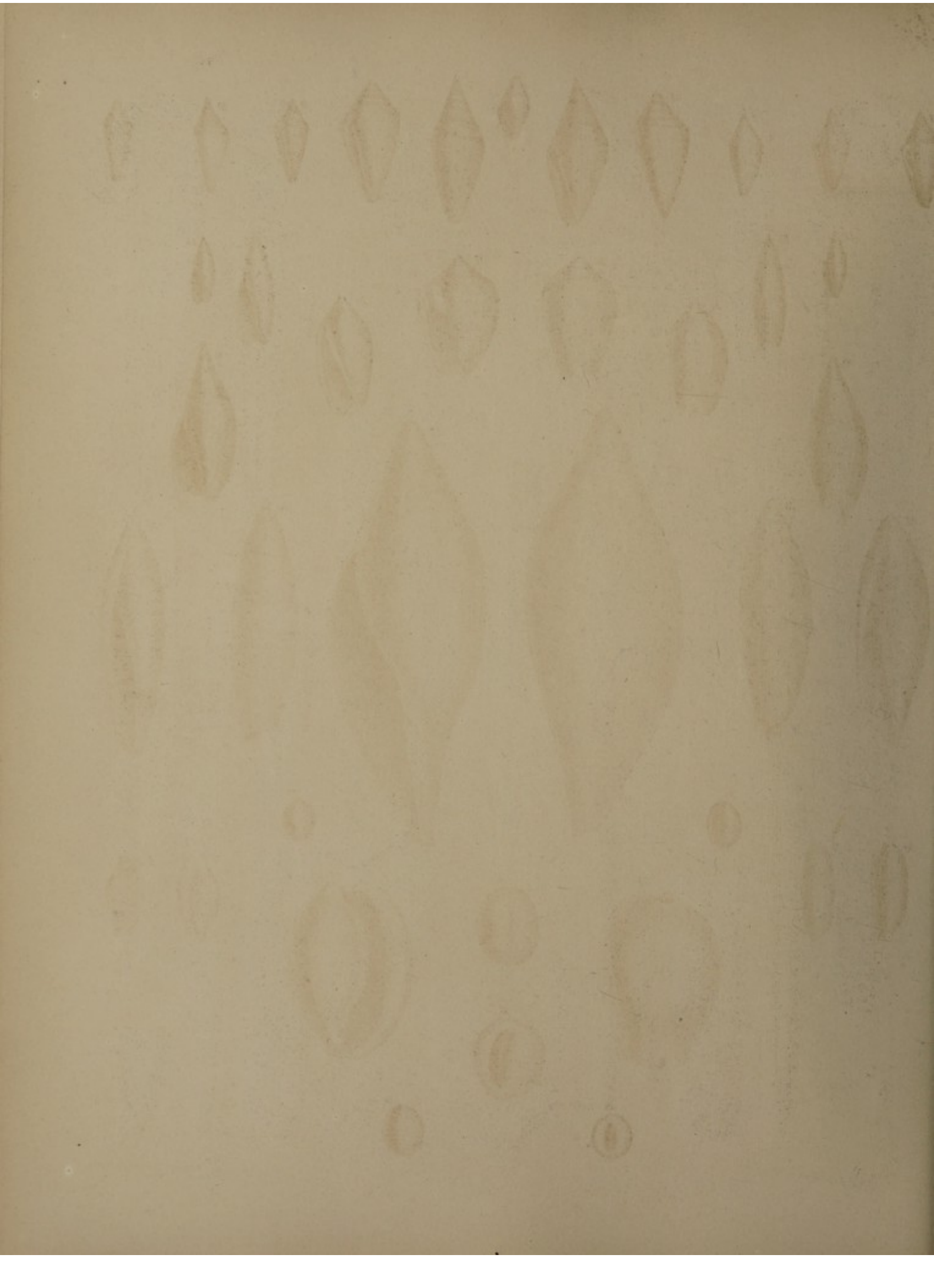
Drawn, by Capt.n Brown.

Engraved, by Ja.s Turvey.



Drawn by Capt.n Brown.

Engraved by S. Miller.





Drawn by Capt.n Brown.

Engraved by Geo. Cranston.





Drawn by Capt.n Brown.

Engraved by A.T. Aikman.



