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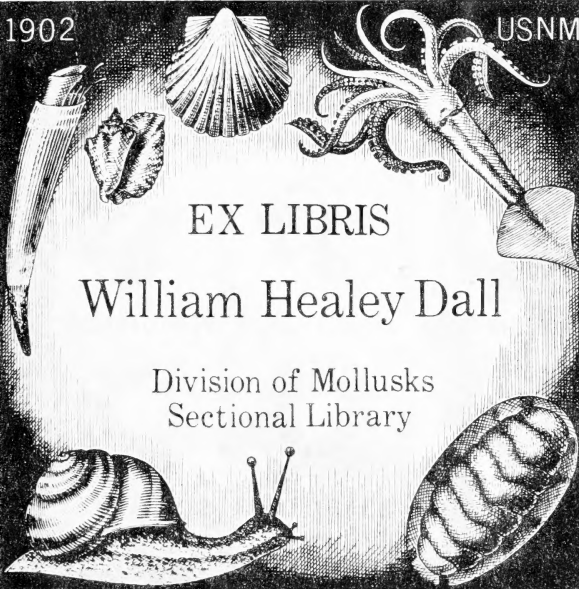
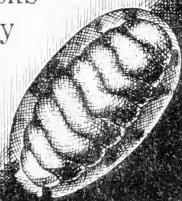
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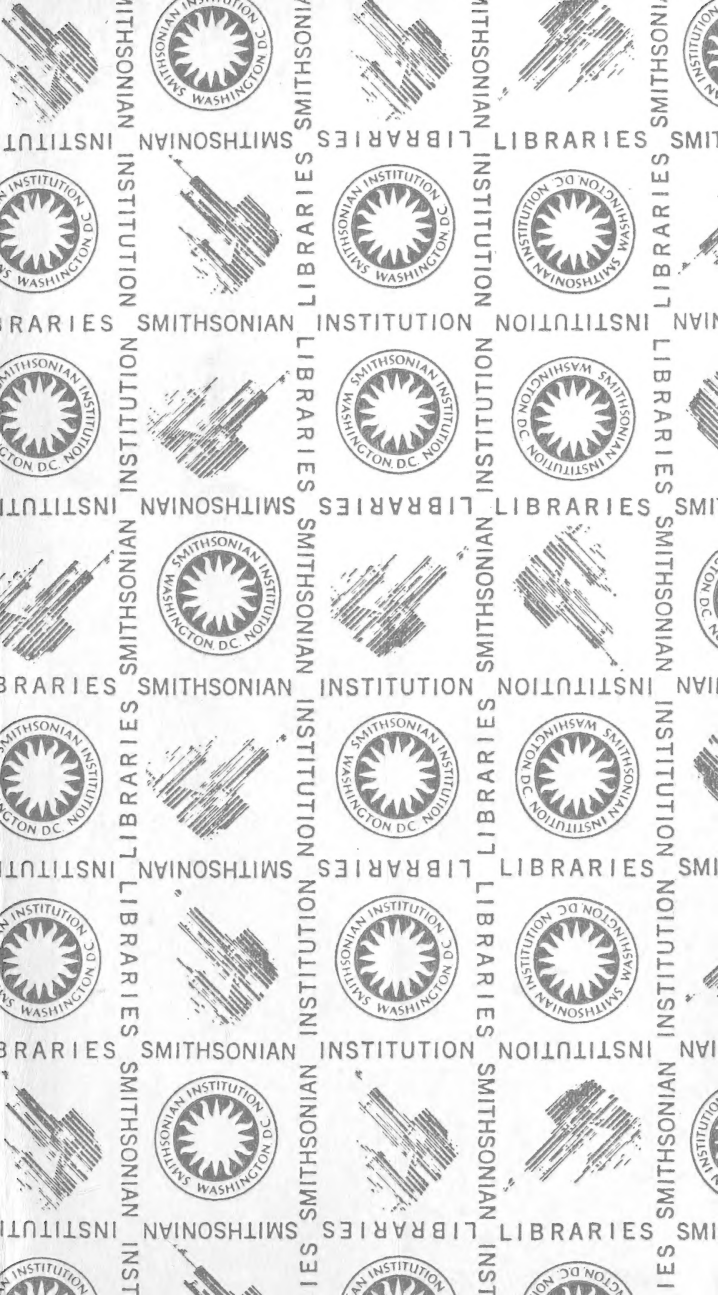
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PART II.

THE
NATURAL HISTORY

OF
The District;

Division of Mollusk
Sectional Library

OR,
LISTS

OF
THE DIFFERENT SPECIES

OF
ANIMALS, VEGETABLES, AND
MINERALS,

AND THEIR RESPECTIVE LOCALITIES,
SCIENTIFICALLY ARRANGED;

*With References to the best Standard Works in which
they are figured and described:*

TOGETHER WITH
A GEOLOGICAL ACCOUNT
OF
THE ROCK STRATA, AND THE FOSSILS
CONTAINED IN THEM.

BY
W. TURTON, M. D., AND J. F. KINGSTON.

Teignmouth:

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and Sold by C. and J. Rivington, Baldwin and Co., and
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NATURAL HISTORY.



WE are now arrived at that portion of our work in which the natural history of the neighbourhood is proposed to be illustrated: this important and fascinating study, which furnishes one of the best motives for exercise, and the best antidote to ennui,

The useful with the sweet combining,
To make life pass without repining,

being every day deservedly increasing in popularity, we shall devote to it space and attention commensurate with its claims. We commence with Zoology, as the highest point in the scale; and the *vertebral animals*, viz. *Mammalia*, *Birds*, *Reptiles* and *Fishes*, being at once the fewest and most important, we shall give lists of them as complete and correct as our information will admit.

In respect to all the rest, we shall, (unless where otherwise specified,) give carefully corrected lists of those most worthy attention for their rarity, beauty, or local interest, with occasional reference to descriptions and plates, for the purpose of directing the

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attention of the reader to any work where interesting information on the subject occurs; or to point out with greater precision the particular species meant.

VERTEBRAL ANIMALS.

I. Warm blooded.

CLASS I. MAMMALIA.

ORDER. CHEIROPTERA—BATS.

- VESPERTILIO. 1. FERRUM EQUINUM. *The Horseshoe Bat*. Linn. Trans. 9. p. 165. Found in caverns at Torquay and other places on the coast, Kents Hole, &c.
2. V. MINUTUS. Linn. Trans. 9. p. 163. Found in caverns with the preceding. These belong to the Genus *Rhinolophus* of Leach. (Zool. Misc. 3.)
3. V. MURINUS. *Short Eared Bat*. Penn. Brit. Zool. 1. p. 148. This is the common species.
4. V. AURITUS. *Long Eared Bat*. Brit. Zool. 1. p. 147. This we believe is not unfrequent, we have caught it at Ilsington and other places. The ears are nearly the length of the body.
5. V. BARBASTELLUS. Linn. Trans. 9. p. 171. This is inserted on Col. Montague's authority. The two last form the Genus *Plecotus* of Fleming's British Animals, p. 7.
6. V. PYGMÆUS. Zool. Journal, v. 1. p. 559 and 584. t. 22. Small with a longish tail. Dr. Leach first noticed it as distinct at Spitchwick, and Dr.

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Horsefield notes it as frequent in the neighbourhood of Dartmoor. We have also caught one at Ilsington, agreeing with the description in the Journal above referred to.*

ORDER. FERÆ. (OF LINN.)

CARNIVORA. (OF CUVIER.)

ERINACEUS. 1. EUROPEUS. *Hedgehog.* This is of frequent occurrence, especially in the more wooded districts. There is a foolish prejudice against it amongst farmers, but it is an inoffensive and even useful animal, feeding on slugs, worms, and insects.

SOREX. 1. ARANEUS. *The Common Shrew.* Frequently met with in banks, old walls, &c.

2. S. FODIENS. *Water Shrew.* Fleming's Brit. Ani. p. 8. Burrows in the banks of streams and may be frequently met with; it swims and dives with great facility.

TALPA. EUROPEA. *Common Mole.* Found in most grounds where the soil is loose and easily pervious.

URSUS. MELES. *The Badger or Grey.* Flem. p. 9. (*Meles Taxus*). This has become a scarce animal, but may be occasionally met with in some

* Some curious particulars of this tribe may be gathered from White's Selborne, and from the works above referred to.

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of the larger woods, and wilder parts of the district.
CANIS. VULPES. *The Fox.* Occurs occasionally in large woods and plantations, and the wilder parts of the district.

MUSTELA. I. VULGARIS. *The Weasel.* Common about old walls, &c.

2. **M. ERMINEA.** *The Stoat.* Brit. Zool. 1. p. 89. Common in woods and hedges; and also frequenting farm yards, barns, &c. in the winter.

3. **M. PUTORIUS.** *The Pole Cat.* Brit. Zool. 1. p. 89. It burrows, is occasionally very destructive in rabbit warrens, and is found in the woody parts of the district. *The Ferret* (**M. FURO**) is a red eyed variety of this.

LUTRA. VULGARIS. *The Common Otter.* Flem. p. 16. Brit. Zool. 1. p. 92. (*Mustela lutra*,) Burrows in the banks of streams, and is met with in the Teign, Dart, and Exe rivers.

ORDER, GLIRES.

MUS. 1. MUSCULUS. *The Common Mouse.* Is a constant attendant on man, and is to be found only near his dwelling.

2. **M. SYLVATICUS.** *The Field Mouse.* Of common occurrence in gardens and fields. This species never frequents houses, it forms an underground retreat, in which it collects a winter store of roots and seeds: it becomes torpid during the cold weather.

3. **M. RATTUS.** *The Black Rat.* Brit. Zool. 2.

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- p. 113. Flem. p. 20. Found in houses and barns occasionally, but of much less frequent occurrence than the next.
4. **M. DECUMANUS.** *Brown Rat.* Brit. Zool. 1. p. 115. A stouter, stronger, and more common species than the last.
- SCIURUS.** 1. **VULGARIS.** *The Squirrel.* This elegant and active little animal forms an ornament in most of our woods and plantations.
- LEPUS.** 1. **TIMIDUS.** *The Hare.* Common.
2. **L. CUNICULUS.** *The Rabbit.* Common.
- MYOXUS.** 1. **AVELLANARIUS.** *The Common Dormouse.* Flem. p. 22. Lays in a winter store of nuts, and in cold weather becomes torpid. Occurs frequently in our woods.
- ARVICOLA.** 1. **AQUATICA.** *Water Rat.* Flem. p. 23. Brit. Zool. 1. p. 118. (*Mus amphibius.*) Frequent in the banks of our streams, it swims and dives well, lays in a winter's store, and becomes torpid in the cold months.
2. **A. AGRESTIS.** *Short Tailed Field Mouse.* Flem. p. 23. Brit. Zool. 1. p. 123. A common species in gardens and meadows. These differ from the genus *Mus*, where they have been usually arranged, in the larger head, shorter tail, coarser fur, and in the different form of the grinding teeth.

ORDER. CETACEA.

- DELPHINUS.** 1. **PHOCÆNA.** *The Porpoess.*

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Willoughby Cet. p. 31. Borlase's Cornwall, p. 164, t. 27. These are found on various parts of the coast at all seasons, and occasionally enter our rivers.

2. D. TURSIÖ. Wern. Meen. 3. p. 75. t. 3. Taken in July, 1814, in Duncannon Pool, in the Dart, near Stoke Gabriel. To Col. Montague we are indebted for an account of the only individual of this species ever taken on the British Coast. It was about 12 feet long, 8 feet in circumference, black above, and whitish beneath.

Accounts of two other cetaceous animals entering the Exe, and of one entering the Dart at different times within the last fifty years are on record, but of what genus or species we know not. Except the *Porpoess*, none of this order can be considered as regularly frequenting our coasts, they only occur as very rare and accidental stragglers.

With respect to the animals once indigenous in this Island, but long since extirpated by the progress of civilization here, tho' still existing in other parts of the globe, such as the *Bear*, *Wolf*, *Wild Cat*, *Beaver*, &c., they belong more correctly (where local illustration is the object,) to the province of the antiquary. Of extinct species, which tho' existant at a former period do not now exist on any known part of the globe, remains of some of them having been found in the lime caverns of the district, we shall notice the subject again under our Geological head.

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CLASS II. BIRDS.

DIVISION 1.—LAND BIRDS.

ORDER. GALLINADÆ.

PHASIANUS. COLCHICUS LIN. *Pheasant.*

Common in the neighbourhood of Mamhead, Kenn, and other preserves, within the district. A domesticated species of Asiatic origin. A white variety of this beautiful bird, is occasionally met with in the preserves near Kenn.

TETRAO. 1. TETRIX. (Lin.) Pennant's Brit.

Zool. 1. p. 266. *Black Grouse.* Found occasionally on Haldon, in Yarner Woods, near Bovey, in the neighbourhood of Buckland in the Moor, but most frequent in Dartmoor.

2. T. PERDIX. (Lin.) Brit. Zool. 1. p. 274.

Partridge. Common.

3. T. COTURNIX. (Lin.) Brit. Zool. 1. p. 274.

Quail. Very scarce, found occasionally in the neighbourhood of Ashburton. A summer visitor.

ORDER. COLUMBADÆ.

COLUMBA. 1. ŒNAS. (Lin.) Will. Orn. p. 136.

Mont. Orn. Dict. *Wood Pigeon.* Common.

The different domesticated varieties originate from this. Willoughby gives them in a detailed manner.

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2. **C. LIVIA.** *Rock Dove.* Latham states, that this is only a variety of the Stock Dove. Selby in his Orn. Illust. keeps it distinct. The chief difference in the plumage is, that the color of the rump in the C. Livia is white, that of the C. Cenas bluish grey, but the habits are very distinct. The Rock Dove occurs in rocky situations, and mostly near the coast, and, as regards our district, migratory, breeding in the Orkneys, &c. It is found in the rocky parts on the Dart, between Dartmouth and Totnes.
3. **C. PALUMBUS.** (Lin.) Brit. Zool. 1. p. 296. *Ring Dove.* Common in woods, stationary, congregates in winter; will not breed in confinement.
4. **C. TURTUR.** (Lin.) Brit. Zool. 1. p. 297. *Turtle Dove.* We have frequently seen this interesting and rather scarce visitor, in the neighbourhood of Teignmouth, Lindridge, Ashburton, and Ilsington. Visits us in the spring, and leaves in September.

ORDER. ACCIPITRES.

1. DIURNÆ—HAWKS.

Bill with a cere;—eyes lateral.

- FALCO. 1. HALIÆTIES.** (Lin.) Mont. Orn. Dict. vol. 2. Brit. Zool. v. 1. p. 174. Willoughby's Orn. 37. (Balbusardus). *Osprey or Fishing Hawk.* Very scarce; a fine specimen of this

NATURAL HISTORY.

bird was shot at Teignmouth a few years since, and another has lately been shot at the Warren, near Exmouth. It feeds chiefly on fish.

2. F. PEREGRINUS. (Lin.) Brit. Zool. 1. p. 178. *Peregrine Falcon*. Rather a rare bird. We have seen two specimens of this bird—one shot in the neighbourhood of Ashburton, the other near Lindridge. It seizes its prey on the wing.
3. F. BUTEO. (Lin.) Brit. Zool. vol. 1, p. 188. t. 54. Temminck 1. p. 63. *Common Buzzard*. Not uncommon in the wilder parts of the district. Seizes its prey on the ground.
4. F. ÆRUGINOSUS. (Lin.) Brit. Zool. 1. p. 192. t. 57. *Moor Buzzard*. Not unfrequent on Dartmoor. Pennant observes that it occasionally preys on fish like the Osprey.
5. F. MILVUS. (Lin.) Brit. Zool. v. 1, p. 185. *Kite*. Found in the more wooded parts of the district; rather a scarce bird,—makes a nest with sticks, which it lines with wool.
6. F. PALUMBARIUS. (Lin.) Brit. Zool. 1. p. 184. *Goshawk*. This bird breeds in Scotland, and is but rarely seen in Devonshire.
7. F. NISUS. (Lin.) Brit. Zool. v. 1. p. 198. *Sparrow Hawk*. Common.
8. F. CYANEUS. (Lin.) Mont. Orn. Dict. v. 1. *Henharrier*. Not unfrequent in the wilder parts of the district. We have seen them skimming along the surface in search of prey on Haldon, Bovey Heathfield, and the neighbourhood of Dartmoor.

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9. F. PYGARGUS. (Lin.) Will. 40. *Ringtail*.
This bird is supposed to be the female of the Henharrier. There has been considerable difference of opinion amongst naturalists on this subject. Montague states the arguments on each side, but does not speak decisively. Latham also treats the subject very fully in the supplement to his Synopsis. Pennant distinctly asserts that males of the Ringtail have been dissected.
10. F. CINERACEUS. Mont. Orn. Dict. and Supp. Lin. Trans. 9. p. 188. *Ash-colored Falcon*. Montague considers that Pennant referred to this species in his variety of the Ringtail, 1. p. 195, and states that it differs from the Cyaneus in the greater length of the wings. In our opinion this is the young Henharrier: the difference in the plumage arises from age.
11. F. TINTUNCULUS. (Lin.) Brit. Zool. v. 1, p. 195. *Kestrel*. Common. This is the Hawk we so frequently see, fixed in the air and fanning it with its wings.
12. F. SUBBUTEO. (Lin.) Brit. Zool. v. 1. p. 197. *Hobby*. Rather scarce, found on the borders of Dartmoor. It feeds there, and migrates the latter end of October.
13. F. ÆSALON. (Lin.) Brit. Zool. 1. p. 200. *Merlin*. Smallest of all the Hawk kind, and rather scarce; it does not breed with us, but arrives about the time the Hobby leaves. It flies very low and with great celerity.

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2. NOCTURNÆ—OWLS.

Bill without cere, eyes directed antecially.

STRIX. 1. FLAMMEA. (Lin.) Brit. Zool. 1. p. 206.

White Owl. Common.

2. S. STRIDULA. (Lin.) Brit. Zool. 1. p. 208.

Brown Owl. Common.

3. S. PASSERINA. (Lin.) Brit. Zool. 1. p. 211.

Little Owl. Smallest of the genus. A specimen was shot many years ago in the neighbourhood of Ashburton; rare in this county, but frequent in some parts of Wales,

ORDER. PASSERES,

LANIUS. 1. EXCUBITOR. (Lin.) Brit. Zool. 1. p. 213. *Great Ash colored Shrike.* We have shot

this rare bird in the neighbourhood of Exeter, An occasional winter visitor.

2. L. COLLURIO. (Lin.) Brit. Zool. 1. p. 215.

Red Backed Shrike. Not uncommon in the neighbourhood of Teignmouth and Ashburton, breeds in the district, arriving in May and leaving in September. It frequently perches on some high branch, making a loud discordant cry. It builds in thorn or bramble bushes, and if its nest be destroyed, it soon erects another habitation near the former. The young are rust color, like the female.

CORVUS. 1. CORAX. (Lin.) Brit. Zool. 1. p. 218.

Raven. Common.

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2. **C. CORONE.** (Lin.) Brit. Zool. 1. p. 219.
Carrion Crow. Common.
 3. **C. CORNIX.** (Lin.) Brit. Zool. 1. p. 223.
Royston Crow. Scarce; has been shot in the neighbourhood of Teignmouth. A rare winter visitor.
 4. **C. FRUGILEGUS.** (Lin.) Brit. Zool. 1. p. 221.
Rook. Common.
 5. **C. MONEDULA.** (Lin.) Brit. Zool. 1. p. 230.
Jackdaw. Common.
 6. **C. GRACULUS.** (Lin.) Brit. Zool. 1. p. 228.
(Fregilus of Cuvier.) *Cornish Chough.* Rarely seen in the district.
 7. **C. PICA.** (Lin.) Brit. Zool. 1. p. 225.
Magpie. Common.
 8. **C. CARYOCATACTES.** (Lin.) Brit. Zool. 2. p. 625. Selby's Illustr. p. 84. *Nutcracker.* A rare accidental straggler.
 9. **C. GLANDARIUS.** (Lin.) Brit. Zool. 1. p. 220.
Jay. This beautiful bird is common in woods.
- AMPELIS. GARRULUS.** (Lin.) **GARRULUS BOHEMICUS.** Will. Orn. *Waxen Chatterer.* Brit. Zool. 1. p. 314. **BOMBYCILLA GARRULA.** Flem. Brit. An. p. 64. A female of this species was shot at Stony Coombe, near Kingkerswell, January 20th, 1829, and another (a male bird) a week or two after near Ashburton. This is an occasional, tho' very rare winter visitor. In Ray's Philosophical Letters it is stated, that large flocks of them appeared in this kingdom in the winter of 1695, feeding on haws.

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STURNUS. 1. VULGARIS. (Lin.) Brit. Zool. 1.

p. 299. *The Starling.* A common winter visitor: rarely breeds in the district. Two pairs have bred in the avenue of Indio, near Bovey Tracey, for the last two years. The solitary Thrush of Montague is the young of this species.

ALCEDO. ISPIDA. (Lin.) Brit. Zool. 1. p.

246. *The Kingfisher.* This brilliant little bird is not frequent, it is generally seen alone watching over some clear running streamlet in search of its finny prey, on which it darts with surprising velocity.

TURDUS. 1. CINCLUS. (Lin.) Brit. Zool. *The*

Water Ouzel. A solitary and rather rare bird, found on the banks of the Teign and Dart rivers; it walks on the bottom of brooks and rivers in search of food.

2. **T. ROSEUS.** (Lin.) Brit. Zool. 2. p. 627.

Rose colored Ouzel. A specimen of this rare and beautiful bird was shot at Teignmouth on the 17th of July, 1817.

3. **T. TORQUATUS.** (Lin.) Brit. Zool. 1. p. 310.

White's Selbourne, vol. 1. *Ring Ouzel.* Found occasionally on Haldon; breeds on Dartmoor and its vicinity, arriving in the spring, and migrating from thence the latter end of autumn.

4. **T. MERULA.** (Lin.) Brit. Zool. 1. p. 308.

Blackbird. Common.

5. **T. VISCIVORUS.** (Lin.) Brit. Zool. 1. p. 301.

Missel Thrush. Common.

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6. **T. PILARIS.** (Lin.) Brit. Zool. 1. p. 304. *Fieldfare.* A common winter visitant; breeds in the northern parts of Europe on high trees.
7. **T. MUSICUS.** (Lin.) Brit. Zool. 1. p. 306. *Thrush.* Common.
8. **T. ILIACUS.** (Lin.) Brit. Zool. 1. p. 307. *Red-wing or Wandle.* Common during the winter months; breeds in the Hebrides.
- SITTA. EUROPEA.** (Lin.) Brit. Zool. 1. p. 255. *Nuthatch.* Common; resembles the Wood Pecker in its habits.
- UPUPA. EPOPS.** (Lin.) Brit. Zool. 1. p. 287. *Hoopoe.* Has been shot at Teignmouth, and has frequently occurred in the neighbourhood of Totnes and Ashburton, during the summer months; has been known occasionally to breed in Devonshire.
- CERTHIO. FAMILIARIS.** (Lin.) Brit. Zool. 1. p. 260. *Creeper.* Common.
- LOXIA. 1. CURVIROSTRA.** (Lin.) Brit. 1. p. 319. *Cross Bill.* We have frequently shot specimens of this beautiful bird in the neighbourhood of Ashburton during the summer months. They vary very much in their plumage, scarcely two of them being alike. This bird derives its name from the curious construction of the bill, which in some subjects crosses to the left, in others to the right. It does not breed in this country, but may be found occasionally from June to the end of the year.
2. **L. COCCOTHAUSTES.** (Lin.) Brit. Zool. 1,

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p. 316. *Grosbeak*. An occasional winter visitant; has been shot at Spitchwick, near Ashburton. The four outer secondary quill feathers seem as if clipped off at the ends. Arrives in the autumn and leaves in April; breeds in France.

3. L. CHLORIS. (Lin.) Brit. Zool. 1. p. 322. *Green Grosbeak or Yellow Linnet*. Common.

3. L. PYRRHULA. (Lin.) Brit. Zool. 1. p. 322. *Bullfinch*. Common.

EMBERIZA. 1. MILIARIA. (Lin.) Brit. Zool. 1. p. 324. *Common Bunting*. Frequent in various parts of the district. It generally perches on the topmost branch, and utters its shrill note. The bill of the Bunting Genus is very singular, in the upper mandible is a strong knob to enable it to break the harder kind of seeds and kernels on which it feeds.

2. E. CITRINELLA. (Lin.) Flem. Brit. An. p. 77. *Yellow Bunting or Yellow Hammer*. Common.

3. E. CIRLUS. (Lin.) Mont. Orn. Dict. and Lin. Trans. p. 276. *Cirl Bunting*. Not uncommon in the neighbourhood of Teignmouth and Ashburton. This is not an unfrequent bird, congregating with the Yellow Hammers, Chaffinches, &c. Montague first observed it as a distinct species in 1800.

4. E. SCHÆNICLUS. (Lin.) Brit. Zool. 1. p. 326. *Black Headed Bunting*. Frequently found in the meadows near Ashburton, Bradley meadows near Newton, and on Bovey Heathfield. Often sings at night.

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5. *E. NIVALIS*. (Lin.) Brit. Zool. 1. p. 329.
Snow Bunting. A rather rare winter visitant. We have observed it several successive winters on Ashburton Down.
- FRINGILLA. 1. *DOMESTICA*. (Lin.) Brit. Zool. 1. p. 338. *Sparrow*. Common.
2. *F. CŒLEBS*. (Lin.) Brit. Zool. 1. p. 335.
Chaffinch. Common. The sexes separate in distinct flocks during the winter months.
3. *F. MONTANA*. (Lin.) Brit. Zool. 1. p. 339.
Mountain Sparrow. Rarely seen in Devonshire, frequent in the northern counties.
4. *F. MONTIFRINGILLA*. (Lin.) Brit. Zool. 1. p. 337. *Brambling*. Found occasionally, in company with the Chaffinch, during the winter season; a regular winter visitant in the neighbourhood of Hightor.
5. *F. CARDUELIS*. (Lin.) Brit. Zool. 1. p. 332.
Goldfinch. Common.
6. *F. SPINUS*. (Lin.) Brit. Zool. 1. p. 340.
Aberdevine or Siskin. A visitor found occasionally in the neighbourhood of Ashburton, and Cockwood, near Starcross. Three specimens were caught in the summer of 1828, in the marshes near Newton.
7. *F. LINOTA*. (Lin.) Brit. Zool. 1. p. 346. (The Twite.) *Linnet*. Common; gregarious in winter.
8. *F. CANNABINA*. (Lin.) Brit. Zool. 1. p. 343.
Greater Red Pole. Rather scarce, occasionally met with in the mountainous parts of the district during the winter season.

NATURAL HISTORY.

9. F. LINARIA. (Lin.) Will. Orn. p. 181. *Lesser Red Pole*. Common.

ALAUDA. ARVENSIS. (Lin.) Brit. Zool. 1. p. 353. *Sky Lark*. Common. The great poet of nature thus elegantly describes it as the leader of the general chorus ;—

“————— up springs the lark,
“ Shrill voic'd, and loud, the messenger of morn ;
“ Ere yet the shadows fly, he, mounted, sings
“ Amid the dawning clouds, and from their haunts
“ Calls up the tuneful nations.”

2. A. MINOR. Will. Orn. p. 150. Brit. Zool 1. p. 358. *Tree Lark or Field Lark*. Found in the neighbourhood of Dartmoor and Haldon. We have frequently observed it in Rora and Penn Woods, near Ilington ; a summer visitor.

3. A. ARBOREA. (Lin.) Brit. Zool. 1. p. 356. *Wood Lark*. Common. This charming little songster frequently sings during the hot summer nights. This circumstance, White notes in his history of Selborne.

“ While high in air and poised upon his wings,
“ Unseen the soft enamoured wood lark sings.”

4. A. PRATENSIS. (Lin.) Brit. Zool. 1. p. 357. *Titlark*. Common near marshy grounds.

5. A. PETRORSA. Mont. Lin. Trans. 4. p. 41. *Rock Lark*. Common on the beach at Teignmouth, searches for its food on the sands as the tide retires.

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- MOTACILLA.** 1. **ALBA.** (Lin.) Brit. Zool. 1. p. 142. *Pied Wag Tail.* Common.
2. **M. BOARULA.** (Lin.) Brit. Zool. 1. p. 368. *Grey Wag Tail.* Frequent in the district, but not so common as the last.
3. **M. FLAVA.** (Lin.) Brit. Zool. 1. p. 362. *Yellow Wag Tail.* A common summer visitor. Migrates the latter end of autumn, when numbers of them may be seen near the sea shores, preparatory to their leaving.
- MUSCICAPA.** 1. **GRISOLA.** (Lin.) Brit. Zool. 1. p. 350. *Spotted Fly Catcher.* A common summer visitor.
2. **M. ATRICAPILLA.** (Lin.) Brit. Zool. 1. p. 351. *Pied Fly Catcher.* A rare summer visitor; no where common.
- SYLVIA.** 1. **LUSCINIA.** Temm. Orn. p. 161. *Nightingale.* This excellent songster has been heard to pour forth its melody in the neighbourhood of Lindridge, Dawlish, and Ringmore. A rare summer visitor in Devonshire.

“Cradled on the branch in moonlight rest,
“The mazy warblings heave her tuneful breast.”

2. **S. PROVINCIALIS.** Temm. 1. p. 211. Mont. Lin. Trans. 7. p. 260. and 9. p. 181. (*Sylvia Dartfordensis.*) *Dartford Warbler.* Frequent on the borders of Haldon during the spring and summer months. We noticed one between Dawlish and the Warren, and another on Haldon, in February, 1829. This shews they

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occasionally remain with us throughout the year.

3. *S. LOCUSTELLA*. Brit. Zool. *The Grasshopper Warbler*. A shy bird, skulks in hedges and thick bushes. We have seen it occasionally in the neighbourhood of Ashburton.
4. *S. RUBECOLA*. (Lin.) Brit. Zool. 1. p. 372. *Red Breast*. Common.
5. *S. PHÆNICURUS*. (Lin.) Brit. Zool. 1. p. 371. *Red Start*. This beautiful summer visitor is not uncommon; it arrives in April and departs in September.
6. *S. SYBILLATRIX*. Mont. Lin. Trans. 4. p. 35. In woods and coppices, and especially near brooks and rivulets overhung with brush wood; it is a summer visitor.
7. *S. MODULARIS*. (Lin.) Brit. Zool. 1. p. 376. Temm. Orn. p. 249. (ACCENTOR.) *Hedge Sparrow*. Common.
8. *S. SALICARIA*. (Lin.) Brit. Zool. 1. p. 381. *Sedge Bird*. Rather scarce; we have seen them in the Newton and Exminster marshes,—it sings almost incessantly, imitating by turns the notes of various birds, from which it has been called the English Mock Bird.
9. *S. ATRICAPILLA*. (Lin.) Temm. Orn. 1. p. 201. *Black Cap*. Common during the summer months, when its well-known melody frequently attracts the ear of the lover of the wild music of nature.
10. *S. CINERIA*. Temm. Orn. 1. p. 207. Flem. Brit. Ani. p. 71. (CURRUEA SYLVIA.) *White*

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Throat. Common in the summer months.

11. S. TROCHILUS. Brit. Zool. 1. p. 378. Flem. Brit. Ani. p. 72. (Regulus Trochilus.) *Yellow Willow Wren.* Not unfrequent in the wooded parts of the district in the summer months.
12. S. HIPPOLAIS. (Lin.) Flem. Brit. Ani. p. 72. (Regulus.) *Least Willow Wren or Chiff Chaff.* This is a common summer visitor, and frequents woods and copses.
13. S. ARUNDINACEA. (Lin.) Temm. Orn. 1. p. 191. Mont. Orn. Dict. *Reed Wren.* A summer visitant; found in the meadows near Newton, and Ashburton.
14. S. REGULUS. Brit. Zool. 1. p. 379. *Golden Crested Wren.* The smallest British bird and not uncommon; stationary.
15. S. TROGLODYTES. Brit. Zool. 1. p. 380. *Kitty Wren.* Common.
16. S. OENANTHE. Brit. Zool. 1. p. 383. *Wheatear.* A common summer visitor, frequently seen on the Denn, at Teignmouth; it is also frequent on the Hightor Downs and those near Yarner,—its flesh is much esteemed, it arrives in March and leaves in September.
17. S. RUBETRA. Brit. Zool. 1. p. 385. *Whinchat.* Common in the neighbourhood of Teignmouth and Ashburton, and other parts of the district, during the summer months.
18. S. RUBECOLA. Brit. Zool. 1. p. 386. *Stonechat.* Common on Haldon and the neigh-

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bourhood of Dartmoor, and frequently seen on the Denn, at Teignmouth. It generally perches on a stone or furze bush from which it can command *some* distance round it. The three last form the genus *Saxicola* of *Flem. Brit. Ani.* p. 67.

- PARUS. 1. MAJOR. (Lin.) *Brit. Zool.* 1. p. 390. *Greater Titmouse.* Common.
2. P. CÆRULEUS. (Lin.) *Brit. Zool.* 1. p. 391. *Blue Titmouse or Tom-tit.* Common.
3. P. ATER. (Lin.) *Brit. Zool.* 1. p. 392. *Cole Titmouse.* Frequent in orchards.
4. P. CAUDATUS. (Lin.) *Brit. Zool.* 1. p. 394. *Long-tailed Titmouse or Long-tailed Pie.* Common in small family flocks in the winter months.
5. P. PALUSTRIS. (Lin.) *Brit. Zool.* 1. p. 393. *Marsh Titmouse.* Common in marshy grounds and orchards.
6. P. BIARMICUS. (Lin.) *Brit. Zool.* 1. p. 396. *Bearded Titmouse.* Scarce; we have occasionally met with it in the neighbourhood of Bovey Heathfield—it frequents marshy places.
- HIRUNDO. 1. RUSTICA. (Lin.) *Brit. Zool.* 1. p. 398. *White's Selborne,* 1. p. 263. *Swallow.* A common summer visitor, the earliest of its family.
2. H. RIPARIA. (Lin.) *Brit. Zool.* 1. p. 402. *White's Selborne,* 1. p. 296. *Sand Martin.* This is the smallest of the Swallow tribe; found on the banks of the Teign, and occasionally builds in the holes of the cliffs near the sea

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coast—it is irregular in its flight, making sudden jerks,—arrives about the same time as the swallow, and leaves about Michaelmas.

3. *H. URBICA*. (Lin.) White's Selb. 1. p. 265. and 2. p. 65. *Common Martin*. Arrives later than the Swallow, and leaves in October. We have seen them as late as the early part of November.

4. *H. APUS*. (Lin.) White's Selb. 1. p. 305. *Swift*. Common; arrives later, and departs sooner than any of the tribe.

CAPRIMULGUS. EUROPEUS. (Lin.) Brit. Zool. 1. p. 416. White's Selb. 2. p. 193. *Goutsucker*. Frequent on moors and wild heathy tracts abounding with ferns. We have frequently listened to its jarring notes, and observed its irregular and rapid motion,—it is seldom seen in the day time unless disturbed. It is a solitary bird,—breeds on the borders of Haldon and Dartmoor. Arrives in May and leaves in September.

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CUCULUS. CANORUS. (Lin.) Brit. Zool. 1. p. 232. *Cuckoo*. Common in the spring, arrives in April—the old birds leave in July—the young ones later;—it generally deposits its eggs in the nest of the hedge sparrow, water wagtail or titlark, the young of which the usurper soon ejects, and enjoys the sole care of

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its foster parents. We have seen the egg as well as the young of this bird. In the Phil. Trans. for 1772, p. 299, an instance is recorded of a cuckoo building a nest and rearing its own young.

