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A
CORNISH FAUNA;

BEING A COMPENDIUM

OF THE

NATURAL HISTORY

OF

THE COUNTY,

*Intended to form a Companion to the Collection in the Museum of the Royal
Institution of Cornwall.*

PART I.

containing the

VERTEBRATE, CRUSTACEAN,

and a portion of the

RADIATE ANIMALS.

BY JONATHAN COUCH, F.L.S., &c. &c.

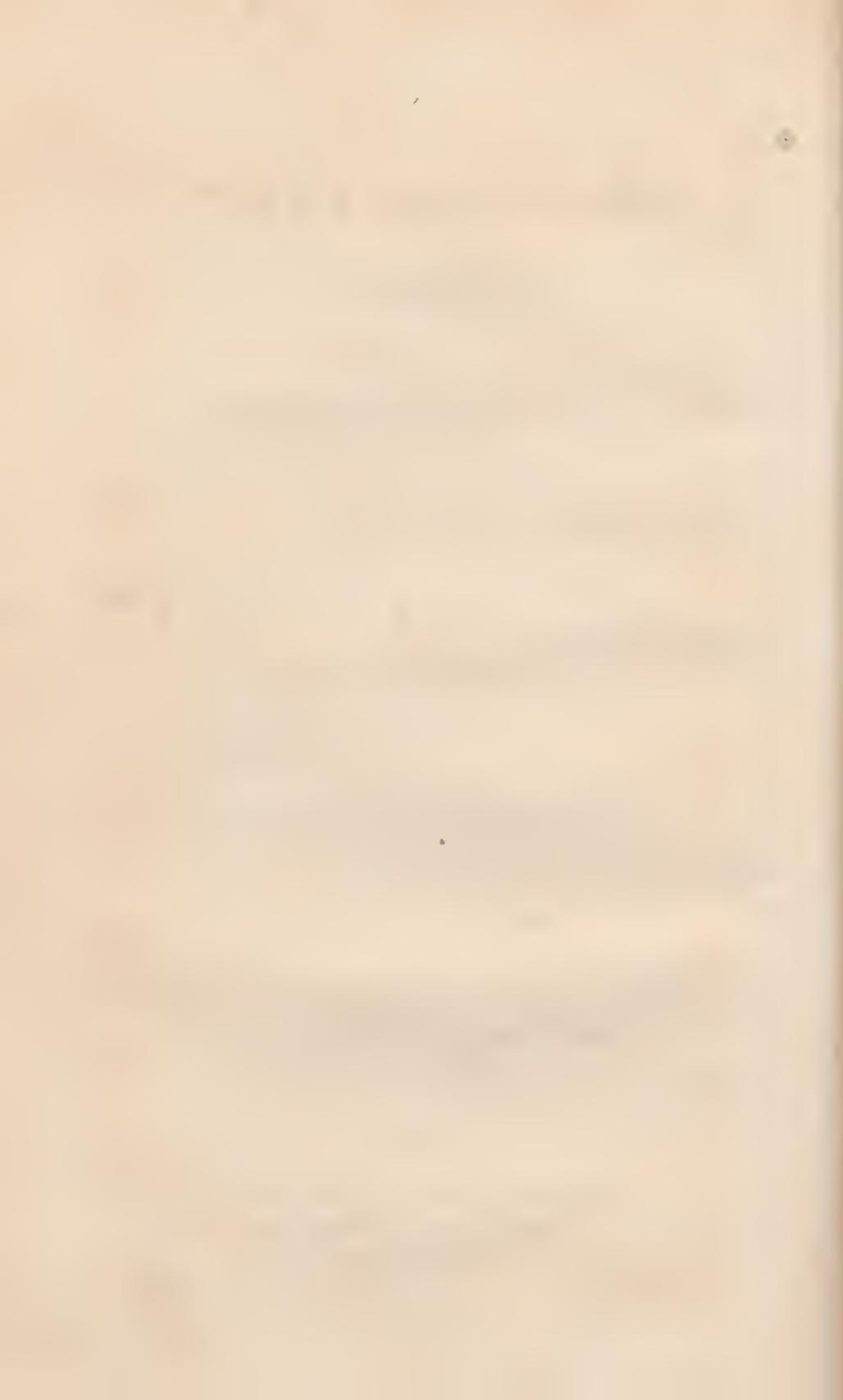
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INTRODUCTION.

THE personal interests of man are much mixed up with, and dependant on the animal creation with which he is surrounded. And beside those which contribute to our wealth or conveniency, there are others of scarcely less interest, that attend the motions of the peasant, and meet the philosopher in his most retired walks; so that as all ranks of men are compelled to notice them, all are in some degree acquainted with their habits and history.

But the contemplative mind seeks after the possession of more knowledge than can be obtained under ordinary opportunities, whilst the delight increases with the acquisition: *the works of the Lord are great, sought out of all them that have pleasure therein*; and as there is none so pleasing, so there is no amusement so innocent as the study of Natural History.

But it is not only, nor even chiefly, as an amusement, that this subject claims our attention. The differences that exist in the forms of the various orders of animal beings—so well fitted to their various modes of life, direct us to the contemplation of the wisdom that formed them, and of the goodness which has placed within their reach the objects suited to their organs and happiness.

This variety of structure also is effected by simply varying the primitive type of the parts, which are thus made capable of fulfilling a vast variety of intentions, according to the residence of the creatures within or on the earth, the sea or air : whilst the gradations of form and intellect in the different classes, with the evident analogies of at least many of the races to each order, and the light which the variety of structure in the organs of the higher animals is calculated to throw on the functions of correspondent parts in the human body, are all matters of deep philosophic interest ; and whilst they show that the creative power of nature is one, claim for the study of his works a place amidst the highest branches of science.

For the same reason that the subject is generally interesting, that part of it which relates to the creatures of our own country must be more especially so ; and it is only when our curiosity in this respect is in some degree satisfied, that we direct a minute attention to those of distant countries.