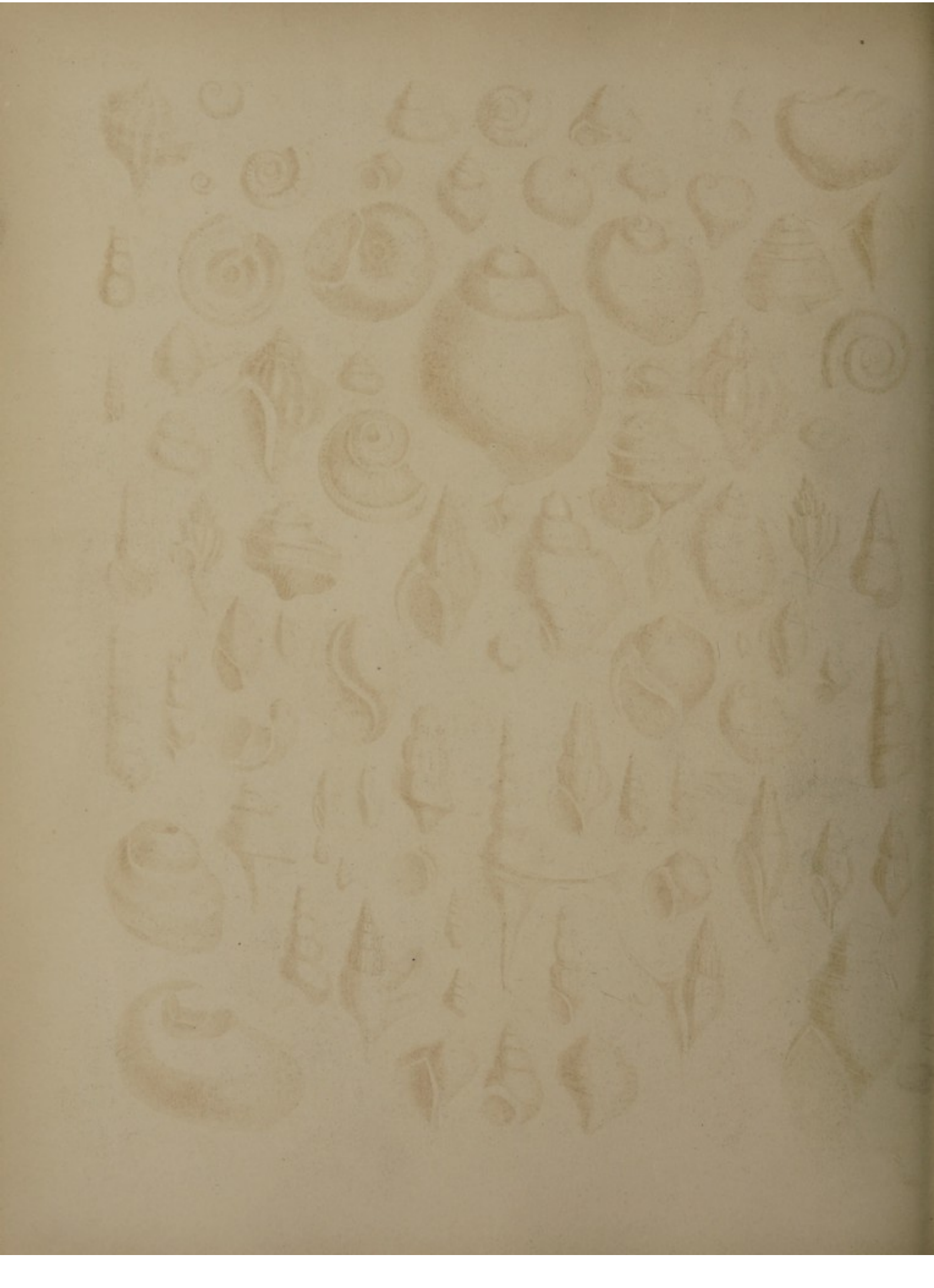
Drawn by Capt.n Brown.

Engraved by A.L. Adlard.



Drawn by Gᵉᵒ Brown.

Engraved by A. T. Alleman.





Drawn by Capt.n Brown.

Engraved by J.Miller



Drawn by Capt.n Brown.

Engraved by W.H.Lizars.



Drawn by Capt.n Brown.

Engraved by Geo. Cranston



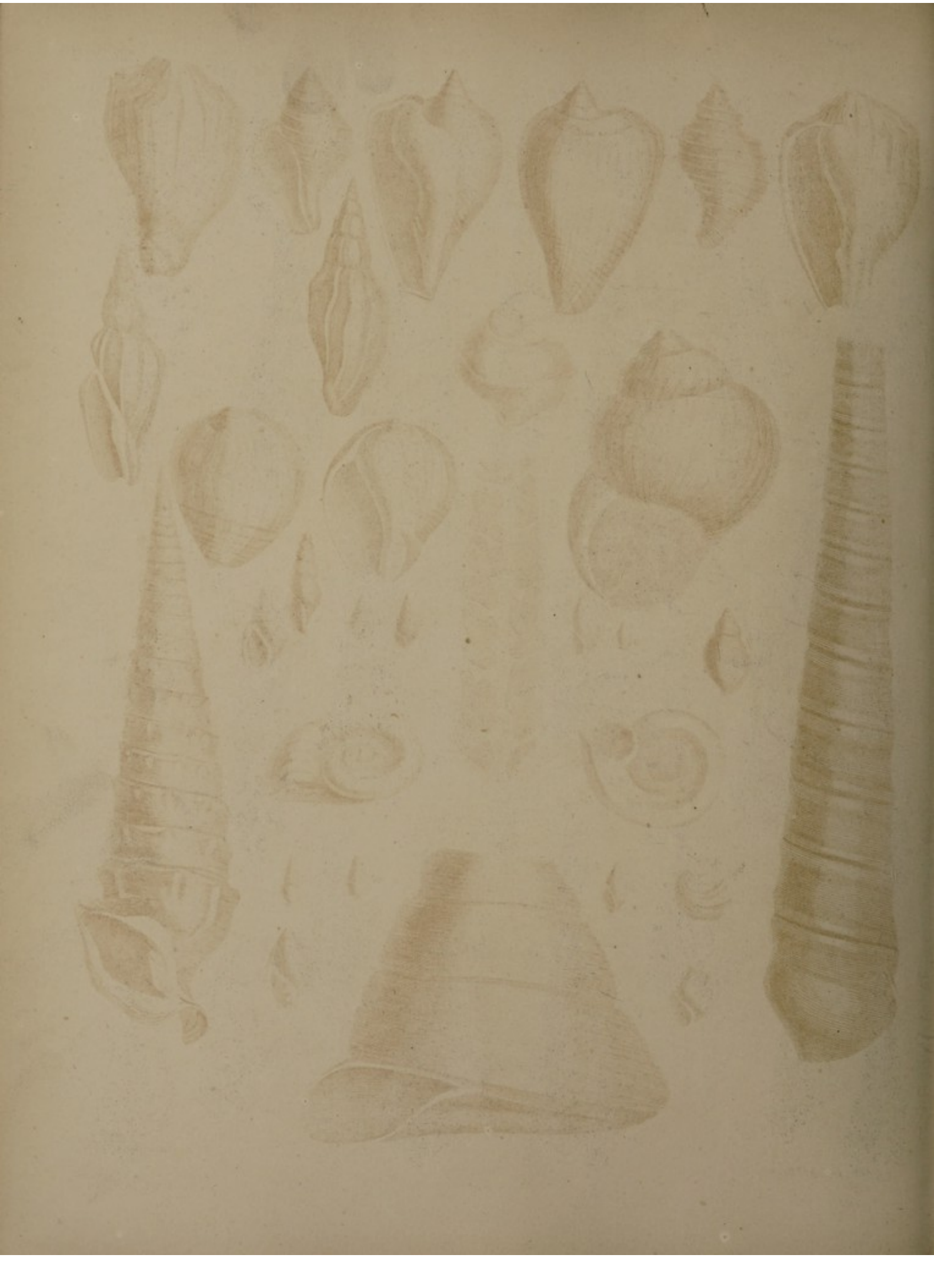
Drawn by Capt.n Brown

Engraved by A.T. Aikman



Drawn by Capt.n Brown.