YUNZ. TORQUILLA. (Lin.) Brit. Zool. 1. p. 237. *Wryneck*. This beautiful summer visitor has occasionally been observed in the vicinity of Teignmouth and Ashburton. Its habits are similar to those of the Wood Pecker genus, and its bill tongue and feet very like that tribe, but it never associates with them.

PICUS. 1. VIRIDIS. (Lin.) Brit. Zool. 1. p. 240. *Green Wood Pecker*. Common. Though its formation and habits lead it to climb trees in search of food, it is often seen on the ground attacking ant hills.

2. P. MAJOR. (Lin.) Brit. Zool. 1. p. 243. *Greater Spotted Wood Pecker*. Scarce, found occasionally in the neighbourhood of Ashburton, Ilsington, and Bovey Tracey. The *P. Media* (*Middle Spotted Wood Pecker*,) of British authors, is the young of this species.

3. P. MINOR. (Lin.) Brit. Zool. 1. p. 245. *Lesser Spotted Wood Pecker*. Scarce. We have seen specimens of this beautiful little bird shot in the woods near Lindridge.

DIVISION 2. GRALLÆ—WADERS.

OTIS. 1. TETRAX. (Lin.) Temm. Orn. 2.

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p. 507. *Little Bustard*. A rare summer visitor, has been found in the neighbourhood of Ashburton. A native of the Southern and Eastern parts of Europe. Only an accidental straggler with us.

2. O *ÆDICNEMUS*. (*CHARADIUS ÆDICNEMUS* of Lin.) Brit. Zool. 1. p. 287. White's Selb. 1. p. 75 and 151, and 2. p. 189. *Thick Kneed Bustard*. Rather rare; found occasionally on Dartmoor. It frequents the high exposed downs and sheep walks, and breeds in the neighbourhood of the moor, laying its eggs on the bare ground. It migrates in winter to more Southern regions,—the young run immediately from the egg like Partridges.

TRINGA. 1. *VANELLUS*. (Lin.) Brit. Zool. 2. p. 458. Temm. Orn. 2. p. 558. (*VANELLUS CRISTATUS*.) *The Plover*. Common on Dartmoor and Bovey Heathfield, it often frequents the sea shore likewise; it is a lively active bird, much on the wing, and is stationary in the district.

2. T. *OCHROPUS*. (Lin.) Brit. Zool. 2. p. 468. *The Green Sand Piper*. Rare,—found occasionally on the banks of some of the Dartmoor streams, from September to April, it does not breed in England,—has a musky smell; is solitary in its habits.

3. T. *HYPOLEUCOS*. (Lin.) Brit. Zool. 2. p. 470. *The Common Sand Piper*. Frequently seen on the banks of the Teign and Dart rivers;

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it is a summer visitor. The plumage varies much, they jerk their tails, and may be seen running after their insect prey on the margins of rivers.

4. **T. GLAREOLA.** Mont. Orn. Dict. and Supp. *The Wood Sand Piper.* Uncommon; found in the woods near the river Dart:—a winter visitor.

5. **T. MACULARIA.** (Lin.) Brit. Zool. 2. p. 463. *Spotted Sand Piper.* A rare winter straggler.

The four species last enumerated, belong to the genus *Totanus*, of Temminck.

6. **T. PUSILLA.** Mont. Orn. Dict. Append. *Little Sand Piper.* We have seen specimens of this least of the tribe, from the banks of the Exe. A rare winter visitor. The tail of this species is wedge-shaped, that of the following doubly forked, which is the chief distinctive character.

7. **T. MINUTA.** Brit. Zool. p. 273. *The least Sand Piper.* A rare winter straggler.

8. **T. ALPINA.** (Lin.) Brit. Zool. 2. p. 471. 2. *The Dunlin.* Found on the sea shore near Teignmouth. The *Purre* (**T. CINCLUS.** Lin.) is supposed to be the *Dunlin* in its winter dress; leaves in the spring.

9. **T. INTERPRES.** (Lin.) Brit. Zool. 2. p. 465. No. 199 and 200. *The Turnstone.* Found occasionally on the banks of the Teign; a winter visitor; forms the genus **STREPSILAS**, of Temminck.

PHÆLAROPUS. LOBATUS. Temm. Brit. Zool. 2. p. 491. *Grey Phalarope.* The toes of this

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curious and rare winter visitor, are furnished with scalloped membranes, serrated on their edges,—found occasionally on the banks of the Teign and Exe. It appears to breed in the arctic regions, as Captain Sabine, in the Appendix to Parry's first voyage, notices them as abundant on the North Georgian Islands.

- CHARADIUS. 1. HIATICULA.** (Lin.) Brit. Zool. 2. p. 479. *The Ring Dotterel.* Common on the sea shores, in the winter.
- 2. C. CALIDRIS.** (Lin.) Brit. Zool. 2. p. 480. (Temm. Orn. 2. p. 524. *CALIDRIS ARENARIA.*) *The Sanderling.* Common in small flocks in the winter.
- 3. C. PLUVIALIS.** (Lin.) Brit. Zool. 2. p. 474. *The Golden Plover.* Common on Dartmoor, and the neighbouring heaths, in summer : and on the sea coast in winter.
- 4. C. HIMANTOPUS.** (Lin.) Brit. Zool. 2. p. 476. White's Selborne, 2. p. 43. *The Long Legged Plover.* Very rarely met with in Great Britain, but frequent in the Southern parts of Europe, Africa, and Asia.
- HÆMATOPUS. OSTRALÉGUS.** (Lin.) Brit. Zool. 2. p. 482. *The Oyster Catcher.* Found occasionally on the beach at Teignmouth, and on the Warren, near Exmouth.
- ARDEA. 1. CINEREA.** (Lin.) Brit. Zool. 2. p. 421. *The Heron.* Common, breeds on the Teign and Dart.
- 2. A. STELLARIS.** (Lin.) Brit. Zool. 2. p. 424.

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The Bittern, Found occasionally in the marshes near Newton and Ashburton, and on Bovey Heathfield. It is a shy solitary bird, and was formerly held in high estimation at the tables of the great;—it is annually becoming a scarcer species.

“The Bittern booms along the sounding marsh,
“Mix’d with the cries of Heron and Mallard harsh.”

3. *A. MINUTA*. (Lin.) Brit. Zool. 2. p. 633.
The Little Bittern. Very rare; has been found in the neighbourhood of Ashburton.

4. *A. EQUINOCTIALIS* (of Latham). Temm. Orn. 2. p. 566. (*A. RUSSATA*.) Mont. in Lin. Trans. 9. p. 197. A female of this species was killed near Kingsbridge, the latter end of October, 1805.

PLUTEA. LEUCORODIA. Mont. Orn. Dict. Supp.
Spoonbill. One shot in March another in Nov. at Kingsbridge.

NUMENIUS. 1. ARQUATA. Temm. Orn. 2. p. 603. (Brit. Zool. 2. p. 429. *SCOLOPAX*.)
The Curlew. Common, breeds on Dartmoor, frequents the sea coast in winter.

“Soothed by the murmurs of the sea-beat shore,
“His dun grey plumage floating to the gale,
“The curlew blends his melancholy wail,
“With those hoarse sounds the rushing waters pour.”

2. *N. PHÆOPUS*. (Temm.) Brit. Zool. 2. p. 430.
(*SCOLOPAX*.) *The Whimbrel*. Not so common

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as the Curlew, and about half the size ; found on the banks of the Teign, Exe, and Dart rivers in the winter. It breeds in Zetland and other districts far north.

- SCOLOPAX. 1. RUSTICOLA. (Lin.) Brit. Zool. 2. p. 433. *The Wood Cock*. Common. Latham mentions three varieties of this species ; arrives in October, and leaves in March ;—has been known to breed in the district occasionally.
2. S. MAJOR. (Lin.) Brit. Zool. 2. p. 450. *The Great Snipe*. A rare solitary bird ; found occasionally during the winter season, in the marshes within the district.
3. S. GRISEA. Mont. Orn. Dict. Supp. *The Brown Snipe*. An accidental winter straggler. This species has the first and second toes united by a web the length of the first joint. It is a native of North America,
4. S. NOVEBOROCENSIS. Mont. Orn. Dict. *The Red Breasted Snipe*. Four of these rare birds were shot on the Warren, near Exmouth, in May, 1829.
5. S. GALLINAGO. (Lin.) Brit. Zool. 2. p. 448. *The Common Snipe*. Frequent in marshy grounds during the winter season, breeds on Dartmoor.
6. S. GALLINULA. (Lin.) Brit. Zool. 2. p. 451. *The Jack Snipe*. Not so common as the former ; a winter visitant,—seldom breeds in this country ; found in marshy grounds.
7. S. ÆGOCEPHALA. (Lin.) Brit. Zool. 2. p. 442. Mont. Orn. Dict. Supp. *Red Godwit and*

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Jadreka Snipe. (LIMOSA MELANURA, of Tem.)

A rare winter visitor.

8. S. RUFUS. (Lin.) Brit. Zool. 2. p. 441.

(LIMOSA RUFUS, of Temm.) *Common Godwit.*

Occur in small flocks, during the winter season.

9. S. GLOTTIS. (Lin.) Brit. Zool. 2. p. 445. and

also p. 444, (Cinereous Godwit,) and perhaps

p. 264, (Black Sand Piper,) is the bird in its

winter plumage, as we annually see it. (TOTANUS

GLOTTIS, of Temm.) *The Green Shank.* An

occasional winter visitor.

10. S. TOTANUS. (Lin.) Brit. Zool. 2. p. 446.

(Cambridge Godwit.) Temm. Orn. 2. p. 639.

(TOTANUS FUSCUS.) Mont. Orn. Dict. and

Supp. (Spotted Snipe.) *The Spotted Red*

Shank. This elegant looking bird has been

found in the marshes near Ashburton. A rare

winter visitor.

RALLUS. 1. AQUATICUS. (Lin.) Brit. Zool. 2.

p. 284. *The Water Rail.* This shy solitary

bird is not common. It is stationary, and feeds

on worms, slugs, and insects.

2. R. CREX. (Lin.) Brit. Zool. 2. p. 487.

(CRAKE GALLINULE.) Temm. Orn. 2. p. 686.

(GALLINULA CREX.) *The Land Rail.* A

common summer visitor, arriving in May and

leaving in October. The muscular stomach

indicates its granivorous habits, in which respect

it differs from most of this order. It forms the

genus ORTYGOMETRA, of Fleming.

GALLINULA. 1. CHLOROPUS. (Temm.) Brit.

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- Zool. 2. p. 489. (COMMON GALLINULE.) *The Water Hen.* Common on the Teign and Dart, lives concealed during the day. It is a stupid bird, when out of the water, and may frequently be found in a holly, or other thick bush, over the banks of a stream, half-asleep.
2. G. PORZANA. (Lin.) Brit. Zool. 2. p. 486. *The Lesser Spotted Gallinule.* We have seen a specimen of this rare bird, which was found in the meadows, near Dartington.
3. G. PUSILLA. Mont. Orn. Dict. Supp. *Little Gallinule.* First noticed by Montague. A specimen was killed near Ashburton, in 1809.
- FULICA. ATRA. (Lin.) Brit. Zool. 2. p. 494. *The Coot.* Not so common as the water hen,—similar in its habits; found on the Teign, Dart, and Exe rivers. In this genus, the toes are bordered with a scalloped membrane, in the last with a plain one.

DIVISION 3. ANSERES.

- PODICEPS. 1. CRISTATUS. (Lin.) Brit. Zool. 2. p. 496. *Tippet and Great Crested Grebes.* The female is less, with a smaller crest, and duller colors;—the young are without the crest,—the plumage is attained in the third year. COLYMBUS URINATOR of Lin., is merely the young bird, it breeds in some of the northern counties, and makes a floating nest. We have occasionally seen this bird within the district.

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2. **P. AURITUS.** Brit. Zool. 2. p. 500 and 501. *Eared and Dusky Grebes.* The Dusky Grebe—this bird is not unfrequently seen on the Teign, the Dart, and the Exe.

3. **P. MINOR.** Brit. Zool. 2. p. 501. *The little Grebe or Dobchick.* Common.

“———— The nimble Divedopper,
“That comes and goes so quickly and so oft,
“As seems at once both under and aloft.”

DRAYTON.

URIA. 1. **TROILE.** Temm. Orn. 2. p. 921. Brit. Zool. 2. p. 519. (**COLYMBUS TROILE.**) *The Guillemot.* Common.

2. **U. ALLE.** Temm. Orn. 2. p. 928. Brit. Zool. 2. p. 517. *The Little Ank.* An occasional winter visitor. We have shot this bird in the neighbourhood of Teignmouth.

COLYMBUS. 1. **GLACIALIS.** (Lin.) White's Selborne, 2. p. 183. Brit. Zool. 2. p. 523. *Northern Diver.* A rare winter visitant on our shores. In the summer it inhabits the north of Europe, and the Arctic coasts, and is common on the coasts of Newfoundland and Labrador.

2. **C. IMMER.** (Lin.) *The Imber.* A specimen of this bird was shot near the Warren, in the winter of 1829. The young of the **C. GLACIALIS** before attaining the full plumage, which it takes three years to accomplish.

3. **C. ARCTICUS.** (Lin.) Brit. Zool. 2. p. 527. *The Black Throated Diver.* An occasional winter straggler.

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4. **C. STELLATUS.** (Lin.) *The Speckled Diver or Loon.* Frequently met with on the shores within the district. A winter visitant retiring northward in the spring to breed. This bird is supposed to be the **C. ARCTICUS**, before attaining its full plumage.
5. **C. SEPTENTRIONALIS.** (Lin.) Brit. Zool. 2. p. 526. *The Red Throated Diver.* Occasionally visits the shores within the district during the winter months; supposed to be the female of the **C. ARCTICUS**, Mont. Orn. Diet. the Supp. and the Edin. Phil. Journal, vol. 8. p. 299.
- ALCA.** 1. **TORDA.** (Lin.) Brit. Zool. 2. p. 509. *The Razor Bill.* Common.
2. **A. ARCTICA.** (Lin.) Brit. Zool. 2. p. 512. Temm. Orn. 2. p. 933. (**MORMON FRATERCULA.**) *The Puffin.* Rather rare on the coast within the district; common in the Isle of Wight, and various other parts of the British coasts. A summer visitor.
- STERNA.** 1. **HIRUNDO.** (Lin.) Brit. Zool. 2. p. 545. *The Common Tern.* Visits our coast in the summer season.
2. **S. NIGRA.** Brit. Zool. 2. p. 547. *The Black Tern.* (**STERNA FISSIPES** of Lin.) An occasional winter visitor.
3. **S. MINUTA.** (Lin.) Brit. Zool. 2. p. 546. *The Lesser Tern.* Met with occasionally on the coast within the district. We have seen several specimens of this clean plain-looking little bird.
- LARUS.** 1. **MARINUS.** (Lin.) Brit. Zool. 2.

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- p. 528. *The Black Backed Gull*. Seldom occurs on the coast,—common in the north of Europe, solitary or in pairs; the young are mottled brown and white.
2. L. FUSCUS. Temm. Orn. 2. p. 767. Brit. Zool. 2. p. 529. (Variety of L. MARNIUS.) Mont. Orn. Dict. (L. ARGENTATUS, or Lesser Black Backed Gull. *The Herring Gull*. This bird is not uncommon on the coast.
3. L. ARGENTATUS. Brit. Zool. 2. p. 535. *The Herring Gull*. This is distinct from the last according to Montague, tho' it has frequently been confounded with it.—*The Wagel*, frequent on the coast, is the young of this species.
4. L. CANUS. (Lin.) Brit. Zool. 2. p. 538. *The Common Gull*. Very Common. The young are mottled brown and white, and do not attain their full plumage until the third year.—*The Winter Gull*, which we have frequently seen on our coast: we agree with Mr. Pennant in considering the young of the Common Gull. The difference of plumage in old and young birds, and their not attaining their full plumage for two or three years, has caused great confusion, not only in this genus, but through the whole of the order, Anseres.
5. L. RIDIBUNDUS. (Lin.) Brit. Zool. 2. p. 541. *The Black Headed Gull*. Not unfrequent during the late summer months. The young ones were formerly esteemed as excellent eating.
6. L. RISSA. (Lin.) Brit. Zool. 2. p. 539. *The Kittiwake*. Common.

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7. **L. TRIDACTYLUS.** (Lin.) Brit. Zool. *The Tarrock.* This is supposed to be the Kittiwake, not arrived at full age and plumage.
 8. **L. MINUTUS.** Mont. Orn. Dict. Supp. *The Little Gull.* An occasional winter visitor.
 9. **L. CATARACTES.** (Lin.) Brit. Zool. 2. p. 529. Will. Orn. p. 265. (CATARACTES NOSTER.) *The Skua or Brown Gull.* Occurs occasionally on the coast within the district; covered to the nostrils with a kind of cere, something like that of the Hawk tribe; fierce, and uncommonly courageous in defence of their young.
 10. **L. CREPIDATUS.** Brit. Zool. 2. p. 532. *The Black Toed Gull.* Occasionally met with on the coast. It pursues the smaller Gulls for the purpose of robbing them of their prey,—supposed to be the young of the Arctic Gull.
 11. **L. PARASITICUS.** (Lin.) Brit. Zool. 2. p. 533. *The Arctic Gull.* Its habits are similar to the last, not common,—an occasional winter visitor; has the nostrils in a cere like *L. Cataractes.* Willoughby kept these distinct from the Gulls, and we think correctly.
- PROCELLARIA.** 1. **GLACIALIS.** (Lin.) Brit. Zool. 2. p. 549. *The Fulmar.* We have occasionally met with this bird on our coast in winter. All this tribe are very fat and oily, they can squirt oil round them from their bills.
2. **P. PUFFINUS.** (Lin.) Brit. Zool. 2. p. 551. *The Shear Water.* Occurs frequently on the coast in summer, it lays a single white egg.

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3. **P. PELAGICA.** (Lin.) Brit. Zool. 2. p. 553. Linn. Trans. 13. p. 618. *The Stormy Petrel.* Occasionally seen near the shore in very stormy weather. This bird much resembles the Swift in general appearance.

MERGUS. 1. ALBELLUS. (Lin.) Brit. Zool. 2. p. 559. *The Smew.* Seldom visits this country, except in severe winters; several of these birds were shot during the winter of 1829.—*The Lough Diver,* rarely met with on our coast, is supposed to be the female of the last.

2. **M. SERRATOR.** Brit. Zool. 2. p. 558. *Red Breasted Goosander.* An occasional, tho' rare winter visitor.

3. **M. MERGANSER.** (Lin.) Brit. Zool. 2. p. 556. *The Goosander.* An occasional winter straggler.

ANAS. 1. CYGNUS. (Lin.) Brit. Zool. 2. p. 562. Will. Orn. p. 272. (CYGNUS FERUS.) *The Wild Swan.* Occurs in very severe weather;—they are known to breed in the Hebrides, Orkney, and other solitary isles.

2. — *The Tame Swan.* (CYGNUS MANSUETUS.) Is a native of the east, and distinguished from the former by the black knob at the upper base of the bill, and its larger size.

3. **A. ANSER.** (Lin.) Brit. Zool. 2. p. 570. *Common Wild Goose.* Frequent during severe winters. It breeds in the northern counties.—*The Common Tame Goose,* is a variety of this.

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4. *A. ERYTHROPUS.* (Lin.) Brit. Zool. 2. p. 576.
White Fronted Goose. These birds visit us occasionally in severe winters, but depart early in the spring. This is the *A. ALBIFRONS* of Temminck's work.
5. *A. BERNICLA.* Will. Orn. p. 274. Brit. Zool. 2. p. 577. *Bernacle.* An occasional tho' rare winter visitor on our shores. The *A. LEUCOPSIS* of Temm.
6. *A. BRENTA.* Will. Orn. p. 275. Brit. Zool. 2. p. 579. *The Brent Goose.* A winter visitor. The *A. BERNICLA*, of Temm. This and the preceding species, were confounded by Linneus, under the title *A. BERNICLA*.
7. *A. NIGRA.* (Lin.) Brit. Zool. 2. p. 584.
The Scoter or Black Duck. Not uncommon on our coast, in winter; they seldom quit the sea.
8. *A. MOLLISSIMA.* (Lin.) *The Eider Duck.* A rare winter visitor; breeds occasionally on the Fern isles, on the Northumberland coast.
9. *A. BOSCHAS.* (Lin.) Brit. Zool. 2. p. 591.
Common Wild Duck. Common.
10. *A. MARILA.* (Lin.) Brit. Zool. 2. p. 586.
The Scarp Duck. Smaller than the common Wild Duck,—rarely met with. An occasional winter visitor.
11. *A. TADORNA.* (Lin.) Brit. Zool. 2. p. 589.
The Sheildrake or Burrough Duck. This beautiful bird is not unfrequently met with on our coast.
12. *A. CLYPEATA.* (Lin.) Brit. Zool. 2. p. 596.

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- The Shovler.* A wild, shy, solitary, and scarce bird ; a rare winter straggler.
13. A. PENELOPE. (Lin.) Brit. Zool. 2. p. 601.
The Wigeon. Common,—they fly in small flocks, and may be known by their whistling note ; they are easily domesticated, and are regular winter visitors.
14. A. FERINA. (Lin.) Brit. Zool. 2. p. 600.
The Pochard. A plump round-shaped bird, occasionally met with during the winter season.
15. A. ACUTA. (Lin.) Brit. Zool. 2. p. 598.
The Pin-tail Duck or Sea Pheasant. Visits this country during severe weather, has occasionally been shot within the district.
16. A. CLANGULA. (Lin.) Brit. Zool. 2. p. 587.
The Golden Eye. We have occasionally, as a winter visitor.
17. A. GLAUCION. (Lin.) *The Merillon.*
This is a rare bird, we have never seen but one specimen ;—it may be distinguished by having a broad white circle round its neck, the female of the last. (Lin. Trans. 4. t. 15.)
18. A. FULIGULA. (Lin.) Brit. Zool. 2. p. 585.
The Tufted Duck. Not unfrequent during the winter season.
19. A. CRECCA. (Lin.) Brit. Zool. 2. p. 606.
The Teal. This beautiful little Duck is common in the winter months.
- PELICANUS. 1. CARBO. (Lin.) Brit. Zool. 2. p. 608. *The Corvorant.* Common. Temm. 2. p. 894.
{CARBO CORMORAMUS.} Frequently perches on

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trees;—is occasionally found up rivers, at a considerable distance from sea. It has a crest, which it loses in winter.

2. P. CRISTATUS. Temm. Orn. 2. p. 900. (CARBO CRISTATUS.) *The crested Corvoraunt.* Very rare, but not clearly ascertained whether a variety of the next, or a distinct species.
3. P. GRACULUS. (Lin.) Brit. Zool. 2. p. 610. *The Shag.* Common.
4. P. BASSANUS. (Lin.) Brit. Zool. 2. p. 612. *The Gannet.* We have occasionally seen this bird within the district, a solitary winter visitant.

The locomotive powers possessed by the greater part of this most interesting class, [often cause us to be agreeably surprised by visits from species, that belong to distant regions, as the preceding list sufficiently proves; in which, tho' many rare birds have a place, we have been careful to admit none, but such as have been well-authenticated, by accurate and competent naturalists. These accidental visitors however,—tho' highly interesting, have no claim, in a philosophic view of the geographical distribution of species to a regular place in the Fauna of a district, which, strictly speaking, ought to be confined to permanent residents, and regular periodical visitants.—The migrations of these last, have formed a subject of anxious investigation to many able naturalists;—no inconsiderable portion for instance, of that delightful work, the Natural History of Selborne, is so occupied;—yet much

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still remains to be cleared up, and many difficult anomalies are left unexplained. Most birds are migratory to a certain extent, and occasionally shift their residences for a greater or less distance.—In the district we have limited ourselves to, many internal migrations are constantly taking place;—for instance, those of the Golden Plover, Lapwing, and Curlew, from Dartmoor to the sea shore, and back;—but it is those only that migrate to considerable distances, that are usually considered as birds of passage. The chief causes of migration seem to be;—a want of adequate and suitable food,—a proper temperature,—and a convenient situation for breeding and rearing the young. A deep and instinctive attachment appears to prevail thro' the whole of animated nature, to the local situations, where the earlier portion of existence has been spent, and it would perhaps simplify the subject, were we to consider that to be the natural and proper home of the bird, where it has been born and reared;—which it leaves, not from choice, but necessity, and to which it returns, as soon as circumstances admit of its doing so;—we should thus consider the summer birds as *natives*, that have been compelled to leave their homes for a season, and those only that come to us in winter, as *visitors*, in the proper sense of the word;—thus we have;

FIRST:—*Permanent residents*,—this includes the major part of the list.

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SECONDLY :—*Summer residents*,—which spend the winter in a warmer climate, and return to their homes in the spring ;—the chief of these are, the Hobby,—Fern Owl,—The Swallow tribe,—Turtle Dove,—Cuckoo,—Corn Crake,—Ring Ouzel,—Fly-Catcher,—Wheat Ear,—and the soft-billed warblers.

THIRDLY :—*Winter visitors*,—which come to us in autumn, and return to their homes in more northern regions, in the spring ;—amongst the principal of these are the Field Fare,—Red Wing,—Starling,—Snow Bunting,—and the Wood Cock, and several others of the order Grallæ, included in the Linnean Genera, Scolopax, Tringa, and Charadius, as well as the greater part of those belonging to the order Anseres.

FOURTHLY AND LASTLY :—*Accidental stragglers*,—such are the Waxen Chatterer,—the rose-colored Thrush, and some others on the list.

For admirably expressive and cheap delineations of British Birds, Bewick's wood cuts, are unrivalled, and the works of Edwards, Donovan, and Selby, furnish colored and highly-finished engravings.—For the more modern systematic arrangements of this class,—Latham, Brisson, and Temminck, may be consulted.

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CLASS III. REPTILES.

COLD BLOODED.

1. *Heart with two auricles.*

SAURIA.

LACERTA. AGILIS. Brit. Zool. 3. p. 21.
Scaly Lizard. Lin. Trans. p. 49. In this last work three different species are enumerated, the characters of which depend chiefly on the color. Ray, (Quad. 264.) notes five varieties. It is of frequent occurrence in dry sandy situations, and on heathy downs, &c.

OPHIDIA.

ANGUIS. FRAGILIS. *The Blind Worm.* Brit. Zool. 3. p. 36. Ray's Syn. Quad. p. 289. (CÆCILIA.) About a foot long,—of frequent occurrence, it feeds on worms, frogs, and mice; its bite is not venemous, it becomes torpid in winter.

NATRIX. TORQUATA. *Ringed or Common Snake.* Ray's Syn. Quad. p. 334. Lin. Syst. Nat. (COLUBER NATRIX.) Frequent in marshy situations, it is without poison fangs, lays 18 or 20 eggs, collected in a mucous mass, in dung-heaps, or at the roots of old trees.

VIPERA. COMMUNIS. *The Viper or Adder.*

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Ray's Syn. p. 285. Lin. Syst. Nat. (COLUBER BERUS.) Of a dirty yellow, with a dorsal line of black confluent rhomboidal spots, and one on each side of triangular spots, varies much in its markings,—has poison fangs. Dr. Leach's Zool. Misc. vol. 3. reduces to their proper rank as varieties;—*The Black*, (LAUPEDE. Quad. 3. p. 247.) *The Blue Bellied*, (Lin. Trans. 7. p. 56.) and *The Red Viper*, (Lin. Trans. 12. p. 349.)

2. *Heart with one auricle.*

BATRACHIA.

TRITON. 1. PALUSTRIS. *The Warted Newt*. Flem. Brit. Ani. p. 157. Lin. Syst. Nat. (LACERTA PALUSTRIS.) It inhabits ponds and swampy situations, and is by no means of unfrequent occurrence.

2. T. AQUATICUS. *Water Newt or Eft*. In still ponds. Lin. Syst. Nat. (LACERTA AQUATICA.) This is frequently met with. In this genus, the young are produced from eggs, deposited on some of the aquatic plants; they breathe at first by gills, and have two clasps under the throat; when the feet are developed, the gills and clasps become absorbed.

RANA. 1. TEMPORARIA. *The Common Frog*. Common in ponds and marshes.

2. R. ESCULENTA. *The Edible Frog*. Has a

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protuberance on the middle of the back, and margined sides,—is less common than the preceding, but by no means of unfrequent occurrence.

BUFO. 1. VULGARIS. *The Common Toad.*
Lin. Syst. Nat. (**RANA BUFO.**) The Frog has teeth, the Toad has none;—a perfectly harmless animal, and very useful in destroying slugs, worms, &c.

TESTUDO. IMBRICATA. *The Hawk's Bill Turtle.* Turton's Brit. Fauna, p. 78, and T. **CORIACEA**, Borlases' Cornw. p. 285; can only, (if at all,) be claimed as an accidental straggler.



CLASS IV. FISHES.

ORDER 1. CARTILAGINOUS.

PETROMYZON. FLUVIATILIS. *River Lamprey.*
Turton's Trans. of Lin. Syst. Nat. 1. p. 931.
Willoughby's Ich. p. 104. (**LAMPETRA.**) In the Dart and Teign rivers, entering them early in the year, and returning to the sea in summer.

SQUALUS. 1. MAXIMUS. *Basking Shark.*
Syst. Nat. 1. p. 920.

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2. *S. CATULUS*. *Spotted Dog Fish*. Fleming's Brit. Ani. p. 165. (*SCYLLIUM*.) Common.
 3. *S. MUSTELUS*. *Smooth Hound*. Leach in Wern. Mem. 2. p. 63. Flem. Brit. Ani. p. 166. (*MUSTELUS LÆVIS*.)
 4. *S. ACANTHIAS*. *Common Dog Fish*. Flem. p. 166. (*SPINAX*.) Common.
 5. *S. GLAUCUS*. *Blue Shark*. Brit. Zool. 3. p. 109. Flem. p. 167. (*CARCHARIAS*.) This is the species that visits the Cornish and Devonshire coasts, in the Mackerel and Pilchard seasons.
 6. *S. VULPES*. *Sea Fox or Thresher*. Borlases' Cornw. p. 265. Flem. p. 167. (*CARCHARIAS*.) An occasional visitor.
- RAIA**. 1. *TORPEDO*. *Cramp Fish*. Brit. Zool. 3. p. 89. Flem. p. 169. (*TORPEDO VULGARIS*.)
2. *R. PASTINACA*. *Sting Ray*. Brit. Zool. 3. p. 95. Flem. p. 170. (*TRIGON*.) Not unfrequent on our coast.
 3. *R. CLAVATA*. *Thorn Back*. Brit. Zool. 3. p. 93. Common.
 4. *R. MICROCELLATA*. Wern. Mem. 2. p. 450. South-west coast of Devon.—Montagu.
 5. *R. BATIS*. *Skate*. Brit. Zool. 3. p. 82. Common.
- ACIPENSER**. **STURIO**. *Sturgeon*. Donovan's British Fishes, t. 65. Occasionally wanders into our rivers, and has been caught both in the Clyst and Dart.

In this genus the gills are free, in all the preceding ones fixed.

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2. OSSEVUS.

A. *Apodal, or without ventral fins.*

ANGUILLA. 1. VULGARIS. *Common Eel.*

Flem. p. 199. Syst. Nat. l. p. 707. (MURÆNA VULGARIS.) Common; migrates to the sea in the autumn, for the purpose of spawning.

2. A. CONGER. *Conger Eel.* Flem. p. 200.

Syst. Nat. l. p. 707. (MURÆNA.) Common. Chiefly amongst rocks.

OPHIDIUM. IMBERBE. Wern. Mem. l. p. 95.

South coast of Devon.—Montagu.

AMMODYTES. TOBIANUS. *Sand Lance.* Will.

Ich. p. 113. Common.

B. *Jugular;—the ventral fins placed before the pectoral.*

GADUS. 1. MORHUA. *Cod.* Common.

2. G. ÆGLEFINUS. *Haddock.* Common. Both this and the Cod are gregarious, and spawn in the spring.

3. G. MERLANGUS. *Whiting.* In large shoals, chiefly in spring. The Whiting caught off Teignmouth, are remarkably fine.

4. G. POLLACHIUS. *Pollack.* On rocky parts of the coast.

5. G. MERLUCIUS. *Hake.* Flem. p. 195.

(MERLUCIUS VULGARIS.) Very Common. Caught chiefly in summer.

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6. *G. MOLVA*. *Ling.* Common; spawns in the spring.

BLENNIUS. 1. *OCELARIS*. Wern. Mem. 2. p. 443. t. 22. Obtained from an oyster bed, at Tor-cross, by Montagu.

2. *G. GATTORUGINE*. Wern. Mem. 2. p. 447. South-east coast of Devon.—Montagu.

3. *G. GALERITA*. A variety. Wern. Mem. 1. p. 98. t. 5. In rocky pools, left by the tide. Montagu.

C. Thoracic;—the ventral fins placed directly under the thorax.

PLEURONECTES. 1. *MAXIMUS*. *Turbot*. Frequent.

2. *P. RHOMBUS*. *Brill.* Don. t. 951.

3. *P. SOLEA*. *Sole.* Flem. p. 197. (*SOLEA VULGARIS*.) Common.

4. *P. PLATEPA*. *Plaise*. Syst. Nat. p. 763. Flem. p. 198. (*PLUTEPA VULGARIS*.) Common. The two next are referable to the same genus.

5. *P. FLESUS*. *Flounder*. Syst. Nat. p. 763. Mouths of rivers; a left-sided variety is not unfrequent.

6. *P. LIMANDA*. *Dab.* Common.

7. *P. HIPPOGLOSSUS*. Flem. p. 199. (*HIPPOGLOSSUS VULGARIS*.) *Holibut*.

MULLUS, SURMULETUS. *Striped Surmullet*. Don. t. 12. A splendid looking fish, delicious eating.

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- SCOMBER. 1. VULGARIS.** *Mackerel.* Donovan, t. 120. Gregarious,—approaches the shores to spawn.
- 2. S. TRACHURUS.** *Scud or Horse Mackerel.* System Nat. 1. p. 828. Fleming, p. 218. (TRACHURUS VULGARIS.) Common.
- ZEUS. ZABER.** *Doree.* Don. t. 8. Frequent.
- GASTEROSTEUS. ACULEATUS.** *Stickleback.* Don. t. 11. The Dart and Teign, and in some of the smaller streams: a small voracious fish, spawning in April.
- SPARUS. 1. PAGRUS.** *Sea Bream.* Common.
- 2. S. LINEATUS.** Wern. Mem. 2. p. 251. t. 22, on the coast of Devon.—Montagu.
- TRIGLA. 1. LÆVIS.** Wern. Mem. 2. p. 455. Taken by the hook, and in shore nets, at Tor-cross.—Montagu.
- 2. T. LINEATA.** Wern. Mem. 2. p. 460. Ditto.
- 3. T. GURNARDUS.** *Grey Gurnard.* Common.
- 4. T. CUCULUS.** *Red Gurnard.* Common.
- COTTUS. 1. GOBIO.** *Bull Head or Miller's Thumb.* In the Dart and Teign.
- 2. C. SCORPIUS.** *Father Lasher.* Rocky parts of the coast.
- GOBIUS. 1. NIGER.** *Groundling.* Four or five inches long.
- 2. G. MINUTUS.** Between two and three inches long, taken sometimes in shrimping nets.
- CEPOLA. RUBESÆUS.** *Red Band Fish.* Lin. Trans. 7. p. 291. t. 17. South coast of Devon.—Montagu.

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D. *Abdominal*;—*ventral fins behind the pectoral.*

MUGIL. CEPHALUS. *Mullet.* Donovan, t. 15.
Common.

ATHERINA. HEPSETUS. *Smelt.* A small transparent looking fish, found in the Teign.