And this indeed must be considered as the proper course of study, even with those who seek the most extended information, or who desire to add by discovery to our present stock of knowledge. With regard to the former, the structure, peculiarities and habits of life, of the creatures of our own neighbourhood, will serve as the best foundation on which to build the edifice of general learning, and as subjects of comparison by which we are able more readily to understand the description and history of those of which the accounts reach us only in books ; and for the latter, many who have no opportunity of pursuing enquiries in distant regions, may still be able to notice things that have been overlooked by others ; and so far at least, is the science

in its youth, that there is scarcely a district, even in our own nation, of which we are able to believe that our knowledge of its Natural History is nearly complete.

Other reasons may be given for studying the science in a particular district. It is known that Animals are not indiscriminately scattered over the face of the Earth; but that certain species are the inhabitants of regions, beyond the limits of which their appearance is regarded as extraordinary; and the precise knowledge of those limits, the reasons why they are confined to them, with the changes which peculiarities of food and climate effect in an individual, constituting what Naturalists call a variety, are most likely to be thus attained, and our acquaintance with nature in general, so much the more improved.

These observations apply with especial force to the County of Cornwall. Situated at the extremity of the Kingdom, and projecting into the depths of the Atlantic, its position, climate and mineralogical structure combine to assign it a distinguished place in natural science above most other Counties of England; in comparison with which its quadrupeds and feathered inhabitants are as numerous and various, while the residents of its waters are even more so; and taken together they form such an aggregate of interest as will well repay the attention of the enquirer.

In laying before the public an enumeration of these tribes and species, it has been the intention first to ascertain the individual kinds, as they are recognized by modern Naturalists; in doing which care has been taken to avoid a multiplicity of references, that might have been easily collected to a large amount without a corresponding increase of the reader's information; for it must be allowed that the more ancient writers are very loose in their discrimination of species, and the

moderns are frequently copyists of each other. Those who are desirous of consulting other authors besides those here given, will find in the books referred to, so much instruction as will satisfy their enquiry, or direct them where to obtain it.

The references to modern Authors must also be regarded as including their history of each species, with the exceptions particularly pointed out; and therefore nothing is given that might be found in any of them. The short notes added to the species are therefore to be understood as occasional correction of what is believed to be an error, or an addition of something in which our native species may differ from the same kinds in other districts. Minute observation is thus sometimes admissible, where in larger or more general works it would be out of place; and in some instances it may be considered as descriptive of the influence of climate and situation.

A Fauna of a Country is commonly understood to comprize an enumeration of all the living nature of the district it embraces; and therefore it may be objected, that in the present instance the name is scarcely applicable to a work that omits the more numerous tribes. Of these the Annelides must be left to other hands: which is mentioned the rather, that some competent persons, for it requires many labourers, may not delay to enter upon the task. The Molluscs also, will invite, and amply repay, the labour of the Naturalist. An imperfect enumeration might have been given, but it has been judged better to omit what must have been exceedingly unsatisfactory. to an inquiring Naturalist.

CORNISH FAUNA.

—o—x—o—
The Species of which there are Specimens in the Museum are marked *

—o—x—o—

VERTEBRATE ANIMALS.

MAMMIFEROUS ANIMALS, OR THOSE WHICH SUCKLE THEIR YOUNG.

BATS.—The Cornish name of these Animals is Ary or Rerymouse, from the Saxon word Areren, to raise, or be lifted up, that is, to fly.

Seventeen Species are enumerated as British; and of these it is probable that nearly all may be found in Cornwall, although the following Species are all that are as yet ascertained.

GREAT BAT. *Vespertilio Noctula*. Jenyns' Manual, p. 23. A figure and History in Bell's British Quadrupeds, p. 12. Rare.

* **PIPISTRELLE.** *V. Pipistrellus*. Jenyns p. 24. Bell's Quad. p. 23. This is our commonest Species, and flies at all seasons of the year, if the thermometer be not much below 50°. It awakes in a few hours after the weather has become mild, and is not uncommonly seen abroad in the middle of a fine day.

* **LONG EARED BAT.** *Plecotus Auritus*. Jenyns, p. 27. Bell's Quad., p. 53. Not uncommon.

BARBASTELLE. *V. Barbastellus*. Jenyns, p. 28. *Barbastellus Daubentonii*, Bell's Quad., p. 63. Rare.

* **GREATER HORSE SHOE BAT.** *Rhinolophus Ferrum Equinum*. Jenyns, p. 19. Bell's Quad., p. 68. This is much more rare than the next Species.

LESSER HORSE SHOE BAT. *R. Hipposideros*. Jenyns, p. 20. Bell's Quad., p. 73. In the neighbourhood of Trelawny-house, this Species abounds almost to the exclusion of every other.

It is probable that the party coloured Bat may be an inhabitant of Cornwall, having been found at Plymouth by Dr. Leach.

* **HEDGEHOG.** *Erinaceus Europæus*. Jenyns, p. 19. Bell's Quad., p. 76. Hedge Boar and Sow. Its internal organization in Ray's Synopsis Anim. Quad., p. 231. The female is of a much more timid character than the male, and in captivity has been known to devour her own young. Common.

* **MOLE.** *Talpa Europæa*. Jenyns, p. 17. Bell's Quad., p. 85. In Cornwall generally, the Want. Moel in Welsh signifies a little hill, and a mole implies a small tumour; but mould also means the earth or soil, and Moldwarp, another name of the animal, implies one that bends or works the soil. The Want is one that disappears, as to want is to be absent, to disappear. The history of the animal is best given by Mr. Bell, and its organization by Ray's Syn. Quad., p. 236. Common.

SHREW. *Sorex Araneus*. Jenyns, p. 17, and Jardine's Mag. Zool., vol. 2., p. 28. Bell's Quad., p. 109. Ray's Syn. Q., p. 239, but not the *S. Araneus* of Continental Authors. Screw. Common.

WATER SHREW. *S. Fodiens*. Jenyns, p. 18, and Jardine's Mag. Zool., vol. 2, p. 31. Bell's Quad., p. 115., but not of Continental Authors. Not uncommon.

* **BADGER.** *Meles Taxus*. Jenyns, p. 10. Bell's Quad., p. 122. Grey. The word Badger was anciently used as equivalent to Trampler, or Pedler, that is, one that walks on his feet; which is applicable especially to this Animal, that was placed by Linneus in his Genus *Ursus*, and distinguished from such as walk only on their toes. Ray Syn. Q., p. 185, who gives an account of its structure, omits to mention that its jaw cannot be displaced from the sockets but by breaking the bone: a character not so decidedly found in any other British Animal. Common.