Engraved by Geo. Cranston.





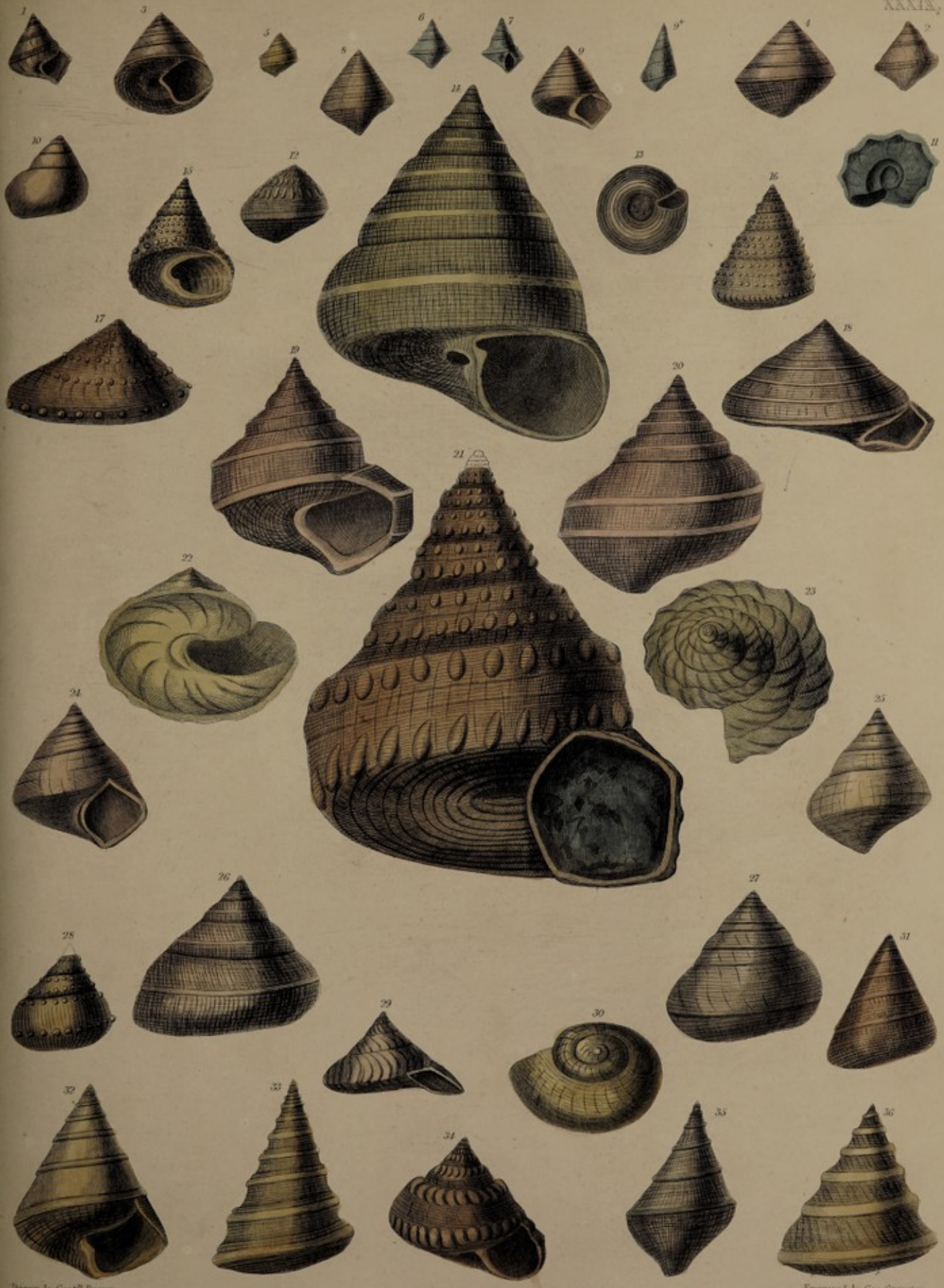
Drawn by Capt.n Brown

Engraved by J.Miller



Drawn by Capt.n Brown.

Engraved by W.H.Lizars.