CYPRINUS. 1. BRAMA. *Bream.* Syst. Nat. 1. p. 883. Flem. p. 187. (ABRAMIS.) Spawns in May,—this is a fresh water genus.

2. C. LEUCISEUS. *Dace.* Don. t. 77. This and the remaining species, belong to the genus LEUCISEUS, (Flem. p. 187. 188.)

3. C. RUTILUS. *Roach.* Don. t. 67.

4. C. CEPHALUS. *Chubb.* In the Exe.

5. C. PHOXINUS. *Minnow.* Don. t. 60. Common in all our small streams.

CLUPEA. 1. HARENGUS. *Common Herring.* They migrate in immense shoals,—but their habits as is the case with most of this class, are very imperfectly known,—they approach the Devonshire shores in the autumn to spawn, and are frequently taken in great numbers;—the young fry enter the rivers.

2. C. PILCHARDUS. *Pilchard.* This is chiefly taken on the Cornish coasts in summer, but their migrations are uncertain. The fry of this and the last are confounded together, under the common name of Sprats.

SALMO.—A. *Stationary in rivers.*

1. S. FARIO. *The Common Trout.* Common

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in the Teign, Exe, and Dart, and other streams within the district.

B. *Migratory from the Sea.*

2. S. EPERLANUS. *Smelt*. Spawns in March, near the entrance of rivers.
3. S. THYMALLUS. *Grayling*. Don. t. 88. Leaves the sea early in spring, and returns to it before winter.
4. S. TRUTTA. *Sea Trout*. Brit. Zool. 3. p. 296. Its migrations are nearly similar to the Salmon.
5. S. HUCHO. *Bull Trout*. Nearly the size of the Salmon, which it also resembles in colour, but is of a more lengthened form,—has fewer rays in the anal fin, and no teeth on the vomer.
6. S. SALAR. *Salmon*. The Edinburgh Phil. Journal, No. 24. The reports of select Committee of the house of Commons in 1824—5, and a work by James Cornish, Esq. of Totnes, “View of the present state of the Salmon and Channel fisheries,” Lond. 1824, may be referred to for the habits, commercial value, &c. &c. of this fish. Salmon fisheries are rented in the Teign, Dart, and Exe rivers.

Donovan may be consulted for good delineations of the British Fishes, and very full and minute descriptions will be found in Willoughby. The geographical distribution, habits, and migratory movements, of the greater part of this class of ani-

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mals, are but imperfectly known ;—the latter, often appear to be very singular, and complex. As the temperature of the medium by which they are surrounded, is much less subject to variation than that of the air, *that* has perhaps, but a very secondary influence, (if any,) on their migrations, and the two great regulating causes probably are, the want of adequate and suitable food,—and of a proper situation for depositing their spawn. Most of the deep water species, approach the shores in the breeding season, and many, as the Salmon, and others, ascend far up rivers, and overcome surprising obstacles, impelled by that Law of Nature which prompts them to continue their species ;—whilst in a few others, these movements are reversed, and tho' habitually living in fresh water, their spawn is deposited in the sea.

The Sword Fish, (XIPHIAS,) Trumpet Fish, (CENTRISCUS,) Flying Fish, (EXOCETUS,) Pilot Fish, (CENTRONOTUS,) and a few others, have we believe been recorded as occurring in the British Channel ;—but they can only be considered as rare and accidental visitors.

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THE accumulation of rare and beautiful shells has ever been viewed as forming a more elegant cabinet than any other department of natural history, not only from their easy arrangement, variety and beauty of colors, and singularity of shape, but from their durability and facility of collection. They have hence become an interesting source of amusement and delight.

It may be also here remarked, that the magnificent collections in British Natural History of the late Colonel Montague, consisting principally of shells from the counties of Cornwall, Devonshire, and Dorsetshire, have been purchased from his executors, for the British Museum, at a great cost.

But although it has been usual to consider Conchology merely as a source of amusement or ornament to the collector, or as filling up a department in one of the classes of Natural History, we

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may venture to offer it as a subject of much higher consideration and interest to the student in geology, as one of the means of elucidating the relations of the different parts of the earth, to which we can or may have access. The connexion of all the parts of Natural History with geological knowledge, has at length been considered as a powerful instrument in the promotion of this sublime science, which though as yet in its infancy, has, like the young Hercules, given glorious promise of a sound and vigorous maturity.

The philosopher, for example, will examine with delight and wonder, the vast mass of diluvian marine shells, mixed with siliceous sand in its several degrees of induration and cementation, and totally different from the sand of the adjacent shores, deposited near the very summit of Haldon Hill, to the north of the town of Teignmouth, and enquire, with busy curiosity, by what process of nature they have been fixed there, at the height of eight hundred feet above the level of the sea. Probably a vortical deposition at the time of the general deluge, round the summit of the original mountain. Comparative measurement of the altitude of this testaceous stratum with other similar depositions, might lead to some valuable conclusions as to the height of the flood, in this region of the globe, and teach us where to seek for their level in other maritime mountainous countries.

This very interesting natural curiosity is just beyond the town of Teignmouth, in a bye road

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leading from the village of Holcombe to Newton; and consists chiefly of nondescript species of *Patella* and *Tellina*: and a little beyond this, on the same level, is another distinct accumulation of shells, mineralized into a blood-red Chalcedony or Cornelian, composed mostly of species of the *Cardium*, *Mactra*, and *Arca*.

We now proceed to a classical enumeration of such marine shells as, from the observations of later Conchologists, have hitherto been found within the precincts of our intended researches. The arrangement is adopted from that which was given by the authors of the descriptive catalogue of British shells, in the eighth volume of the *Linnean Transactions*. And that it may be rendered more useful to such as collect them for the purpose of scientific arrangement, a short generic character is given of each family, and a reference to the most accurate engraving of each species, whenever they may be found in the beautiful works of *Da Costa's British Conchology*, *Pennant's British Zoology*, (the edition of 1812,) *Montague's Testacea Britannica*, and *Turton's Conchological Dictionary and British Bivalves*.

A. With more than two valves.

CHITON.

Shell boat-shaped, consisting of several valves disposed in a transverse manner along the back,

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and incumbent on each other at their front margin.

1. *Chiton marginatus*. *Brit. Zool. pl. 39. fig. 2.*
2. *Ch. lævis*. *Brit. Zool. pl. 39. fig. 3.*
3. *Ch. fascicularis*. *Montague, pl. 7. fig. 5.*
4. *Ch. cinereus*. *Lin. Trans. vol. 8. pl. 1. fig. 3.*

All these are found sticking to the under side of stones, at low water, and on oysters.

LEPAS.

Shell with several erect unequal valves, firmly fixed to other substances.

1. *Lepas anatifera*. *Brit. Zool. pl. 41. fig. 2.—*
Donovan, pl. 11.
2. *L. anserifera*. *Donovan, pl. 166. fig. 2.*
3. *L. sulcata*. *Montague, pl. 1. fig. 6.*
4. *L. fascicularis*. *Donovan, pl. 64.*
5. *L. membranacea*. *Montague Supplem. p. 164.*
6. *L. scalpellum*. *Montague, pl. 1. fig. 4.*

These are fixed by a flexible stalk, and occasionally found on drifted wood, sea weed, and other marine substances.

7. *Lepas punctata*. *Montague, pl. 1. fig. 5.*
- 7*. *L. rugosa*. *Donovan, pl. 160. L. Borealis.*
8. *L. balanus*. *Brit. Zool. pl. 40. fig. 1.—*
Donovan, pl. 30. fig. 1.
9. *L. balanoides*. *Brit. Zool. pl. 40. fig. 2.—*
Donovan, pl. 36. fig. 2. 3.
10. *L. intertexta*. *Brit. Zool. pl. 41. fig. 1.—*
Donovan, pl. 36. fig. 1.

Fixed, without stalk, to stones and shells.

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PHOLAS.

Shell with two larger primary valves, open at both ends, and several lesser ones about the hinge: teeth long, curving inwards, one in each valve on the inside.

1. *Pholas papyracea*. *Turton, pl. 1. fig. 1. 4.*
2. *Ph. lamellata*. *Turton, pl. 1. fig. 5. 6.*
3. *Ph. tuberculata*. *Turton, pl. 1. fig. 7. 8.*
4. *Ph. dactylus*. *Brit. Zool. pl. 42. fig. 1.—
Donovan, pl. 118.*
5. *Ph. candida*. *Brit. Zool. pl. 42. fig. 2.—
Donovan, pl. 132.*
6. *Ph. parva*. *Brit. Zool. pl. 4. fig. 1.—
Montague, pl. 1. fig. 7. 8.*

All these are found at low water, burrowed in clay, sand, decayed wood, or sandstone rocks.

B. *With two valves.*

MYA.

Shell generally gaping at one end: hinge with mostly a strong thick broad tooth, not inserted into the opposite valve.

1. *Mya truncata*. *Brit. Zool. pl. 44.—Donovan, pl. 92.*
2. *M. arenaria*. *Brit. Zool. pl. 45.—Donovan, pl. 85.*
3. *M. declivis*. *Pultney's History of Dorsetshire, pl. 4. fig. 6.*

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4. *M. prætenuis*. *Montague, pl. 1. fig. 2.*—
Donovan, pl. 176.

5. *M. distorta*. *Montague, pl. 1. fig. 1.*

6. *M. bidentata*. *Montague, pl. 26. fig. 5.*

A minute species, buried in the back of old thick oyster shells, just below the surface.

7. *substriata*. *Montague Supplement, page 25.*

Very minute, hardly exceeding the tenth of an inch in diameter, and dredged up among corallines.

8. *M. inœquivalvis*. *Montague, pl. 26. fig. 7.*

9. *M. suborbicularis*. *Montague, pl. 26. fig. 6.*

10. *M. purpurea*. *Montague Supplement, page 21.*

11. *M. ovalis*. *Turton, pl. 8. fig. 1. 2.*

12. *M. stirata*. *Turton, pl. 8. fig. 6. 7.*

13. *M. dubia*. *Turton, pl. 2. fig. 8. 9. 1.*

14. *M. convexa*. *Turton, pl. 4. fig. 1. 2.*

15. *M. substirata*. *Turton, pl. 11. fig. 9. 10.*

GALEOMMA.

Shell equivalve, equilateral, tranverse, with a large oval gape at the front margin; hinge without teeth: ligament internal.

1. *Galeomma Turtoni*.

A new genus of Shells, discovered and described by Dr. Turton, and figured in the *Zoological Journal*, vol. 2. plate 13. fig. 1.

SOLENA.

Shell oblong, open at both ends, with a reflected

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awl-shaped tooth or two, not inserted into a groove of the opposite valve.

1. *Solen Siliqua*. *Brit. Zool. pl. 48. fig. 1.*—
Donovan, pl. 46.

2. *S. Vagina*. *Brit. Zool. pl. 49. fig. 1.*—
Donovan, pl. 120.

3. *S. Ensis*. *Brit. Zool. pl. 48. fig. 2.*—
Donovan, pl. 50.

4. *S. pellucidus*. *Brit. Zool. pl. 49. fig. 2.*—
Donovan, pl. 153.

5. *S. vespertinus*. *Brit. Zool. pl. 50. fig. 2.*—
Donovan, pl. 41. fig. 2.

6. *S. floridus*. *Turton, pl. 6. fig. 9.*

7. *S. costulatus*. *Turton, pl. 6. fig. 8.*

These two last species were first described and figured in Dr. Turton's bivalve shells, under his genus *Prammobia*.

8. *S. squamosus*. *Turton, pl. 6. fig. 1. 3.*
Lepton.

9. *S. minutus*. *Turton, pl. 2. fig. 12.*

10. *S. antiquatus*. *Donovan, fig. 114.*

11. *S. sebpula*. *Turton, pl. 6. fig. 11. 12.*

SPHENIA.

Shell transverse, open at the anterior end : hinge of the left valve with an elevated transversely elongated tooth, of the right valve with a concave tooth and small denticle behind it : lateral teeth none : ligament internal.

1. *Sphenia binghami*. *Turton, pl. 3. fig. 4. 5.*

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2. *Sp. swainsoni*. *Turton*, pl. 3. fig. 3.

A new genus discovered by Dr. Turton in the interior of rocks at Torquay.

TELLINA.

Shell with the front side generally sloping, or curved to one side: hinge with usually three teeth; the lateral teeth in one of the valves flat, or nearly obsolete.

1. *Tellina tenuis*. *Brit. Zool.* pl. 51. fig. 2.—
Donovan, pl. 19. fig. 2.
2. *T. fabula*. *Donovan*, pl. 97.
3. *T. donacina*. *Montague*, pl. 27. fig. 3.
4. *T. ferroensis*. *Brit. Zool.* pl. 50. fig. 3.—
Donovan, pl. 60.
5. *T. depressa*. *Donovan*, pl. 163.—*Turton*,
pl. 8. fig. 8.
6. *T. radula*. *Montague*, pl. 2. fig. 1. 2.—
Donovan, pl. 130.
7. *T. crassa*. *Brit. Zool.* pl. 51. fig. 1.—
Donovan, pl. 103.
8. *T. lactea*. *Montague*, pl. 2. fig. 4.—*Turton*,
pl. 7. fig. 4. 5.
9. *T. rotundata*. *Montague*, pl. 2. fig. 3.—
Turton, pl. 7. fig. 3.
10. *T. flexuosa*. *Donovan*, pl. 42. fig. 2.
Venus sinuosa.
11. *T. solidula*. *Brit. Zool.* pl. 52. fig. 2.—
Da Costa, pl. 12. fig. 4.
12. *T. inæquivalvis*. *Turton*, pl. 3. fig. 11 to 14.

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13. *T. divericata.* *Turton's Conchological Dictionary.*

CARDIUM.

Shell with the valves equal and convex, mostly ribbed longitudinally, and toothed round the margins: hinge with two teeth near the beaks, and a remote lateral one each side; locking into the opposite valves.

1. *Cardium aculeatum.* *Brit. Zool. pl. 53. fig. 1.—Donovan, pl. 6.*
2. *C. spinosum.* *Brit. Miscell. pl. 32.*
3. *C. echinatum.* *Donovan, pl. 107. fig. 1.—Da Costa, pl. 14. fig. 2.*
4. *C. tuberculatum.* *Pultney's History of Dorset, pl. 2. fig. 2.*
5. *C. ciliare.* *Brit. Zool. pl. 52. fig. 2.—Donovan, pl. 32. fig. 2.*

This last is the same as *C. echinatum*, in a different stage of growth.

6. *C. edule.* *Brit. Zool. pl. 53. fig. 3.—Donovan, pl. 124.*
7. *C. lævigatum.* *Brit. Zool. pl. 54. fig. 1.—Donovan, pl. 54.*
8. *C. rubrum.* *Montague, pl. 27. fig. 4. Minute.*
9. *C. elongatum.* *Turton, pl. 13. fig. 8.*
10. *C. nodosum.* *Turton, pl. 13. fig. 9.*
11. *C. exignum.* *Donovan, pl. 32. fig. 3.*

CONCHOLOGY.

MACTRA.

Shell with the valves equal, mostly unequal at the sides : middle tooth of the hinge complicated or triangular, with a small hollow each side ; the lateral teeth remote, locking into each other.

1. *Maetra stultorum*. *Brit. Zool. pl. 53. fig. 1.*
—*Donovan, pl. 116.*
2. *M. dealbata*. *Montague, pl. 5. fig. 1.*
3. *M. solida*. *Brit. Zool. pl. 55. fig. 2.*—
Donovan, pl. 61.
4. *M. subtruncata*. *Brit. Zool. pl. 55. fig. 1.*
—*Montague, pl. 27. fig. 1.*
5. *M. listeri*. *Donovan, pl. 64. fig. 1.* *Tellina*
plana.
6. *M. boysii*. *Montague, pl. 3. fig. 7.* *Ligula.*
7. *M. lutraria*. *Brit. Zool. pl. 55. fig. 3.*—
Donovan, pl. 58.
8. *M. hians*. *Donovan, pl. 140.*—*Da Costa,*
pl. 17. fig. 4.
9. *M. crassa*. *Turton, t. 5. fig. 7.*
10. *M. triangularis*. *Turton, t. 6. fig. 14.*
11. *M. minutissima*. *Turton, t. 6. fig. 15.*
12. *M. tenuis*. *Montague, t. 17. fig. 7.*

DONAX.

Shell with the front margin very abrupt and blunt ; hinge with two teeth in the middle, and a single remote lateral one.

CONCHOLOGY.

1. *Donax trunculus*. *Brit. Zool. pl. 58. fig. 1.*
—*Donovan, pl. 29. fig. 1.*
2. *D. irus*. *Donovan, pl. 29. fig. 22.*—*Da Costa, pl. 15. fig. 6.*

This last is found buried in the hardest stone.

3. *D. denticulata*. *Turton Dict. t. 41. fig. 19.*
4. *D. complanata*. *Turton, t. 7. fig. 13. 14.*
5. *D. rubra*. *Turton, t. 10. fig. 14.*

VENUS.

Shell with three teeth in the hinge, all close together; one of them placed longitudinally, and inclining outwards.

1. *Venus verrucosa*. *Brit. Zool. pl. 57. fig. 1.*
—*Donovan, pl. 44.*
2. *V. casina*. *Brit. Zool. pl. 57, fig. 2.*
3. *V. lactea*. *Donovan, pl. 149.*
4. *V. fasciata*. *Donovan, pl. 170.*—*Da Costa, pl. 13. fig. 3.*
5. *V. danmonia*. *Montague, pl. 29. fig. 4.*
V. sulcata. *Lin. Trans. vol. 8. pl. 2. fig. 2.*

Seems in no one respect to differ from this shell.

6. *V. gallina*. *Brit. Zool. pl. 59. fig. 2.*—*Donovan, pl. 68.*
7. *V. islandica*. *Brit. Zool. pl. 56.*—*Donovan, pl. 77.*
8. *V. chione*. *Donovan, pl. 17.*—*Da Costa, pl. 14. fig. 7.*
9. *V. undata*. *Brit. Zool. pl. 58. fig. 3.*—*Donovan, pl. 121.*

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10. *V. exoleta*. *Brit. Zool.* pl. 57. fig. 3.—
Donovan, pl. 42.
11. *V. decussata*. *Brit. Zool.* pl. 6. fig. 2.—
Donovan, pl. 67.
12. *V. pullastra*. *Lin. Transactions*, vol. 6. pl.
17. fig. 13. 14.
13. *V. perforans*. *Montague*, pl. 3. fig. 6.
14. *V. virginea*. *Brit. Zool.* pl. 58. fig. 5.—
Lin. Trans. vol. 8. pl. 2 and 3.
15. *V. scotica*. *Turton*, pl. 11. fig. 3. *Crassina*.
16. *V. spinifera*. *Montague*, pl. 17. fig. 1.
17. *V. triangularis*. *Turton*, pl. 11. fig. 19.
20. *Cyprina*.
18. *V. reflexa*. *Turton*, pl. 10. fig. 1. 2.
19. *V. laminosa*. *Turton*, pl. 10. fig. 4.
20. *V. pallida*. *Turton*, pl. 10. fig. 5.
A new species, found by Dr. Turton.
21. *V. ovata*. *Turton*, pl. 9. fig. 3.
22. *V. aurea*. *Turton*, pl. 9. fig. 7. 8.
23. *V. minima*. *Montague*, pl. 3. fig. 3.

ARCA.

Shell with numerous teeth in the hinge, alternately locking within each other.

1. *Arca pilosa*. *Brit. Zool.* pl. 61. fig. 1.—
Donovan, pl. 37.
2. *A. lactea*. *Brit. Zool.* pl. 61. fig. 2.—
Donovan, pl. 135.
3. *A. nucleus*. *Donovan*, pl. 68.—*Da Costa*,
pl. 15. fig. 6.

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4. *A. noæ*. *Turton Dict. fig. 58.*
5. *A. fusca*. *Donovan, pl. 158. fig. 3. 4.*
6. *A. minuta*. *Turton Dict. fig. 98.*
7. *A. perforans*. *Turton, pl. 13. fig. 2. 3.*

OSTREA.

Shell with two generally unequal valves : hinge without teeth, but furnished with a hollow in the middle, and mostly lateral transverse grooves.

1. *Ostrea maxima*. *Brit. Zool. pl. 62.—Donovan, pl. 49.*
2. *O. jacobæa*. *Brit. Zool. pl. 63. fig. 1.—Donovan, pl. 137.*
3. *O. opercularis*. *Brit. Zool. pl. 63. fig. 2.—Donovan, pl. 12.*
4. *O. varia*. *Brit. Zool. pl. 64. fig. 1.—Donovan, pl. 1. fig. 1.*
5. *O. sinuosa*. *Brit. Zool. pl. 64. fig. 2.—Donovan, pl. 34.*
6. *O. lineata*. *Donovan, pl. 116.—Da Costa, pl. 10. fig. 8.*
7. *O. lævis*. *Montague, pl. 4. fig. 4.*
8. *O. obsoleta*. *Brit. Zool. pl. 64. fig. 3.*
9. *O. edulis*. *Da Costa, pl. 11. fig. 6.—Lin, Trans. vol. 6. pl. 18. fig. 9. 10.*
10. *O. parasitica*. *Turton Dict. fig. 8.*
11. *O. pusio*. *Turton, pl. 17. fig. 2.*
12. *O. tenera*. *Zool. Journ. 2. pl. 13. fig. 2.*
A new species, found by Dr. Turton.

CONCHOLOGY.

ANOMIA.

Shell with the under valve flat, and perforated near the hinge: teeth none.

1. *Anomia ephippium*. *Brit. Zool. pl. 65.*—
Donovan, pl. 26.
2. *A. cepa*. *Turton, t. 18. fig. 4.*
3. *A. squamula*. *Turton, t. 18. fig. 5. 6. 7.*
4. *A. A. aculeata*. *Montague, t. 4. fig. 5.*
5. *A. cymbiformis*. *Lin. Trans. vol. 8. t. 3.*
fig. 6.
6. *A. undulata*. *Turton, t. 18. fig. 8. 9. 10.*
7. *A. fornicata*. *Turton, t. 18. fig. 12. 13.*

MYTILUS.

Shell generally fixed by a beard of silky filaments: hinge without teeth, marked by a longitudinal groove, which is sometimes finely notched.

1. *Mytilus edulis*. *Brit. Zool. pl. 66. fig. 2.*—
Donovan, pl. 128.
 2. *M. barbatus*. *Brit. Zool. pl. 67. fig. 2.*—
Donovan, pl. 70.
- This is considered as a bearded variety of the last.
3. *M. pellucidus*. *Brit. Zool. pl. 66. fig. 3.*—
Donovan, pl. 81.
 4. *M. discors*. *Donovan, pl. 25.*—*Da Costa,*
pl. 17. fig. 1.
 5. *M. discrepans*. *Montague, pl. 26. fig. 4.*
Found on fresh Oysters.

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6. *M. rugosus*. *Brit. Zool. pl.* 66. *fig.* 1.—
Donovan, pl. 141.
7. *M. præcisus*. *Montague, pl.* 4. *fig.* 2.
8. *M. gibsii*. *Turton's Bivalves, p.* 200.
9. *M. hirundo*. *Turton, t.* 16. *fig.* 3. 4.

PINNA.

Shell triangular, gaping at the larger end, and fixed at the other by a beard of silky filaments: hinge without teeth; the valves connected on one side nearly the whole length.

1. *Pinna ingens*. *Donovan, pl.* 150. *Pinna lævis*.

This vast shell is taken by the trawl, between Teignmouth and Torbay.

2. *P. fragilis*. *Turton, t.* 20. *fig.* 4.
3. *P. pectinata*. *Turton, t.* 19. *fig.* 1.
4. *P. papyracea*. *Turton, t.* 20. *fig.* 3.

The two last were discovered by Dr. Turton.

C. *With a single Valve.*

NAUTILUS.

Shell consisting of compartments or cells, communicating with each other by means of a small tube or perforation.

1. *Nautilus rotatus*. *Montague, pl.* 15, *fig.* 4.
N. calcar.
2. *N. umbilicatus*. *Montague, pl.* 13. *fig.* 1.

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3. *N. beccarii*. *Montague, pl. 18. fig. 4.*
4. *N. beccarii perversus*. *Montague, pl. 18. fig. 6.*
5. *N. crispus*. *Montague, pl. 18. fig. 5.*
6. *N. spirula*. *Turton Dict. fig. 77.*

In 1826, after a hard gale of wind, many of these shells, together with the *Helix Tanthina* were cast on the Teignmouth beach.

CYPRÆA.

Shell involute, oval, obtuse at both ends : aperture very narrow, reaching the whole length of the shell, toothed on both sides.

1. *Cypræa pediculus*. *Donovan, pl. 43.—Da Costa, pl. 2. fig. 6.*

BULLA.

Shell convolute, without teeth, aperture mostly contracted ; oblong and reaching nearly the whole length of the shell, entire at the base : pillar oblique smooth.

1. *Bulla lignaria*. *Brit. Zool. pl. 73. fig. 2.—Donovan, pl. 27.*
2. *B. aperta*. *Donovan, pl. 120. fig. 1.—Da Costa, pl. 2. fig. 3.*
3. *B. haliotoidea*. *Montague, pl. 7. fig. 6.*
4. *B. catena*. *Montague, pl. 7. fig. 7.*
5. *B. hydatis*. *Da Costa, pl. 1. fig. 10.*

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- *5. *B. cylindracea*. *Brit. Zool. pl. 73. fig. 3.*
—*Donovan, pl. 120. fig. 2. 2.*
6. *B. umbilicata*. *Montague, pl. 7. fig. 4.*
7. *B. retusa*. *Montague, pl. 7. fig. 5.* *Bulla truncata.*
8. *B. obtusa*. *Montague, pl. 7. fig. 3.*
9. *B. alba*. *Zool. Journ. vol. 2. t. 13, fig. 6.*
A new species taken by Dr. Turton.
10. *B. patula*. *Turton Dict. fig. 27. 28.*
11. *B. plumula*. *Montague, t. 15, fig. 9.*
12. *B. membranacea*. *Lin. Trs. v. 11. t. 12. fig. 4.*

VOLUTA.

Shell more or less spiral : aperture reaching much down the shell, with the pillar plaited or toothed.

1. *Voluta tornatilis*. *Brit. Zool. pl. 74. fig. 1.*
—*Donovan, p. 75.*
2. *V. denticulata*. *Montague, pl. 20. fig. 5.*—
Donovan, p. 138.
3. *V. alba*. *Walker's minute shells, fig. 61.*
4. *V. lævis*. *Montague, t. 6. fig. 7.*
5. *V. bidentata*. *Montague, t. 30. fig. 2.*
6. *V. triplicata*. *Donovan, t. 138.*

A specimen of this rare shell was found by Dr. Turton on Paington Sands.

BUCCINUM.

Shell spiral, generally inflated : aperture oval, ending in a short canal leaning to the right.

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1. *Buccinum undatum*. *Brit. Zool. pl.* 76.—
Donovan, p. 104.
2. *B. lapillus*. *Brit. Zool. pl.* 75. *fig.* 1. 1. 1.
—*Donovan, p.* 11.
3. *B. reticulatum*. *Brit. Zool. pl.* 75. *fig.* 2. 2.
—*Donovan, p.* 76.
4. *B. macula*. *Brit. Zool. pl.* 82. *fig.* 6.—
Montague, pl. 9. *fig.* 7.
5. *B. varicosum*. *Zool. Journ. vol.* 2. *t.* 13. *fig.* 7.
A new species, described by Dr. Turton.
6. *B. glaciale*. *Donovan, t.* 154.
A specimen of this shell was dredged up at Torquay.
7. *B. carinatum*. *Turton Dict. fig.* 94.
A specimen of this beautiful species was taken
by the dredge at Torquay, and is in the cabinet
of Dr. Turton.
- *7. *B. minimum*. *Montague, t.* 8. *fig.* 2.
8. *B. ovum*. *Zool. Journ. vol.* 2. *t.* 13. *fig.* 9.
A new species, by Dr. Turton.

MUREX.

Shell spiral, often rough with membranaceous folds or protuberances: aperture oval, ending in an entire straight canal, sometimes a little reflected.

1. *Murex erinaceus*. *Brit. Zool. pl.* 79. *fig.* 1.
—*Donovan, p.* 35.
2. *M. gracilis*. *Montague, pl.* 15. *fig.* 5.—
Donovan, pl. 169. *fig.* 1.
3. *M. sinuosus*. *Montague, pl.* 9. *fig.* 8.
These two last are probably the same shell.

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4. *M. nebula*. *Brit. Zool. pl. 82. fig. 7.*—
Montague, pl. 15. fig. 6.
5. *M. septangularis*. *Montague, pl. 9. fig. 5.*—
Donovan, pl. 179. fig. 4.
6. *M. costatus*. *Brit. Zool. pl. 82. fig. 2.*—
Donovan, p. 91.
7. *M. turricula*. *Montague, pl. 9. fig. 1.*—
Donovan, p. 156.
8. *M. rufus*. *Montague, page 263.*
9. *M. corneus*. *Brit. Zool. pl. 79. fig. 2.*—
Donovan, p. 38.
10. *M. linearis*. *Montague, pl. 9. fig. 4.*—
Donovan, pl. 179. fig. 3.
11. *M. purpureus*. *Montague, pl. 9. fig. 3.*
12. *M. reticulatus*. *Da Costa, pl. 8. fig. 13.*
13. *M. pictus*. *Zoological Journal, vol. 2. t. 13.*
fig. 7.

A new species, found by Dr. Turton.

14. *M. attenuatus*. *Montague, t. 9. fig. 6.*
15. *M. tubercularis*. *Montague, p. 270.*
16. *M. adversus*. *Donovan, t. 159.*

TROCHUS.

Shell spiral, more or less conic : aperture a little angular or rounded, and contracted transversely : pillar placed obliquely.

1. *Trochus magus*. *Brit. Zool. pl. 83. fig. 4.*
—*Donovan, pl. 8. fig. 1.*
2. *T. tumidus*. *Montague, t. 10. fig. 4.*
- *2. *T. crassius*. *Donovan, t. 71.*

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3. *T. lineatus*. *Donovan*, pl. 74. Two upper and lower figures.
4. *T. ziziphinus*. *Brit. Zool. pl.* 83. fig. 1.—
—*Donovan*, p. 52.
5. *T. umbilicatus*. *Brit. Zool. pl.* 83. fig. 3.—
Donovan, p. 74.
6. *T. montacuti*. A new species.
7. *T. ziziphinus*. *Donovan*, t. 52.
8. *T. papillosus*. *Donovan*, t. 127.
9. *T. exiguus*. *Donovan*, t. 8. fig. 2.

TURBO.

Shell solid, spiral : aperture contracted, entire, more or less orbicular.

1. *Turbo jugosus*. *Montague*, pl. 20. fig. 1.
2. *T. littoreus*. *Brit. Zool. pl.* 84. fig. 8.—
Donovan, pl. 33. fig. 1. 2.
3. *T. rudis*. *Donovan*, pl. 33. fig. 3.—*Lin.*
Trans. vol. 8. pl. 4. fig. 12. 13.
4. *T. crassior*. *Montague*, pl. 20. fig. 1.—
Donovan, pl. 178. fig. 4.
5. *T. pulius*. *Donovan*, pl. 2. fig. 2. 6.—
Da Costa, pl. 8. fig. 1. 3.
6. *T. rerber*. *Lin. Trans. vol. 3. pl. 13. fig.*
21. 22.
7. *T. ulvæ*. *Brit. Zool. pl.* 87. fig. 7.
8. *T. auricularis*. *Montague*, page 308.—*Tur-*
ton's Brit. Fauna, page 180.
9. *T. quadrifasciatus*. *Montague*, pl. 27.
fig. 7.

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10. *T. clathrus*. *Brit. Zool. pl.* 84. *fig.* 2.—
Donovan, p. 28.
11. *T. parvus*. *Donovan, p.* 90. *Turbo lacteus*.
12. *T. striatus*. *Lin. Trans. vol.* 3. *pl.* 13.
fig. 25. 26.
13. *T. costatus*. *Montague, pl.* 10. *fig.* 5.
14. *T. terebra*. *Brit. Zool. pl.* 48. *fig.* 4.—
Donovan, pl. 22. *fig.* 2.
15. *T. denticulatus*. *Montague, p.* 315.—*Tur-*
ton's Brit. Fauna, p. 181.
16. *T. labiosus*. *Brit. Zool. pl.* 28. *fig.* 8.—
Montague, pl. 13. *fig.* 7.
17. *T. petræus*. *Montague, p.* 403.
18. *T. fulgidus*. *Montague, p.* 332.
19. *T. depressus*. *Montague, t.* 13. *fig.* 5.
20. *T. unidentatus*. *Montague, p.* 324.
21. *T. spiralis*. *Montague, t.* 12. *fig.* 9.
22. *T. truncatus*. *Montague, t.* 10. *fig.* 7.
23. *T. vitreus*. *Montague, t.* 12. *fig.* 3.
24. *T. ventrosus*. *Montague, t.* 12. *fig.* 13.
25. *T. cingillus*. *Montague, t.* 12. *fig.* 7.
26. *T. interruptus*. *Montague, t.* 20. *fig.* 8.
27. *T. elegans*. *Montague, t.* 22. *fig.* 7.
28. *T. turtonis*. *Turt. Dict. fig.* 97.
29. *T. punctura*. *Montague, t.* 30. *fig.* 5.
30. *T. calethiscus*. *Montague, t.* 30. *fig.* 5.
31. *T. subulatus*. *Donovan, t.* 172.

HELIX.

Shell spiral, more or less transparent and brittle :

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aperture contracted, roundish or crescent-shaped.

1. *Helix serpuloides*. *Montague*, *pl.* 21. *fig.* 2.
2. *H. elegantissima*. *Montague*, *pl.* 10. *fig.* 2.
—*Donovan*, *pl.* 179. *fig.* 1.
3. *H. polita*. *Brit. Zool.* *pl.* 82. *fig.* 1.—
Donovan, *p.* 172.
4. *H. lutea*. *Montague*, *pl.* 16. *fig.* 6.
5. *H. lavigata*. *Brit. Zool.* *pl.* 89. *fig.* 8.—
Donovan, *p.* 105.
6. *H. otis*. A new species by Dr. Turton.

NERITA.

Shell spiral, gibbeus, flattish beneath : aperture half orbicular ; the pillar-lip transverse, flattish, and truncate.

1. *Nerita glaucina*. *Brit. Zool.* *pl.* 90. *fig.* 1.
—*Donovan*, *pl.* 20. *fig.* 1.
2. *N. canrena*. *Donovan*, *p.* 167. *Nerita intricata*.
3. *N. littoralis*. *Brit. Zool.* *pl.* 90. *fig.* 3.—
Donovan, *pl.* 20. *fig.* 2.
4. *N. pallidula*. *Donovan*, *pl.* 16. *fig.* 1.—
Da Costa, *pl.* 4. *fig.* 4. 5.

PATELLA.

Shell more or less conic, and shaped like a basin, generally without spire.

1. *Patella vulgata*. *Brit. Zool.* *pl.* 92. *fig.* 1.
—*Donovan*, *p.* 14.

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2. *P. cærulea*. *Brit. Zool. pl. 93. fig. 4.*—*
Da Costa, pl. 1. fig. 5. 6.
3. *P. intorta*, *Brit. Zool. pl. 93. fig. 2.—*
Donovan, p. 146.
4. *P. pellucida*. *Brit. Zool. pl. 93. fig. 4.—*
Donovan, pl. 93. fig. 1.
5. *P. fissura*. *Brit. Zool. pl. 93. fig. 3.—*
Donovan, pl. 21. fig. 3.
6. *P. ungarica*. *Brit. Zool. pl. 93. fig. 1.—*
Donovan, pl. 21. fig. 1.
7. *P. militaris*. *Montague, pl. 13. fig. 11.—*
Donovan, p. 171.
8. *P. græca*. *Brit. Zool. pl. 92. fig. 3.—*
Donovan, pl. 21. fig. 3.