* **OTTER.** *Lutra Vulgaris*. Jenyns, p. 13. Bell's Quad., p. 129. By far the greatest portion of these creatures in Cornwall, derive their food from the sea, where they may be seen diving for fish, even when the waves are very tempestuous. Several instances are known, of their being drowned in Crab-pots; into which they had entered in search of prey, and had not afterwards been able to find the opening.

- * **WEASEL.** *Mustela Vulgaris*. Jenyns, p. 12. Bell's Quad. p. 141. Ray's Syn. Quad. p. 195. Fitch, Fairy. Common. It is not common for this animal to assume a pied appearance in Cornwall; but it has done so in a not very cold season.
- * **POLE CAT.** *M. Putorius*. Jenyns, p. 11. Bell's Quad., p. 156. Ray's Syn. Quad., p. 199. Common.
- FERRETT.** *M. Furo*. Jenyns, p. 12. Bell's Quad., p. 161. Domestic.
- * **MARTEN.** *M. Foina*. Jenyns, p. 11. Martes F. Bell's Quad., p. 167. Marten Cat. Rare and Local.
- CAT.** *Felis Domestica*. Bell's Quad., p. 182. Ray's Syn. Quad., p. 170. Cats without tails are common; and though the defect may at first have proceeded from injury, it is continued in the breed. Such Cats are commonly of large size, and good mousers. We have no other wild Cats, than such as have descended from the domestic race.
- DOG.** *Canis Familiaris*. Bell's Quad., p. 200. Ray's Syn. Quad., p. 175.
- * **FOX.** *C. Vulpes*. Jenyns, p. 14. *Vulpes Vulgaris*. Bell's Quad., p. 252. Ray's Syn. Quad., p. 177. Common, especially in Cliffs near the Sea.
- * **SEAL.** *Phoca Vitulina*. Jenyns, p. 15. Bell's Quad., p. 263. Ray's Syn. Quad., p. 189. Soyle. Scarce.
- GREY SEAL.** *Ph. Barbata*. Jenyns, p. 16. *Halichærus Gryphus*. Bell's Quad., p. 273. Mr. Bell's figure and description go far in deciding this to be the Species taken in a net near Padstow in 1832; and of which some account is given in Loudon's Mag. Nat. Hist., vol. 7, p. 508.
- * **SQUIRREL.** *Sciurus Vulgaris*. Jenyns, p. 29. Bell's Quad., p. 291. Common.
- DORMOUSE.** *Myoxus Avellanarius*. Jenyns, p. 30. Bell's Quad., p. 295. Dormouse. Common.
- HARVEST MOUSE.** *Mus Messorius*. Jenyns, p. 31. Bell's Quad., p. 299. Common.
- LONGTAILED FIELD MOUSE.** *M. Sylvaticus*. Jenyns, p. 30. Bell's Quad., p. 305. Common.
- COMMON MOUSE.** *M. Musculus*. Jenyns, p. 31. Bell's Quad., p. 308. Common.
- * **BLACK RAT.** *M. Rattus*. Jenyns, p. 32. Bell's Quad., p. 311. Scarce.
- * **BROWN RAT.** *M. Decumanns*. Jenyns, p. 32. Bell's Quad., p. 315. Common.
- * **WATER RAT.** *Arvicola Amphibia*. Jenyns, p. 33. Bell's Quad., p. 321. Common.
- SHORT TAILED FIELD MOUSE.** *A. Agrestis*. Jenyns, p. 33. Bell's Quad., p. 325. Common.

- HARE.** *Lepus Timidus.* Jenyns, p. 34. Bell's Quad., p. 333. Ray's Syn. Quad., p. 204. In Loudon's Magazine of Natural History, vol. 7, p. 504, there is an account of a white variety of the common Hare, which from the year 1829, has continued on Morval Estate, the seat of John Buller, Esq., and was still to be found so lately as Christmas, 1836. As several of them have been killed, at different times through this series of years, it is clear that the peculiarity has been propagated in the race; whilst their not being found at any considerable distance from their original haunts, is a proof of the little disposition evinced to wander from a favourite district.
- * **RABBIT.** *L. Caniculus.* Jenyns, p. 35. Bell's Quad., p. 348. A black variety is sometimes seen; * but this peculiarity is not propagated, as in the white Hare, above mentioned.
- HOG.** *Sus Scrofa.* Jenyns, p. 39. Bell's Quad., p. 357. "Wild Boar Swine," figured by Bewick, Quad., p. 159, continued in Cornwall to a late date, but now the usual variety of breeds is kept as in other parts of the Kingdom.
- HORSE.** *Equus Caballus.* Jenyns, p. 39. Bell's Quad., p. 365. Ray's Syn. Quad., p. 62.
- ASS.** *E. Asinus.* Jenyns, p. 39. Bell's Quad., p. 283. Donky, Neguer.
- OX.** *Bos Taurus.* Jenyns, p. 36. Bewick's Quad., p. 29, and 38. The ancient breed in the West of England was called Black Cattle, from the very dark appearance of its coat, almost like velvet: circumstances in which it seems to have differed from the races of the North of England, which were white.
- SHEEP.** *Ovis Aries.* Jenyns, p. 37. Bewick's Quad., p. 56, &c.
- GOAT.** *Capra Hircus.* Jenyns, p. 37. Bewick's Quad., p. 77. Bell's Quad., p. 432. Great numbers are kept in the middle districts of the County.
- STAG.** *Cervus Elephus.* Jenyns, p. 37. Bell's Quad., p. 394. None can now be deemed permanent wild inhabitants of our hills.
- FALLOW DEER.** *C. Dama.* Jenyns, p. 38. Bell's Quad., p. 402.

THE WHALE TRIBE.

- FINFISH.** *Balæna Physalus.* Jenyns, p. 47. The Razor-back Whale of Scoresby. Ray supposes it to be the Phyceter or Blower of the Ancients. Rare.
- BROAD NOSED WHALE.** *B. Musculus.* Jenyns, p. 47. Several Specimens of this enormous Species are seen on the Cornish Coast every year; feeding on the smaller gregarious fishes.