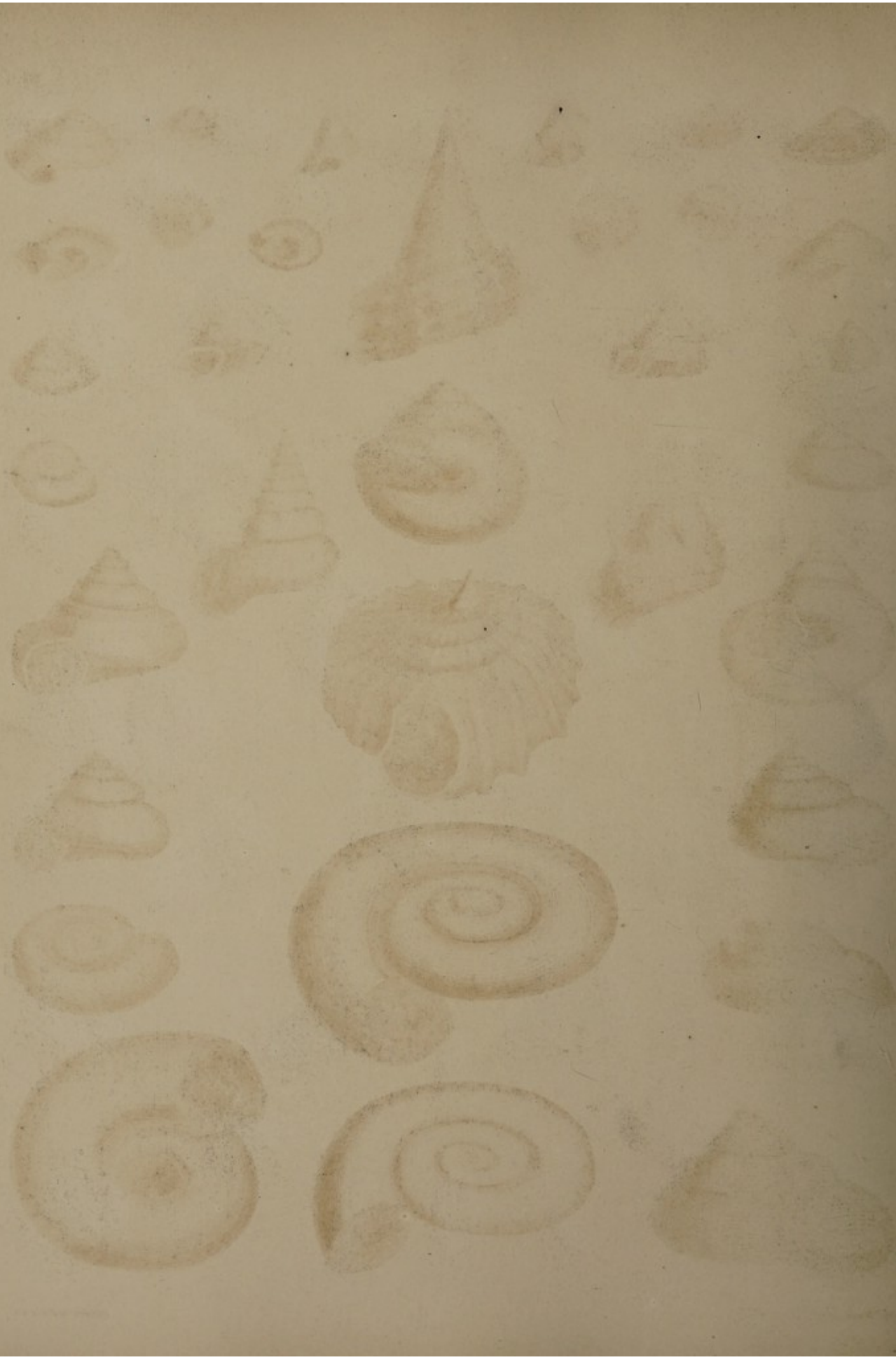
Drawn by Capt.n Brown.

Engraved by Geo. Cruikshank.



Drawn by Capt.n Brown.

Engraved by Geo Cranston.





Drawn by Capt.n Brown.

Engraved by W.H.Lizars.



Drawn by Capt.n Brown.

Engraved by D. Kay.



Drawn by Capt.n Brown.

Engraved by W.H.Lizars.



Drawn by Capt.n Brown.

Engraved by Geo. Cranston.



Drawn by Capt.n Brown.

Engraved by W.B.Lizars.



Drawn by Capt.n Brown.

Engraved by G. Cranstan.



Drawn by Capt.n Brown.

Engraved by A.T. Aikman.



Drawn by Capt.n Brown.

Engraved by A.T.Aikman.



Drawn by Geo^{rge} Brown.

Engraved by W.H.Lowe





Drawn by Capt.n Brown

Engraved by W.H.Lizars



Drawn by Capt. Brown.

Engraved by A. T. Atkinson.