DENTALIUM.

Shell linear, tubular, not divided into chambers,
open at both ends.

1. *Dentalium entalis*. *Brit. Zool. pl. 93. fig. 5.*
—Donovan, p. 48.
2. *D. gadus*. *Montague, pl. 14. fig. 7.*
3. *D. trachea*. *Montague, pl. 14. fig. 10.*
4. *D. glabrum*. *Montague, p. 497.*
5. *D. imperforatum*, *Montague, p. 496.*
6. *D. dentalis*.
7. *D. striatum*.

SERPULA.

Shell tubular, variously shaped; generally

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separated internally by divisions, at irregular distances.

1. *Serpula spirorbis*. *Brit. Zool. pl. 94. fig. 1.*
—*Donovan, p. 9!*
2. *S. spirillum*. *Pultney's Dorsetshire, pl. 19.*
*fig. 27.**
3. *S. minuta*. *Montague, p. 503.*—*Turton's*
British Fauna, p. 201.
4. *S. granula*. *Donovan, p. 100!*
5. *S. heterostropha*. *Montague, p. 503.*—*Tur-*
ton's Brit. Fauna, p. 201.
6. *S. carinata*. *Montague, p. 502.*—*Turton,*
p. 201.
7. *S. vitrea*. *Lin. Trans. vol. 5. pl. 1. fig. 31.*
32. S. reflexa.
8. *S. vermicularis*. *Brit. Zool. pl. 94. fig. 2.*
—*Da Costa, pl. 2. fig. 5.*
9. *S. reversa*. *Montague, p. 508.*—*Turton's*
British Fauna, p. 201.
10. *S. triquetra*. *Brit. Zool. pl. 94. fig. 3.*—
Donovan, p. 95.
11. *S. tubularia*. *Montague, p. 513.*—*Turton's*
British Fauna, p. 202.

Large masses of this very fine shell are frequently taken up by the trawl, between Teignmouth and Torquay, attached to stones, shells, and other substances.

TEREDO.

Shell cylindrical, taper, flexuous, lodged in wood,

CONCHOLOGY.

with two valves covering the head of the animal, and two lanceolate ones near the tail.

1. *Teredo navalis*. *Donovan, pl. 145.*—*Turton, t. 2, fig. 1. 3.*

Occasionally found in old stakes, and the bottoms of ships.

2. *T. bipennata*. *Turton Dict. fig. 38 to 40.*

3. *T. malleolus*. *Turton, t. 2, fig. 19.*

4. *T. nana*. *Turton, t. 2, fig. 6. 7.*

The three last discovered by Dr. Turton, in submarine wood.

XYLOPHAGA.

Shell lodged in wood, resembling the *Teredo*, except its wanting the long curved teeth within the valves, and the long tube with its accessorial valves, instead of which there are two curved calyx-like valves behind the hinge.

1. *Xylophaga dorsalis*. *Turton's Bivalves, tab. 2, fig. 4. 5.*

This new and singular genus was first distinguished by Dr. Turton, in masses of wood which had long lain under water in Torbay.

CONCHOLOGY,

ARRANGED

ON THE AMENDED SYSTEM.



THE great additions which have of late years been made in the Science of Natural History, have consequently extended to the department of Conchology. The afore mentioned enumeration, therefore, of marine shells found on this and the adjacent shores, and exhibited under the Classification of *Linnaeus*, is here arranged according to the amended systems of *Lamarck*, *Turton*, and *Sowerby*.

The marine animals which furnish shells may be distributed into four grand Classes or families.

CLASS I.—ANNELIDES.

Body furnished with articulations or distinct joints, but without articulated limbs; elongated, worm-shaped, inclosed in a shelly tube, and furnished with transverse segments.

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The tube without internal chambers or partitions.

1. *Dentalium*. Shell free, tubular, regular, slightly curved, tapering to the hinder extremity, and open at both ends.

In this genus are included the *Dentalium* *Entalis*, *D. dentalis*, *D. striatum*, *D. gadus*.

2. *Cæcalium*. Shell resembling the last, except that it is closed at the lower or smaller extremity.

Including the *Dentalium* *trachea*, *D. imperforatum*, *D. glabrum*, and the *Vermiculum incurvatum* of Mont.

3. *Serpula*. Shell wholly or partially attached, circular or more or less undulately elongated, slightly tapering, solitary or in groups. Including the whole of the genus *Serpula*.

The tube separated into cells by internal partitions.

This division includes all those very minute shells which have hitherto been arranged under the genus *Nautilus*.

CLASS II.—CIRRIPEDES.

Body inclosed in a tunic, and furnished on the upper part with many jointed feet in two rows, and each of these feet bearing setaceous fringed cirri in pairs seated on a pedicel.

4. *Coronula*. Shell fixed, suborbicular, rather

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conic, truncate at each extremity, with six valves having separate spaces between them and firmly adhering together; the lid consisting of four obtuse valves.

Includes the *Lepas diadema*.

5. *Balanus*. Shell fixed, conic or elongated, with six unequal valves and spaces closely united; the lid two-parted, consisting of four pointed valves, the hinder pair a little prominent.

Containing the *Lepas balanus*, *Balanoides*, *Conoides*, *Rugosus*, *Scoticus*, and *Punctatus*.

6. *Clisia*. Shell fixed, compressed—conic, closed at top, with four unequal valves closely adhering; the lid consisting of two undivided valves.

Containing the *Lepas striata*.

7. *Acasta*. Shell fixed in sponge, cylindrical, with six valves closely united, seated on a distinct cup-shaped base.

Including *Lepas spongiosa*.

8. *Pyrgoma*. Shell conic, undivided, with an oval mouth; the base closed and fixed on a madreporic; the lid two-parted consisting of four valves.

Pyrgoma anglicum, beautiful clusters of this shell are found on a madreporic adhering to the rocks at low water at Torquay.

9. *Lepas*. Shell seated on a moveable stalk, compressed at the sides, with five contiguous valves of unequal size, the lower side ones larger.

Includes *L. anatifera*, *L. anserifera* or *L. sulcata*, and *L. fascicularis*.

10. *Scalpellum*. Shell seated on a scaly stalk,

CONCHOLOGY.

compressed, with 13 contiguous unequal valves, the lower side ones less.

Lepas scalpellum.

CLASS III.—CONCHIFERA.

Body without articulations or transverse segments, without visible head or eyes, and always inclosed in a bivalve shell.

A. - Without permanent ligament.

11. *Pholas*. Shell transverse, oval, equivalve, open at one end, mostly furnished with variously shaped accessorial valves behind. Hinge with a long curved tooth in each valve placed under the hind margin : lateral teeth none.

Includes the whole of the *Pholas* tribe.

12. *Teredo*. Shell orbicular, hemispherical, equi-valve, ending in a long cylindrical tube which is furnished at the end with variously shaped valves. Hinge with a long curved tooth in each valve within the margin : lateral teeth none.

13. *Xylophga*. Shell, like the last, lodged in wood, very open before and closed behind, but is without the long cylindrical tube and its accessorial valves, and wants the teeth within the margin.

B. With the ligament external.

14. *Saxicava*. Shell transverse, equivalve, un-

CONCHOLOGY.

equal sided, open at one or both ends : hinge without teeth.

Includes the *Mytilus rugosus*, and *M. Pholadis*.

15. *Gastrochæna*. Shell transverse, oval, with a vast opening in front. Hinge with a single obscure transverse, somewhat laminar tooth in each valve : lateral teeth none.

Includes *Mya dubia*.

16. *Saxicava*. Shell transverse, equivalve, inequilateral, open at one or both ends. Hinge without teeth.

Includes *Mytilus rugosus* and *Mytilus pholadis*.

17. *Hiatella*. Shell transverse, inequivalve, inequilateral, open at the anterior end. Hinge with a single tooth in one valve closing between two obscure ones in the other : lateral teeth none.

Includes *Solen minutus*.

18. *Petricola*. Shell transverse, equivalve, inequilateral, open at the anterior end. Hinge with two teeth in one valve closing between three in the other : lateral teeth none.

Includes *Donax irus*.

19. *Venerirupis*. Shell transverse, equivalve, inequilateral, open at the anterior end. Hinge with three elongated teeth in each valve, all parallel and close together, one of them smaller : lateral teeth none.

Includes *Venus perforans*.

20. *Anatina*. Shell transverse or somewhat orbicular, inequivalve, open at the anterior or both ends. Hinge with a dilated concave tooth pro-

CONCHOLOGY.

jecting a little inwards in each valve and an additional moveable one in one of the valves : lateral teeth none.

Includes *Mya convexa*, *pubescens*, *declivis*, *prætenuis*, *distorta*, *striata*, and *Anatina truncata* of Turton.

21. *Listera*. Shell oval, equivalve, a little open at the sides. Hinge with a spoon-shaped tooth, and additional small ones on one side : lateral teeth none.

Includes *Maetra Listeri*.

22. *Agina*. Shell oval, equivalve. Hinge with a single erect somewhat cloven penetrating tooth in each valve : lateral teeth none.

Includes *Mya purpurea*.

23. *Solen*. Shell transversely linear equivalve, inequilateral, open at both ends. Hinge near one end, with the beaks obscure ; teeth varying in number and shape : lateral ones none.

Includes *Solen vagina*, *siliqua*, *ensis*, and *pellucidus*.

24. *Psammobia*. Shell transverse, oblong or oval, equivalve ; mostly open at the sides. Hinge with two teeth in each valve, one of them obscure ; lateral teeth none.

Includes *Solen fragilis*, *Ps. florida* and *costulata* of Turton. *S. legumen*, *strigilatus*, *antiquatus*, and *vespertinus*. *Venus deflorata*. *Tellina ferroensis*, *solidula*.

25. *Tellina*. Shell transverse or suborbicular, flattish, with a flexuous plait on the anterior side.

CONCHOLOGY.

Hinge with two teeth in one or both the valves, and mostly remote lateral ones. Ligament on the shorter side.

Includes *Tellina lineata* of Turton, *T. punicea*, *Fabula*, *Donacina*, *bimaculata*, *depressa*, *striata*, *tenuis*, *crassa*.

26. *Lucina*. Shell somewhat orbicular, closed. Hinge with two or three teeth in one of the valves, and an internal transverse cavity on the anterior side: lateral teeth none.

Includes *Tellina lactea*, *rotundata*, *Radula*, and *Venus undata*.

27. *Strigilla*. Oval or somewhat globular, equi-valve, closed, with striæ curved in different directions. Hinge with one or two teeth and a lateral one in each valve: ligament at the longer side.

Includes *Tellina carnaria*, *pisiformis*, *divaricata*.

28. *Cryptodon*. Shell triangularly globular, equi-valve, closed. Hinge with a single obscure penetrating tooth and a narrow lateral cavity: lateral teeth none.

Includes *Tellina flexuosa*.

29. *Donax*. Shell transverse, equi-valve, inequi-lateral, the anterior side obtuse and very short. Hinge with two teeth in each valve, with rather remote lateral ones. Ligament at the shorter side.

Includes *Donax trunculus*, *denticulata*, *plebeia*, *rubra*.

30. *Capsa*. Shell in all respects resembling the *Donax*, but is destitute of lateral teeth.

Includes *Donax castanea*.

CONCHOLOGY.

31. *Astarte*. Shell orbicular or subtriangular, equivalve, closed. Hinge with two teeth in each valve, with very obscure lateral ones.

Includes *Venus scotica*, *danmonia*, *Mactra triangularis* and *minutissima*.

32. *Myrtea*. Shell oval-triangular, equivalve, closed. Hinge of one valve with a single tooth and lateral one each side of the other valve with two teeth and obscure lateral ones.

Includes *Venus spinifera*.

32. *Cyprina*. Shell somewhat heart-shaped, equivalve, closed. Hinge with two or three teeth divergent at their tips, and a lateral one at the anterior side.

Includes *Venus Islandica*, *triangularis*, *minima*.

33. *Venus*. Shell transverse or somewhat orbicular equivalves, closed. Hinge with three teeth in each valve, the outer ones close together at the base and divergent at their tips : lateral teeth none.

Includes *Venus verrucosa*, *Casina*, *reflexa*, *fasciata*, *laminosa*, *Gallina*, *ovata*, *aurea*, *virginea*, *decussata*, *pullastra*.

34. *Cytherea*. Shell suborbicular or transverse, equivalve, closed. Hinge with four teeth in the right valve, three of them close together at the base, and one remote under the areola ; in the left valve three teeth, rarely four, close together, with a remote cavity on the anterior side : lateral teeth none.

Includes *Venus Chione*, *exoleta*, *sinuata*, and *tigerina*.

CONCHOLOGY.

35. *Arca*. Shell transverse, mostly equivalve inequilateral, with the beaks separated by a transverse area. Hinge in a straight line, with numerous teeth alternately closing together and gradually enlarging from the centre : lateral teeth none.

Includes *Arca* *Noæ*, *fusca*, *perforans*.

36. *Pectunculus*. Shell mostly orbicular, equivalve, closed ; the beaks close together but becoming gradually more remote by age. Hinge in a curved line, with numerous teeth alternately closing together, the central ones obliterated : lateral teeth none.

Includes *Arca* *Glycymeris*, *pilosa*, and *nummaria*.

37. *Cardium*. Shell more or less heart-shaped, equivalve, mostly ribbed longitudinally, with the beaks prominent and close together. Hinge with two approximate penetrating teeth, and on each side a remote lateral inserted tooth.

Includes the whole of this family.

38. *Mytilus*. Shell longitudinal, equivalve, generally attached by a byssus issuing from the middle ; with the beaks acute, nearly terminal and straight. Hinge with small teeth varying in number, and alternately closing together ; lateral teeth none. Ligament marginal and elongated.

Includes *M. edulis*, *pellucidus*.

39. *Modiola*. Shell somewhat transverse, equivalve, with the hinder side very short ; beaks nearly terminal and placed at the shorter side. Hinge without teeth.

CONCHOLOGY.

Includes *Mytilus Tulipa*, *Modiolus*, *Gibbsii*, discors, and discrepans.

40. *Lima*. Shell longitudinal, oblong, inequivalve, inequilateral, with auricles at the base, and the beaks rather remote. Teeth none, but under the beaks is an external cavity and a transverse dissepiment.

Includes the *Ostrea fragilis* and *subauriculata*.

41. *Avicula*. Shell flat, oblique, inequivalve, inequilateral, transversely produced in a straight line at the base, where the sides are lobed; the beaks rather remote. Hinge linear, with a single slightly penetrating tooth: lateral teeth none.

Includes the *Mytilus Hirundo*.

41. *Pinna*. Shell longitudinal, wedge-form, inequivalve, pointed and nearly straight at the base, dilated and open at top. Hinge without teeth. Ligament nearly the length of the shell.

Includes the whole of this family,

C. *With the Ligament internal.*

42. *Ostrea*. Shell fixed, inequivalve, irregular, with the beaks more or less separated from each other and becoming unequal by age. Hinge without teeth, with a cavity which is partly external and in the lower valve which becomes gradually elongated.

Includes *Ostrea edulis* and *parasitica*.

43. *Anomia*. Shell flat, inequivalve, irregular; the under valve perforated near the beak, and

CONCHOLOGY.

fixed by an operculum or tendon. Hinge without teeth. Ligament placed transversely under the beak.

Includes the whole of this family.

44. *Pecten*. Shell free or fixed, orbicular or oblong, transversely dilated into auricles at the base; the beaks equal and close together. Hinge without teeth, with an internal triangular cavity.

Includes the whole of the Scallop tribe.

45. *Discina*. Shell inequivalve, roundish—oval, flattish, and fixed; each valve furnished with an orbicular central disk: the disk of the upper valve papillary near the middle of the under valve divided by a transverse cleft. Hinge indistinct.

Includes the *Patella distorta* of Montagu.

46. *Mya*. Shell transverse, equivalve, open at the sides. Hinge with a single elevated transversely dilated tooth in the left valve, and none in the right: lateral teeth none.

Includes *M. truncata*, *arenaria*, and *ovalis* of Turton's Bivalves.

47. *Sphenia*. Shell transverse, inequivalve, open at the anterior end. Hinge of the left valve with an elevated transversely dilated tooth, of the right valve with a concave tooth and small denticle: lateral teeth none.

Includes *Sph. Binghami* and *Swainsoni* of Turton's Bivalves.

48. *Lutraria*. Shell transverse, oblong, equivalve, open at both the sides. Hinge with a spoon-

CONCHOLOGY.

shaped tooth and an adjacent triangular one : lateral teeth none.

Includes *Mactra hians*, and *lutraria*.

49. *Montacuta*. Shell oval or oblong, equivalve; inequilateral, mostly closed. Hinge with two teeth in each valve, and a cavity between them; lateral teeth none.

Includes *Mya substriata*, *bidentata*, and *ferruginea*.

50. *Pandora*. Shell transverse, inequivalve, inequilateral, open at the anterior end. Hinge of the flat valve with a single tooth and longitudinal cavity, of the convex valve with two longitudinal cavities : lateral teeth none.

Includes *Tellina inequivalvis*, and *obtusa*.

51. *Corbula*. Shell somewhat triangular, inequivalve, inequilateral, closed. Hinge with a single conic tooth and adjacent cavity in the left valve, and a spoon-shaped tooth and cavity in the right : lateral teeth none.

Includes the *Mya inequivalvis*.

52. *Mactra*. Shell somewhat triangular, equivalve, a little open at the sides. Hinge with a spoon shaped tooth, and an adjacent triangular one : lateral teeth, laminar, double in one of the valves.

Includes *Mactra solida crassa*, *subtruncata*, *stultorum*.

53. *Lepton*. Shell flat, nearly orbicular, inequilateral, a little open at the sides. Hinge of one valve with a single tooth, and transverse linear lateral one on each side ; of the other valve with

CONCHOLOGY.

a cavity in the middle, and a transverse deeply cloven lateral tooth each side, the segments of which divaricate from the beak.

Includes *Solen squamosus*.

54. *Kellia*. Shell somewhat globular, equivalve, closed. Hinge with two approximate teeth and a remote lateral tooth in one valve, and a concave tooth and remote lateral one in the other.

Includes *Mya suborbicularis*, and *Tellina rubra*.

55. *Nucula*. Shell oval-triangular or oblong, equivalve, inequilateral. Hinge with an oblique projecting spoon-shaped tooth in each valve: lateral teeth on each side numerous, sharp pointed, inclining outwards, alternately closing together.

Includes *Arca Nucleus* and *A. minuta*.

CLASS IV. MOLLUSCA.

Body without articulations or transverse segments, furnished with head and eyes, and never inclosed in a bivalve shell.

1. CHITONIDA.

Body elongated, covered with numerous valves placed in a longitudinal series down the back.

Includes the several species of *Chiton*.

2. PATELLIDA.

Body conic, clothed with a conic shell which is hollow underneath.

CONCHOLOGY.

56. *Patella*. Shell thick ; the crown imperforate and inclining anteriorly : spire none ; the margin entire : muscular impression elliptic, somewhat truncate before and constricted at the sides.

Includes *Patella vulgata*, *pellucida*, and *parva*.

57. *Emarginula*. The crown imperforate ; spire none : the margin cloven or notched anteriorly.

Includes *Patella Fissura*.

58. *Pileopsis*. Crown imperforate, hooked at the tip ; the margin very entire.

Includes *Patella ungarica*, *antiquata*.

59. *Calyptræa*. Crown imperforate, central, erect ; the internal cavity furnished with an involuted lip.

Includes *Patella Chinenis*.

60. *Fissurella*. Crown perforated ; the margin very entire.

Includes *Patella Apertura*, *Græca*.

2. BULLADÆ.

Shell open, involute ; the spire mostly concealed or none.

61. *Bullæa*. Shell very thin, partly and spirally involute at the upper part, without produced spire or pillar.

Includes *Bulla aperta*, *B. plumula*, and others.

62. *Bulla*. Shell hard, somewhat cylindrical, without spire none ; truncate at top : aperture as long as the shell.

Includes *Bulla cylindrica*, *ampulla*, &c.

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63. *Haminœa*. Shell thin, somewhat globular, without spire : aperture narrow, as long as the shell.

Includes *Bulla Hydatis*.

64. *Ovula*. Shell oval involute, gibbous in the middle, without spire : aperture much produced at the extremities.

Includes *Bulla patula*.

3. NERITIDÆ.

Shell somewhat globular or semioval : the left side of the aperture generally half-parted transversely.

65. *Natica*. Shell umbilicate underneath. Aperture half-round ; the inner-lip oblique ; without teeth : the outer-lip acute. Operculum horny or testaceous.

Includes the Marine Neritæ.

66. *Ianthina*. Shell somewhat globular, very fragile ; aperture rather triangular ; the pillar elongated, straight, and reflected : operculum none.

Includes *Helix Ianthina*.

4. MACROSTAMODÆ.

Shell more or less ear-shaped, with a short lateral spire.—Aperture very much extended. Pillar and operculum none.

67. *Haliotis*. Shell ear-shaped, broad, with a

CONCHOLOGY.

very short spire: aperture very open, the disk perforated by a longitudinal row of holes.

Includes *Haliotis tuberculata*.

68. *Stomatia*. Shell oval or oblong, somewhat ear-shaped, with a depressed nearly marginal spire. Aperture very open, with the lips united, without perforations along the margins.

Includes *Helix lævigata*, and *H. Otis* of Turton.

69. *Sigaretus*. Shell roundish-oval, somewhat ear-shaped, with the spire depressed; the inner-lip short and spirally involute. Aperture dilated, without perforations; the lips disunited.

Includes *Helix haliotideæ*.

5. PLICACIDÆ.

Aperture of the shell longitudinal, not expanded, entire at the base, and with a fissure at the back. Pillar furnished with plaits or teeth.

70. *Tornatella*. Shell cylindric-oval, transversely striate. Aperture narrow, oblong. Pillar with plaits at the base. Operculum horny, somewhat kidney-shaped.

Includes *Voluta tornatilis*.

71. *Auricula*. Shell oval, quite smooth. Aperture oval-oblong. Pillar plaited at the base. Operculum none.

Includes *Voluta denticulata*, and *V. bidentata*.

72. *Odontostoma*. Shell conic-oval, quite smooth. Aperture oval. Pillar with a single tooth or fold towards the middle. Operculum none.

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Includes *Turbo unidentatus* and others.

6. TURBINACIDÆ.

Pillar without plaits—shell conic or elongated ; aperture roundish or oblong, never expanded, with the lips either united or separated.

73. *Tornus*. Shell orbicular, depressed : aperture oval or roundish ; pillar none. Operculum horny.

Includes *Helix subcarinata*.

74. *Trochus*. Shell conic : aperture angular, with the lips disunited : pillar arched, a little prominent at the base. Operculum horny.

Includes the *Trochus* family.

75. *Turbo*. Shell solid, conoid : aperture rounded, with the lips disunited. Pillar arched, flattened, imperforate, not truncate at the base. Operculum horny.

Includes *Turbo litoreus*, *Nerita litoralis*, &c.

76. *Lacuna*. Shell thin, conoid or somewhat globular, clothed with an epidermis : aperture roundish-oval, with the lips disunited. Pillar flattened, with a longitudinal groove which terminates at the upper end in an umbilicus. Operculum horny.

Includes *Helix Lacuna*, *Turbo vinctus*, *Nerita pallidula*, &c.

77. *Planaxis*. Shell solid, conic-oval : aperture oval ; pillar depressed at the base and obliquely truncate, separated from the outer lip by a narrow

CONCHOLOGY.

sinus ; outer lip lineate internally, and marked below the upper margin by a decurrent callus.

Includes *Buccinum lineatum*.

78. *Phasianella*. Shell solid, conic-oval : aperture oval, with the lips disunited : pillar smooth, depressed, tapering at the base. Operculum calcareous or horny.

Includes *Turbo Pullus* and others.

79. *Cingulus*. Shell oval : aperture oval, with the lips united, and the margin acute : pillar smooth.

Includes *Turbo parvus* and others.

80. *Scalaria*. Shell turreted, ribbed longitudinally : aperture orbicular, with the lips united, and the margin reflected.

Includes *Turbo Clathrus*.

81. *Turritella*. Shell turreted, with a long spire : aperture roundish, entire, with the lips disunited ; outer lip with a sinuosity and slightly channelled at the base internally : operculum horny, suborbicular.

Includes *Turbo Terebra*.

82. *Pyramidella*. Shell conico-subulate, polished, with numerous flat volutions, the sutures hardly visible : aperture oval, with the lips disunited ; pillar smooth. Operculum oval, horny.

Includes *Turbo politus*, and *subulatus*.

7. CANALIFERÆ.

Shell spiral, ending at the base of the aperture

CONCHOLOGY.

in a canal which is more or less elongated : the outer lip not changing its form by age.

83. *Pleurotoma*. Shell turreted or spindle-shaped, with a straight canal ; outer lip cloven or notched at the upper end. Pillar smooth.

Includes *Murex gracilis*.

84. *Fusus*. Shell spindle-shaped without varices, with the spire elongated : outer-lip entire, smooth ; pillar smooth or striate externally.

Includes *Murex corneus* and others.

85. *Murex*. Shell oval-oblong, furnished externally with rough varices which are three or more in number, and forming longitudinal continuous rows. Aperture round.

Includes *Murex Erinaceus*.

86. *Tritonia*. Shell oval-oblong, furnished with varices which are either alternate or solitary, and never forming longitudinal continuous rows : aperture oblong.

Includes *Buccinum Macula* and others.

8. ALATÆ.

Aperture ending in a canal at its base ; the outer lip becoming dilated by age, and changing its form.

87. *Rostellaria*. Shell turreted or spindle-shaped : the outer-lip spreading as it advances to maturity, either entire or toothed or forming finger-like divisions : aperture oblong, extending into a canal at the upper part.

Includes *Strombus Pes Pelecani*.

CONCHOLOGY.

9. PURPURIFERÆ.

Shell with a short reflected canal at the base of the aperture, or with an oblique reflected fissure.

88. *Purpura*. Shell oval, with or without tubercles, or angular; aperture dilated, notched at the base, with an oblique somewhat channelled sinus: pillar flattened, ending in a point at the base.

Includes *Buccinum Lapillus*.

89. *Dolium*. Shell thin, inflated, with transverse belts: outer-lip toothed or crenate its whole length: aperture longitudinal, notched at the base.

Includes *Buccinum Perdix*.

90. *Buccinum*. Shell oval or conic-oval: aperture longitudinal, emarginate at the base without canal: pillar not depressed, turgid above, undulately curved.

Includes *Buccinum undatum*.

10. COLUMELLIDÆ.

91. *Marginella*. Shell oval-oblong, quite smooth, with a short spire: aperture elongated, slightly emarginate or reflected at the base. Pillar plaited at the base.

Includes *Voluta lævis*.

11. CEPHALOPODES:

Body immersed in a sack. Head external; the mouth surrounded with inarticulate feet.

CONCHOLOGY.

92. *Spirula*. Shell rolled into a disk-like spire at the smaller extremity, the volutions not attached to each other; the larger one straight and cylindrical.

Includes the *Nautilus Spirula*. Turton's Conch. Dict. plate 77. A number of these most rare and interesting shells were cast on the Teignmouth beach in the winter of 1826, accompanied by the *Ianthina* in the living state.

ANNULATED ANIMALS.

In this type the nervous system consists of a series of ganglia connected by two longitudinal nervous cords.

CLASS I. CRUSTACEÆ.

All the animals of this class are covered by integuments of a more earthy character than any others of the type *Annulata*,—they were arranged by Linneus amongst the apterous insects and are included in his genera *Cancer*, *Monoculus* and *Oniscus*,—Lamarck first established them as a distinct class; in all of them, as far as has hitherto been explored, the sexes are distinct.

A. ENTOMOSTRACA.

Mandibles simple or none—Legs branchial.

APUS. PRODUCTUS. (Latr.) In stagnant ponds.

DAPHNIA. PULEX. (Latr.) Ditto.

CYPRIS. CONCHACEA. (Latr.) Donovan, I. t. 5. (MONOCULUS CONCHACEUS.) In clear ponds, swim with great rapidity and whilst swimming conceal the whole body in the bivalve shell.

NATURAL HISTORY.

CYCLOPS. QUADRICORNIS. (Latr.) In fresh and stagnant waters.

All the above genera were included by Linneus in his genus **MONOCULUS**.

BRANCHIOPODA. STAGNALIS. (Latr.) Lin. Trans. 1. p. 163. t. 9. (**CANCER STAGNALIS.**)

This may occasionally be met with in shallow pools of rain water—the body is transparent.

The animals of this division or sub-class have been as yet but little attended to and their arrangement is consequently very unsettled and imperfect—some are parasitic on other marine or aquatic animals, and a few are said to undergo transformation during their growth.

B. MALACOSTRACA.

Mandibles palpigerous—Legs simple.

1. PODOPTHALMÆ.

This division includes the animals commonly known as Crabs, Lobsters, Shrimps, &c., they all have the power of reproducing their claws when lost.

CORYSTES. CASSIVELAUNUS. LEACH MALACOSTRACA PODOPTHALMATA BRITANNIÆ, t. 1. Latr. (**CORYSTES DENTATUS.**) Penn. Brit. Zool. 4. 6. t. 7. Male and Female. (**CANCER DENTATUS.**) Occasionally thrown up on the beaches.

NATURAL HISTORY.

ATELECYCLUS. HETERODON. Mala. Podophth. t. 2. Lin. Trans. 11. t. 1. f. 1. (**CANCER DENTATUS.**) Discovered by Montagu on our coast—where it is not an uncommon species in deep water.

PIRIMELA. DENTICULATA. Malac. Podophth. t. 3. Lin. Trans. 9. p. 87. t. 2. f. 2. (**CANCER DENT.**) Taken from the rubbish of a trawl net at Torquay, by Dr. Goodall.

PORTUNUS. 1. PUBER. Malac. Podophth. t. 6. Brit. Zool. 4. t. 4. f. 8. (**CANCER VELUTINUS.**) On our southern shores. This forms an article of food in France—the colors when alive are very vivid.

2. **P. CORRUGATUS.** Malac. Podophth. t. 7. f. 1 and 2. Brit. Zool. 4. t. 5. f. 9.

3. **P. MARMOREUS.** Malac. Podophth. t. 8. First discovered by Montagu. It is of frequent occurrence along the whole of our coast line, thrown up from the deep water after storms, or entangled in the shore nets of the fishermen.

4. **P. DEPURATOR.** Malac. Podophth. t. 9. f. 1.—2. Brit. Zool. 4. t. 4. f. 6. A.

The most frequent species of the genus.

5. **P. PUSILLUS.** Malac. Podophth. t. 9. f. 5.—8. Frequently dredged up from the deep water off the coast.

6. **P. EMARGINATUS.** Malac. Podophth. t. 8. f. 3.—4. South-west coast of Devon on Leach's authority,—extremely rare.

The portuni are commonly known by the names of

NATURAL HISTORY.

flying, or flat-footed crabs, they have the power of swimming by means of the flat hinder legs which act as fins,—some of the species frequent rocky parts of the coast, others the sandy,—they only approach the shore at particular seasons.

CARCINUS. MÆNAS. Malac. Podopth. t. 5. Brit. Zool. 4. t. 2. f. 5. (**CANCER MÆNAS.**) Very common.—Lurking under sea weed or burrowing in the sand.

PORTUMNUS. VARIEGATUS. Malac. Podopth. t. 4. Brit. Zool. 4. t. 1. f. 4. (**CANCER LATIPES.**) A finely mottled species with orange colored legs—burrows in the sand and may be found in general by digging near low water mark.

CANCER. PAGURUS. Malac. Podopth. t. 10. Brit. Zool. 4. t. 3. f. 7. The common edible species on rocky parts of the coast in deep water. It is in season between Christmas and Easter.

XANTHO. FLORIDA. Malac. Podopth. t. 11. Lin. Trans. 9. p. 85. t. 2. f. 1. (**CANCER FLORIDA.**) Common on rocky parts of our coast according to Montagu.

PILUMNUS. HIRTELLUS. Malac. Podopth. t. 12. Brit. Zool. 4. t. 6. f. 11. (**CANCER HIRTELLUS.**) On the southern coast of Devon—Leach. This is frequent on the rocky parts of the coast, and may be taken under stones at low tide.

PINNOTERES. PISUM. Malac. Podopth. t. 14. f. 1.—3. Brit. Zool. 4. t. 1. f. 1. (**CANCER**

NATURAL HISTORY.

PISUM.) Found in muscle shells; about the size of a pea.

All the species of this genus inhabit the bivalve shells of the Mytilidæ, Pinnæ, &c. of the acephalous Mollusca.

GONOPLAX. BISPINOSA. Mal. Podopth. t. 13. Brit. Zool. 4. t. 5. f. 10. (**CANCER ANGULATUS.**) Has been taken on many parts of the southern coast of Devon.

The animals of this family inhabit deep water where the bottom is clayey or slimy in which they make a lateral burrow with two entrances.

EURYNOME. ASPERA. Malac. Podopth. t. 17. Brit. Zool. 4. t. 9. (**CANCER ASPER.**) Dredged up from deep water off the coast occasionally.

PISA. 1. GIBESII. Malac. Podopth. t. 19. Lin. Trans. 11. 2. t. 1. (**CANCER BIACULEATUS.**) Deep waters on the coast. Montagu. Not unfrequently taken by the trawl net.

2. P. TETRAODON. Malac. Podopth. t. 20. Brit. Zool. 4. t. 8. f. 15. (**CANCER TETRODON.**) In deep water off Teignmouth, and thrown on the beaches occasionally after storms.

MAJA. SQUINADO. Malac. Podopth. t. 18. Sow. Brit. Misc. t. 39. (**CANCER MAJA.**) *The Thorn Back or King Crab.* Off the coast in the deep water frequent; in the younger state (when it differs much in general appearance from the adult) it approaches the shore and is often taken in the common nets.

HYAS. 1. ARANEUS, Malac. Podopth. A. t. 21.

NATURAL HISTORY.

(**CANCER ARANEUS**, of Lin.) This species tho' abundant on the Kentish coast is of rare occurrence on ours.

2. **H. COARCTATUS**. Malac. Podopth. t. 21. B. Dredged up from deep water on the southern coast of Devon. Leach.

INACHUS. DORSETTENSIS. Malac. Podopth. t. 22. f. 1.—8. (**CANCER SCORPIO**, of Penn. and Fabricius.) Abundant on our coasts, taken in dredge nets at the mouths of rivers and in deep water off the shore.

In. **Dorynchus** of the same plate, f. 7. and 8, we probably have also.

MACROPODIA. 1. PHALANGIUM. Mal. Podop. t. 23. f. 6. Brit. Zool. 4. t. 8. (**CANCER PHALANGIUM**.) *The Spider Crab*. Common near the mouths of our rivers.

2. **M. TENUIROSTRIS**. Malac. Podopth. t. 23. f. 1.—5. A common inhabitant of the deep water off the coast according to Dr. Leach. It was first observed amongst some crustaceæ collected at Torquay by Dr. Hooker.

PAGURUS. 1. STREBLONYX. Malac. Podopth. t. 26. f. 1.—4. Brit. Zool. 4. t. 17. f. 38. (**CANCER BERNHARDUS**.) *The common Hermit or Soldier Crab*.

2. **P. PRIDEAUX**. Malac. Podopth. t. 26. f. 5.—6. These are both found on our northern shores.

The species of this genus are parasitic, and inhabit the empty cavities of Turbinate univalves

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changing their habitations from smaller to larger shells as they increase in growth. The abdomen and tail is naked and tender, the latter is furnished with one or more hooks to enable the animal to secure itself in its habitation; they move about with considerable facility.