* There is a Specimen in the Museum, killed at Trengwainton.

SHARP LIPPED WHALE. *B. Boops* Jenyns, p. 47. Bell's Quad., p. 520. Dr. Moore (London's Mag. Nat. Hist., vol. 1, N.S.) informs us that it was this Species which in 1831 was found floating in the neighbourhood of Plymouth. The individual had frequented the Cornish Coast for a long time previously, in pursuit of young herrings, multitudes of which it was seen to devour; and from gorging which, it was supposed to have met its death.

BEAKED WHALE. *B. Rostrata*, Lin. Some doubts exist, whether this be a distinct Species or the young of the *B. Boops*, Jenyns, p. 48.

ROUNDHEADED BLOWER. *Physeeter Catodon*, Lin. This also is considered a doubtful Species; but it is probable that future discoveries will extend rather than limit the Catalogue of British Whales.

BLUNTHEADED BLOWER. *P. Macrocephalus*. Jenyns, p. 44. Bell's Quad., p. 506.

HIGHFINNED BLOWER. *P. Tursio*. Jenyns, p. 44. This is judged to be the Species sometimes seen on our Coasts, sailing rapidly along at a uniform elevation in the Water, with its slender but elevated fin above the surface, while the body is concealed below.

BOTTLE NOSE. *Ph. Bidens*, Lin. *Hyperööden Bidens*. Jenyns, p. 44. Bell's Quad., p. 492.

HUMPED BLOWER. *Ph. Polycyphus*. ———. I have unfortunately omitted to note the proper reference to any authority for the use of the trivial name here given, and which I had an opportunity of verifying in a Volume belonging to the Library of the Zoological Society of London. One Specimen ran itself on shore in pursuit of small fish, several years since; and another was seen, and minutely described to me by an intelligent fisherman; but it would appear that the number of humps on the back is variable. It is probably the *Balaena Monstrosa*, Ruysch's Theat. Anim., vol. 1., tab. 41.

— **GRAMPUS.** *Delphinus Orca*. Jenyns, p. 42. London's Mag. Nat. Hist., vol. 4, p. 338, where the dorsal fin is represented as higher than in Bell's Quad., p. 477. It is unwieldy but ferocious, and seems to be the *φαλαίνα* (*Balaena*) of the Poetic Naturalist Oppian, who gives a curious account of its being taken with a baited hook.

— **PORPOISE.** *D. Phocæna*. Jenyns, p. 41. Bell's Quad., p. 473. The Sniffer of Cornish fishermen. It is sometimes caught in Drift Nets, and I have known it take a bait, though it commonly proves too strong for the line. The rolling motion of this and some other of the smaller Species, is caused by the situation of the Nostrils on the anterior part of the top of the head; to breathe through

which the body must be placed in somewhat of an erect posture, from which to descend it passes through a considerable portion of a circle. They rarely congregate into an herd, like the other Delphini, and commonly no more than a pair is seen together.

DOLPHIN. *D. Delphis.* Jenyns, p. 40. Bell's Quad., p. 463. A figure of this and the last Species may also be found in Borlase's Hist. of Cornwall, but they are not exceedingly accurate. It is the Dolphin of the Ancients, but not of modern Sailors: the latter being the *Coryphæna Hippuris* of Linneus.

LEADING WHALE. *D. Melas.* Jenyns, p. 42. D. Deductor of Scoresby. Roundheaded Porpoise, Bell's Quad., p. 483. This Species goes in numerous herds; but it is probable that more than one has been confounded with it, as it is certain that different companies display considerable variety of appearance. The Leading Whale is of a very dark colour; but an whole herd is sometimes seen of a cream colour, and single Specimens of a light tint are not unfrequent. These cannot be the *D. Beluga*, a White Whale, as the latter is without the dorsal protuberance or fin.

There is no class of the larger Animals, of which so little is definitely known, as of the Whale Tribe; it is therefore much to be wished, that in every instance where one is taken or thrown on shore, an accurate measurement should be taken of all the proportions; and in an especial manner, that the jaws should be preserved, for the inspection of some competent Naturalist.

The Museum of the Royal Institution of Cornwall is a proper situation in which to deposit such Specimens; and a figure, even if roughly drawn, will greatly assist in determining the Species.

BIRDS.

THE FALCON TRIBE.

GOLDEN EAGLE. *Aquila Chrysaetos.* Jenyns, p. 80. Yarrell's Br. Birds, vol. 1, p. 7. One instance has come within my observation, in which the Ringtailed Eagle, (Bewick's Br. Birds, vol. 1, p. 49) now judged to be the immature state of this Species, was killed in Cornwall.

- OSPREY. *A. Haliaeetus*. Jenyns, p. 81. Yarrell's Br. B., vol. 1, p. 20. Scarce.
- PEREGRINE FALCON. *Falco Peregrinus*. Jenyns, p. 82. Yarrell's Br. B., vol. 1, p. 32. It keeps chiefly in retired Cliffs, and hence is called the Cliff Hawk.
- GYRFALCON. *F. Islandicus*. Jenyns, p. 81. Yarrell's Br. B., vol. 1, p. 26. One specimen only is recorded, on the authority of Dr. Borlase.
- HOBBY. *F. Subbuteo*. Jenyns, p. 82. Yarrell's Br. B., vol. 1, p. 40.
- MERLIN. *F. Æsalon*. Jenyns, p. 83. Yarrell's Br. B., vol. 1, p. 48. Scarce, and in winter only. It is probably the Marlion of Carew; but Dame Juliana Barners, in her Treatyse on Hawking, in the Boke of St Albans, speaks of the Marlioun as large, and so adapted for the sport of an Emperor; whereas this is of small size.
- * KESTRIL. *F. Tinnunculus*. Jenyns, p. 87. Bewick's Br. B., vol. 1, p. 76, and 78. Cress Hawk, and Windhover. Common in Cliffs.
- * SPARROW HAWK. *Accipiter Fringillarius*. Jenyns, p. 85. Bewick's Br. B., vol. 1, p. 68. Common. The Nisus of Ovid is supposed by translators to be this bird; which Gesner pronounces to be a mistake.
- * KITE. *Milvus Ictinus*. Jenyns, p. 86. Bewick's Br. B., vol. 1, p. 63. Rare; but two or three Cornish Specimens are beyond question.
- * BUZZARD. *Buteo Vulgaris*. Jenyns, p. 87. Bewick's Br. B., vol. 1, p. 57. Common.
- * MOOR BUZZARD. *B. Rufus*. Jenyns, p. 88. Bewick's Br. B., vol. 1, p. 61. Rare.
- * HENHARRIER. *B. Cyaneus*. Jenyns, p. 89. Bewick's Br. B., vol. 1, p. 73 and 75.
- * ASH COLOURED HARRIER. *B. Cineraceus*. Jenyns, p. 90. Rare.