Drawn by Capt.n Brown

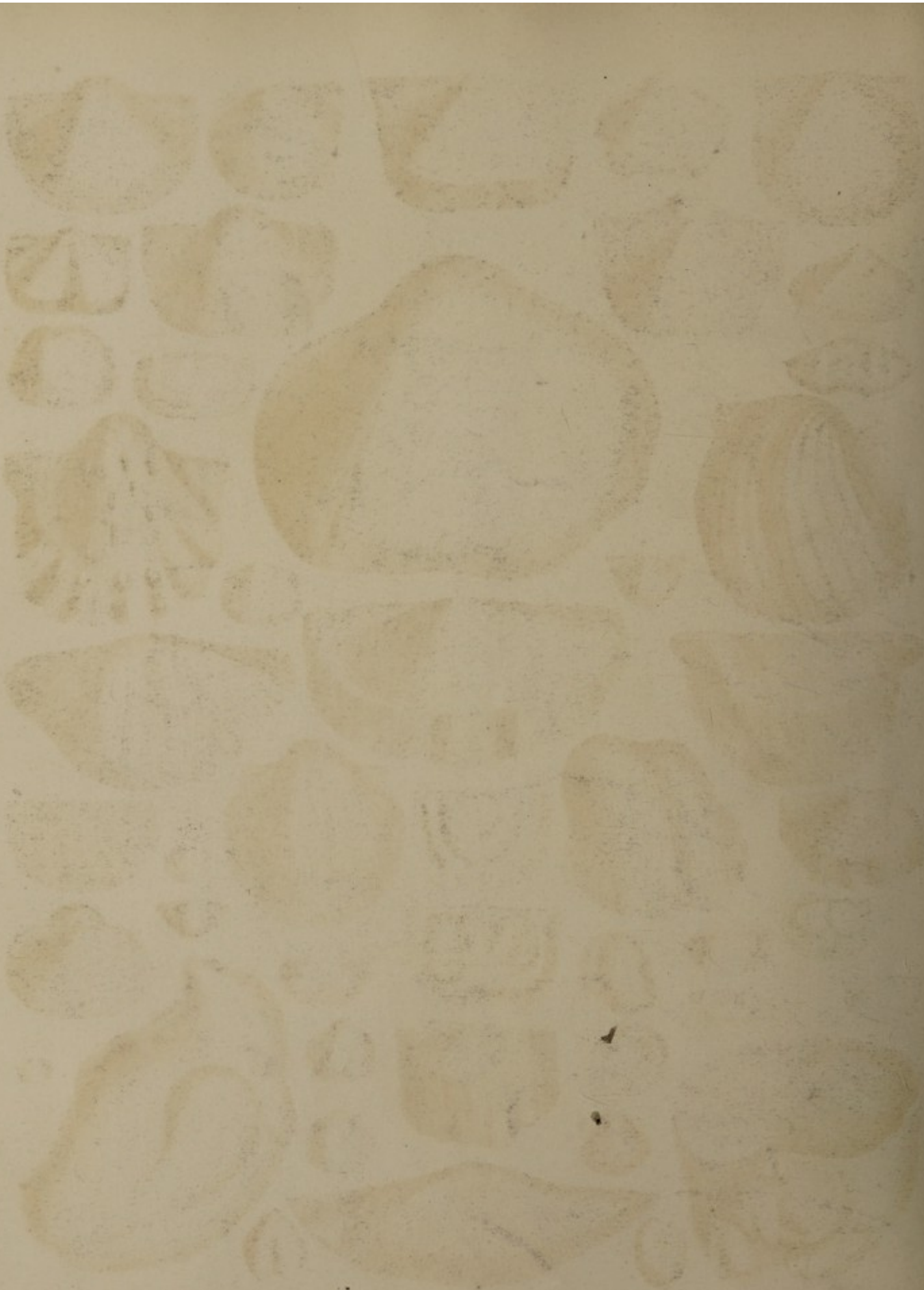
Engraved by A.T. Dikman



Drawn by Cap.tn Brown.

Engraved by John Miller


LIII.
Drawn by Capt.n Sturm.
Engraved by J. Miller.





Drawn by Capt.n Brown.

Engraved by J.Miller.





Drawn by Cap.tn Brown.

Engraved by J.Miller.



Drawn by Capt.n Brown.

Engraved by Geo. Cruikshank.



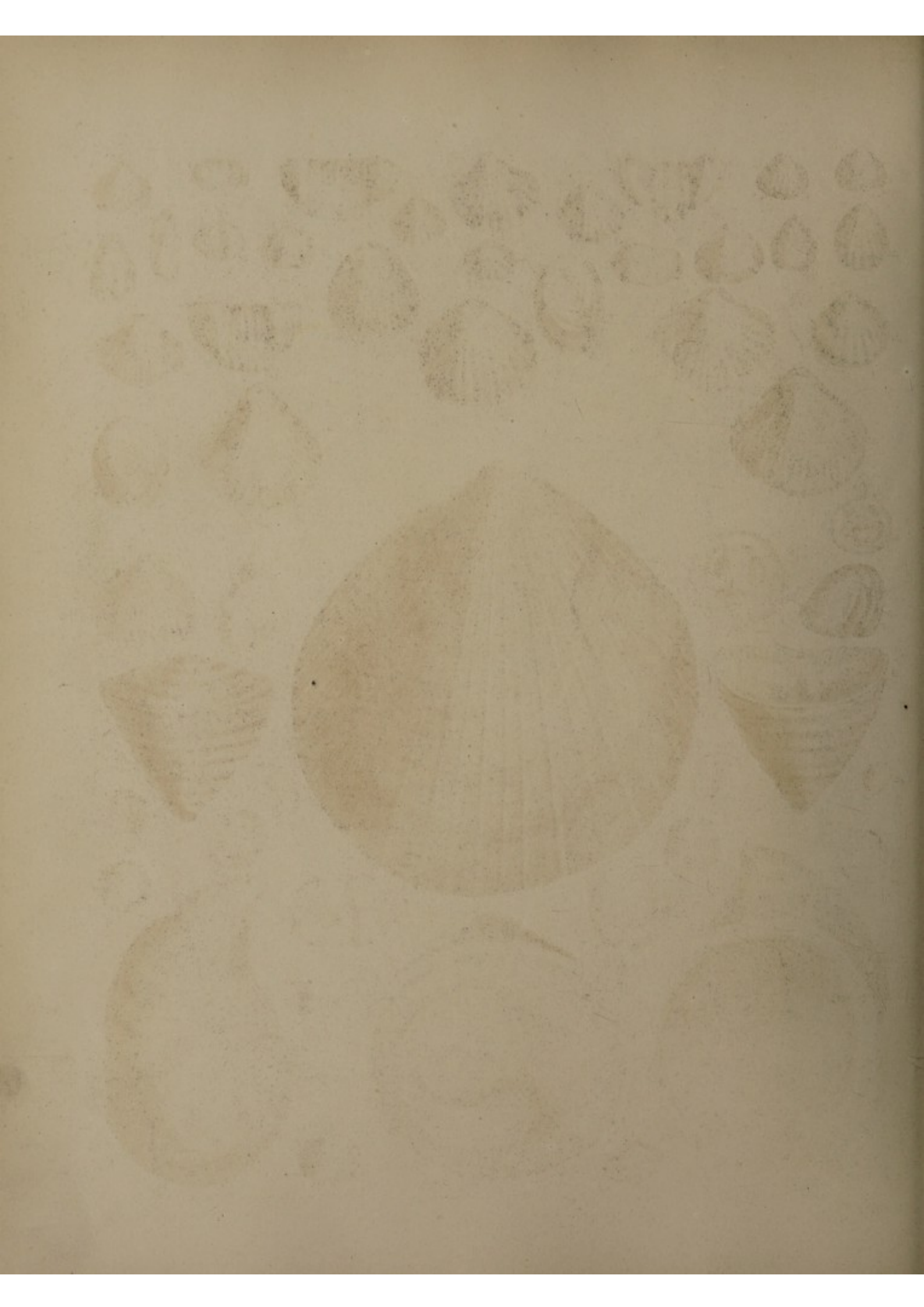
Drawn by Capt.n Brown.

Engraved by J. Miller



Drawn by Capt.n Brown.

Engraved by J.Miller.





Drawn by Capt.n Brown.

Engraved by J.Miller.



Drawn by Capt.n Brown.