PALINURUS. VULGARIS. Malac. Podoph. t. 30. Brit. Zool. 4. t. 11. f. 22. (**ASTACUS HOMARUS.**) *The Sea Cray Fish or Horny Lobster.*

The Palinuri live on fish and other marine animals, —they have the power of producing a loud noise by rubbing the first joints of the exterior antennæ against the projecting clypeas.

PORCELLANA. PLATYCHELES. (Latr.) Brit. Zool. 4. t. 6. f. 12. (**CANCER PLATYCHELES.**) On the rocky parts of the coast—of a rounded form about the size of a horse bean adhering closely to the stones under which it lurks.

GALATEA. 1. SPINIFERA. Malac. Podoph. t. 28. B. Brit. Zool. 4. t. 14. f. 26. (**ASTACUS STRIGOSUS.**) Under stones at low tide on most of the rocky parts of the coast.

2. **G. SQUAMIFERA.** Malac. Podoph. t. 28. A. In similar situations with the last.

GEBIA. 1. DELTAURA. Malac. Podoph. t. 31. f. 9, 10. On the southern coast of Devon.

2. **G. MELTATA.** Malac. Podoph. t. 31. f. 1.—8. Inhabits with the last—both species are found under the mud at very low tides in which they make long winding horizontal

NATURAL HISTORY.

passages at the depth of two or three feet from the surface.

CALLIANASSA. SUBTERRANEA. Malac. Podop. t. 32. Montagu first described this species, Lin. Trans. v. 11. p. 343, he found it in a sand bank in the estuary of Kingsbridge. It lives beneath the sand on the sea coast.

ASTACUS. 1. GAMMARUS. Brit. Zool. 4. t. 10. f. 21. (A. MARINUS, of Latreille.) *The Common Lobster.* In the deep clear water amongst rocks,—they have the power of springing backwards to a great distance into their holes: they feed chiefly on dead animal matter.

2. A. FLUVIATILIS. (Latr.) Brit. Zool. 4. t. 15. f. 27. (A. ASTACUS.) *The Craw Fish.* Inhabits rivers, burrowing in the banks.

CRANGON. VULGARIS. Malac. Podopth. t. 38. B. Brit. Zool. 4. t. 15. f. 30. (ASTACUS CRANGON.) *The Common Shrimp.* On sandy shores,—it often ascends rivers.

PROCESSA. CANALICULATA. Mal. Podopth. t. 41. On the southern coast of Devon—Montagu.

HIPPOLYTE. VARIANS. Malac. Podopth. t. 38. f. 6.—16. In pools amongst the rocks of our coast,—it varies much in color from red to green or bluish green.

PALEMON. 1. SERRATUS. Malac. Podopth. t. 43. f. 1.—10. Brit. Zool. 4. t. 16. f. 28. (ASTACUS SERRATUS.) *The Prawn.*

2. P. SQUILLA. Malac. Podopth. t. 43. f.

NATURAL HISTORY.

11—13. (CANCER SQUILLA, of Lin.) This is common, and according to Leach has been generally confounded with the last.

3. P. VALIANS. Malac. Podopth. t. 43. f. 14.—16. This species according to Leach is also common on the coast.

All the Palemoni inhabit the shores of the sea during summer, and feed on dead animal matter—the females appear to be much more abundant than the males, and are usually found with spawn.

ATHANAS. NITESCENS. Malac. Podopth. t. 44. On the southern coast of Devon—Montagu. Found occasionally in pools left by the tide amongst rocks.

MYSIS. BIPES. (Latr.) Lin. Trans. 11. p. 14. t. 2. f. 5. (MONOCULUS ROSTRATUS.) Common beneath stones—lying on black mud, and on the south coast of Devon—Montagu.

MEGALOPA. MONTAGUI. Malac. Podopth. t. 16. f. 1.—6. Lin. Trans. 7. p. 84. t. 6. f. 1. (CANCER RHOMBOIDALIS.) Taken among some floating marine plants in Torbay.

2. EDRIOPTHALMA.

TALITRUS. 1. LOCUSTAS. (Latr.) Brit. Zool. 4. p. 21. (ASTACUS LOCUSTA.) *Sand Hopper.* Burrows and hops about in the sand on the coast—it is very abundant.

2. T. LITTOREUS. Lin. Trans. 11. p. 96.

NATURAL HISTORY.

- (*CANCER LITTOREUS*.) Found under stones and fuci on the shore.
3. *T. SPINOSUS*. Lin. Trans. 11. p. 3.
(*CANCER SPINOSUS*.)
- MELITA. PALMATA*. Leach. Lin. Trans. 11. p. 358. On the sea coast of Devon under stones—Montagu.
- MÆRA. GROSSIMANA*. Leach. Lin. Trans. 11. p. 359. The southern coast of Devon beneath stones—Montagu.
- GAMMARUS. 1. AQUATICUS*. Lin. Trans. 11. p. 359. Fresh water ponds, &c.
2. *G. MARINUS*. Lin. Trans. 11. p. 359. Common in the sea on our southern coast.
- AMPITHOE. RUBRICATA*. Lin. Trans. 11. p. 360. In the sea on the southern coast of Devon.
- PHERUSA. FUCICOLA*. Lin. Trans. 11. p. 360. Amongst Fuci on the southern coast of Devon.
- PODOCERUS. VARIEGATUS*. Lin. Trans. 11. p. 361. Ditto.
- JASSA. PULCHELLA*. Lin. Trans. 11. p. 361. Ditto.
- COROPHIUM. LONGICORNE*. (Latr.) Brit. Zool. 4. t. 16. (*ASTACUS GROSSIPES*.) Amongst the mud at the entrance of rivers.
- CAPRELLA. 1. PHASMA*. Leach. Lin. Trans. 7. p. 66. t. 6. (*CANCER PHASMA*.) The southern coast of Devon—Montagu.
2. *C. ATOMA*. Brit. Zool. 4. t. 12. f. 22. (*ASTACUS ATOMOS*.) In running water extremely minute.

NATURAL HISTORY.

CAMPTECOPEA. HIRSUTA. (Leach.) Lin. Trans. 11. p. 367. On the southern coast of Devon—Montagu.

CYMODICE. TRUNCATA. (Leach.) Lin. Trans. 11. p. 369, On the southern coast of Devon, very rare—Montagu.

LIMNORIA. TEREBRANS. (Leach.) Lin. Trans. 11. p. 370. It perforates wood piles, &c.

JANIRA. MACULOSA. (Leach.) Lin. Trans. 11. p. 373. The southern coast of Devon amongst marine plants—Montagu.

ASELLUS. AQUATICUS. (Leach.) Lin. Trans. 11. p. 373. Clear ponds, &c. Common.

JÆRA. ALBIFRONS. (Leach.) Lin. Trans. 11. p. 373. Amongst marine plants and under stones on the southern coast of Devon—Montagu.

PHILOSCIA. MUSCORUM. (Latr.) Damp situations amongst moss, &c.

ONISCUS. ASELLUS. (Latr.) Rotten wood, old walls, &c. *The Common Wood Louse.* The young are contained in a four-valved follicle under the abdomen of the mother.

ARMADILLO. VULGARIS. (Latr.) Amongst moss under stones, &c. Common. Rolls itself up in a ball.

CLASS II. MYRIAPODA (of Leach.)

The animals of this class formed the genera *Scolopendra* and *Julus*, amongst the apterous insects of the Linnæan system;—the animals of

NATURAL HISTORY.

this class have a distinct head and two antennæ,—the body composed of numerous segments, each furnished with two or four legs.

ORDER 1. CHILOGNATHA.

With seven-jointed antennæ and short legs.

GLOMERIS. MARGINATA. (Latr.) This has usually been confounded with the last genus of the former class.

JULUS. SABULOSUS. Beneath stones, &c. This is one of the most common of this obscure tribe, The British species are described in the 11th vol. of the Linnæan Transactions.

CRASPEDOSOMA. POLYDESMOIDES. Leach. Lin. Trans. 11. p. 380. Under stones. Common along the borders of Dartmoor and on the southern coast.

POLLYXENUS. LAGURUS. (Latr.) Common. under the bark of trees.

ORDER 2. SYNGNATHA.

With fourteen-jointed antennæ and elongated legs.

LITHOBIUS. FORFICATUS. Linn. Trans. v. 11. To which we refer for the other species of this genus, and for those of 2 or 3 others established by Dr. Leach.

NATURAL HISTORY.

CLASS III. ARACHNOÏDA (Leach.)

The Linnæan genera *Phalangium*, *Aranca*, and *Scorpio*, belong to this class as established and defined by Dr. Leach in the 3d volume of the Zoological Miscellany, They were arranged both by Linnæus and Cuvier amongst the apterous insects.

ORDER 1. POLYMEROSOMATA.

The body composed of a series of segments—the abdomen not pedunculated.

SIRO. RUBENS. (Latr.) In woods amongst moss.

SCORPIO. OBISIUM. &c. Zool. Misc. v. 3.

A natural group, for an account of which we refer to Dr. Leach's Monograph.

ORDER 2. DIMEROSOMATA.

Body composed of two segments—abdomen pedunculated.

PHALANGIUM. OPILIO. (Latr.) On walls, &c.
Long Legged Spider.

ARANEA. DOMESTICA. Lin. (Latr.) and other authors. *The Common House Spider.*

AGELENA. LABYRINTHICA. Leach. Common on the ground in fields, spinning a horizontal well with a funnel shaped cavity.

NATURAL HISTORY.

ARGYRONETA. AQUATICA. (Latr.) It lives in ponds and slow streams, forming a curious web beneath the water in which it lives surrounded by a globule of air formed by itself—it dives to the bottom for its prey.

ATYPUS. DISDERA. EPEIRA. and several other genera of the natural family of **ARANEIDES**, have been formed by Latreille, Leach, and other eminent naturalists out of the Linnæan genus **ARANEA**, familiarly known as spiders—they agree in many of their general characters, all have six or eight immovable eyes, each of which consists of a single lens, so that they can only see in particular directions—they cast their skins frequently, and for a minute description of the mode in which this is accomplished, we are indebted (at least as respects one species) to the late Sir J. Banks. Amongst the smaller animals, they are what the *Feræ*, and the *Accipitres* are amongst the quadrupeds and birds.

ORDER 3. PODO SOMATA,

Animals with a four-jointed body, tubular mouth, four eyes placed on a common tubercle, and eight articulated legs, Their proper situation is still unsettled: they compose a singular group of marine animals—the female carrying the eggs in round masses under the base of the rostrum; they formed part of the genus *Hydrachna*, of Linnæus.

PYCNOGONUM. BALÆNARUM. (Latr.) Taken

NATURAL HISTORY.

up in the fishing trawls on the coast.

NYMPHUM. 1. GRACILE. Leach. Zool. Misc.

1. p. 45. A frequent species.

2. **N. FEMORATUM.** Zool. Misc. I. p. 45. On the shores of the southern coast of Devon.

CLASS IV. ACARI (of Leach.)

The animals of this class are chiefly parasitic, living on the bodies of other animals, and are for the most part subjects for the microscope—they are very numerous and open a wide field for investigation which has been very imperfectly explored. They have a body composed of a single segment, and mostly a rostriform mouth—they breathe by means of Tracheæ, and have six or eight legs; they mostly belong to the Linnæan genera *Acarus* and *Hydrachna*, and were placed by Linneus amongst his apterous insects. We can only point out a few as specimens of the class, and to complete the uniformity of our design,

ORBITA. HUMERALIS. (Latr.) Amongst moss and under stones; frequent in the southern parts of Devon.

ACARUS. of Lin. Latreille, and others. *The Common Cheese Mite.* amongst numerous other species is included in this genus.

IXODES. of Latreille and Leach. *The Common Dog Tick.* amongst others is included in this genus.

HYDRACHNA. GEOGRAPHICA. (Latr.) Inhabits

NATURAL HISTORY.

slow streams, a very beautiful animal, and one of the largest of its tribe.

LIMNOCHARES. HOLOSERICEA. (Latr.) Common in fresh water ponds in the summer.



CLASS V. INSECTA. (Leach.)

SUBCLASS METABOLIA.

ORDER. COLEOPTERA.—BEETLES.

- Cicindela hybrida.* *Dawlish warren.*
Cychrus rostratus. *Dawlish cliffs,—Shaldon.*
Carabus intricatus. *Stephens' British Entomology.*
*One specimen was taken some years since in
Mamhead Park, and another at Ashburton.*
- Carabus arvensis.* } *Little haldon.*
—— *cancellatus.* }
- Nebria complanata.* *Under stones on the sea shore,*
—Dawlish warren.
- Leistus cœruleus.* *Sand-banks,—Holcombe.*
Panagæus cruxmajor. *Under stones,—Ashburton,*
Epomis cineta.

NATURAL HISTORY.

- Sphodrus leucothalmus*.
- Brosicus cephalotes*. Under stones on the sea shore,
—*Dawlish warren*.
- Brachinus crepitans*. *Teignmouth and Dawlish warren*.
- *explodens*. *Teignmouth*.—*These two last explode with a noise on being touched*.
- Lamprias cyanocephala*.
- Dyticus angustatus*. } *Kingsteignton*,—*Buckland*
———— *punctulatus*. } *in the moor*.
- Elater cupreus*. *Buckland Beacon*.
- *holosericeus*. *Lindridge*.
- Malachius æneus*. } *Teignmouth*,—*Milbourn*
———— *biguttatus*. } *down*.
- Necrophagus humator*.
- Oiceoptoma rugosa*. } *Staverton*.
———— *sinuata*. }
- Copris lunaris*. *Dawlish warren*.
- Typhœus vulgaris*.
- Sinodendron cylindricum*.
- Melolontha solstitialis*.
- Anomala frischia*. *Sand-hills*,—*Dawlish warren*.
- Cetonia aurata*. *Bovey tracey*,—*Teignmouth*,—*Torquay*.
- Lucanus cervus*. *Banks of the Dart*,—*Ashburton*.
———— *parallelipedus*. *Teignmouth*.
- Pedinus maritimus*. *Particularly numerous on Dawlish warren*.
- Œdemera podagrariæ*. *Ashburton*,—*Stover*.
- Liparus ater*.
- *anglicanus*,

NATURAL HISTORY.

- Lixus sulcirostris.** *Sand-hills,—Dawlish warren.*
Scolytus destructor. *This insect in 1827, destroyed several fine elm trees in Mr. Serjt. Praed's Lawn, at Teignmouth. The trees infested by it, are perforated with holes like shot holes.*
Prionus coriarius. *Ashburton,—Newton,—Kings-teignton.*
Clytus arietis.
Leptura meridiana.
——— *ornata. Lindridge.*
——— *6-maculata.*
Donacia, Species of this genus are scarce here.
Cassida salicornia. (*Curtis' British Entomology.*)
Galeruca tanacetii.
Chrysomela fulgida. *Dawlish warren,—Teignmouth.*
——— *hyperici. Bradley woods.*
Coccinella 16 guttata. *Ugbrook park on palings.*
——— *2 punctata.*

ORDER. DERMAPTERA.

Formica auricularia.

ORDER. DICTYOPTERA.

Blatta orientalis.

ORDER. ORTHOPTERA.

Gryllotalpa vulgaris.

NATURAL HISTORY.

Locusta viridissima.

ORDER. HEMIPTERA.

Pentatoma cærulea. (*Curtis' British Entomology.*)

Little Haldon.

———— *bidens.*

Cydnus biguttatus.

Lygæus apterus. *Teignmouth Cliffs—Orestone.*

———— *nugax.*

Cimex marginata. *Birch trees.*

———— *prasinus.*

Notonecta maculata. (*Curtis.*)

ORDER. OMOPTERA.

Jassus veridis.

ORDER. LEPIDOPTERA.

SECTION 1. DIURNA. (BUTTERFLIES.)

Gonepterix rhamni. (The Brimstone.) *The Larva feeds only on the Buckthorn.*

Colias edusa. *Cliffs at Teignmouth, in August.*

Pontia cardamines. (Orange tip.)

———— *sinapis.* (Wood white)

Melitœa dictynna. (The Heath.) *Bradley woods.*

Argynnis paphia. (Silver washed.)

Vanessa antiopa. (Camberwell Beauty.) *Once taken at East Ogwell.*

NATURAL HISTORY.

- Vanessa polychloros.* (Large Tortoise shell.) *In July and April.*
—— *cardui.* (Painted Lady.) *Spring and Autumn.*
Hipparchia galathœa. *Cliffs at Teignmouth.*
Thecla quercus. (Purple hair streak.)
—— *betulæ.* (Brown hair streak.) *The Larva feeds on the Black-thorn.—August.*
Lycæna argiolus. (Azure blue.) 2 broods.
—— *alsus* (Bedford blue.) *Cliffs at Teignmouth, in June.*
—— *idas.* (Black spot brown.) *Ditto.*
Hesperia malvæ. (Mallow skipper.) *Mamhead, and Lindridge, in June.*
—— *tages.* (Dingy skipper.) *Cliffs at Teignmouth, in May.*

SECTION 2. CREPUSCULANA. (MOTHS.)

- Smerinthus ocellata.* (Eyed hawk moth.)
—— *tiliæ.* (Lime hawk moth.) *Larva elm trees.*
Sphinx elpenor. (Elephant hawk moth.) *Larva on white ladies' bedstraw.*
—— *convolvai.* (Convolvulus hawk moth.) *Teignmouth.*
—— *atropos.* (Death's head hawk moth.) *Larva on the potatoe and jessamine.*
Sesia bombiciformis. (Narrow bordered bee hawk moth.) *Bradley woods.*
Ægeria ichneumoniformis. (*Figured by Curtis.*) *Cliffs at Teignmouth.*

NATURAL HISTORY.

- Zygæna loti.* (Five spot burnet.)
Ino statices. (Forester.) *Chagford.*
Cossus ligniperda. (Goat moth.) *The Larva feeds on the internal wood of oak, ash, and willow.*
Saturnia pavonia minor. (Emperor moth.) *Larva feeds on heath and sallows.*
Gastropacha quercifolia. (Lappet moth.) *Teignmouth.*
Lasiocampa cratægi. (Oak eggjar.)
 ——— *neustri.* (Barred tree lackey.)
 ——— *rubi.* (Fox moth.)
Stauropus fagi. (Lobster moth.)
Notodonta camelina. (Coxcomb moth.)
 ——— *dromedaria.* (Iron prominent.)
 ——— *palpina.* (Pale prominent.)
 ——— *quernea.*
Ceruna vinulia. (Kitten moth.)
Arctia russula. (Clouded buff.)
 ——— *mendica.* (Muslin moth.)
 ——— *papyritia.* (Water ermine m.)
 ——— *phæorrhœa.* (Brown tail m.)
Callimorpha dominula. (Scarlet tyger m.)
 ——— *fuliginosa.* (Ruby tyger m.)
 ——— *rosea.* (Red arches m.) *Ilington woods.*
Lithosia complana. (Common footman m.)
 ——— *rubricollis.* (Black footman m.) *Woodland.*
Physis cristeæ.
Adela degeerella. (Japan m.)
Noctua straminea. *Ashburton.*
 ——— *valligera.* *Dawlish warren.* *Larva feeds on the roots of plants under the sand.*

NATURAL HISTORY.

- Noctua sagittifera. *Ditto, ditto, ditto.*
 ——— serena. *Haldon.*
 ——— aceris.
 ——— spreta. (*Curtis Br. Ent. t. 117.*) Larva
feeds on the fir.—Stover woods.
 ——— diffinis.
 ——— præcox. *Feeds on the Galium Verum.—*
Dawlish warren.
 ——— absinthii. *Haldon.*
 ——— mamestria. *Ashburton.*
 ——— typica.
 ——— rectilinea. *Teignmouth.*
 ——— leporina. }
 ——— bradiporina. } *Larva on birch and alder.*
 ——— fimbria. *Bradley woods.*
 ——— myrtilli. (*Curtis, t. 145.*)—*Haldon.*
 ——— aprilina. *Bagtor woods,—Ilsington.*
 ——— lithoxylea. (*The light arches.*)
 ——— achates.
 ——— vitta. *Feeds on the roots of grass under*
sand.—Dawlish warren.
 ——— rutilago.
 ——— capsincola. *Ashburton.*
 ——— semibrunnea.
 ——— cytherea.
 ——— rivularis.
 ——— lucipara.
 ——— batis.
 ——— derasa.
 Hipparchus papilionarius. (*Large emerald m.*)—
Ashburton.

NATURAL HISTORY.

Hipparchus prunatus.

Geometra prunaria.

———— illustraria. Larva on the black-thorn.

———— conversaria. Teignmouth.

———— favillaciaria. Haldon.—Larva on the peat, from which the turf has been removed.
—(figured, Curtis, plate 33.)

———— sambucaria.

———— syringaria.

———— albiaria.

———— galiata. Cliffs,—Bitton.

———— angulata.

———— pendularia.

———— strigilata.

———— lobulata.

———— linariata. Between Teignmouth and Dawlish.—Larva on the antirrhinum linaria.

Biston prœdromaria. (Oak beauty.)

—— betularia. (Peppered m.)

Herminia colonalis.

———— barbalis. Ringmore.

———— tarsicrinalis.

———— flamealis.

Platypteryx falcataria. (Pebble hook tip.) Stover woods.

———— lacertanaria.

Cilex compressa. (Goose egg m.)

Tortrix fagana. (Green silver lines.)

Botys nympheata. Feeds on the Lemna.

—— atralis.

—— longipedalis. Cliffs at Teignmouth.

NATURAL HISTORY.

Botys ostrinalis.

—— *A new species.* *Bitton.*

—— *ferrugalis.*

—— *cespitalis.*

Pyrausta cingulalis. (*Curtis, pl. 128.*)

Pyralis farinalis.

Galleria cerea. Larva in *bee-hives.*

Crambus margaritalis. *Dawlish warren.*

—— *acinacidea.* *Ugbrook park.*

—— *socius.* *Dawlish warren.*

—— *barbus.* *Cliffs at Teignmouth.*

Tinea sociana.

—— *cucullatilis.*

Pterophorus lunædactylus. *Dawlish warren.*

———— *tetradactylus.*

ORDER. TRICHOPTERA.

Phryganea perla.

ORDER. NEUROPTERA.

Libellula maculata. (Spotted dragon fly.)

—— *donovani.*

—— *scottica.*

ORDER. HYMENOPTERA.

Trichiosoma laterale. Larva on the birch.—
(*Curtis, pl. 49.*)

Abia nigricornis. (*Curtis, pl. 89.*)

NATURAL HISTORY:

Cræsus septentrionalis. Larva, on the birch.
(Figured, Curtis.)

Hylotoma stephensii. (Figured, Curtis, pl. 65.)
Feeds on the Sallow.

Pelastes pini. (Figured, Curtis, pl. 4.) Stover
woods.

——— *dissecticornis.*

Tenthredo punctura.

Larra epione.

Cynips quercus folii.

Mellinus mystaceus.

Chrysis fulgida. (Figured, Curtis, pl. 8.)

——— *ignita.*

——— *effulgens.*

——— *bidentata.*

Formica herculæna.

Mutilla europæa. Lindridge.

Tiphia femorata.

Pompilus viaticus.

Amophila sabulosa. The Larva feeds on cater-
pillars of various lepidoptera.

Crabro cribrarius.

——— *leucostoma.* Sandy banks,—Holcombe.

Vespa crabro. (The hornet.)

Colletes fodiens. (Figured, Curtis, pl. 85.)

Melecta punctata. (Curtis, pl. 125.)—Cliffs at
Teignmouth.

Andrena pellopes.

——— *combinata.*

Anthidium manicum.

Osmia tunensis. Cliffs at *Teignmouth.*

NATURAL HISTORY.

- Megachile centuncularis.**
Cælioxys conica.
Nomada flava.
Eucera longicornis.
Bombus ruppestris. } Holcombe.
 ——— harrisella. }
Apis banksiana.

ORDER. DIPTERA.—FLIES.

- Stratiomys chamæleon.** (*Samouelle Intr. t. 12.*
f. 4.) Dawlish warren.
Odontomyia viridula.
Nemottelus xylota.
Sargus politus. *Marshes at Kingsteignton.*
Tabanus bovinus.
Volucella bombylans. *Bradley woods.*
 ——— inanis. *Ditto.*
Empis pomorum.
Anthrax circumdata. *Dawlish warren.*
Bombylius major.
 ——— medius.
 ——— minor. *Bradley woods.*
Sericomyia arcuatum.
 ——— lapponum. *Bogs of Dartmoor.*
Myopa dorsalis.
 ——— picta.
Musca grossa.
Atherix maculata.
Helcomyza ustulata. *Dawlish warren. (Figured*
by Curtis, pl. 66.) In September.

NATURAL HISTORY.

Microdon apiformis. (*Figured by Curtis, pl. 70.*)

Oxycera xyloa.

Conops pipens.

—— *picta.* *Cliffs at Teignmouth.*

—— *variabilis.*

—— *sepulchralis.*

Ochthera mantis. *Taken by Dr. Leach.*

It has been calculated that the number of Insects found in Great Britain, exceeds 16,000 ;—and there is every reason to believe that this district produces its due proportion. The above catalogue which does not enumerate above 250, is therefore intended only to note a few of the most remarkable, or of such as are most interesting for their rarity or beauty.

RADIATED ANIMALS.

CLASS I. ECHINODERMATA.

With coriaceous or crustaceous skin and distinct intestinal canal.

ORDER 1. FREE.

- ECHINUS.** 1. **ESCULENTUS.** *Sea Urchin.* Turton's Tr. Syst. Nat. v. 4. p. 136. Common on submersed rocks.
2. **E. SUBANGULARIS.** Syst. Nat. v. 4. p. 138. With the former.
3. **E. SPATANGUS.** Syst. Nat. v. 4. p. 158. Fleming's Brit. Ani. p. 480. (**SPATANGUS CORDATUS.**) Frequently met with on the sands.
4. **E. PUSILLUS.** Borlase's Cornw. p. 278. t. 28. A minute species of frequent occurrence.
- HOLOTHURIA.** 1. **PHANTAPUS.** Syst. Nat. v. 4. p. 109. Penn. Brit. Zool. 4. p. 48. t. 23. (**ASCIDIA RUSTICA.**) We once met with this species in Torbay.
2. **H. DIGITATA.** Linn. Trans. 11. p. 22. t. 4. Coast of Devon.—Montagu.
3. **H. PENTACTES.** (A var. of) Linn. Trans. 9. p. 112. t. 7. Coast of Devon.—Montagu.

NATURAL HISTORY.

- ASTERIAS. 1. PAPPOSA.** *Star Fish.* Syst. Nat. v. 4. p. 130. Common.
2. **A. GLACIALIS.** Syst. Nat. v. 4. p. 131. Frequent.
3. **A. ACULEARIS.** Syst. Nat. v. 4. p. 134. Berl. Cornw. t. 25. fig. 19. Three or four other figures on the same plate are referable probably to the same species.
- SIPUNCULUS. 1. NUDUS.** Syst. Nat. v. 4. p. 67. Frequent on the coast. Six or eight inches long.
2. **S. SACCATUS.** Linn. Trans. v. 7. p. 75. Teignmouth.—Montagu.
3. **S. STROMBUS.** Linn. Trans. 7. p. 75. In the old shells of **ROSTELLARIA PES-PELICANI.** Teignmouth.—Montagu.

ORDER 2. FIXED.

CRINOIDEÆ.

With numerous articulated processes surrounding the margin of the aperture.

The different genera of this family *Pentacrinites Encrinites*, &c., occur chiefly as fossils—one species only (**PENTACRINUS EUROPÆUS**) having as far as we are aware occurred on any of our shores—some of the fossil species occur in our Transition Lime formation, as we shall elsewhere notice.

NATURAL HISTORY.

CLASS II. ACALEPHA.

With a soft and generally gelatinous skin—no distinct cavity for stomach and intestines.

ACTINEA. I. MESEMBRYANTHEMUM. Turton's Brit. Fauna, p. 131. and Syst. Nat. v. 4. p. 104. Of frequent occurrence adhering to rocks—when contracted hemispherical.

2. **A. CRASSICORNIS.** Turton's Brit. Fauna, p. 130. Frequent in crevices of rocks, &c.

3. **A. BELLIS.** Brit. Fauna, p. 131. *The Sea Daisy.* A gregarious species.

4. **A. DIANTHUS.** Brit. Fauna, p. 131. Rocky pools near the low water mark.

MEDUSA. I. CRUCIATA. Brit. Fauna, p. 139. Syst. Nat. v. 4. p. 122.

2. **M. FASCA.** Syst. Nat. v. 4. p. 123. Borl. Cornw. p. 256. t. 25. (*URTICA MARINA.*)

3. **M. PURPUREA.** Borl. Cornw. t. 25. fig. 9. Frequent.



CLASS III. ZOOPHYTES.

The body mostly compound and assuming plant like forms—the mouth surrounded by a circle of tentaculi.

NATURAL HISTORY.

1. CARNOSA.

Polypi connected with a fleshy substance.

FREE.

PENNATULA. PHOSPHOREA. *Sea Pen.* Emits a strong phosphoric light in the night.

FIXED.

A. *With a solid axis.*

GORGONIA. VERRUCOSA. Solander and Ellis's Corall. p. 89. n. 14. We have a magnificent specimen of this—dredged up in Torbay.

CORALLINA. 1. RUBENS. Ellis's Corall. p. 50. n. 5. t. 24. e. E. and p. 51. n. 7 and 8. f. F. F. and f. g. G. of the same plate, are referable to the same species at different periods of their growth. Frequent on the coast.

2. C. OFFICINALIS. Ellis's Corall. p. 48. n. 2. t. 24. a. A. Common on the beaches.

B. *Without a solid axis.*

ALCYONIUM. 1. DIGITATUM. Ellis's Corall. p. 82. t. 32. fig. a. A A. 2. Thrown up occasionally on the beaches

2. A. GELATINOSUM. Hudson's Fl. Anglica. (**FUCUS GELATINOSUS.**) English Botany.

NATURAL HISTORY.

(*ULVA DIAPHANA*.) Ellis's Corall. p. 87. t. 32. Attached to Fuci and other marine substances. Common.

- SPONGIA.** 1. *VERRUCOSA*. Wern. Mem. 2. p. 117. t. 13. Coast of Devon.—Montagu.
2. *S. TOMENTOSA*. Ellis's Corall. p. 80. t. 16. Common on rocks and on the stalks of the larger Fuci—"appears under a microscope to be composed of small bundles of minute transparent fibres, so extremely fine and sharp, that they affect the skin like Cow-itch." Ellis, as referred to above.
3. *S. SUB-ERICA*. Wern. Mem. 2. p. 100. On old univalve shells.—Montagu.
4. *S. PALMATA*. Solander and Ellis's Corall. p. 189. n. 10. t. 58. In deep water along the coast.

2. CELLULIFERA.

Polypi in calcareous cells —which are imperforate at the base.

- MILLEPORA.** 1. *LICHENOIDES*. Ellis's Corall. p. 76. t. 27. d. D. Of common occurrence—incrusting rocks, &c.
2. *M. POLYMORPHA*. Ellis's Corall. p. 76. t. 276. Common on submarine rocks, &c.
- TUBIPORA.** *SERPENS*. Ellis's Corall. p. 74. n. 6. t. 27. Attached to Fuci corallines, &c. Frequent.
- DISCOPORA.** *VERRUCARIA*. Solander and

NATURAL HISTORY.

Ellis's Corall. p. 137. n. 13. On Fuci and corallines. Frequent.

CELLEPORA. PUMICOSA. Ellis's Corall. p. 75. n. 7. t. 27. Incrusting Fuci, &c.

FLUSTRA. 1. FOLLICULA. Ellis's Corall. p. 70. n. 2. t. 29. *Broad-leaved Hornwrack*. Frequent.

2. F. MEMBRANACEA. Solander and Ellis's Corall. p. 18. n. 12. Common on broad-leaved Fuci, &c.

3. F. PILOSA. Ellis's Corall. p. 73. n. 4. t. 31. Common on various marine plants, &c.

3. THECATA.

Polypi surrounded by a membranaceous tube, covering the sub-divisions of their compound body.

CELLULARIA. 1. FASTIGIATA. Solander and Ellis's Corall. p. 21. n. 1. Not unfrequent beyond low water mark.

2. C. HOOKERI. Flem. Brit. Ani. p. 539. Discovered by Dr. Hooker, at Torquay.

3. C. SCRUPOSA. Ellis's Corall. p. 38. n. 4. t. 20. Common; adhering to various submarine substances.

4. C. REPTANS. Ellis's Corall. p. 37. n. 3. t. 20. Common on submarine Fuci, &c.

5. C. CILIATA. Ellis's Corall. p. 38. n. 5. t. 20. Common on corallines and Fuci.

SERTULARIA. 1. POLYZONIAS. Ellis's

NATURAL HISTORY.

- Corall. p. 5. n. 3. t. 2. Adhering to dead shells, roots of Fuci, &c.
2. S. HALECINA. Ellis's Corall. p. 17. n. 15. t. 10. *Herring Bone Coralline*. Common on oyster shells, &c.
 3. S. ABIETINA. Ellis's Corall. p. 4. n. 2. t. 1. Common beyond low water mark.
 4. S. CUPRESSINA. Ellis's Corall. p. 7. n. 5. t. 3. *Sea Cypress*. Common on oyster beds, &c.
 5. S. ARGENTEA. Ellis's Corall. p. 6. n. 4. t. 2. *Squirrel Tail*. Common on oyster beds.
 6. S. OPERCULATA. Ellis's Corall. p. 8. n. 6. t. 3. *Sea Hair*. Common on Fuci, &c.
 7. S. PUMILA. Ellis's Corall. p. 9. n. 8. t. 5. Common on *Fucus serratus*.
 8. S. ROSACEA. Ellis's Corall. p. 8. n. 7. t. 4. On old shells, &c.
 9. S. THUIA. Ellis's Corall. p. 10. n. 9. t. 5. *Bottle Brush Coralline*. Oyster beds, &c.—Common.
 10. S. ANTENNINA. Ellis's Corall. p. 15. n. 14. t. 9. *Lobster Horn Coralline*. Frequent.
- PLUMULARIA. 1. PENNATULA. Lamarck, 2. p. 128. This has been found on our shores by Col. Montagu.
2. P. FALCATA. Lamarck, 2. p. 123. Ellis's Corall. p. 12. n. 11. t. 7. *Sickle Coralline*. Common on old Shells, &c.
- CAMPANULARIA. DICHOTOMA. Lamarck, 2. p. 113. Ellis's Corall. p. 21. n. 18. t. 12.

NATURAL HISTORY.

Sea Thread. Of frequent occurrence on old shells, &c.

TUBULARIA. INDIVISA. Ellis's Corall. p. 31. n. 2. t. 16. Frequent on shells from deep water.

4. NUDA.

Naked polypi, with tentaculi round the mouth.

HYDRA. VIRIDIS. Ellis's Corall. t. 28. C. Frequent on aquatic plants in slow streams.

The Individuals arranged under this last type occupy the lowest situation in the scale of Animal existence;—The nervous system in all of them being very obscure and, in not a few of the species, only recognizable with considerable difficulty. Still many of them are of considerable importance as forming extensive reefs and Islands in the warmer regions of the globe, tho' in this respect their operations appear to be much less extensive than was at one time supposed; and others from their elegant forms and curious modes of propagation, are very interesting subjects of investigation.—The greater part of them were mistaken by our earlier naturalists for plants, and it is to *Ellis* that we are indebted for first clearly pointing out their animal nature, in his "Essay towards a natural History of Corallines" London, 1755; this is the work we have chiefly referred to for this class, and we know of no superior one from which to obtain a clear idea of the

NATURAL HISTORY.

animals it contains and their modes of growth and propagation.

This discovery of nature being animated in a portion of her works previously unsuspected, opened up, as he eloquently observes, “new scenes of wonder and astonishment in enabling us to contemplate how variously, and how extensively, life is distributed thro’ the universe of things.”