OWLS.

- * LONG EARED OWL. *Otus Vulgaris*. Jenyns, p. 91. Bewick's Br. B., vol. 1, p. 85. Scarce.
- SHORT EARED OWL. *O. Brachyotus*. Jenyns, p. 92. Bewick's Br. B., vol. 1, p. 87 and 89. Scarce, and in winter only.
- * WHITE OWL. *Strix flammea*. Jenyns, p. 92. Bewick's Br. B., vol. 1, p. 90. Barn Owl. Common. An owl had had its nest robbed of the young, for several successive years; on the last occasion however, when a man was again making his way to the recess for the same purpose, the Parent bird escaped from the aperture with its only young one held fast in its claw; and having carried it off in safety, it never again returned to that place to breed.

- * **TAWNY OWL.** *S. Aluco.* Jenyns, p. 93. Bewick's Br. B., vol. I. p. 92. Ivy Owl. Common.
- CANADA OWL.** *Noctua Funerea.* Jenyns, p. 526. The only Specimen recognized as British, was taken on the Coast of Cornwall.

SHRIKES.

- * **CINEREOUS SHRIKE,** *Lanius Excubitor.* Jenyns, p. 95. Bewick's Br. B., vol. 1. p. 95. Butcher Bird. Rare, but it has been known to form its nest in Cornwall.
- * **REDBACKED SHRIKE.** *L. Collurio.* Jenyns, p. 96. Bewick's Br. B., vol. 1. p. 97. It leaves us in winter, and returns about the beginning of May.
- * **SPOTTED FLY CATCHER.** *Muscicapa Grisola.* Jenyns, p. 97. Bewick's Br. B., vol. 1, Sup. p. 30. Not uncommon.

THRUSHES.

These Birds derive their common English name from the spots that are spread over the plumage of the under parts of their bodies; on the same account as also a common disease of the mouth (Aphthæ) is similarly denominated. The Latin name of the Genus (*Turdus*,) and the old name of the Wrasses as found in Gesner and Ray, are descriptive of the same characters.

- * **WATER OUZEL.** *Cinclus Aquaticus.* Jenyns, p. 98. Bewick's Br. B., vol. 1, p. 31. Common in solitary situations.
- * **MISSEL THRUSH.** *Turdus Viscivorus.* Jenyns, p. 98. Bewick's Br. B., vol. 1, Sup. p. 16. Holm Screech, Holm being the Cornish name of the Holly tree. Common, and sometimes in considerable flocks. In the cold Spring of 1837, the young of this Bird had left the nest, on the 18th of April, three days before the young of the Thrush were sufficiently active for that purpose; and on the 1st of May five eggs had been deposited for a new brood.
- * **FIELD FARE.** *T. Pilaris.* Jenyns, p. 99. Bewick's Br. B., vol. 1, p. 125. Common in winter.
- * **THRUSH.** *T. Musicus.* Jenyns, p. 100. Bewick's Br. B., vol. 1, p. 129. Common, but in increased numbers in winter.
- * **REDWING.** *T. Iliacus.* Jenyns, p. 100. Bewick's Br. B., vol. 1, p. 127. Winnard. Common in winter, but sooner and more completely subdued by cold, than any other bird.
- * **BLACKBIRD.** *T. Merula.* Jenyns, p. 101. Bewick's Br. B., vol. 1, p. 123. Common; and Specimens more or less mottled with white are not rare.* In one instance the Specimen, a young Bird from the nest, was of a pure white.

* There are several mottled Specimens in the Museum.

- RING OUZEL. *T. Torquatus*. Jenyns, p. 101. Bewick's Br. B., vol. 2, p. 122. A few are found to visit certain stations in Cornwall, for a few days in spring, as if in the course of migration.
- GOLDEN ORIOLE. *Oriolus Galbula*. Jenyns, p. 122. Bewick's Br. B., vol. 1, Sup. p. 18. Rare, but perhaps less so than is supposed, since I have been informed of their alighting on fishing boats in several separate years.
- HEDGE WARBLER. *Accentor Modularis*. Jenyns, p. 102. Bewick's Br. B., vol. 1, p. 225. Hedge Sparrow. Common.
- * REDBREAST. *Sylvia Rubecula*. Jenyns, p. 103. Bewick's Br. B., vol. 1, p. 217. Common. It moults earlier than most birds; so that it usually resumes its song by the middle of August.
- BLUE THROATED WARBLER. *S. Suecica*. Jenyns, p. 104. Eyton's rarer Birds of Britain, p. 9. A Bird supposed to be this species, as judged from its conspicuous colours at a small distance, was seen near Resprin, but not taken, towards the end of September, 1836.
- REDSTART. *S. Phenicurus*. Jenyns, p. 104. Bewick's Br. B., vol. 1, p. 220. Not more than two or three instances have been collected, in which this Bird has been seen in Cornwall, and these have occurred about the time when it is migrating from its Summer haunts. In no instance has it been known to breed with us.
- * GRASS HOPPER WARBLER. *S. Locustella*. Jenyns, p. 106. Bewick's Br. B., vol. 1, Sup. p. 32. Common in Summer.
- SEDGE WARBLER. *S. Phragmites*. Jenyns, p. 106. Bewick's Br. B., vol. 1, p. 227. In Summer.
- REED WREN. *S. Arundinacea*. Jenyns, p. 107.
- * BLACK CAP. *S. Atricapilla*. Jenyns, p. 109. Bewick's Br. B., vol. 1, p. 228. Not uncommon, but local.
- * WHITE THROAT. *S. Cinerea*. Jenyns, p. 109. Bewick's Br. B., vol. 1, p. 230. Common in Gardens and Orchards in Summer.
- * WOOD WREN. *S. Sibilatrix*. Jenyns, p. 110. Bewick's Br. B., vol. 1, p. 231. In Summer.
- * WILLOW WREN. *S. Trochilus*. Jenyns, p. 111. Bewick's Br. B., vol. 1, p. 232.
- CHIFF CHAFF. *S. Hippolais*. Jenyns, p. 111. Bewick's Br. B., vol. 1, p. 233.
- LESSER WHITE THROAT. *S. Curruca*. Jenyns, p. 109. Bewick's Br. B., vol. 1, Sup. p. 35. Rare.
- The three or four latter Species are sometimes seen crossing the Channel to us, in Spring; and are confounded together by Sailors under the name of Miller's Thumbs. They leave us in winter, but a specimen of the *S. Hippolais* was shot by Mr. Jackson, near Looe, in January 1829.