Engraved by W.H Lizars



Drawn by Capt.n Brown

Engraved by W H Lizars



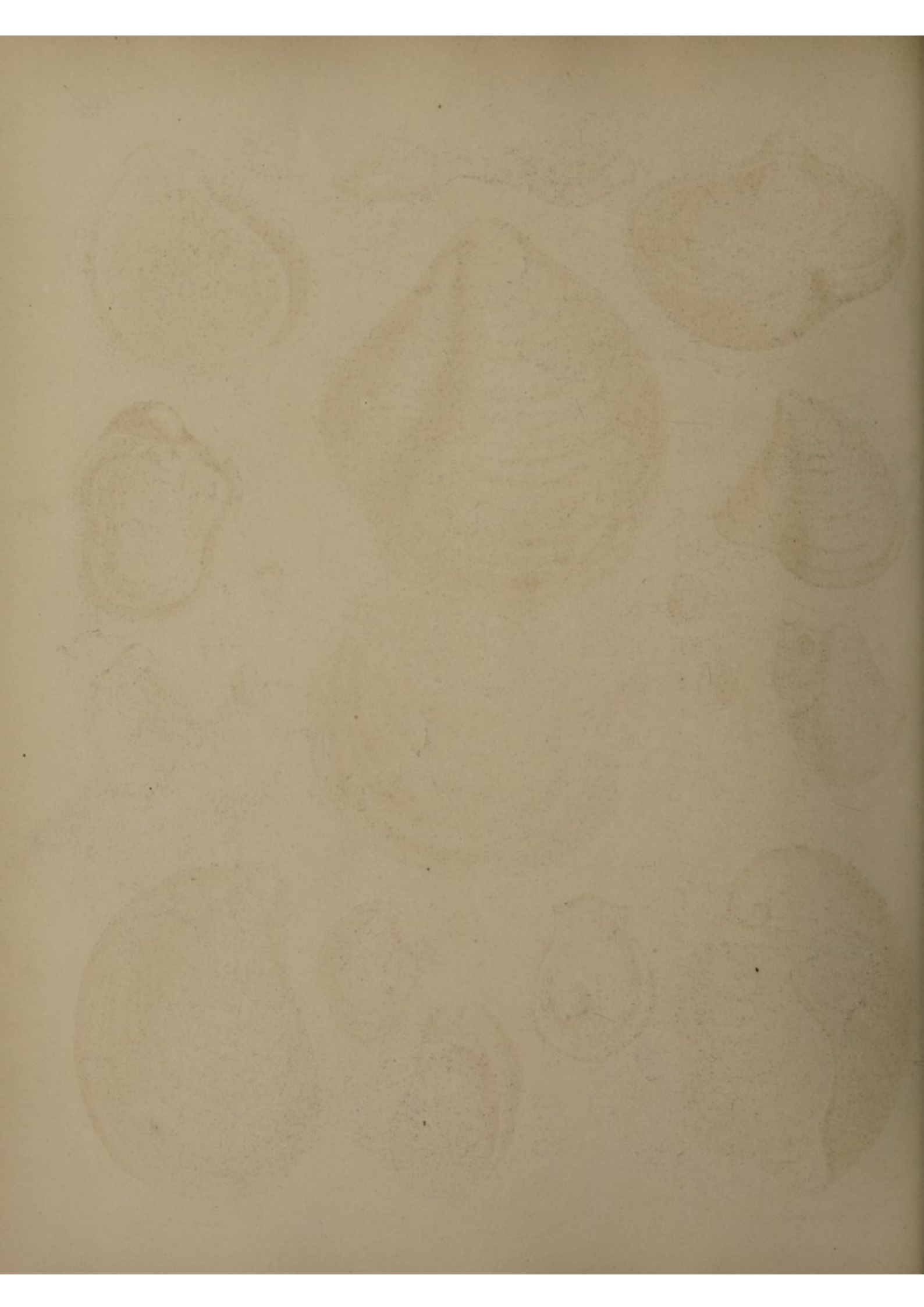
Drawn by Capt. Brown

Engraved by A.T. Aikman



Drawn by Gen.l Brown.