We have thus ranged thro’ the scale of vitality from its highest to its lowest type—in all of which there still remains ample room for study and observation—for the discovery of new modifications of organization and facts relative to the known ones—for the correction of much that is uncertain or erroneous—and for the purpose of blending facts now unconnected or apparently contradictory into more general and harmonious views.—One great principle we may consider as firmly established,—that a more or less perfect and complicated organic structure, is always found in correspondence with the greater or less relative size and perfection of the nerves.—The superiority of one animal to another in the scale of being, is to be traced to the superiority of its nervous system: thus in the *radiated animals*, we find the simplest and smallest apparatus compatible with existence and feeling—in the next a mere nervous cord or ring—then an obvious series of ganglions—and as we advance higher in the scale, we find successively developed—a regular

NATURAL HISTORY.

double column—a cerebellum—and a brain, each advancement being uniformly characterized by some addition to the powers of the animal ; all the different organs presenting a corresponding increase in number, complexity, and finish, up to man. But even the very lowest in the scale of animals, must have some glimpses of the external world by which it is surrounded, and thus ranks altogether and distinctly above the vegetable kingdom, to which we next proceed

BOTANY.



TREATING as it does of the richest and most beautiful of the three Kingdoms of Nature, we need sing no pœans in praise of **BOTANY**.—Whether the facility with which the materials for its study may be collected is considered, (and in no part of Great Britain are they found in greater profusion and variety than in the district whose elucidation is the object of the present work,)—or the constant occupation and amusement it is capable of affording, thro' every season of the year,—whether as furnishing a motive for exercise—a theme for conversation—or a subject for private study—it is alike interesting and important.

In the following list, the arrangement of the “**FLORA DEVONIENSIS**” is followed, and the plants have been selected chiefly on account of their beauty, rarity, or local interest, so as to give the leading and peculiar features, as it were, of our rich

NATURAL HISTORY.

and varied Flora.—The ALGÆ and especially the *marine* plants of that order we have given a fuller enumeration of, and carefully arranged the different species under the latest and best established genera, the leading characters of which are explained.—The works chiefly referred to, are Smith's English Botany,—Dillwyn's *Confervæ*,—Turner's *Historia Fucorum*, and Stackhouse's *Nereis Britannica*,—as containing the best and most easily accessible representations of the plants in question.

PHÆNOGAMOUS PLANTS.

MONANDRIA.

MONOGYNIA.

Salicornia herbacea. *Salt marshes,—common.*

DIANDRIA.

MONOGYNIA.

Circæa lutetiana. *Shady hedges.*

Veronica scutellata. *Haldon and Bovey heathfield.*

——— *anagallis.* *St. Mary Church.*

Pinguicula lusitanica. *Haldon and Haytor down.*

Utricularia vulgaris. *Stover canal head, &c.*

——— *intermedia.* *Teignbridge.*

Lemna—trisolca. *Clear ponds.*

——— *minor.* *Ponds, common.*

NATURAL HISTORY.

Lemna gibba. *Kingsteignton, &c.*

TRIANDRIA.

MONOGYNIA.

Valeriana dioica. *St. Mary Church*

Iris pseudacorus. *Beside streams, &c.*

— *foetidissima.* *Woods and hedges.*

Schœnus albus. *Bovey heathfield.*

—— *nigricans.* *Ditto.*

Scirpus acicularis. *Ilington.*

—— *sylvaticus.* *Kingsteignton.*

Eriophorum angustiflorum. *Bovey heathfield.*

DIGYNIA.

Milium lendigerum. *Babbacombe cliffs.*

Agrostis setacea. *Exposed downs.*

Arundo arenaria. *Sea beach.*

—— *pragmites.* *Banks of the Teign.*

Aira cristata. *Ingsdon.*

—— *cæspitosa.* *Marshy situations.*

Melica uniflora. *Hedges.*

Monilia cœrulea. *Open downs.*

Poa maritima. *Teignmouth.*

— *compressa.* *Ilington.*

— *bulbosa.* *The dens.*

Triodia decumbens. *Haldon.*

Briza media. *Dry pastures.*

Festuca uniglumis. *Sandy beach.*

NATURAL HISTORY

Festuca elatior. *Teignmouth, &c.*

Triticum junceum. *Sea beach.*

——— *lohiaceum.* *Ditto.*

Elymus arenarius. *Ditto.*

Hordeum maritimum. *Ditto.*

Rottbolla incurvata. *Ditto.*

TETRANDIA.

MONOGYNIA.

Dipsacus sylvestris. *Hedges, &c.*

Scabiosa succisa. *Woods.*

——— *columbaria.* *On the cliffs.*

Asperula odorata. *Ilington, &c.*

Rubia peregrina. *Hedges.*

Plantago maritima. *Sea beach.*

——— *coronopus.* *Ditto.*

Centunculus minimus. *Bovey heathfield.*

Cornus sanguinea. *Woods and hedges.*

TETRAGYNIA.

Moenchia glauca. *Haldon.*

Radiola millegrana. *Bovey heathfield, &c.*

PENTANDRIA.

MONOGYNIA.

Lithospermum arvense. *Between Dawlish and
Teignmouth.*

NATURAL HISTORY.

- Anchusa sempervirens.* *Ilsington, &c.*
Symphytum officinale. *Teign banks, &c.*
Borago officinalis. *The dens.*
Primula veris. *Ingsdon, Torquay, Mary Church.*
Menyanthes trifoliata. *Bovey heathfield.*
Lysimachia vulgaris *Teign-bridge.*
 ————— *nemonem.* *Shady hedges.*
Anagallisa arvensis. *Fields.*
 ——— var. bright blue *Dawlish.*
 ————— 8, white with purple eye. *Ilsington.*
 ————— *tenella.* *In bogs.*
Convolvulus sepium. *Sheltered hedges.*
 ————— *soldanella.* *Sea beaches.*
Campanula hederacea. *Haldon, &c.*
 ————— *rotundifolia.* *Ilsington.—Rare.*
Viola odorata. *Banks and hedges.*
 ——— *palustris.* *Bogs.*
 ——— *lactea.* *Bovey heathfield.*
Verbascum virgatum. *Bovey Tracey, &c.*
 ————— *blattaria.* *Teignmouth, &c.*
Hyoscyamus niger. *On the sands.*
Solanum dulcamara. *Banks of the Teign, &c.*
 ————— *nigrum.* *The dens.*
Erythræ centaureum. *Fields.*
 ————— var. *B. pulchella.* *Dawlish.*
Samolus valerandi. *Kenton and Powderham.*
Rhamnus frangula. *Kingsteignton.*
Euonymus Europæus. *Ilsington, &c.*
Ribes nigrum. *Teign banks.*
Glaux maritima. *Hackney marshes.*
Vinca minor. *Hedges occasionally.*

NATURAL HISTORY.

DIGYNIA.

- Chenopodium polyspermum. *Teignmouth.*
Beta maritima. *The dens, &c.*
Salsola kali. *Sea coast.*
Cuscuta Epithymum. *Exposed downs.—parasitic
on heath, furze, &c.*
Gentiana campestris. *Babbacombe.*
Eryngium maritimum. *The dens, &c.*
Daucus maritima. *The cliffs.*
Crithmum maritimum. *Ditto.*
Sium repens. *Bovey heath.*
Sison inundatum. *Ditto.*
Smyrniolum olusatrum. *Dawlish cliffs.*
Anethum foeniculum. *Ditto, and Teignmouth, &c.*
Apium graveolens. *Hackney marshes.*

TRIGYNIA.

- Viburnum lantana. *Woods and hedges.*
—— opulus. *Ditto.*
Sambucus ebulus. *St. Mary Church.*

PENTAGYNIA.

- Statice armeria. *Sea coast.*
—— limonium. *Salt marshes.*
Linum catharticum. *Exposed pastures.*

HEXAGYNIA.

- Drosera rotundifolia. *Haldon and Bovey heath.*

NATURAL HISTORY.

Drosera longifolia. Ditto, ditto.

HEXANDRIA.

MONOGYNIA.

Galanthus nivalis. Chudleigh rock and Becky fall.

Narcissus biflorus. Ilsington and Paignton.

———— pseudo-narcissus. Teign banks.

Allium vineale. Chudleigh bridge.

Scilla autumnalis. Torbay, on cliffs. &c.

Narthecium ossifragum. Haldon & Haytor down.

Luzula sylvatica. Teign banks, &c.

———— fosteri. Ilsington, &c.

Peplis portula. Bovey heathfield, &c.

TRIGYNIA.

Triglochin palustre. Salt marshes.

———— maritimum. Ditto, common.

Colchicum autumnale. Torwood meadows.

Alisma plantago. Bovey heathfield.

———— ranunculoides. Near Kingsteignton.

OCTANDRIA.

MONOGYNIA.

Epilobium roseum. Ilsington.

Vaccinium myrtillus. Woody and heathy downs.

Daphne laureola. Ingsdon.

NATURAL HISTORY.

TETRAGYNIA.

Adoxa moschatellina. *Moist hedges.*

DECANDRIA.

DIGYNIA.

Saponaria officinalis. *Shaldon near the sands.*

Dianthus armeria. *Teignmouth and Newton.*

TRIGYNIA.

Silene maritima. *The cliffs.*

— *anglica.* *Kingsteignton, &c.*

Adenarium peploides. *The dens, &c.*

Arenaria marina. *Ditto.*

PENTAGYNIA.

Cotyledon umbilicus. *Common.*

Sedum telephium. *Near Chudleigh bridge.*

— *rupestre.* *The cliffs.*

Oxalis corniculata. *Dawlish, &c.*

Cerastium aquaticum. *The Dart banks.*

Spergula subulata. *Haldon.*

DODECANDRIA.

MONOGYNIA.

Lythrum salicornia. *Teign banks, &c.*

NATURAL HISTORY.

DYGNIA.

- Reseda luteola.* *Chudleigh rock, &c.*
Euphorbia peplis. *Paignton sands.*

ICOSANDRIA.

MONOGYNIA.

- Prunus cerasus.* *Woods.*
Pyrus malus. *Ditto.*
— *torminalis.* *Holne chase, &c.*
— *aucuparia.* *Woods, &c.*
— *aria.* *Babbacombe rocks.*
Spiræa filipendula. *Ditto cliffs.*

POLYANDRIA.

MONOGYNIA.

- Glaucium luteum.* *The cliffs.*
Papaver hybridum. *Near Dawlish.*
Cistus helianthemum. *Near Denbury.*
— *polifolius.* *Babbacombe cliffs.*

POLYGYNIA.

- Anemone nemorosa.* *Borders of streams,*
Clematis vitalba. *Teignmouth hedges,*
Thalictrum minus. *Babbacombe cliffs.*
Ranunculus aquatilis. *Dart, by Totnes bridge,—*
Bovey heathfield.

NATURAL HISTORY.

- Ranunculus auricomus. *Berry Castle, &c.*
————— sceleratus. *Dawlish, &c.*
————— parviflorus. *Hedges frequent.*
Caltha palustris. *Bogs.*

DIDYNAMIA.

GYMNOSPERMIA.

- Marrubium vulgare. *Frequent along the coast.*
Leonurus cardiaca. *Teigngrace.*
Melittis melissophyllum. *Woods at Ugbrook, Buckland, Spitchwick, Ilsington, Sandridge, &c.*
Scutellaria galericulata. *Bovey heath,*
————— minor. *Bogs.*
Lycopus europæus. *Borders of streams.*
Salvia verbenaca. *The cliffs.*

ANGIOSPERMIA.

- Bartsia viscosa. *Bovey heath,—Exmouth warren.*
Antirrhinum spurium. *Teignmouth—Kingsteignton.*
————— orontium. *Fields.*
————— majus. *Old walls.*
Sibthorpia europæa. *Spitchwick.*
Orobanche major. *Ugbrook park.*

TETRADYNAMIA.

SILICULOSA.

- Cakile maritima. *Sea beaches.*

NATURAL HISTORY.

- Crambe maritima.* Ditto.
Teesdalia nudicaulis. Bovey heathfield.
Cochlearia officinalis. Teignmouth and Dawlish
cliffs.
——— *danica.* Ditto.

SILIKUOSA.

- Arabis hirsuta.* Ilington.
Barbarea præcox. Kingsteignton and Dawlish.
Sisymbrium sophia. Teignmouth.
Erysimum cheiranthoides. Ditto.
Cheiranthus fruticulosus. Old walls.
Brassica oleracea. Babbacombe cliffs.
Rhaphanus maritimus. Along the cliffs.

MONADELPHIA.

PENDANDRIA.

- Erodium cicutarium.* Dawlish, Teignmouth, &c.
——— *moschatum.* Ditto, ditto.
——— *maritimum.* Ditto, ditto.

DECANDRIA.

- Geranium rotundifolium.* Dartmouth castle.
Malva moschata. Hedges, frequent.
Lavatera arborea. On the Ore-stone and Thatcher
in Torbay.

NATURAL HISTORY.

DIADELPHIA.

HEXANDRIA.

- Fumaria capreolata.* *Teignmouth, &c.*
—— *claviculata.* *Ilington, Becky full, &c.*
—— *lutea.* *Near Totnes.*
Genista anglica. *Bovey heathfield.*
Ononis arvensis. *On the cliffs.*
Anthyllis vulneraria. *Ditto.*
Lathyrus nissolia. *Ditto.*
—— *aphaca.* *Holweli Torr.*
—— *sylvestris.* *Ditto and Shaldon ditto.*
Vicia sylvatica. *Lime rocks, Kingsteignton.*
—— *lathyroides.* *St. Mary Church and Shaldon.*
—— *bithynica.* *Teignmouth and Shaldon.*
Ornithopus perpusillus. *Ilington, Milburn down.*
Hippocrepis comosa. *Rocks on the coast.*
Trifolium suffocatum. *The dens.*
—— *subterraneum.* *Bank before Powderham
Castle.*
Trifolium arvense. *Teignmouth.*
—— *striatum.* *Ingsdon.*
—— *fragiferum.* *Exmouth embankment.*
Lotus diffusus. *Near the Hackney clay pits.*
Medicago maculata. *Along the cliffs.*

POLYADELPHIA.

POLYANDRIA.

- Hypericum androsæmum.* *Woods and hedges.*

NATURAL HISTORY.

- Hypericum montanum.* *Ugbrook woods, &c.*
———— *hirsutum.* *Ditto.*
———— *elodes.* *In bogs.*

SYNGENESIA.

POLYGAMIA ÆQUALIS.

- Tragopogon pratense.* *Ilington and Teignbridge.*
Helminthia echioides. *Ditto and Exmouth cliffs.*
Hieracium murosum. *Haytor rocks.*
———— *umbellatum.* *In woods.*
Cichorium intybus. *Teignmouth, &c.*
Carduus marianus. *Chudleigh rock, &c.*
Carlina vulgaris. *Dry pastures.*
Bidens tripartita. *Chudleigh.*

POLYGAMIA SUPERFLUA.

- Artemisia maritima.* *Frequent along the coast.*
———— *gallica.* *Ditto.*
Gnaphalium minimum. *Exmouth warren.*
Conyza squarrosa. *Hedges.*
Tussilago petasites. *Banks of the Teign.*
Aster tripoleum. *On the coast and in salt marshes.*
Pyrethrum maritimum. *On the coast.*
Anthemis nobilis. *Milburn down, Haldon, &c.*
Achillea ptarmica. *Bogs.*

POLYGAMIA FRUSTRANEA.

- Centaurea calcitrapa.* *Exmouth sands.*

NATURAL HISTORY.

GYNANDRIA.

MONANDRIA.

- Orechis morio.* Meadows near Exmouth.
—— *pyramidalis.* Woods—*Ilington—Chudleigh.*
—— *Torquay.*
Habenaria bifolia. *Ilington and Chudleigh.*
Ophrys apifera. Lime rocks and Torbay.
Neottia spiralis. *Ilington and St. Mary Church.*
Listera ovata. *Berry Castle and Edginswell.*
—— *nidus-avis.* *Ugbrook park.*
Epipactis latifolia. *Black pool near Ingsdon.*

MONŒCIA.

MONANDRIA.

- Zostera marina,* Frequently thrown upon the beach
by the tide.

TRIANDRIA.

- Typha latifolia.* *Old clay pits at Kingsteignton.*
Carex pulicaris. *Haldon.*
—— *arenaria.* *Along the coast.*
—— *depauperata.* *Woods.*
—— *riparia.* *Exmouth.*
—— *vesicaria.* *Teign banks near Chudleigh.*
—— *filiformis.* *Old clay pits and Teignbridge.*

NATURAL HISTORY.

Kobresia caricina. *Haldon.*

TETRANDRIA.

Littorella lacustris. *Bovey heath and Haldon.*

POLYANDRIA.

Quercus sessiliflora. *The Buckland woods.*

DICECIA.

DIANDRIA.

Salix repens. *Bovey heathfield.*

TRIANDRIA.

Ruscus aculeatus. *St. Mary Church.*

TETRANDRIA.

Myrica gale. *Bovey heath, Holne chase.*

PENTANDRIA.

Humulus lupulus. *In hedges, frequent.*

HEXANDRIA.

Tamus communis. *Woods and hedges.*

NATURAL HISTORY.

ENNEANDRIA.

Hydrocharis morsus-ranæ. *Powderham, in the
ditches.*

POLYGAMIA.

Atriplex portulacoides. *Sea shores.*

——— *laciniata.* *Ditto.*



CRYPTOGAMOUS PLANTS.

EQUISETACEÆ.

Equisetum fluviatile. *Shaldon, and Dawlish.*

——— *limosum.* *Wet places,—frequent.*

LYCOPODIACEÆ.

Lycopodium clavatum. *Haldon—Hayotr down.*

FILICES.

Osmunda regalis. *Borders of streams.*

Polypodium phegopteris. *Becky-fall.*

Aspidium aculeatum. *Kingsteignton.*

NATURAL HISTORY.

- Aspidium dilatatum.* *Ilington.*
———— *spinulosum.* *Near Torquay.*
———— *marinum.* *On the Cliffs.*
Hymenophyllum tunbridgense. *Becky-fall.*

MUSCI.

- Andrea Rothii.* *Haytor rocks,*
Sphagnum squarrosum. *Bogs.*
———— *cuspidatum.* *Ditto.*
Phascum alternifolium. *Teignmouth,*
———— *muticum.* *Ditto and Shaldon.*
———— *cuspidatum.* *Teignmouth.*
Anictangium ciliatum. *Haldon,—Haytor down.*
Schistostega pennata. *Near Totnes.*
Polytrichum urnigerum. *Streams on Haldon,*
Cinclidotus fontinaloides. *In the Dart, by Hood*
bridge.
Tortula tortuosa. *Babbacombe,—Chudleigh rock.*
———— *reveluta.* *Dawlish.*
Encalypta vulgaris. *Ingsdon lime rocks.*
Pterogonium gracile. *Bottor rocks,—Lustleigh*
cleve.
Dicranum subulatum. *Dawlish.*
Leucodon sciuroides. *Ugbrook park.*
Didymodon trifarium. *Cliffs between Teignmouth*
and Dawlish.
Funaria muhlenberghii. *Bovey heath.*
Neckera crispa. *Ugbrook park.*
Anomodon viticulosum. *Ditto.*
Daltonia heteromalla. *Ditto.*

NATURAL HISTORY.

- Fontinalis antipyretica.* In the river *Teign*.
Bartramia arcuata. Bogs on *Haytor down*.
Hookeria lucens. *Becky-fall*,
Hypnum riparium. The *Dart*, near *Totnes*.
——— *dendroides.* Ditto, near *Staverton*.
——— *cordifolium.* Bogs on *Haldon*.
Bryum Tozeri. The *Dart* banks, four miles above
Totnes.
——— *roseum.* *Ilington*.
——— *turbinatum.* *Haytor down*.
——— *alpinum.* Ditto.

HEPATICÆ.

- Anthoceros punctatus.* *Bovey heath*,—*Ilington*.
Jungermannia inflata. *Ilington*.
——— *albicans.* *Haytor down*.
——— *viticulosa.* *Ilington woods*.
——— *barbata.* *Becky-fall*.
Targionia hypophylla. *Ilington*.
Marchantia cruciata. *Wet hedges*.

CHARACEÆ

- Chara vulgaris.* *Stover canal*.
——— *flexilis.* *Bovey heath*.

LICHENS.

- Lecidea atrovirens* and } *Haytor rocks*,
——— var. *B. geographica* }

NATURAL HISTORY.

- Lecidea ferruginea.* Ditto.
 ——— *immersa.* Chudleigh rocks.
Gyrophora pustulata. Haytor rocks.
Graphis dendritica. Buckland woods.
Endocarpon miniatum. Chudleigh rock.
 ————— *complicatum.* Haytor rocks.
Lecanora ventosa. Ditto.
 ——— *tartarea.* Ditto.
Parmelia glomulifera. Botter rocks.
 ——— *herbacea.* Ditto.
 ——— *aquila.* Haytor down.
 ——— *physodes.* Ditto.
Borrera flavicans. Botter rocks.
Cetraria glauca and } Haytor down.
 ——— *var. B. fallax.* }
Sticta pulmonaria. In woods.
 ——— *scrobiculata.* Becky-fall,—Botter rocks.
Cenomyce alaicornis. Haytor down.
 ————— *endivifolia.* Ditto.
 ————— *cervicornis.* Ditto.
 ————— *fimbriata.* Ditto.
 ————— *baccillaris.* Ditto.
 ————— *sparassa.* Ditto.
 ————— *uncialis.* Ditto.
 ————— *rangiferina.* Ditto.
Stereocaulon paschale. Botter rocks.
Alectoria jubata. Haytor rocks.
Ramalina scopulorum. Ditto.
Usnea barbata. Becky fall.
Collema lacerum. Ditto.
 ——— *tremelloides.* Ilington.

FUNGI.

- Amanita muscaria.* Woods, in Autumn.
- Agaricus stipitis.* Roots of old trees in woods.
- *rotula.* On sticks, dead leaves.
- *androsaceus.* Ditto.
- *giganteus.* One of the species that form the circles called fairy rings.
- *galericulatus.* Common.
- *cinnamomeus.* Bagtor woods.
- *campestris.* The edible mushroom.
- *semi-ovatus.* On manure,—common.
- Merulius lachrymans.* Rotton wood, &c.—
common.
- Dædalia quercina.* On the oak,—old palings.
- Polyporus squamosus.* Trunks of trees.
- *igniarius.* Ditto.
- Boletus bovinus.* Frequent in woods.
- Hydnum repandum.* In woods.
- Clavaria coralloides.* Woods and heaths.
- *vermicularis.* In pastures.
- *pratensis.* Ditto.
- *corniculata.* Ditto.
- Phallus foetidus.* Woods,—occasionally.
- Peziza aurantia.* On the ground—rotton sticks.
- *vesiculosa.* On roofs of thatched cottages.
- *scutellata.* Common.

NATURAL HISTORY.

GASTROMYCI.

Tremella albida. *Dead branches of trees.*

———— *diliquescens.* *On old pales,—common.*

Puccinea rosæ. *On the under surface of the leaves of various roses.*

Uredo candida. *On cruciform plants.*

Æcidium tussilaginis, *On the leaves of Tussilago farfara,—The species of the three last genera are very numerous, deriving their names mostly from the different plants on which they are parasitic.*

Lycoperdon pratense. *In pastures.*

———— *pyriforme.* *Ditto.*

Cyathus crucibulum. *Woods and hedges.*

———— *striatus.* *Ditto.*

ALGÆ.

Most of the species of this extensive natural order are aquatic and sub-pellucid, and many of them float in the water unattached. Their colours for the most part are different shades of green, brown, or red—the fructification is various, in some of the species the *sporules* or seeds are scattered thro' the substance of the *frond*—in others they are enclosed in *tubercles* or *processes* formed from a continuation of the frond—and in some the mode of propagation is by *Gemmæ* in a viviparous manner.

A. *Fronds articulaté.*

DIVISION 1. CHÆTOPHOROIDEÆ.

Plants with gelatinous pellucid fronds enclosing beaded filaments—which (for the most part) contain the fructification.

NOSTOC.

An olivaceous bullate frond—filled with moniliform simple curved filaments.

1. N. COMMUNE. E. Bot. t. 461. (TREMELLA
N

NATURAL HISTORY.

NOSTOC.) This is frequent in pastures after rain.

2. N. VERRUCOSUM. This is frequent in the streams descending from Dartmoor.

CODIUM.

A spongiform, forked, spherical, or flat mass containing tubular filaments—fructification granular in the tubes.

1. C. BURSA. E. Bot. t. 2183. (FUCUS BURSA.) Torquay.
2. C. TOMENTOSUM. E. Bot. t. 717. (FUCUS.) On the coast occasionally.

CHÆTOPHORA.

A gelatinous roundish or elongated mass, filled with branched articulated filaments.

1. C. MARINA. E. Bot. t. 1956. (RIVULARIA TUBERIFORMIS.) Attached to rocks or marine plants.
2. C. RUBRA. E. Bot. t. 1627. (ULVA RUBRA.) Ditto.

LINKIA.

Gelatinous, and roundish or elongated, composed of straight, radiating, simple filaments.

1. L. ATRA. E. Bot. t. 1798. (RIVULARIA

NATURAL HISTORY.

ATRA.) This appears like small black dots on the surfaces of marine rocks.

DIVISION 2. CONFEROIDEÆ.

The plants of this division have tubular jointed fronds, and the fructification consists of minute sporules within the articulations.

DRAPARNALDIA.

The frond gelatinous—the primary filaments bearing penicellate fascicled branchlets.

1. **D. GLOMERATA.** E. Bot. t. 1740. (CONF. FERRA MUTABILIS.)
2. **D. PLUMOSA.** Dillwyn, t. 12. (CONF. MUTABILIS.) Both these species are frequent in clear streams and ditches, attached to marine plants.

ZYGNEMA.

The filaments gelatinous, simple and equal, uniting in pairs by means of lateral tubes—the sporules disposed in a spiral or stellate manner.

1. **Z. GENUFLEXA.** E. Bot. t. 1914. (CONF. GENUFLEXA.)
2. **Z. DECIMINUM.** Dillw. t. 4 and 5. (CONF. NITIDA & JUGALIS.) E. Bot. t. 2339. (C. NITIDA.)

NATURAL HISTORY.

3. **Z. QUININUM.** Dillw. t. 3. E. Bot. t. 1656.
(CONF. SPIRALIS.) The species of this singular genus are found in ditches and stagnant ponds.

CONFERVA.

With uniform jointed filaments which are either simple or branched,—the articulations filled with minute sporules.

1. *Simple.*

1. **C. ERICETORUM.** Dillw. t. 1. E. Bot. t. 1553. Bovey heathfield.
2. **C. CAPILLARIS.** Dillw. t. 46. (C. CRISPA.) This species is rigid and brittle when dry. It is found in ponds near the sea.
3. **C. RIVULARIS.** Dillw. t. 39. E. Bot. t. 1654. In slow streams.

2. *Branched.*

a. Not aquatic.

4. **C. VELUTINA.** Dillw. t. 77. Spreading in a green velvet-like manner on the surface of the ground.

b. aquatic.

5. **C. FRACTA.** Dillw. t. 14.

NATURAL HISTORY.

6. *C. GLOMERATA*. Dillw. t. 13, and also t. 48. (*C. LÆTE-VIRENS*.)
7. *C. RUPESTRIS*. E. Bot. t. 1699. Common on marine rocks—growing in dense tufts, which are dark green and rigid.
8. *C. PELLUCIDA*. E. Bot. t. 1716. This grows in the same situations as the last, in green shining tufts.

DIVISION 3. ECTOCARPOIDÆ.

The plants of this division have filiform or capillary fronds, their fructification external tubercles or capsules, and occasionally innate ones at the ends of the branchlets—they are with very few exceptions, marine.

1. *Red.*

ASPEROCAULON.

The main stem hirsute opaque, not jointed—the branches jointed, the fructification of two kinds.—Capsules, and lanceolate pods containing rows of granules.

1. *A. COCCINEA*. Dillw. t. 3. (*CONF. COCCINEA*.) Frequently thrown up on the sea beaches.

POLYSIPHONIA.

With tufted branched filaments composed of paral-

NATURAL HISTORY.

lel tubes. Fructification ovate capsules, and granules in swollen branchlets.

1. P. FASTIGIATA. Dillw. t. 447. E. Bot. t. 1764. (CONF. POLYMORPHA.)
2. P. FUCOIDES. Dillw. t. 75. (CONF. FUCOIDES.) and also t. 81. (CONF. NIGRESCENS.)
3. P. GRIFFITHSIANA. E. Bot. t. 2312. (CONF. GRIFFITHSIANA.)
4. P. BYSSOIDES. E. Bot. t. 347. (CONF. BYSSOIDES.) Amongst regectamenta, on the beach of the Exmouth warren. P. GRIFFITHSIANA is found on the shores of Torbay. The two first named species are of frequent occurrence, attached to rocks and Fuci.

CERAMIUM.

This genus has filaments composed of simple tubes, bearing capsules surrounded by an involucre of short branchlets.

1. C. ELONGATUM. Dillw. t. 33. (CONF. ELONGATA.) Common,—attached to rocks, fuci, &c.
2. C. RUBRUM. Dillw. t. 34. (CONF. RUBRA.) Ditto.
3. C. DIAPHANUM. Dillw. t. 38. (CONF. DIAPHANA.) Back of Exmouth warren.
4. C. CILIATUM. Dillw. t. 33. (CONF. CILIATA.) Den of Teignmouth.

NATURAL HISTORY.

CALLITHAMNION.

The filaments jointed and branched—the articulations marked with a single broad tube-like line, the joints pellucid. The Fructification, pedunculated capsules on the branchlets.

1. C. TETRICUM. Dillw. t. 81. (CONF. TETRICA.)

GRIFFITHSIA.

In this genus the seeds are immersed in a gelatine, and surrounded by an involucre, and the filaments jointed and branched.

1. G. SETACEA. Dillw. t. 82. (CONF. SETACEA.) A frequent plant.
2. G. EQUISETIFOLIA. Dillw. t. 54. (CONF. EQUISETIFOLIA.) Back of Exmouth warren.

2. *Olive green, or brown.*

CLADOSTEPHUS.

The primary filaments are solid, with whorled branchlets, of a different structure, at the joints,—the fructification capsular.

1. C. VERTICILLATUS. Dillw. t. 55. E. Bot. t. 1718. In rocky basins on the coast.

NATURAL HISTORY.

2. **C. SPONGIOSUS.** Dillw. t. 42. E. Bot. t. 2427. (CONF. SPONGIOSA.) At the back of Exmouth warren.

SPHACELLARIA.

The filaments jointed, distichous, or dichotomously branched, the ends of the branches abrupt Sphacellate—the fructification, granules in the Sphacellated apex, or capsules.

1. **S. SCOPARIA.** E. Bot. t. 1552. Dillw. t. 52. (CONF. SCOPARIA.) Frequent on the sea coast.

ECTOCLARPUS.

The filaments jointed and much branched—the fructification—lanceolate pods, or ovate capsules, solitary or racemose.

1. **E. LITTORALIS.** Dillw. t. 31. E. Bot. t. 2290. (CONF. LITTORALIS.) Common on the coast, attached to rocks and fuci.

B. *Fronde not articulated.*

DIVISION 4. ULVOIDEÆ.

The plants of this division are chiefly marine, and have thin cellular fronds, which are either plane or

NATURAL HISTORY.

tubular. The fructification internal, granules or small dark tubercles sprinkled over the surface.

1. *Fronde plane.*

ZONARIA.

Root downy,—frond plane,—the fructification adnate tubercles, arranged in parallel lines on the frond.

1. Z. PAVONIA. E. Bot. t. 1276. (ULVA PAVONIA.) Rocky basons at Exmouth, Torquay, &c.
2. Z. ATOMARIA. E. Bot. t. 419. (ULVA ATOMARIA.) Near Torquay.
3. Z. DICHOTOMA. E. Bot. t. 774. (ULVA DICHOTOMA.) Exmouth, Torquay, &c.

ULVA.

Root scutate ; frond plane, membranaceous, having naked granules dispersed thro' the whole in clusters of about four.

1. U. LACTUCA. E. Bot. t. 1531. Attached to marine rocks, &c., and frequently washed up at the entrance of the Teign.
2. U. BULLOSA. E. Bot. t. 320. In fresh water ponds, &c.
3. U. UMBILICALIS. E. Bot. t. 2286. Tor-

NATURAL HISTORY.

quay, Babbacombe, &c.—The former may probably be a variety of this.

4. U. LINZA. Dill. Misc. t. 9. f. 6. Rocks near Exmouth.

2. *Fronde tubular.*

FISTULARIA.

Root scutate—frond membranaceous, simple or branched. Fructification naked, immersed granules dispersed thro' the whole, in clusters of about four.

1. F. INTESTINALIS. E. Bot. t. 1739. (ULVA COMPRESSA.) Frequent on marine rocks.
2. F. FISTULOSA. E. Bot. t. 642. (ULVA FISTULOSA.) Ditto.

NODULARIA.

In this genus the roots are scutate, the fronds filiform, rigid, and torulose—the fructification oblong granules in the tubular frond.

1. N. FLUVIATILIS. E. Bot. t. 1763. Dillw. t. 29. (CONF. FLUVIATILIS.) In various parts of the Dart, Teign, and Exe, where the stream is clear and rapid.

OSCILLATORIA.

Plants with gelatinous simple filaments, filled in-

NATURAL HISTORY.

ternally with transverse parallel striæ.—They have all an oscillating motion, whence the name is derived.

1. Growing in fresh water.

1. O. NIGRA. Dillw. t. 64. (CONF. FONTINALIS. In clear streams, attached to submersed stones.
2. O. LIMOSA. Dillw. t. 20. (CONF. LIMOSA.) Ditto.

2. Marine.

3. O. SCOPULORUM. Dillw. Suppl. t. A. E. Bot. t. 2171. (CONF. SCOPULORUM.)

On the ground—damp walls, &c.

4. O. MURALIS. Dillw. t. 7. E. Bot. t. 1554. Common at all seasons, on walks, damp walls, &c.

VAVCHERIA.

With irregularly branched filaments—the fructification a granular mass within the frond, and external vesicles (frequently with hooked processes contiguous to them.)

1. Vesicles solitary.

1. V. DILLWYNII. Dillw. t. 16. (CONF.

NATURAL HISTORY.

FRIGIDA.) On the ground in damp situations.

2. *Vesicles in pairs or clusters.*

2. V. ORNITHOCEPHALA. Dillw. t. 74. (CONF. VESICATA.) At the bottom of ditches—of a brownish green colour.
3. V. GEMINATA. E. Bot. t. 1766. In stagnant ponds and ditches on the surface.
4. V. SESSILIS. E. Bot. t. 1765. Ditto.

BRYOPSIS.

With tubular, aggregated, branched filaments, innate or imbricate above—the fructification a dark internal mass of granules.

1. B. PLUMOSA. E. Bot. t. 2375. (ULVA PLUMOSA.) Rocks near Exmouth and Torquay—an elegant little plant two or three inches in height, of a fine green, growing in the form of a feather.

DIVISION 5. FLORIDEÆ.

The roots scutate—the fronds cylindrical or plane, their colour rosaceous or purple. The fructification capsules, or immersed sporules, often both in the same species, but on distinct individuals,—all marine plants.

NATURAL HISTORY.

GIGARTINA.

The plants of this genus have scutate roots, and filiform and much branched fronds—the fructification is of two kinds, Capsules—and innate clusters of seeds in pod-shaped branchlets.