DARTFORD WARBLER. *Melizophilus Provincialis*. Jenyns, p. 112. Bewick's Br. B., vol. 1, p. 216. Local, and very uncertain in its haunts.

* GOLD CRESTED WREN. *Regulus Aurocapillus*. Jenyns, p. 113. Bewick's Br. B., vol. 1, p. 235. Common. The Fire Crested Wren, which has been confounded with this, has also been reported to me, but I have not examined a Cornish Specimen.

WAGTAILS.

* PIED WAGTAIL. *Motacilla Alba*. Jenyns, p. 114. Bewick's Br. B., vol. 1, p. 204. Dishwasher. (M. Yarrelli, of Gould, who has pronounced it to be different from the *M. Alba* of Linneus: Loudon's Mag. Nat. Hist., 1837, p. 459.) Common, without changing its quarters according to the seasons, as in the North of England.

* GREY WAGTAIL. *M. Boarula*. Jenyns, p. 115. Bewick's Br. B., vol. 1, p. 206. Chiefly a Winter Visitor, but some remain to breed; for which purpose they quit the Sea Shore, and resort to the neighbourhood of our smaller streams.

* YELLOW WAGTAIL. *M. Flava*. Jenyns, p. 115. Bewick's Br. B., vol. 1, p. 207. Rarer than either of the former, and in Autumn and Winter only.

LARKS.

* TITLARK. *Anthus Pratensis*. Jenyns, p. 117. Bewick's Br. B., vol. 1, p. 201. Common, but changing its quarters. It is much subdued by Cold in Winter.

* TREELARK. *A. Arboreus*. Jenyns, p. 118. Bewick's Br. B., vol. 1, Sup. p. 28. In Summer.

SHORE LARK. *A. Petrosus*. Jenyns, p. 118. Bewick's Br. B., vol. 1, Sup., p. 26. Fieldlark. Common and abundant at all Seasons; but numbers, in small flocks, are seen by Fishermen crossing the Channel from France, in Spring.

* SKYLARK. *Alauda Arvensis*. Jenyns, p. 127. Bewick's Br. B., vol. 1, p. 195. Abundant, but increasing in numbers in Cold Winters.

The following incident is deserving of being recorded, as an illustration of the Natural History of this Bird: on the 29th of October, 1835, as my informant and another individual were standing in conversation in a field, and within three or four feet of each other, their attention was attracted to a Kestrel in active pursuit of a Lark, on which it had made some unsuccessful pounces. They hollod loudly, with the hope of searing away the Hawk, but in vain; their shouts however had the effect of causing the Lark to fly towards them,

where it alighted on the ground, and crept into a tuft of grass between their feet. The terrified bird suffered itself to be taken with the hand, and is now when I write, still confined in a Cage; but the Kestrel did not retreat for a considerable time afterward.

* **WOODLARK.** *A. Arborca.* Jenyns, p. 127. Bewick's Br. B., vol. 1, p. 199. Most common in Winter, and changing its haunts according to the Season.

BUNTINGS.

SNOW BUNTING. *Emberiza Nivalis.* Jenyns, p. 129. Bewick's Br. B., vol. 1, p. 172. This Species is inserted in the List of Cornish Birds, on the authority of a paragraph in a newspaper, several years since. It must be of rare occurrence, but has been seen also in Devonshire, by Dr. E. Moore, of Plymouth.

* **BUNTING.** *E. Milliaria.* Jenyns, p. 130. Bewick's Br. B., vol. 1, p. 165. Bull Lark. Common.

* **REED BUNTING.** *E. Schaeniclus.* Jenyns, p. 130. Bewick's Br. B., vol. 1, p. 168. Local.

* **YELLOW BUNTING.** *E. Citrinella.* Jenyns, p. 131. Bewick's Br. B., vol. 1, p. 166. Yellow Hammer. Glad- dy. Common.

* **CIRL.** *E. Cirrus.* Jenyns, p. 131. Common. I am unable to refer to Bewick's figure, in the last Edition of his "British Birds," as, probably from the manner in which his Specimen was set up, it conveys no proper idea of the figure of this Species.

* **WHEATEAR.** *Saxicola Ænanthe.* Jenyns, p. 119. Bewick's Br. B., vol. 1, p. 238. White Ear. Nacker. A common Summer visitor, arriving about the middle of March. They cross the Channel early in the morning, few arriving after nine o'clock; and it is not uncommon for them to alight on the Fishing Boats when the weather is misty. I have never observed that the sexes arrive separately, as is commonly reported. A few have been known to remain with us through the winter; the colour being then much more brown than in Summer.

* **WHIN CHAT.** *S. Rubetra.* Jenyns, p. 120. Bewick's Br. B., vol. 1, p. 240. Rare, not more than two or three Specimens having been recorded as Cornish.

* **STONE CHAT.** *S. Rubicula.* Jenyns, p. 121. Bewick's Br. B., vol. 1, p. 242. Stone Chatter. Common, and approaching gardens in the Winter. The nest is hidden with great art. It has been known to cross the channel to us.

TITMICE.