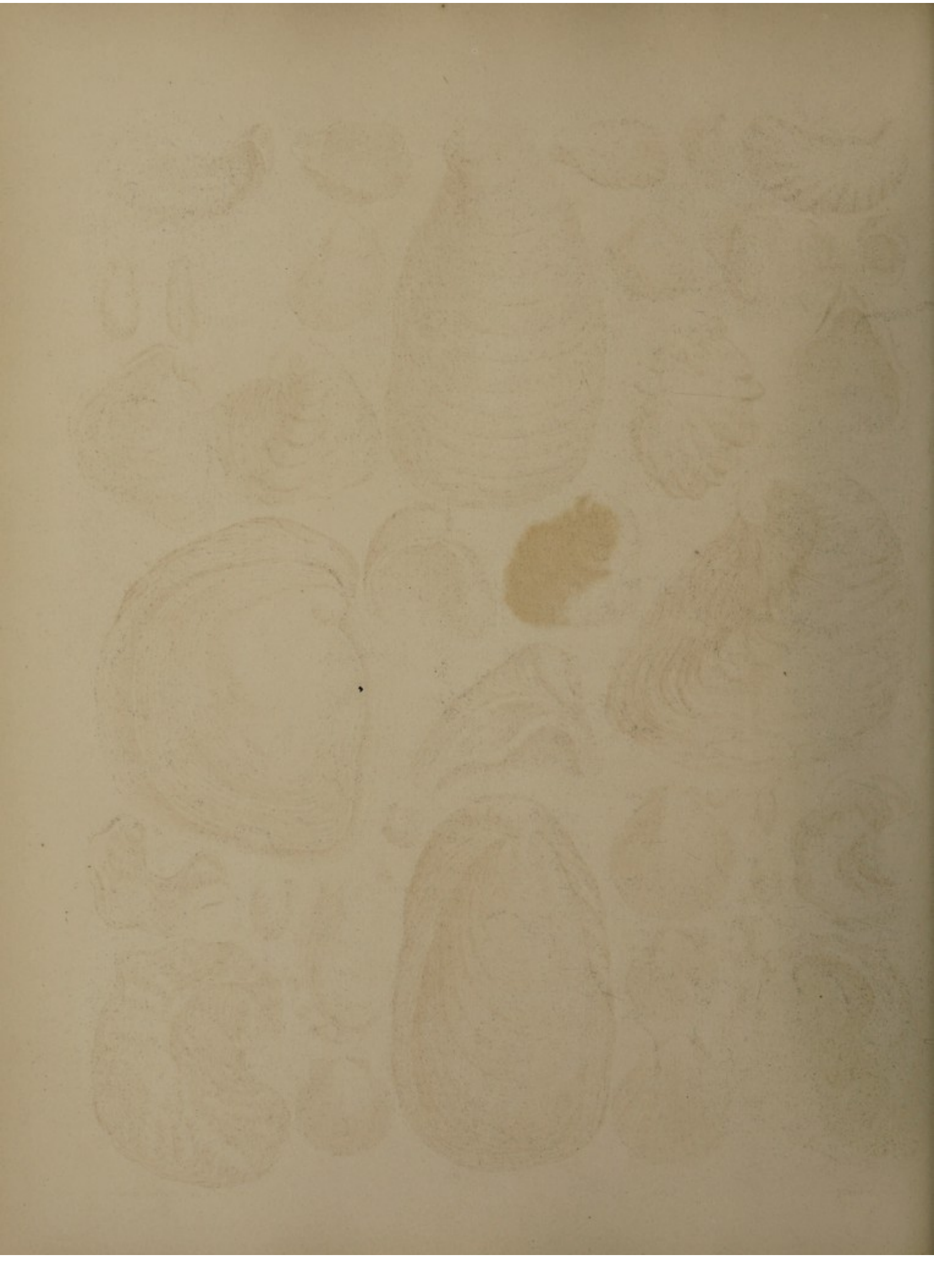
Engraved by W.E. Lizars





Drawn by Capt.n Brown.

Engraved by Geo. Cruikshank.





Drawn by Capt.n Brown.
Engr.d by J.Lowes





Drawn by Cap.^n Brown.

Eng.^d by J. Basire



Drawn by Capᵗⁿ Brown.

Engᵈ by J. Basire.



Drawn by Capt.n Brown.

Engraved by A.T.Aikman



Drawn by Capt.n Brown.

Engraved by Brown & Somerville Edin.r



Drawn by Capt.n Brown.

Engraved by A.T.Ahman.



Drawn by Capt.n Brown.

Engraved by A.E.Aikman.


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19



Drawn by Capt.n Brown.

Engraved by A.T.Atkinson.



Drawn by Capt.n Brown.

Engraved by A.T.Aldman.



Drawn by Capt.n Brown

Engraved by J.T. Johnson



Drawn by Capt.n Brown.

Engraved by A.T.Adamson.



Drawn by Capt.n Brown.

Engraved by Brown & Somerville Edin.r



Drawn by Capt.n Brown.

Engraved by W.H.Lizars.



Drawn by Capt.n Brown.

Engraved by A. T. Johnson.



Drawn by Capt.n Brown.

Engraved by A.T.Adlington



Drawn by Capt.n Brown.

Engraved by A.T.Atkinson.



Drawn by Capt.n Brown.

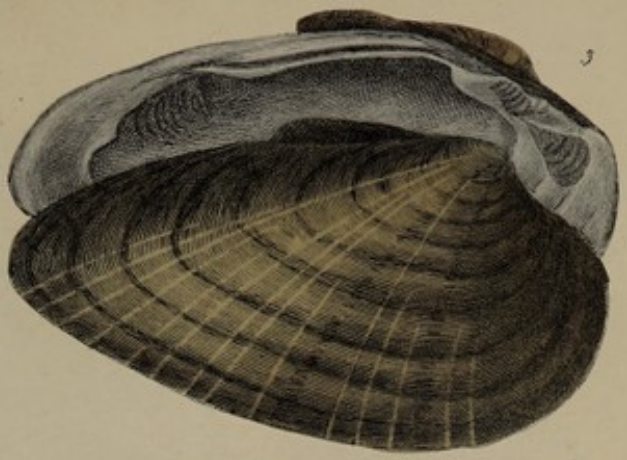
Engraved by James Turrell



Drawn by Capt.n Brown.

Engraved by James Tassey.



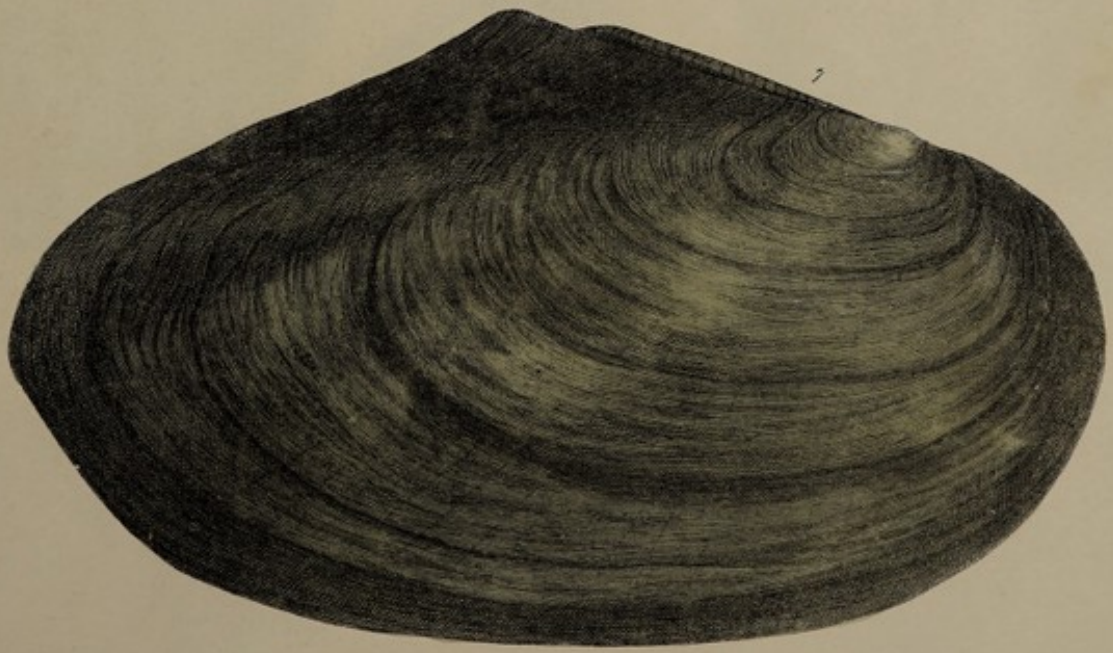












Drawn by Capt.n Rivers

Engraved by W.H. Lizars Edinburgh



Drawn by Capt.n Brown.