1. *G. PLICATUS.* Turner's Hist. Fuci, t. 180. E. Bot. t. 1089. (*FUCUS PLICATUS.*) Frequent along the coast.
2. *G. PURPURASCENS.* Turn. Hist. Fuci, t. 9. E. Bot. t. 1243. (*FUCUS PURPURASCENS.*) Frequent on the coast.
3. *G. PINASTROIDES.* Turn. Hist. Fuci. E. Bot. t. 1042. (*FUCUS PINASTROIDES.*) Frequent on the coast.

CHONDRIA.

With filiform branched fronds. The fructification double, external tubercles, and naked granules immersed in the branches.

1. *C. OBTUSA.* Turn. Hist. Fuci, t. 21. E. Bot. t. 1201. (*FUCUS OBTUSUS.*) Torquay, Exmouth, Dawlish, &c.
2. *C. PINNATIFIDA.* Turn. Hist. Fuci, t. 20. E. Bot. t. 1202. Ner. Brit. p. 48. t. 11. and *F. OSMUNDA.* Ner. Brit. p. 47. t. 11. Rocks at Dawlish, Teignmouth, &c.
3. *C. OVALIS.* Turn. Hist. Fuci, t. 81. E.

NATURAL HISTORY.

- Bot. t. 711. (FUCUS OVALIS.) Ner. Brit. t. 67. (FUCUS SEDOIDES.) Torquay and Exmouth warren.
4. C. DASYPHYLLA. Turn. Hist. Fuci, t. 22. E. Bot. t. 847. Torquay.
 5. C. KALIFORMIS. Turn. Hist. Fuci, t. 29. Frequent on the coast.
 6. C. OPUNTIA. Turn. Hist. Fuci, t. 107. (FUCUS OPUNTIA.) E. Bot. t. 1868. (RIVULARIA. OPUNTIA.)
 7. C. ARTICULATA. Turn. Hist. Fuci, t. 106. E. Bot. t. 1574. On the coast.

DELESSERIA.

Plants with scutate roots and membranaceous plane fronds;—the fructification double,—Capsules, and naked granules dispersed in spots thro' the frond.

1. *Fronds ribbed, or veined.*

1. D. SANGUINEA. Turn. Hist. Fuci, t. 36. E. Bot. t. 1041. (FUCUS.) Frequent along the coast.
2. D. SINUOSA. Turn. Hist. Fuci, t. 35. (FUCUS SINUOSUS.) Ner. Brit. p. 18. t. 7. (FUCUS RUBENS.) Common on the coast.
3. D. ALTA. Turn. Hist. Fuci, t. 160. E. Bot. t. 1837. (FUCUS.) Common.
4. D. RUSCIFOLIA. Linn. Trans. vol. 6. p. 8. E. Bot. t. 1395. Exmouth and Torbay.

NATURAL HISTORY.

5. **D. HYPOGLOSSUM.** E. Bot. t. 1396. Ner. Brit. p. 76. t. 13. (**FUCUS HYPOGLOSSOIDES.**) Exmouth, Torbay, &c.
6. **D. LACERATA.** Turn. Hist. Fuci, t. 68. E. Bot. t. 1067. Not unfrequent on the coast.

2. *Veinless.*

7. **D. COCCINEA.** Turn. Hist. Fuci, t. 59. E. Bot. t. 1242. Frequent in rocky basins left by the tide.
8. **D. LACINIATA.** Turn. Hist. Fuci, t. 69. Linn. Trans. vol. 3. p. 156. (**F. LACERATUS.**) var. V. Ner. Brit. p. 92. t. 15. (**F. CRISPUS.**) Frequently thrown up on the beaches.
9. **D. GLANDULOSA.** Turn. Hist. Fuci, t. 38. E. Bot. t. 2135. (**FUCUS GLANDULOSUS.**) Torbay.

SPHÆROCOCCLUS.

With scutate root, cartilaginous frond, and uniform, capsular fructification.

1. **S. RUBENS.** E. Bot. t. 1053. Turn. Hist. Fuci, t. 42. Exmouth warren and Torquay.
2. **S. CRISPUS.** Turn. Hist. Fuci, t. 216 and 7. (**FUCUS CRISPUS.**) Ner. Brit. p. 53. t. 12. (**F. STELLATUS.**) This plant varies much in form and colour, it is common along the coast.
3. **S. MAMILLOSUS.** Turn. Hist. Fuci, t. 218. E. Bot. t. 1054. Ner. Brit. p. 65. t. 12. (**F.**

NATURAL HISTORY.

- ECHINATUS.) On the beaches along the coast.
4. *S. MEMBRANIFOLIUS*. Turn. Hist. Fuci, t. 74. E. Bot. t. 1965. Amongst the rejectamenta in Torbay.
 5. *S. PALMETTA*. E. Bot. t. 1120. Turn. Hist. Fuci, t. 73. Exmouth warren and Torbay.
 6. *S. RENIFORMIS*. Turn. Hist. Fuci, t. 11. Amongst the rejectamenta in Torbay.
 7. *S. CORNEUS*. Turn. Hist. Fuci, t. 257. E. Bot. t. 1970. Torquay, Babbacombe, &c.

ODONTHALIA.

With a scutate root—linear, membranaceous, toothed frond, and two kinds of fructification—slender marginal pods containing a double row of granules, and axillary clusters of pedicelled capsules.

1. *O. DENTATA*. Turn. Hist. Fuci, t. 13. E. Bot. t. 1241. (*FUCUS DENTATUS*.)

PTILOTA.

1. *P. PLUMOSA*. E. Bot. t. 1308. Turn. Hist. Fuci, t. 60. Ner. Brit. p. 105. Frequent along the coast.

HALYMENIA.

With coriaceous fronds, thro' the whole of which the seeds are dispersed in spots.

NATURAL HISTORY.

1. *H. EDULIS.* Turn. Hist. Fuci, t. 134. E. Bot. t. 1307. Ner. Brit. p. 57. t. 12. (FUCUS.)
Near Torquay.
2. *H. PALMATA.* Turn. Hist. Fuci, t. 114. E. Bot. t. 1307. Frequent along the coast—both these are edible plants.

DIVISION 6. FUCOIDEÆ.

Plants with coriaceous or cartilaginous fronds—their colour olive brown, changing to black—their fructification naked sporules, immersed in the frond, or included in tuberculated receptacles.

LAMINARIA.

Fibrous root—frond expanded on a distinct stipes. Fructification naked granules, immersed in irregular groups in the frond.

1. *L. ESCULENTA.* E. Bot. t. 1759. Turn. Hist. Fuci, t. 117. Linn. Trans. vol. 3. p. 140. (FUCUS TETRAGONUS and F. TERES.)
2. *L. SACCHARINA.* Turn. Hist. Fuci, t. 163.
β. BULLATA. E. Bot. t. 1376.
γ. ACUMINATA.
δ. LATISSIMUS. This plant varies exceedingly in size and form, it is common along the coast.
3. *L. PHYLLITIS.* Turn. Hist. Fuci, t. 164. E. Bot. t. 1331. Ner. Brit. p. 33. t. 9. This

NATURAL HISTORY.

is probably only the younger state of the former.

4. *L. DIGITATA*. E. Bot. t. 2274. Turn. Hist. Fuci, t. 162. Frequent.
5. *L. BULBOSA*. E. Bot. t. 1760. Turn. Hist. Fuci, t. 161. Ner. Brit. p. 6. t. 4. (*FUCUS POLYSCHIDES*.) Frequent.
6. *L. LIGULATA*. E. Bot. t. 1636. Growing in deep water, thrown up occasionally, tho' rarely on the shores of Torbay.
7. *L. PLANTAGINEA*. E. Bot. t. 2136. (*ULVA PLANTAGINEA*.) Teignmouth and Dawlish.

FUCUS.

With a scutate root—the fructification tubercles in a common mucous receptacle, and filled with sporules and filaments.

1. *F. NATANS*. Turn. Hist. Fuci, t. 45. E. Bot. t. 2114.
2. *F. BACCIFERUS*. Turn. Hist. Fuci, t. 27. E. Bot. t. 1967. These two species are occasionally thrown on the coast—they are most abundant within the Tropics, and known to sailors by the common appellation of *gulf weed*.
3. *F. NODOSUS*. E. Bot. t. 570. Turn. Hist. Fuci, t. 91. Common.
4. *F. VESICULOSUS*. E. Bot. t. 1066. Turn. Hist. Fuci, t. 88.
β. SPIRALIS. E. Bot. t. 1685. Ner. Brit. p. 10. t. 5.

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γ. LONGIFRUTUS. DeCandolle. Fl. Franc.

δ. SHERARDI. Ner. Brit. p. 72. t. 13.

ε. MULTIFIDUS. This common species is very variable in habit and mode of growth.—
The above are the most remarkable varieties.

5. F. SERRATUS. E. Bot. t. 1221. Ner. Brit. p. 1. t. 1. Common.

6. F. CERANOIDES. E. Bot. t. 215. Turn. Hist. Fuci, t. 89. Near the entrance of the Dart, and at the back of Exmouth warren.

7. F. CANALICULATUS. Turn. Hist. Fuci, t. 3. E. Bot. t. 823. Frequent.

HIMANTHALIA.

In this genus the frond springs from a cup-shaped base, and the tubercles are imbedded in the whole length of the frond.

1. H. LOREA. Turn. Hist. Fuci, t. 196. E. Bot. t. 569. (FUCUS LOREUS.) Neighbourhood of Torquay.

CYSTOSEIRA.

With cylindrical stipes—plane lower leaves, and filiform upper ones, with innate vesicles—the fructification, tubercles in common cellular receptacles.

1. C. SILIQUOSA. E. Bot. t. 474. Turn. Hist. Fuci, t. 159. (FUCUS SILIQUOSA.) β.

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- SMALLER. Ner. Brit. p. 42. t. 11. Frequent along the coast.
2. C. GRANULATA. E. Bot. t. 2169. Turn. Hist. Fuci, t. 251. Near Exmouth, and rocks near Tor-abbey.
 3. C. ABROTANIFOLIUS. E. Bot. t. 2130. Turn. Hist. Fuci, t. 252. Torbay.
 4. C. FIBROSA. E. Bot. t. 1969. Turn. Hist. Fuci, t. 209. Torquay.
 5. C. ERICOIDES. E. Bot. t. 1968. Turn. Hist. t. 191. (F. ERIDOIDES.) Ner. Brit. p. 44. t. 11. (F. TAMARISCIFOLIUS.) Torbay, &c.

LICHINA.

The plants of this genus have a shrubby Licheniform habit, the fructification consists of solitary scutelliform tubercles, perforated at the end.

1. L. PYGMÆA. E. Bot. t. 1332. Turn. Hist. Fuci, t. 258.
2. L. CONFINIS. E. Bot. t. 2575. Turn. Hist. (F. PYGMÆUS. β .) Probably only a variety of the last—both are frequent on rocks left by the tide, growing in black crowded patches about half an inch high.

FURCELLARIA.

With filiform fronds, the extremities of which swell into closed pericarps.

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1. **F. LUMBICALIS.** E. Bot. t. 824. Turn. Hist. t. 6 and β . **FASTIGIATA.** Frequent on the coast.

SPONGIOCARPUS.

The frond filiform. The fructification naked spongy warts, composed of radiating filaments, amongst which are the sporules.

1. **S. ROTUNDUS.** E. Bot. t. 1738. Turn. Hist. Fuci, t. 5. (**FUCUS ROTUNDUS.**) Ner. Brit. p. 89. t. 14. (**F. RADIATUS.**) Torbay.

SPOROCHNUS.

The fronds filiform—the tubercles terminated by a tuft of jointed threads.

1. **S. PEDUNCULATUS.** Turn. Hist. Fuci, t. 188. Ner. Brit. p. 110. t. 16. (**F. PEDUNCULATUS.**)
2. **S. ACULEATUS.** E. Bot. t. 2445. Turn. Hist. Fuci, t. 187. Frequent on the coast.

CHORDARIA.

The fronds filiform—the seeds immersed in jointed concentric filaments.

1. **C. FLAGELLIFORMIS.** E. Bot. t. 1222. Turn. Hist. t. 85. (**F. FLAGELLIFORMIS**) On the coast.
2. **C. FILUM.** E. Bot. t. 2487. Turn. Hist. t. 86. Ner. Brit. p. 40. t. 10. Common along the coast.

MINERALOGY.



HAVING ranged over the diversified and complex field of organized nature, as developed in our beautiful district, we next arrive at the science which treats of the unorganized matter, composing the crust of the Earth, and which was for a long time, less attended to, than any of its kindred ones. The difficulty of obtaining characters sufficiently constant and precise, to distinguish minerals from each other, as compared with those furnished by organized substances, was, and still remains, a very serious obstacle to the satisfactory study of them. The simple elements of which they are composed, being mixed and blended, in the great Laboratory of Nature, in almost infinitely various modes, and proportions, we should search in vain for the well-defined, and uniform characteristics that constitute our idea of *species* in the other Kingdoms of Nature. To this we must further add, the difficulty of obtaining access to them; the Ocean effectually

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excludes from us two-thirds of the rock structures, and of the remaining portion, a large part is concealed by superficial deposits of various debris, covered by a carpet of vegetation ; so that a full and correct outline, of the extent and junction of the different formations, can only be imperfectly, and with considerable difficulty, approximated to.

It is to the careful examination of those parts of the globe where the strata are most dislocated and inclined—where the elevations are great and abrupt, and the rifts and chasms frequent and deep, that we owe the larger part of what knowledge we possess, of its structure : these characteristics occur chiefly in countries where rocks of the primitive and transition classes approach the surface ; and as it is also in rocks of these formations, that the greater part of the metalliferous Lodes occur, (which are ramified cracks or fissures, in which ores, and other substances are imbedded,) we are in such districts, further assisted by the shafts and adits of the miner. Notwithstanding the various natural obstacles however, the unwearied spirit of research, that characterizes the present age, is rapidly advancing this most interesting, and important branch of natural science, to the philosophic precision, carried to such perfection in the animal, and vegetable departments. Nothing accelerates this, more than the connected and enlarged views, with which every branch of science is now studied, and by which they are all made to throw mutual light on each other, like the ornaments in the personification of the Poet,

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“The Jewels in whose crisped hair,
Were placed each others beams to share.”

Comparative anatomy, and other branches of natural science, as applied to Fossil bones, and other organic remains that have been preserved in some of the more recent of the rock formations, and in the various diluvial deposits, furnishes us with very valuable data, as to the relative ages and history of those formations. The improvements and discoveries in Chemistry, supply us with simpler, and more perfect methods of analysis, and with more numerous, and surer tests or reagents. (For instance,—The decomposition of the Earths, by the powerful agency of the Voltaic battery, promises to lead us, even to the true theory, of the deep-seated causes of Earthquakes, and volcanic eruptions, in

“The central caverns of the hollow earth,
That never heard the sea’s tempestuous call,
Nor the dread summons of impatient thunder,”

and to much of the internal structure of our globe and the causes of the changes, and convulsions, to which, at different periods, its surface has been subjected.) And the mathematics are brought to our aid, to explain the laws of crystallization—as well as those by which the various molecules of matter combine, in definite proportions, to form the various mineral substances. The external characters of minerals tho’ the most obvious and easily determined, will, we fear, always remain to a considerable degree, vague and uncertain; but still,

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they also, have been brought under far more accurate and precise rules than those to which the older mineralogists were accustomed. Thus much by way of proem to our subject, taken in its most comprehensive sense; which however, is usually and conveniently divided into, **MINERALOGY**, properly so called, which has for its peculiar object, the characters, chemical, and external, of the different minerals, and their scientific arrangement in the cabinet—and **GEOLOGY**, whose object is, the rock structures, and minerals as they exist in *masses*; and their different relations to each other. We shall attend to this distinction as far as it may be practically useful to do so; in either department, the student will find a rich, and varied, and very imperfectly explored field for his exertions, in the district we are about to treat of, which will be prescribed within the following tolerably well defined boundaries, in tracing which, as well as in following us thro' the localities, and space occupied by the different formations, the map should be kept open before him.—A N. E. and S. W. line, drawn across the map, from Dartmeet, thro' the parishes of Widdicombe in the Moor, Manaton, Lustleigh, Hennock, Christow, Doddiscombsleigh, Dunchideock, and Ide, to Exeter, forms our Western boundary, and the Dart, the Exe, and the sea-coast included between those rivers, the other three. Thus embracing within appropriate limits, all the strata of a much wider range; for an East and West line, from Dawlish, situated on the red sandstone formation,

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to the High Torr rocks, placed on, and near the edge of the Granite, will, in the space of a dozen miles, cut through almost every different formation of the County.

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I.—THE GRANITE FORMATION.

We shall begin with the *oldest* Rock of the primitive class, namely, the Granite, of which looking Westward up the line of the Teign, to the High Torr* and neighbouring hills, which are the boundary of our view in that direction, we see the Eastern edge. This formation occupies the central, and most elevated district of the County, and continues on thro' Cornwall to the Land's end. It includes the whole of the extensive forest of Dartmoor, with its wild romantic scenery, and Torrs, as well as several parishes immediately round that great waste. In the district we are speaking of, it occupies the entire parishes of Widdecombe in the Moor, Manaton, and Lustleigh. Its general direction is N. W. and S. E. forming on its Eastern-most side, an irregular, and indented outline, thro' the higher and Western-most parts of the parishes of Hennock, Bovey Tracey, Ilsington, and Ashburton. The most remarkable of the Torrs, near this boundary, are the two elevations known by the name of the High Torr rocks; these are nearly 1600 feet above the sea level, and from their summits, the finest panoramic view in the County presents itself. They

* This has been erroneously spelt Haytor, the mistake probably originated in considering them as in the hundred of Heytor, and as giving name to it, which is not the case, they are in the hundred of Teignbridge.

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have a bolder, and more massive character than most of the other Torrs, so numerously scattered over this exposed region. Some of these latter, have very broken and picturesque outlines, often bearing a close resemblance to extensive castellated ruins, as may be instanced in Hounter Torr, and one or two others in the immediate neighbourhood of Hightor, to the N. W. They all consist of rhomboidal masses of various sizes, (the whole formation indeed has a similar structure in the mass, as may be observed in the Quarries, immediately under the High Torr rocks,) more or less rounded at the edges, and separated from each other by the action of the atmosphere. The Logan stones, that have been noted in various parts of the granite district, owe their origin to this cause; and hence different blocks become more or less perfect ones, or gradually cease to be so, and fall from the base.

There is a large rocking stone at Lustleigh Cleve, three or four miles north of High Torr, the only one we are acquainted with in the district. Those circular cavities that occur on the summits of many of the Torrs, and have been termed Druidical basins, have their origin in the same natural causes. There are three or four very distinct ones on the Hightor rocks. Detached blocks, of various sizes, are thickly strewn over the surface, in different parts of the district.

The component parts of this formation, are principally felspar, quartz, and mica, in grains, or crystals, of various magnitude, and more or less

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distinct character. Felspar is generally the predominating ingredient, and frequently occurs in large, regular, crystals, of a milk white, or yellowish white colour, or, more rarely, of a flesh red—the quartz is the next, and is not frequently found in distinct crystals, tho' it has the transparency, fracture, and other external characters, that denote a crystalline texture—the mica, is in thin plates, of various size, usually of a smoky brown, or black colour—more rarely white, or green—schorl occasionally forms a component part also of this formation, and chlorite, is found disseminated in small earthy grains, or specks, and occasionally enclosed in the quartz.—The texture, and other characters vary much, from a coarse, to a very fine grain—from a compact, and durable character, to an open and decomposing one, which latter circumstance is probably owing to the presence either of a mineral oxide, or an alkali—beds of sand, of various degrees of fineness, also occur in different places, and occasionally decomposed felspar, intermixed with minute fragments of quartz, (porcelain clay) as at Horridge, in the parish of Ilsington—the general colour of the finer, and more compact kinds, is blueish-grey—that in a state of decomposition, has usually a greater, or less, tinge of yellow, or red, derived most probably, from an oxide of Iron, or Manganese. Remains of old Tin streams, are of very frequent occurrence in the granite district. Lodes of Tin, micaceous iron, and graphite, or plumbago, of inferior quality, occur in this district; and in the

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ravines, and hollow basins, formed by the inequalities of the surface, extensive peat bogs are formed.



2.—THE SLATE FORMATION.

Rocks of this character rank next in age, and occupy a considerable portion of the district ; they are situated on the southern and eastern sides of the granite, on which the older portion rests, their general direction being the same. The distinction and limits between what is undoubtedly of primitive formation, and what as is equally obvious, must be considered as transition slate, has been as yet very imperfectly ascertained,—a north eastern range bounded by the granite on one side, and the western limits of the Transition Lime stone which we shall trace further on, appears to be of primitive origin. It occupies nearly the whole of Doddiscombesleigh and Christow, and may be followed through the eastern parts of Hennock, Bovey Tracey, Ilsington, and Ashburton, to, and beyond the Dart—whilst a second more easterly range, commencing with, and having the same general limits as the Lime rock to the west, and the higher parts of Combeintinhead, Ipplepen and Staverton, to the East, and occupying nearly the whole of West Ogwill and Woodland,

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as well as a considerable portion of Highweek, East Ogwell, and Denbury, may be considered as transition—as well as another South-eastern range which has a part of Marldon and Berry Pomeroy, as its inland boundary, and occupies a large portion of Churston Ferrers and Kingswear. A more or less lamellar structure characterizes the whole of these formations, and the strata for the most part, dip towards some easterly point of the compass, with various degrees of inclination, (in some instances they appear almost vertical) they are often bent in a curved or zigzag manner, and are frequently traversed by veins of quartz. The other characters of this formation are very various. It passes by insensible gradations from a more compact and micaceous kind in the neighbourhood of the granite, to the roofing slates and others of various degrees of softness, down to a disintegrated clay. To this formation belong also other rock strata, that require attention, along various parts of the granite boundary, sometimes interposed between the granite and micaceous or argillaceous schist, and sometimes incumbent on one or other of the latter. These have chiefly either a syenitic, porphyritic, or siliceous character, but to trace out the various limits and characters of each, would be a most difficult, and in some instances, an impracticable task—occasionally rock strata of very distinct character succeed each other abruptly—but in a number of instances, the passage from one rock to another contiguous one, takes place by very gradual change.

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The student who will carefully follow the line of Junction of this formation, with the granite, from the Hightor and Yarner Downs, in the parishes of Hsington and Bovey Tracey, on by their irregular course to the Bottor rocks, in the parish of Hennock, and from thence to Canonteign, and will examine some of the ravines in the latter parishes, will find much that is of the highest geological interest to reward his pains, and may at the same time collect an extensive and well defined series of rock specimens such as granite of various textures,—sileceous, micaceous, and argillaceous schists—syenite and all the various formations in which hornblende prevails—(a considerable part of Hennock and Bovey Tracey is on a rock of this description)—garnet rock—porphyry—(very fine green porphyry occurs near Crockern bridge) and greywacke. Lodes of Copper, Tin, Iron, Manganese, and Lead occur in this formation. In no part of it have we ever met with any fossil remains.



3.—TRANSITION LIME.

This formation occupies a considerable proportion of the south-eastern part of the district, its general direction being conformable with the former ones—in some instances, it is immediately incumbent on

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the *primitive*, in others interstratified with the *transition* slate. Its western-most edge may be traced from the southern ascent to Haldon in the parish of Chudleigh, on in a S. E. direction through several parts of that parish, (the Chudleigh rocks, &c.) by Ingsdon in the parish of Ilsington, and thence thro' the parishes of Bickington, and Ashburton, to the Dart. A second more easterly range may be followed from Bishopsteignton and Kingsteignton, through Woolborough, East Ogwell, Denbury, Torr Bryan, and Broadhempston, (of all which parishes it forms a considerable portion, and Transition slate the remainder.) More easterly still, we find it occupying a large part of Abbots Kerswell, Ipplepen, and Little Hempston, (which is the western boundary of this third range) Mary Church, (where the rocks frequently rise in a very picturesque and romantic manner) Torr-Moham, part of Marldon, (Aptor, &c.)—Berry Pomeroy, the southern part of Stoke Gabriel, (Watton, &c.) and Churston Ferrers—the two capes of Berry-head and Hope's nose, being the eastern-most points of this range ; in all these parishes, except the two last named, it for the most part protrudes through, and is surrounded by the old red sand stone.

The prevailing colour of this rock is blueish-grey, or black, with white veins ; in some of the more easterly parts of the formation, where the basset ends protrude thro' the red sand, the markings are more varied—red, and, occasionally, yellow sweepings and veins being frequent, as if (which is most

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likely the case) the colouring oxides of the red sand formation had penetrated this ; it probably does not prevail to any great depth in the solid strata, and the texture of the marble where those markings occur, is usually more open and unequal than the rest. In one or two of the Bickington Quarries, magnesia forms a component part of this rock ; and the metalliferous variety that sets under water is also there met with in beds of 12 or 18 inches in thickness.

Fossil remains occur, though somewhat sparingly, in this formation—they all, (at least as far as our observation extends,) belong to the radiated type of animals—crinoideæ—corallines—madrapores—serulariæ, &c., more or less perfectly preserved. The finest impressions are usually procured from beach-worn pebbles on the contiguous coast, which have probably been detached from the upper and basset ends, and loose portions of the adjoining rocks—but they occasionally occur, forming the principal portion of the solid strata.

This is the case at Coombe-Fishacre in the parish of Ipplepen ; this rock, the basset end of which protrudes at a considerable angle through the red sand stone, and dips to the eastward, from the upper bed to the depth of between forty and fifty feet, (which is as low as it has yet been opened) and for the width of several yards, has the whole of its strata crowded with Polypiferous fossils ; some of the upper beds which are of a very fine and compact texture, appear to consist almost wholly of commi-

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nuted fragments of this description, of a brownish grey colour, with here and there a more distinct portion of the fossils intermixed; the lower beds, which have red and white veins, are crowded with larger and more distinctly formed remains.

These are referable to a different and far earlier period than the bones of the various species of mammalia that occur in the fissures and caves of this formation. The one being amongst the most ancient, the other amongst the most recent vestiges, that remain of the revolutions that have occurred on the surface of the globe. Fissures and caverns of this kind are of general occurrence in compact Lime rocks, not only in this Island, but on the Continent where they have long been objects of curiosity; the most remarkable ones in our district are those of Kent's Hole and the Chudleigh rocks, the former of which has been very diligently explored, and we are looking forward with great interest, to the publication of a work that has been announced by a gentleman of Torquay, which will contain an account of the Treasures that have there been unearthed. They are all more or less filled with a Diluvial detritus of mud, sand, angular fragments of Transition rocks, &c., and stalactites. In those at the Chudleigh rocks, numerous pebbles of chert and chalk flint, and Transition slate are mixed with the mud that forms the principal substance, and fills up the fissures to the very surface of the soil; where ever occurring they appear to be connected, and so often confluent and inosculating

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with each other, and so identical as to their contents, that there appears to be no difference as to the time of their being so filled.

These cavernous fissures have all a communication with the surface, and, as previously stated, are of general occurrence in Lime rocks, whilst the dispersion of bones in them is only partial; those that have occurred within our district, are we believe chiefly referable to the following animals, Hyena—Tiger—Bear—Wolf—Fox—Rhinoceros—Horse—Ox, Deer, and some smaller animals of the natural order, Rhodentia.

Buckland considers these bones to be of antediluvian origin,* and in the *Reliquiæ Diluvianæ*, from page 76 to 80, discusses the time and circumstances of their introduction into the caverns, considering the most probable hypothesis to be, that the animals had fallen during that period into the open fissures, and there perishing, remained undisturbed on the spot on which they died till drifted forward by the action of the Diluvial waters to their present situations—for further particulars we must refer to the above work. The reader will also find in Cuvier's *Fossil Osteology*, and the preliminary *Essay on the Theory of the Earth*, ample details on this interesting subject.†

* Though belonging to presently existing Genera, they are all referable to *extinct* species.

† Cuvier considers they are the remains of animals which inhabited these caves and died peaceably there.

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The economical and ornamental purposes to which this rock is applied, we shall notice in its proper place.

We may here observe that a rock somewhat similar to the Amygdaloidal Trap described farther on, may be met with at several points of the junction between this and the Slate formation—it often contains a large proportion of Iron, and deserves to be more accurately traced and examined.



THE RED SAND STONE,

Is that of which as the formation next in order we are now to treat—a line swept from Exeter and Ide through the eastern part of Dunchideock, and round the eastern edge of Haldon, and thence on through part of Ideford—Bishopsteignton—Kings-teignton, the eastern side of Woolborough, and through Abbot's Kerswell and Ipplepen on to the Dart, includes the western limits of this formation;

The truth appears to be, that in many of the caves the bones were collected at two different, though certainly not very distant periods; The first when they were the abode of certain animals, the second when other bones were transported there by a general catastrophe.

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whilst the line of the Exe and the Sea Coast, on to Goodrington, form its other boundaries ; so that the spaces not occupied by the Lime or Slate, or the Amygdaloidal Trap, to be hereafter described, are filled by this formation : the strata vary much in thickness, and in general dip very gradually ; they present themselves under various characters—viz ; that of a *sand stone* loosely compacted, or altogether pulverulent, (this is often intersected by thin plates of oxidulated Iron)—a *marle* more or less indurated— or a *Breccia* composed of fragments of various sizes, the base of which is usually marle of an unctuous and argillaceous character ; the marle having frequently those white and purple patches characteristic of that compound.

This rock is often of sufficiently indurated character to be available as a building stone, and is then like Granite of a rhomboidal structure in the mass—argillaceous beds of Sand stone and of Breccia (conglomerate) often alternate with each other, and are inclined in various directions. The component parts, or rather the mineral contents of the more recent portion of this formation* are various—remains of Granitic, Porphyritic, and Greywacke rocks form a considerable part of the imbedded

* It appears to be referable to two distinct members of the secondary class of rocks,—the old and the new red sand, (first and third sand stones of Humboldt) but this is a point not entirely settled, nor have their different limits in the County been accurately defined.

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fragments—crystalline, semi-vitreous, and earthy Felspar of a reddish brown colour—quartz—common schorl, (occasionally this and the last are met with distributed in small contemporaneous veins, apparently crystalline,)—chlorite—brown manganese ochre in occasional cavities—calcareous spar—and Lime stone (occasionally with coralloid remains.) All these are for the most part mixed promiscuously in the same stratum, occasionally particular substances predominate but seldom if ever to the total exclusion of all others—the quartzose and porphyritic fragments are but slightly rounded—in some cases not even perceptibly so—the calcareous portions have usually the appearance of being worn by attrition.



AMYGDALOIDAL TRAP.

(The Toad Stone of some Authors.)

This rock is met with both north and south of Exeter—on the south-west side we may trace it for 4 or 5 miles in the direction of Ide, and of Dunchideock; many points occur along this range in which masses of this rock are found interposed between the beds of red sand stone, and as these points nearly fol-

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low the junction of that rock with the transition districts, the Trap must occur towards the lower part of the sand stone series ; from its alternating however with the latter, it would appear to be associated with *it* rather than with the transition series, as might otherwise have been supposed ; more accurate examination may probably present instances of the rock along the lines of junction still more southerly than those noted, and enable this question to be settled with more certainty. The Rev. J. J. Conybeare has given a full and accurate account of the constituent parts and structure of it, which we shall here quote. “The general aspect of this rock, is that of a granular mass, somewhat loosely compacted, mostly of a brown or purplish-brown, (which colour it probably owes to the oxide of Manganese.) In this are intermixed small portions of calcareous spar, mica, or chlorite and indurated clay (Lithomarge,) in quantities often forming a considerable part of the whole mass ; the Calcareous spar as well as the Manganese often traverses the rock in small veins ; the cells of the amygdaloidal portion are filled or lined with brown oxide of manganese, calcareous spar, and a coarse jasper ; this abundant admixture of substances apparently adventitious obscures the character of the rock, so as to make it difficult to pronounce with any certainty as to its essential constituents. These may probably be granular or earthy felspar, and one or more of the following—Hornblende—Augite—Bronzite—or Hyperstene—probably the se-

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cond—the more compact portions fuse before the blowpipe, sometimes into a more or less slaggy black glass, sometimes into a dirty white enamel, more or less mixed with black patches.



THE GREEN SAND FORMATION.

This is immediately incumbent on the red sand stone previously described ; in this district it occupies the upper parts of Milburn Down, of Great and Little Haldon, and two or three smaller contiguous hills, which may be considered as interrupted portions of a range once continuous from thence across Black Down near Kentisbeare, to its dip beneath the chalk in Dorsetshire. Its direction is nearly the same as that of the primitive and transition ranges—Its characters are chiefly that of a fine grained sand of various texture, from a friable character to a compact silt, and all more or less coloured by chlorite ; it frequently contains nodules of Gypsum, and abounds with fossil remains, chiefly univalve and bivalve shells.

Incumbent on this formation both on the summit of Milburn Down, and the other hills, are strata of chalk flints—these beds were probably continuous also with those of Black Down, to their termination

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in Dorsetshire, where they are incumbent on the chalk. Polypiferous remains and Echinæ, are of common occurrence amongst them.



THE BOVEY CLAY & COAL FORMATIONS.

These commence at the base of the granite hills in a large natural basin of irregular form, about 7 or 8 miles in circumference, situated in the parishes of Hennock, Bovey Tracey, Ilsington and Teigngrace, and nearly surrounded by hills of considerable elevation,* they continue on by a natural opening in a S. E. direction to Teignabridge and Kingsteignton, and thence across the Teign by Newton, and by Ford at the base of Milburn Down, and might probably be partially traced in that direction on to the sea coast near Goodrington.

The former consists principally of deposits of clay of different degrees of purity, from that of a coarse and gritty quality to the purer marketable sorts, horizontally alternating kind with other deposits consisting of sand and gravel—the whole apparently

* The surface of this Basin is known by the name of the Bovey heathfield, and is at an average height of 50 feet above the low water sea level.

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formed from the debris and decomposition of the primitive hills that bound it at the western end. Debris from the green sand formation apparently water worn, also occurs sparingly at the surface on the eastern side.

These deposits consist chiefly of five clay beds of various width, running parallel with as many alternating ones of gravel whose width varies from 50 to 100 feet ; the loose head of earth and gravel on these varies considerably, from 5 or 6 feet, to 25 or 30 ; beneath this incumbent stratum, the clay beds lie, not in a straight level manner, but undulating, like the waves of the sea ; beneath the 4 westernmost beds (which are worked to depths varying from 30 to 80 feet)* the Bovey Coal runs ; under the most eastern or pipe-clay (which is also frequently worked to the depth of 80 feet) white quartz and sand are found.

The Bovey coal which passes under this, occurs in stratified beds, which occupy a space of 70 feet altogether in thickness, and dip at an angle of about 24° or 25° near the Pottery in the parish of Bovey, where the largest body of it appears to be situated, and where it approaches to within 5 or 6 feet of the surface ; at this spot are 6 beds of various thickness, interposed between brownish clay ; in this

*Near the S. E. corner of the Heathfield, this formation was bored to the depth of 200 feet thro' continuous layers of clay, varying in colour and texture, in an unsuccessful search for black coal.

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clay small veins of coal resembling reeds and grass are found, and retinasphaltum ; the whole is covered by a loose gravelly head.

The main beds of this formation appear very obviously to consist of the wood of Dicotyledonous trees imperfectly mineralized.



ALLUVIAL DEPOSITS.

The principal are those of the Teign and Exe ; they accumulate with considerable rapidity, especially along the sides of the latter river, but offer nothing very peculiar to remark on—in cutting through the soil in order to lengthen the Exeter canal, successive layers to the depth of several feet, of bivalve shells, chiefly of the genera *Tellina* and *Mactra* might be observed, marking the different depositions of sediment.