* **GREAT TITMOUSE.** *Parus Major.* Jenyns, p. 121. Bewick's Br. B., vol. 1, p. 246. Common.

* **BLUE TITMOUSE.** *P. Ceruleus.* Jenyns, p. 122. Bewick's Br. B., vol. 1, p. 248. Heckamall, a name common to all the Genus in the West of England. Common, but more wandering in its habits than the Great Titmouse.

MARSH TITMOUSE. *P. Palustris.* Jenyns, p. 123. Bewick's Br. B., vol. 1, p. 253. Scarce.

* **COLE TITMOUSE.** *P. Ater.* Jenyns, p. 123. Bewick's Br. B., vol. 1, p. 248. Local.

* **LONGTAILED TIT.** *P. Caudatus.* Jenyns, p. 124. Bewick's Br. B., vol. 1, p. 250. Common.

* **BEARDED TITMOUSE.** *Calamophilus Biarmicus.* Jenyns, p. 125. Bewick's Br. B., vol. 1, p. 254.

WAXWING. *Bombycilla Garrula.* Jenyns, p. 125. Bewick's Br. B., vol. 1, p. 115. One was shot at Restormel in January, 1829.

FINCHES.

* **CHAFFINCH.** *Fringilla Cælebs.* Jenyns, p. 133. Bewick's Br. B., vol. 1, p. 180. Copperfinch. Common.

* **MOUNTAIN FINCH.** *F. Montifringilla.* Jenyns, p. 134. Bewick's Br. B., vol. 1, p. 182. Rare, and in winter only.

* **HOUSE SPARROW,** *F. Domestica.* Jenyns, p. 134. Bewick's Br. B., vol. 1, p. 176. Common. White Sparrows are not uncommon.

* **GROSBEAK.** *F. Coccythraustes.* Jenyns, p. 136. Bewick's Br. B., vol. 1, p. 158. Rare. A Male Specimen was killed near Looc, Nov. 4, 1828, and another escaped. Others had been seen.

* **GREENFINCH.** *F. Chloris.* Jenyns, p. 136. Bewick's Br. B., vol. 1, p. 161. Common.

* **GOLDFINCH.** *F. Carduelis.* Jenyns, p. 137. Bewick's Br. B., vol. 1, p. 184. Common.

* **SISKIN.** *F. Spinus.* Jenyns, p. 137. Bewick's Br. B., vol. 1, p. 186. Rare. A young Specimen of the year was brought alive to me, October 31, 1835.

* **LINNET.** *F. Cannabina.* Jenyns, p. 139. Bewick's Br. B., vol. 1, p. 180, and Sup. p. 22. Naturalists seem inclined to consider the Linnet and Greater Redpole as one Species; I have therefore brought them together; but it is admitted that the Lesser Redpole, *F. Linaria,* Jenyns, p. 138, is distinct: though whether the latter be found in Cornwall is uncertain.

* **BULLFINCH.** *Pyrrhula Vulgaris.* Jenyns, p. 140. Bewick's Br. B., vol. 1, p. 162. Hoop and Golden Hoop. Common, but especially in the early part of spring, when it visits gardens to devour the buds of gooseberry bushes; with which it fills its crop to distension.

CROSSBILL. *Loxia Curvirostra.* Jenyns, p. 141. Bewick's Br. B., vol. 1, p. 154. An irregular visitant in small companies. It has been known to alight on a fishing Boat at a few leagues from our Shores.

* **STARLING.** *Sturnus Vulgaris.* Jenyns, p. 143. Bewick's Br. B., vol. 1, p. 119. This Bird visits Cornwall in large flocks, in Autumn and Winter; but none of them remain to breed, except perhaps a few, as I have been informed, in the Cliffs on the North East of the County. They oven depart much earlier than the migratory Birds that go to the North parts of Europe.

THE CROW KIND.

* **CORNISH CHOUGH.** *Fregilus Graculus.* Jenyns, p. 144. Bewick's Br. B., vol. 1, p. 106. Not abundant, a circumstance chiefly owing to the persecution it suffers from the sportsman, and those who supply Naturalists with Specimens.

* **RAVEN.** *Corvus Corax.* Jenyns, p. 145. Bewick's Br. B., vol. 1, p. 101. Common. It builds in steep cliffs more frequently than in trees.

* **CROW.** *C. Corone.* Jenyns, 145. Carrion Crow and Town Crow. Common. It is destructive to young poultry, exhibiting considerable daring in its attacks on them. It also plunders the nests of Gulls and other large Sea Birds, piercing the eggs and carrying them off on its bill.

* **HOODED CROW.** *C. Cornix.* Jenyns, p. 146. Bewick's Br. B., vol. 1, p. 103. Scarce and in Winter only.

* **ROOK.** *C. Frugilegus.* Jenyns, p. 146. Bewick's Br. B., vol. 1, p. 105. Common in Rookeries. I have seen two young birds taken from the same nest, one of them much mottled with White, and the other having the White portions so regularly arranged, in broad stripes across the wings and on the body, both sides corresponding in the distribution of the markings, that it might have easily passed for some other Species.

* **JACK DAW.** *C. Monedula.* Jenyns, p. 147. Bewick's Br. B., vol. 1, p. 107. Chow, Chauf. Common, but variable in its attachment to situation. Beside Church Towers, a favourite resort is in steep and craggy Cliffs.

* **MAGPIE.** *C. Pica.* Jenyns, p. 147. Bewick's Br. B., vol. 1, p. 110. Maggot. Maggoty pie, a name used by Shakspear, and of which Magpio seems an abbreviation. Common.

* **JAY.** *Garrulus Glandarius.* Jenyns, p. 148. Bewick's Br. B., vol. 1, p. 113. Common in woods.

NUT CRACKER. *Nucifraga Caryocatactes.* Jenyns, p. 146. Bewick's Br. B., vol. 1, p. 112. Montagu reports it to have been shot in Cornwall.

WOODPECKERS.