Engraved by A.T.Ashman





Drawn by Capt.n Brown.

Engraved by A.T.Atkinson.



Drawn by Capt.n Brown.

Engraved by A.T.Atkinson.


1
3
6
2
5
4
7
11
10
8
9
13
14
12
16
15
20
17
18
19



Drawn by Capt.n Brown.

Engraved by A.T.Aikman.



rawn by Capt.n Brown.

Engraved by John Miller



Drawn by Capt.n Brown.

Engraved by John Somerville



Drawn by Capt.n Brown.

Engraved by John Miller



Drawn by Geo.ᵉ Brown.

Engraved by A.T. Atkinson.



Drawn by Capt.n Brown.

Engraved by John Miller



Drawn by Gen.l Brown.

Engraved by A.T. Gilman.



Drawn by Capt. Brown

Engraved by A. Adlard



Drawn by Capt.n Brown.

Engraved by John Miller



Drawn by Capt.n Brown.

Engraved by John Somerville



Drawn by Capt.n Brown.

Engraved by John Miller.





Drawn by Geo.ge Brown.

Engraved by John Miller.



Drawn by Capt.n Brown.

Engraved by J. Miller.



Drawn by Capt.n Brown.

Engraved by J. Miller.



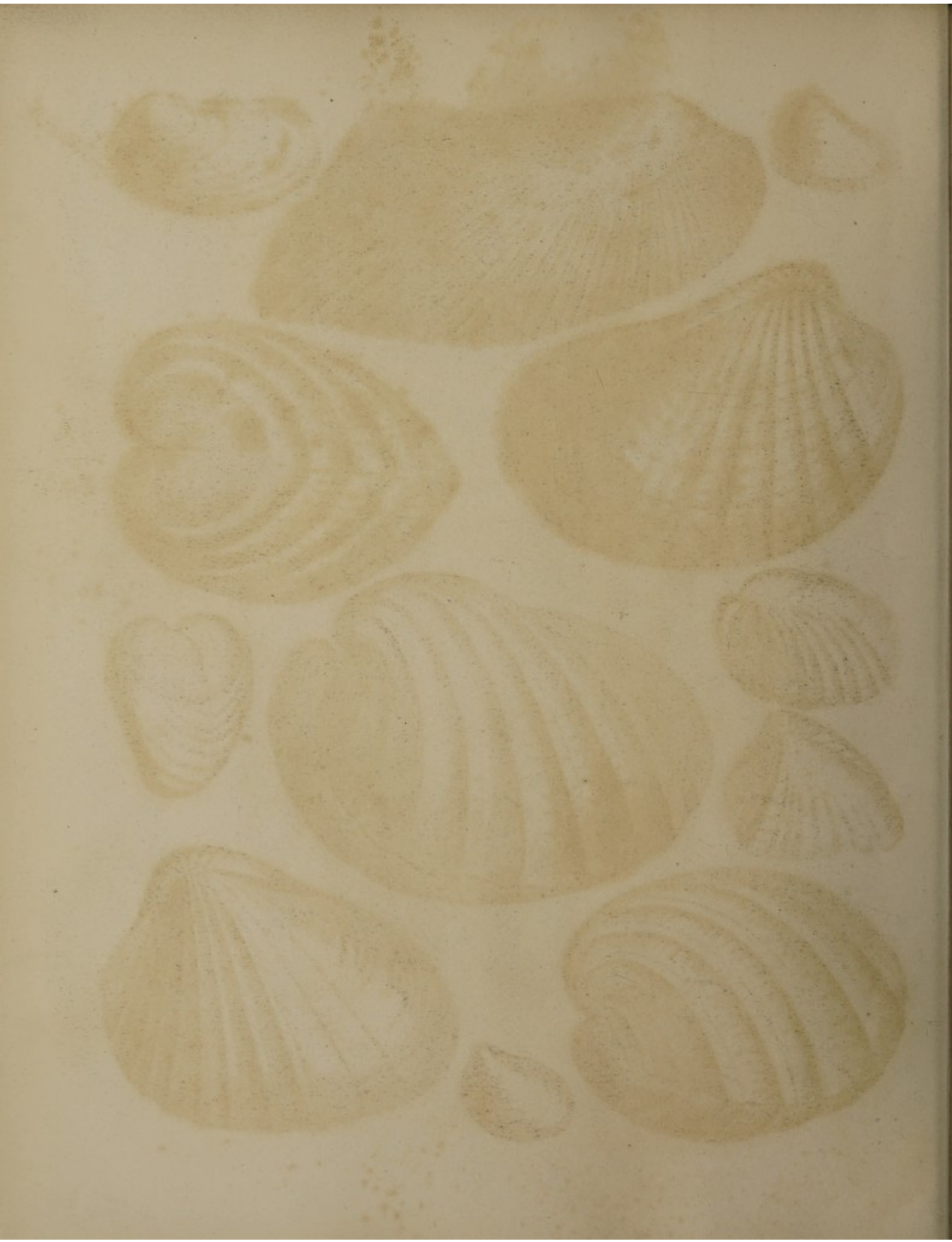
Drawn by Geo.e Brown.

Engraved by J. Miller.



Drawn by Capt.n Brown.

Engraved by J. Miller





Drawn by Capt.n Brown.

Engraved by Js Miller.



Drawn by Capt.n Brown.

Engraved by J. Miller



Drawn by Capt.n Brown

Engraved by J.Miller