We have thus given an outline of the different strata of the neighbourhood, but to enter into any lengthened Disquisition as to their relative ages and modes of formation, would require a larger space than is compatible with our limits. Arguments deduced both from Chemistry and the higher Mathematics induce a general belief of the once fluid state of the primitive rocks, and the more modern

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views of Geognosy lean towards the idea of the liquified masses ascending from below upwards, whilst that of Werner explained every thing by precipitations, and movements in an opposite direction; he supposed them to have been dissolved in water, but the better opinion now seems to be, that their fluidity was caused by an increase in the temperature of the Earth; the researches and experiments of *Mitscherlich*, appears to give a high degree of probability to this Theory; he has produced by artificial fusion, upwards of forty different species of minerals, the greater number of which, correspond precisely with those ascertained to exist in nature, and he thence argues “that the artificial production of mica and other minerals which compose our primitive rocks, appear to place beyond doubt, the Theory that our primitive mountains were formerly a melted mass.”

Humboldt also in his Geognostical Essay—in which he has embodied all his own immense personal experience, and that of every other able geognost, “does not hesitate to range himself on the side of those who rather conceive the formation of crystallized siliceous rocks by fire than by water.” We have heard it suggested, that some part of our *granite* may belong to a later and Transition æra—but we see no reason whatever for considering the whole of it to be other than of primitive and contemporaneous formation.

The determination of the relative ages and origin of the rocks included under the head of the *Slate*

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Formation, is a far more difficult matter. De Luc, who spent much time in the neighbourhood, always contended that a volcanic action was obvious in the sienitic rocks of the neighbourhood of Bottor—as far as our own observation extends, between these, and the characters presented by many others along the eastern line of junction with the granite, there appears to be no sufficient difference to justify the idea of their originating from distinct causes, or at different periods; rocks of a compact basaltic character in which Hornblende predominates, and which frequently contain a large proportion of Iron (often from 15 to 20 per cent and upwards,) may be met with at various places along the whole line both in Devon and Cornwall—it would require more extensive and accurate examination than has hitherto been afforded them, to pronounce with any degree of confidence, but we feel inclined to consider them as a series of Whin Dykes connected with the *older members* of the different rock series, as the Amygdaloidal Trap may probably be with the *more recent ones*.*

* We have alluded to the great variety of structure presented by the different rocks that we have placed together under this head, and an extract, from Humboldt's Essay previously referred to, on this point may not be misplaced in a note. After propounding as the universal law of minerals, that all rocks were in the first instance, an amorphous paste, the crystalline elements or molecules of which tho' invisible to the eye, are found by degrees increased and disengaged from the close texture of the mass—he

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With respect to the red sand stone, we conceive the most probable opinion to be, that its origin is mechanical, and derived from the breaking up of

goes on to instance this in the Schists of Transition, of which he observes that their structure tho' apparently so different from that of porphyry or granite, presents striking examples of insensible passages to rocks granular, porphyritic, or granitoid; at first they become greenish and harder, according as the amorphous paste acquires hornblende, it passes to those amphibolic trap rocks formerly mistaken for Basalt; in other places, the mica, concealed at first in the mass, is developed, and separates into plates distinctly crystallized, at the same time the felspar and quartz become visible, and the mass assumes a granular appearance with elongated grains, this is a true Transition gneiss; the grains lose by degrees their common direction—the crystals are grouped round their several centres, and the rock becomes a granite, or transition syenite; in other cases the quartz alone is developed—augments becomes formed into round nodules, and the schist passes to a grauwacke very distinctly characterized." He elsewhere observes, "In the Long series of rocks (primitive and secondary,)—an assemblage of monuments of different Epochas—three very striking phænomena may be distinguished—viz; the first dawn of organic life on the globe—the appearance of the fragmentary (transition) rocks—and the catastrophe which has buried the ancient monocotyledonous vegetation. These phænomena mark the Epocha of the intermediary (transition) rocks, and that of the coal sand stone, the first member of the secondary rocks; but notwithstanding the importance of the Phænomena thus remarked, the rocks of one Epocha have always a *prototype* in those of a preceding Epocha, and every thing denotes the effect of a continued developement."

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some of the inferior strata—the resemblance of the different fragments it is composed of, to the older rocks in its immediate neighbourhood, appears to bear out this opinion; we may here observe, that the only kind of rock in the vicinity of which it contains no fragments, is that of the hornblende or greenstone. Its containing no organic remains, though these are abundant in the strata immediately below and above it, and its general want of consolidation, certainly argue that its formation must have taken place under different circumstances, and by a different process from either of these.

As to the Amygdaloidal Trap, we may leave it a mooted point whether the beds may be considered as a series of Whin Dykes; or Depositions, and concretions more nearly connected, and contemporaneous with the strata that envelop them, our own opinion inclining to the former.

The green sand is a still more recent member of the secondary class than the red, it abounds with fossil marine shells, and appears to have originated in sedimentary deposition. The flint strata incumbent on it, may be considered as connected with the chalk formation in Dorsetshire, on which they are there incumbent, as with us they are on the green sand.

And lastly respecting the Bovey clay and coal formations, the former of these we are not inclined to ascribe to a period earlier than the last convulsion; nor is it improbable that the same Diluvial action, so obvious in the excavation of our present

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vallies, and which nearly corresponds with the dip of the different formations, may have destroyed and drifted some ancient forest then existent in the vicinity, to its present situation under the Debris of the rock strata, thro' what may previously have been an inland lake—the imperfect mineralization of the wood—its comparatively superficial situation, and many other circumstances tend to confirm this view.



Having given a general description of the rock strata of the District, and their probable origin, we shall next enumerate the principal species and varieties of minerals they contain, that are objects of interest for scientific investigation, and arrangement in the cabinet.

QUARTZ.

Amorphous.

Topazine—Associated with the tourmaline.

Crystallized.

Opaque.

White—In the granite formation ; frequent.

Black—Haytor mine.

Transparent.

Colourless—Granite and Slate ; frequent ;
and in Flint on Haldon.

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Amethystine. } Fine specimens have occur-
Purple, } red in Geodes at the
Rose red, } Haytor mine.

Ruby red—Haytor mine; rare—small but very beautiful and perfect crystals, lining cellular Quartz.

Irisated—Ditto.

Yellow—Ditto; some crystals occur of a very clear and fine texture.

Brown—ditto; of various shades.

Cuirngorm—ditto; fine specimens but rare.

Pseudo-morphous—ditto; taking some of the forms of Garnet, and of Iron pyrites.

Hyalite—ditto; rare.

Spongiform, radiated, lamellated, cellular, and *stalactitic* varieties also occur at this mine.

OPAL.

Semi—of various colours—yellow, green, blue, whitish, striped—of frequent occurrence at the Haytor mine, in rounded nodules invested by indurated Clay (Lithomarge.) We have specimens closely approaching the texture of true Opal.

CHALCEDONY.

Haytorite, or Pseudo-morphous Crystals—these are of various sizes, taking the forms of Quartz, Garnet, or Iron pyrites; the name is derived from the mine where they occur.

Hydrophanous.

Stalactitic.

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Mamillated,
Botryoidal, &c.

Some very beautiful Chalcedonies of many different colours and very sportive forms, have occurred at the Haytor mine.—We may here note, that the finest collection both of these and the other minerals that have there been found, is that in the possession of Shirley Woolmer, Esq., of Exeter.) Fine mamillated Chalcedony, (white, pink, or light blue,) also occurs on Haldon, lining Geodes and “of a beautifully cœrulean colour, at Warmpitt, often coating the iron stone,” J. G. Croker, Esq.

Carnelian—on Haldon, frequent.

Agate.

Fortification—Haytor Iron mine, occasionally passing into quartz ; near Ash-hill.

JASPER.

Common red—Bishopsteignton.

GARNET.

Massive—near the junction of the Granite and Slate—at Hightor.

Crystallized.

Common—various shades of yellow, green, and brown ; the former mostly small, some of the latter of large size, but usually of a coarse texture—Haytor mine, and other parts of that neighbourhood.

Pyrenite—we have specimens from the same

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neighbourhood ; rare.

AXINITE.

Massive.

Crystallized—this occurs in the neighbourhood of Haytor, in a Syenitic rock, occasionally accompanied by Garnet. The crystals are mostly very well defined, and of a tolerable size. We consider this the first time that it has been noticed as a Devonshire mineral.

CLAY.

Porcelain,
Lithomarge,
Potters,
Pipe-clay, } Select specimens of these are easily obtainable from the localities we have previously described.

HORNBLLENDE.

Massive, and in small acicular Crystals—in localities previously stated.

Actynolite—at the Haytor mine in amorphous masses, and in distinctly radiated clusters ; the radii from $\frac{1}{8}$ to 1 inch in length, the colours varying from a light to a very dark green—a thin variety, with a vitreous lustre occurs sparingly on the surface of the ore.

ASBESTUS.

Common—of frequent occurrence in the slate formation—Sharpham, Buckland woods, &c.

Amianthus—ditto.

STAUROLITE— This was discovered by Dr. Turton amongst the granite chippings on Teign-

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mouth wharf, and in all probability came from the Haytor granite quarries—this specimen with which we have been most obligingly favoured, is a remarkably fine one.

MICA—well defined specimens for the Cabinet are occasionally, tho' rarely, met with in the granite formation.

Hexagonal prisms of a dark green colour occasionally occur—we have a specimen from the neighbourhood of Manaton—in granite of a coarse and open texture.

FELSPAR.

Common—well defined crystals of various sizes, usually white or flesh red—are frequent in the granite.

Manganesian rose coloured—in a decomposing state; from the Hightor works; “often approaching asparagus stone, from the same place.” J. G. Croker, Esq.

SCHORL.

Crystallized—in longitudinal deeply striate prisms occasionally terminated by three planes; of various sizes, sometimes large and distinct; sometimes small and very closely aggregated; fine specimens may frequently be obtained from old stream-works in the granite.

PITCH STONE—“coating scopiform hornblend 1 inch thick, near the Hon. Capt. Pellew's

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new residence at Canonteign; found on the North-East range of the sienite of Bottor Rock, in the stones quarried for that building. The late Revd. J. Hill, of Hennock, found Pitch Stone near the Bottor Rocks also. The fracture of this sienitic rock often exposes a vitreous extremity." J. G. Croker, Esq.

TOURMALINE.

Crystallized.

Black—splendid specimens of this mineral accompanied by large crystals of apatite, occurred in a bunch, with clay, quartz crystals, and carbonate of iron, some years since, in a coarse grained decomposing granite, at Wooley, in the parish of Bovey Tracey; a new cut that has lately been made in the Turnpike road, between that and Moreton, passes thro' the spot, immediately below which is a small lode of micaceous iron; we believe the cavity has been exhausted, some specimens that have lately made their appearance, being probably part of an old hoard; the crystals, which are of various sizes, are prisms of six or more sides, variously terminated.

CARBONATE OF LIME.

Calcareous Spar—crystals of a great variety of forms are frequent on the sides and crevices of the lime rocks, quarries &c. and well defined ones are also frequent in the red

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sand stone cliffs.

Stalactites, }
Stalagmites, } Lime caverns &c.—common.

Marble—the different varieties we have described elsewhere.

ARRAGONITE “Wotton Court—Torquay,” J. G. Croker, Esq.

MAGNESIAN LIME-STONE. We have met with this at Bickington.

APATITE. In the same locality as the tourmaline, as previously stated—the crystals are greyish white translucent prisms, some of them large and fine.

GYPSUM—nodules of this occur in the green sand of Haldon.

HEAVY SPAR.

Sulphate of Barytes—in veins in the Babbi-combe lime-stone; the most common form in which it occurs, is that of opaque concentric laminæ.

IRON PYRITES.

Yellow.

Crystallized }
Radiated. } Frequent in the slate forma-
Arsenical. } tion, and in the Bovey coal
Auriferous. } formation, the 3 last varieties
occur at the Haytor mine.

White. ditto.

OXIDULATED IRON.

Crystallized.

Specular octohedrons,—at the Haytor mine; frequent.

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MICACEOUS IRON—some varieties of this approximate very closely to Graphite; Hennock, Lustleigh, &c.—in veins.

HÆMATITE.

Brown—Ilsington.

BOG IRON.

Frequent in low swampy bottoms in the Slate district.

CARBONATE OF IRON.

Haytor mine, Ashburton Down mine &c. *Scaly red glance Iron* investing Quartz is met with in the Buckland Woods, and *shell Iron* on Haldon, and on Teigngrace heathfield. On the downs round the hazel rocks, and Buckland Beacon, fragments of stone containing iron, shorl, and asbestos are met with strewd on the surface that possess considerable magnetic power.

OXIDE OF MANGANESE.

Massive and Crystallized.

Radiated, } In the localities previously
Mammellated, } given.

OXIDE OF TIN.

Granular and crystallized—Ashburton Down mine—Tin pebbles also occur occasionally in old stream works.

COPPER.

Native.

“Hyner—Frequently associated in the same vein with carbonate of lead.” J. G. Croker, Esq.

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- COPPER PYRITES.** Ashburton Down mine.
MALACHITE. Ditto.
BLUE CARBONATE OF COPPER.—"Hyner." J.
G. Croker, Esq.
GALENA—veins in the slate formation. Hennock,
and Ilington.
BLENDE. Ditto.
MINERAL CARBON—In the Bovey coal beds.
BOVEY COAL—Bovey heathfield, &c.
RETINASPHALTUM—In the Bovey coal beds.



FOSSILS.

TRANSITION LIME. The greater part of the fossil remains that occur in this formation, are completely blended with the solid mass of which they often form a considerable portion, tho' some are occasionally met with preserved in a more distinct and separate form; they belong mostly to the orders, *Zoophyta*, and *Crinoidea*. We have been favoured with an inspection of some recently found at Bradley,, near Newton. by J. G. Croker, Esq. in a vertical fissure, imbedded in blue foetid decomposing Lime. They consists of Trilobites—Pentacrinites—Madrepores—Amplexi—Ortbocerates—Inocerami—Terebratulæ—Ostreæ—Venericardiæ

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and Murices—some of the latter genera, are probably connected with the more recent strata, of the green sand or chalk flints of Milburn Down, in the immediate neighbourhood; but the former ones belong to the rock in the fissures of which they have been discovered—as well as the *Cardium hibernicum* of Sowerby, which occurs at the same place. The more recent bones of quadrupeds in the caverns of this formation, we have elsewhere noticed.

GREEN SAND. The levels that have been driven in various parts of Black Down, have enabled us to obtain a tolerably complete knowledge of the fossil remains preserved in this formation, and there is little doubt that those of Haldon, are of a similar kind and equally numerous, but as the latter hills have not been penetrated in the same manner, their is a greater difficulty in obtaining access to them; upwards of 150 species of fossil Testacea, have been met with at the former place; whence also, we have chiefly obtained our own specimens, but this locality being beyond the limits to which we confine ourselves, an enumeration of them would be out of place. We have met with specimens from Haldon, belonging to the following genera, *Turbo*—*Murex*—*Terebratula*—*Chama*—*Trigonia*—*Pecten*, *Cucullæa*—*Pectunculus* and *Nucula*; and connected with the chalk flints *Inocerami*, and several *Echini*; this list might doubtless be considerably extended, even with only our present facilities for research.

THE BOVEY COAL. Some distinct scales ap-

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parently of cones belonging to the pine family, are occasionally met with ; we have also been favored by Mr. Croker with specimens, in a very perfect state, of a small one-celled capsule, or drupe, resembling that of the genus, *Myrica*.



We shall conclude with a general view of the commercial and oeconomic importance of the available mineral products of each formation.

The GRANITE.—*Tin* has always been considered the most ancient and valuable product of this rock, traces of old stream works &c., for obtaining this metal are every where to be met with, and tin pebbles are by no means of unfrequent occurrence in these, but at present, none is produced as an article of commerce within our prescribed limits ; tho' there can be little doubt that if judiciously explored, many available lodes might be found. *Micaceous Iron ore* occurs in small lodes, and is worked in the parishes of Hennock, Lustleigh, Moreton and Bovey Tracey, under the name of *shining ore*. It contains a large proportion of carbon, and in fact may be considered as an inferior kind of Graphite or Pulm-bago, and is applied to many of the same uses—after being carefully washed, it is packed in casks in a pulverized state, and shipped in limited quantities

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from Teignmouth and Exeter. We may next notice the *Peat*, which occurs to a considerable extent in many parts of this formation, and is used as fuel in the neighbourhood—it occupies beds often of considerable extent, from 5 or 6 feet, to 50 or more. It may be considered as a congeries of vegetable matter, in which the remains of organization are more or less visible—the long stringy fibres of the *Sphagna* and other bog mosses, form the principal portion of that within our limits; it increases annually, often to the thickness of many inches; in some of the deeper part of the bogs on Hightor and the neighbouring Downs, it is occasionally found, enclosing portions of the trunks and branches of fir, birch, alder and hazel; as well as leaves, hazel nuts, fir cones, &c. Peat when of good quality is tolerably compact, and cuts into solid masses—when inferior, which is generally in proportion as you approach the surface, it shews a considerable degree of elasticity and resistance to the spade. There are immense deposits on Dartmoor, especially in the bed of Cranmere pool, the source of most of our Devonshire streams, of a black, compact, and very superior quality, but it has never been made available to any extent beyond supplying the scanty population of the district with fuel, for which purpose, it is cut in square junks of 8 or 9 inches during the summer months, and after standing some weeks on the surface to dry, is taken to the Homestead and usually stacked. *Porcelain Clay*—small runs of this occur at Spitchwick, Horridge, and one or

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two other places, but we believe they have never been made available.

Lastly, the *Granite* itself is quarried to a considerable extent, and applied to a variety of useful and ornamental purposes. The Haytor Quarries, situated round the base of the rocks whence they derive their name, have obtained a high repute amongst Architects, for the size, durability, and fineness of texture of the blocks produced from them; 2 or 300 men are usually employed there—a great part of the stone being worked to the shape and fineness required, on the spot; it is conveyed to the Stover canal, by means of a rail-way of 7 or 8 miles in length, formed of the same materials; this winds down amongst the neighbouring hills and crosses Bovey heath, joining the canal head at Ventiford, whence it is conveyed to the new wharf at Teignmouth, and there shipped to the extent of several thousand tons annually, chiefly for the metropolis.

The SLATE OF KILLAS. *Tin*, *Copper*, *Lead*, *Iron*, and *Manganese* veins all occur in this, and have been worked, though only to a very limited extent. *Copper* and *Tin* ores are met with in veins at the Ashburton Down mine, for both of which it has been worked advantageously, at present only for the latter. A *Lead* mine that has been neglected many years, occurs at Hsington, and another at Hennock, that has been very recently in work. *Iron* occurs and has very recently been worked in a large lode near the base of the Hightor rocks; this mine having excited great local interest,

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we make the following extracts from an account of it published in the *Philosophical Magazine*, No. 17.

“ The lode, to the depth at present explored, is a very regularly stratified one, of oxidulated iron ore and argillaceous schist, in alternate beds ; and is situated on the edge of the granite district, near the base of the Hightor rocks. The hill, on the brow of which, near the centre, it crops out, is immediately incumbent on the granite ; its principal slope is gradual and towards the East, the sides having a more precipitous descent to the North and South. It consists chiefly of micaceous, passing into clay schist, and of hornblend rock (provincially termed Ironstone) of a compact basaltic texture, and great specific gravity ; and mostly containing a proportion of iron-ore, which occasionally runs in distinct threads and patches through small portions of it.

The lode occurs in the clay schist, and the direction of its strata is nearly North-west and South-east, underlying to the North-east at an angle of 22° or 23° only for the first few feet from the surface ; but below this the dip is very regular at an angle of 45° . It consists of alternate beds of ore and schist varying in thickness from 6 inches to 3 or 4 feet ; the central bed being of iron-ore, and considerably the largest, it is 8 feet in thickness ; and the other alternating beds of schist and ore are disposed above and below it in a tolerably regular relative proportion. The schist having a tendency to contract in width, as the depth increases, and the ore to approximate each way towards the central bed, into which

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the obvious probability is, that the other beds at a greater depth, run; but whether this is the case, or whether, if they do so, the central bed is proportionally increased, must of course remain uncertain, until a level is driven, through the side of the hill from the northern ravine, and which would cut the lode at about 150 feet perpendicularly below the surface. Permanent springs rise at the depth of a few feet, the water from which is carried off by a syphon bent over the northern slope of the hill. A level driven from the back of the lode, at the depth of about 20 feet from the surface, through schist, in a south-west direction, intersected, about 30 feet from its commencement, another small bed of ore, about $3\frac{1}{2}$ feet in width, in which a large proportion of iron-pyrites is disseminated, the dip being the same as that of the principal lode, with which however, it does not seem to be connected; the latter being included in a well-defined manner, in alternating beds as previously stated, whose width is altogether about 28 feet. The length, of course, is not capable of being so accurately defined: from the part where the road crosses the vein on the western side, the traces are observable on to the granite, a distance of 230 yards, which they do not enter, but are conformable along its edge for some distance in a northerly direction; and on the eastern or lower side, it has been traced for the distance of 250 yards, down to a compact stratum of Hornblende, blended with garnet and actinolite, against which the traces appear to have been hove

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in a zigzag curved manner, and to dip under it. The length however of the beds containing ore of a quality available for smelting, does not (at least to the depth at present excavated) exceed 150 yards.

The surface along the whole line of the lode, as well as on each side of it, is apparently regular and undisturbed, and consists of a loose head of flat schistose stones and fragments, and the earthy mould arising from their decomposition, to the depth of 5 or 6 feet. In this head, at either end, along the line of the lode, bunches of manganese contaminated by iron occur. Near the central part of the lode an old sinking was discovered to the depth of 42 feet on one single bed of the ore. There remain no records in the neighbourhood, as to when or for what purpose this excavation was made ; but the probability is, that it was mistaken for tin, old stream-works for obtaining which abound in the neighbourhood. Only a small portion (if any) appears to have been carried off ; as the chief part was left in heaps, and strewed on the surface to the extent of two or three acres immediately round, and which in fact led to the discovery of the mine, and remained unaccounted for some time after.

The chief part of the ore is of a compact texture, but portions of it, especially on approaching the surface, are coarsely granular ; more or less perfectly formed crystals, loosely aggregated, are also frequent. The per-centage of iron it contains varies from 40 to 70 (the average probably of what has hitherto been worked yielding in the large way

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about 50) ; some of the richer specimens are actively magnetic ; when pulverized, the ore is brownish black, and passively magnetic. It occurs also mixed with sulphur and with arsenic, in coarsely granular masses. Spathose carbonate of iron and also iron-pyrites are met with ; the latter, either in decomposing granular concretions, radiated, in more or less perfect cubic crystals, and in small spangles disseminated through the coarser granular ore. Copper-pyrites and arsenical pyrites also occur, the former very sparingly.”

MANGANESE has been worked to some extent at Doddiscombesleigh, Hennock, Ilsington, and Ideford ; the ores are chiefly the black and grey oxides, which usually occur in bunches ; after pulverising and washing, it is put in casks and shipped off in this state for the market. *Roofing Slate*, several large and excellent quarries of this are met with, the principal are those at Staverton, and Nether-ton—they are worked chiefly for the supply of the neighbourhood. This formation especially near the line of junction with the granite, richly deserves to be more carefully explored than has hitherto been the case ; but practical miners have great local prejudices, and in general, can only be induced to extend their operations gradually and carefully from points of established reputation—even in Cornwall there is much promising ground yet unexamined.

THE LIME-STONE. This rock is quarried and burnt to a great extent, for the purpose of a manure ; the rocks on the Western-most line, from Haldon

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to the Dart, supplying the country at the back for many miles into the granite and slate districts; and from the Babbicombe quarries, vessels are constantly conveying stone to supply the kilns along the banks of the Exe, whence a large part of the red sand stone district around and beyond Exeter is supplied. It is also admirably adapted to building and ornamental purposes, and the variety and beauty of its markings, cause it to be in great request, for tablets, pillars, mantle-pieces, &c. The cliff at Petitor, on the edge of the sea, between two portions of the red sand stone and which is the most easternly point along the coast where Lime occurs, has long been celebrated in this way—the blocks here are tumbled from the outer edge of the cliff, (the whole of which appears in a loose disjointed state,) of many tons weight, and slabs of a large scantlage, and pillars of 14 or 15 feet in length are often worked from it. The rock also, which we have previously noticed, at Coomb-fishacre, on the estate of John Shepherd, Esq. is quarried for ornamental purposes; and whether we consider the size and fine texture of the slabs, or the beauty and novelty of their patterns, we know of nothing of this kind in the county capable of rivalling it.

THE RED SAND STONE. This is in some places sufficiently compact to serve as a very durable building material. There are quarries at Exminster and elsewhere, for this purpose.

THE GREEN SAND. If the sides of Haldon were driven into in the same way as those of Black

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Down, no doubt the same kind of whet-stones as that furnishes, might be obtained ; and the naturalist would at the same time be better enabled to examine the numerous species of fossils in which it abounds.

THE BOVEY CLAY FORMATION. The available portion of this, as we have previously stated, consists of five distinct beds running parallel between as many others of gravel ; the two westernmost beds are what are technically called, cracking clay—the two next or middle beds, black clay. (These four are the beds used in the manufactory of porcelain and earthen-ware)—and the most eastern bed (which is much wider than either of the others) Pipe clay, which is so strongly impregnated by iron that it is unfit for the potter's use, and is confined to the manufactory of pipes. The pure body adapted for the market, commences on the left bank of the Teign, nearly opposite Newton—the cracking and black clay beds, extending towards the north-west to the base of the granite hills between Hightor and Bovey Tracey—the pipe clay is limited by the opposite hills, as previously stated. Clay has been worked on the opposite side of the Teign, but it has proved of an inferior quality, unfit for the market. It is worked in square open pits to various depths of from 30 to 80 feet ; under the whole of the four western beds, Bovey coal occurs, and abundance of water—under the eastern one, sand ; it is cut out in small cubic junks, technically called clay balls, of which, many thousand tons are an-

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nually shipped off to the potteries from Teignmouth, some of which is conveyed by carts to the Hackney cellars, but the principle part is taken down the Stover canal in barges. We must here acknowledge our obligation to S. Whiteway, Esq. to whom we are chiefly indebted for the account of this interesting formation.

Lastly, the **BOVEY COAL**. The chief use to which this is applied, is the manufacture of an inferior description of earthen-ware, at the potteries on Bovey heath; it is also used as fuel, in the cottages of the neighbouring poor, but its difficult and imperfect combustion, and the fœtid gas emitted during the process prevents its being used to any great extent for domestic purposes; many experiments have been made to render this article more extensively useful, but hitherto without any approach to success, the large proportion of earthy and incumbustible matter it contains, having hitherto proved an insurmountable obstacle; the charcoal produced from it is of excellent quality, but not in pieces of sufficient size and compactness to stand a blast. It would be a most important advantage to the neighbourhood, if any means could be devised to make it available in the smelting of Iron; the chief difficulty to overcome appears to be, the getting rid of the ashes, which by their rapid accumulation, prevents a sustained white heat from being kept up in the furnace. We have ourselves made some unsuccessful experiments for this purpose, nor do we yet quite despair of seeing some plan devised

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to overcome the difficulty—and here we cannot but call to mind with esteem and regret the late Mr. Hatherleigh, to whose spirited exertions the neighbourhood, on this and many other accounts, are so much indebted.

As the opinion that *black coal*, (provincially sea coal) may yet be discovered in the neighbourhood, does not appear to be quite obsolete, we shall conclude this general sketch with a brief statement of the reasons that make this extremely improbable within the limits of the district we are describing. From the great number of geological facts that have now been collected and generalized, certain deductions have been drawn relative to the order of superposition of the different rock strata, and of the organized fossil remains that are preserved in them, that appear to rest on a firm basis; thus the primitive rocks contain no fossil remains—the transition formations occasionally contain Zoophytes, Mollusca, and a few Crustacea—these are the earliest organic forms that occur, and are met with in the transition lime-stone of the district; our red sand stone rests immediately on these without any other interposed strata, so that whether we consider it as being an older, or more recent, member of the secondary class, the result in boring thro' it would be the same, viz. we should arrive at the transition rocks, which are of more ancient origin than those containing the coal measures (which are the mineralized fossil remains of the earliest monocotyledonous vegetation; the same may be observed of the green

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sand, a still more recent member of the secondary class, and which rests immediately on the last without any of the members of the oolitic formation (as is elsewhere the case) interposing. There appears to be nothing very singular in this, as it is a general fact, that the more recent the strata, the more limited is their extent, and the more partial their distribution ; for instance the chalk does not extend to us, tho' the beds of flint incumbent on the green sand, appear to be interrupted portions of those resting on that formation in Dorsetshire. The Bovey clay basin, containing the *brown coal* deposit, has already been bored to the depth of 200 feet through a coarse gritty clay—which boring had it been farther continued, would most probably have reached some rock of the primitive class, as appears from the geological character of the neighbourhood on either side this curious deposit.



In conclusion, we may observe that our object in drawing up this part has been two-fold. First. To furnish the accomplished naturalist, who may be

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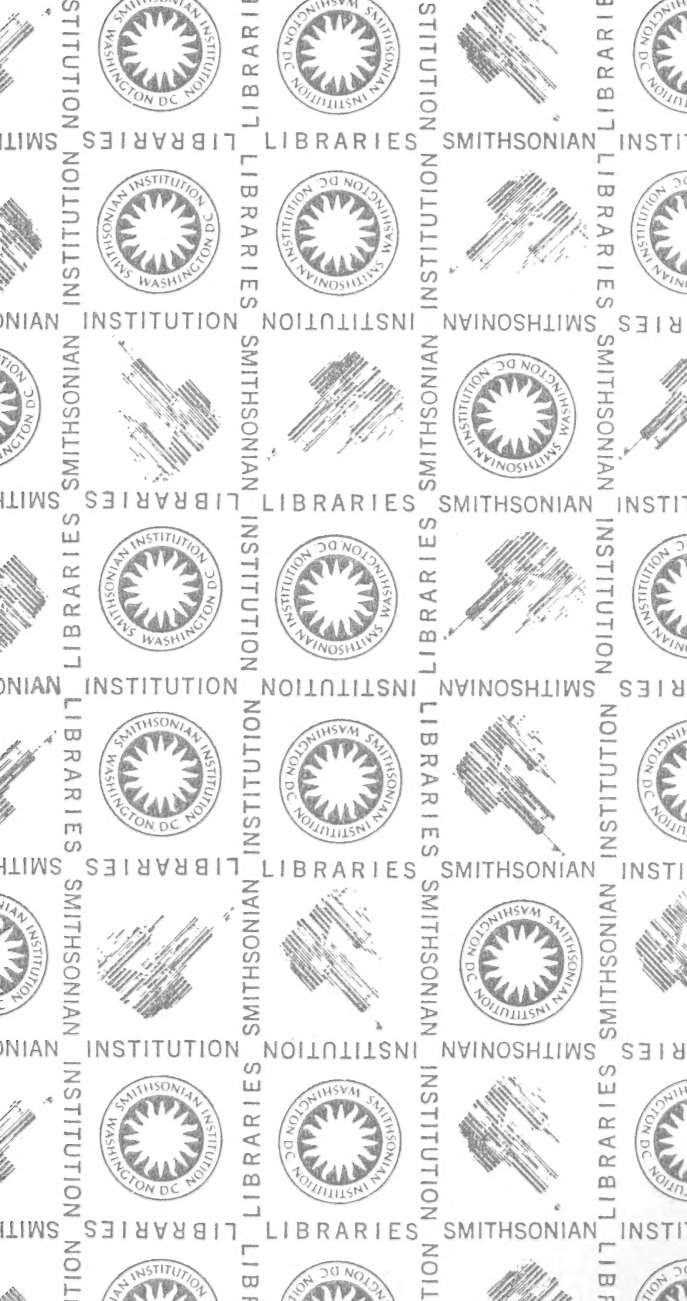
unacquainted with the district, with a guide to exhibit its general character, facilitate his researches and economize his time, by directing him at once to the objects he may wish to obtain or examine ; and secondly, to create a local interest in the neighbourhood, for this delightful study, and to stimulate the curiosity of those residing in it to investigate the treasures that surround them. By interleaving the volume, any facts, observations, or additions that the researches of any individual enable him to make, will be kept together in a systematic manner, and easily referred to ; whilst the references it supplies to the best plates, and descriptions of the various subjects, cannot fail to facilitate considerably the progress of the young naturalist.

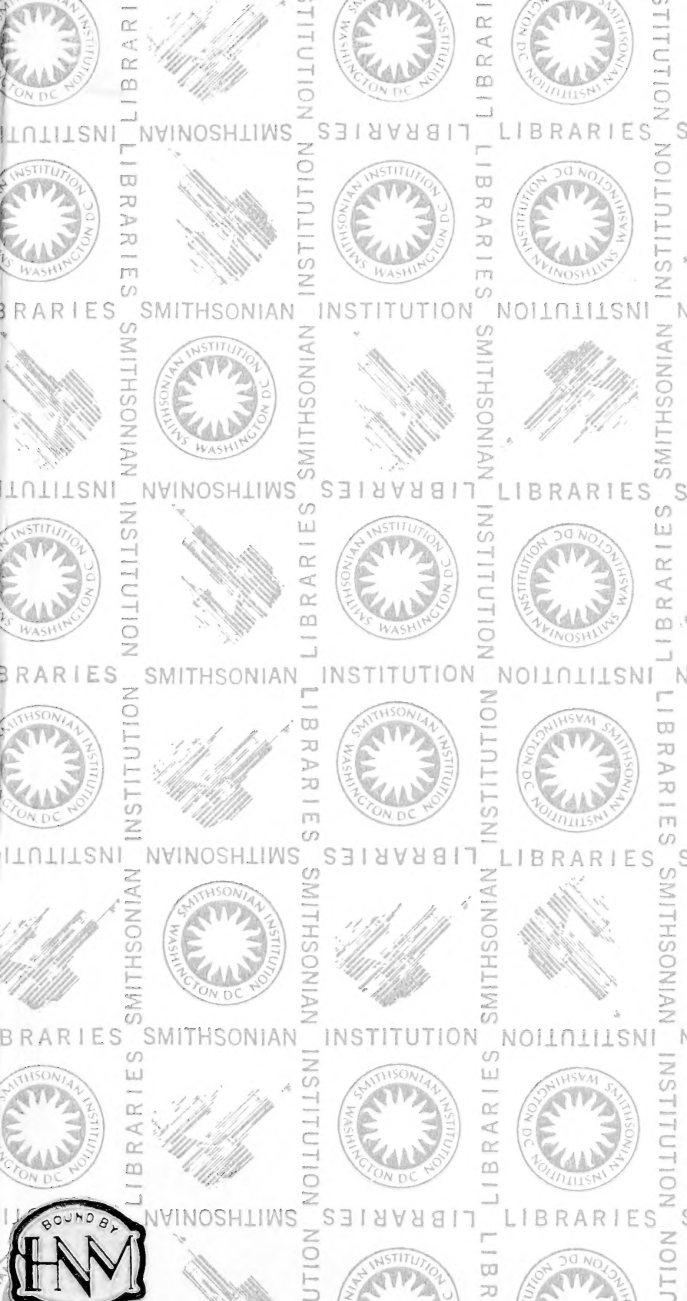
Natural science has now become so popular, that any arguments setting forth its importance and utility would be superfluous. "It tends," says an able naturalist, "to keep alive the better feelings and more valuable energies of our nature ; affording to youth delights equally pure and vivid—to maturity, calm and grateful occupation—to old age, the most pleasing materials for agreeable and salutary reflection, and whilst their votary enjoys the disinterested pleasure of enlarging the intellect, and increasing the comforts of society, he is himself independent of the caprices of human intercourse and the accidents of human fortune. Nature is his great and inexhaustible treasure, his days are always too short for his enjoyment, ennui is a stranger to his door ; at peace with the world,

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and his own mind he suffices to himself, makes all around him happy, and the close of his useful existence is the evening of a beautiful day.”

FINIS.





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