- * GREEN WOODPECKER. *Picus Viridis*. Jenyns, p. 149. Bewick's Br. B., vol. 1, p. 141. Common in Woods.
- * GREATER SPOTTED WOODPECKER. *P. Major*. Jenyns, p. 150. Bewick's Br. B., vol. 1, p. 143. Rare.
- * LESSER SPOTTED WOODPECKER. *P. Minor*. Jenyns, p. 151. Bewick's Br. B., vol. 1, last Edition. I have only seen one Specimen that was shot in Cornwall, in the neighbourhood of Liskeard.
- * WRYNECK. *Yunx Torquilla*. Jenyns, p. 152. Bewick's Br. B., vol. 1, p. 136. Not common, more perhaps from its retired habits than absolute scarcity.
- * CREEPER. *Certhia familiaris*. Jenyns, p. 152. Bewick's Br. B., vol. 1, p. 149. Not uncommon.
- * WREN. *Troglodytes Europæus*. Jenyns, p. 153. Bewick's Br. B., vol. 1, p. 237. Common. Although this little bird braves the severest Winters, in very cold weather it seems to require more than usual warmth, which is sought in ricks of hay, or the recesses of moss, where they huddle together in troops. A specimen has been seen with a white ring round the neck.
- * HOOPOE. *Upupa Epops*. Jenyns, p. 153. Bewick's Br. B., vol. 1, p. 147. So many Specimens have been met with, as to justify me in saying that it is not uncommon in Cornwall. The periods of their visit are about the vernal and autumnal Equinox, as if performing a regular migration; and for several years I have noted the occurrence of one or more Specimens within a very limited distance of the same spot, an elevated and retired farm near the Sea. Two were shot at one time, after they had seemed to have paired; and in the Autumn of 1836, one remained near the farm yard for about a week, being by no means shy. It seemed to be in moult, having but one or two feathers in the Crest.
- NUTHATCH. *Sitta Europæa*. Jenyns, p. 154. Bewick's Br. B., vol. 1, p. 145. Local; but not uncommon in some situations; as near Liskeard, and at Boconnock.
- * CUCKOW. *Cuculus Canorus*. Jenyns, p. 154. Bewick's Br. B., vol. 1, p. 131. Common in its season. The Cuckow is never seen crossing the Ocean to us, but as it is probable that its call is heard immediately on its arrival, the following dates may serve for comparison with other parts of the kingdom; first heard, April 19, 1830—21st, 1816—22nd, 1826—23rd, 1824, 1832—24th, 1825—25th, 1833, 1836—27th, 1835—29th, 1823—30th, 1810, 1828, 1831—May 2nd, 1813, 1822, 1837—9th, 1821—11th, 1812, 1815. About the middle of June the voice undergoes a

change and reduplication; after which it soon ceases altogether, although Specimens are seen, in small companies, to the beginning of July; when the old Birds disappear altogether, at nearly the same day. A Bird of the year was shot August 29, 1837.

CAROLINA CUCKOW. *Coccyzus Americanus*. Jenyns, p. 155. Eyton's rarer Birds, p. 23. One is recorded as having been found in Cornwall.

ROLLER. *Coracias Garrula*. Jenyns, p. 156. Bewick's Br. B., vol. 1, p. 117. Pennant mentions one shot in Cornwall, and another was killed near Falmouth, Oct. 4, 1822.

BEE EATER. *Merops Apiaster*. Jenyns, p. 156. Bewick's Br. B., vol. 1, last Edition. Drew (Hist. of Cornwall, 2 vols. 4to.,) records the occurrence of four Specimens in the parish of Madern, in 1807; and from G. S. Borlase, Esq., of Helston, whose decease I lament to see announced whilst writing this, I have been informed that a flock of twelve came near that Town in 1828; of which eleven were shot.

* KINGFISHER. *Alcedo Ispida*. Jenyns, p. 157. Bewick's Br. B., vol. 2, p. 34. Common.

SWALLOWS.

* SWALLOW. *Hirundo Rustica*. Jenyns, p. 157. Bewick's Br. B., vol. 1, p. 259. Abundant in Summer. The following are the first dates of its being seen: the earliest April the 4th, the greatest number of appearances, in the second and third weeks of that month, and the latest, May 5th. The disappearance, first in September 24, 1816, the greatest number in October, and the latest November 1st, 1805. It often builds in Caves on the Sea Shore.

* MARTIN. *H. Urbica*. Jenyns, p. 158. Bewick's Br. B., vol. 1, p. 264. Abundant in Summer, but many that leave us in Autumn, never return in Spring. It sometimes forms its nest in Caverns on the Sea Shore; but although in these circumstances both it and the Swallow fly boldly into the Cavern, the Nests are well concealed in crevices. The first appearances, from April 6th, to May 5th, embracing as in the instance of the Swallow, a period of 25 years: the period of disappearance, from September 28th, to December 7th. The dates given for the arrival of these Birds, noted only the first that are seen in each year; but they continue to cross the Channel in small parties through nearly all the month of May, and it often happens that some are seen for a few days, and then no more for a week or two, without the occurrence of any weather that can be supposed to have caused them to hide themselves. The circumstance therefore is explained by the supposition that they are not

our resident Birds, and have passed on to their more Northern haunts: an opinion which will also account for the fact, that a few will sometimes make their appearance long after all our resident Birds seem to have left us; and I have myself witnessed the arrival in a state of exhaustion and fatigue, from the broad expanse of the Ocean, and late in the Autumn, of small flocks of Martins, that seem to have had their passage interrupted by boisterous opposing winds. The latest date given for the disappearance of these Birds, refers to the year 1835, and belongs to a considerable flock of our own Birds; which sometimes disappeared for a few days and then appeared again, still continuing a recognition of their former residence. Towards the end of their stay, the weather being cold, they passed the night in holes of a wall originally formed for scaffolding.

BANK MARTEN. *H. Riparia.* Jenyns, p. 158. Bewick's Br. B., vol. 1, p. 263. In Summer, local; there being but a few places in the County fitted for their residence.

* **SWIFT.** *Cypselus Apus.* Jenyns, p. 159. Bewick's Br. B., vol. 1, p. 266. Common in Summer. First appearance from May 1st, to the 21st, the whole colony appearing together, contrary to the custom of the other Hirundines. Latest seen from July 28th, to August 16th. Their numbers suffer no increase, in a considerable number of years; and indeed all the Swallow tribe appear to suffer a diminution of numbers when absent from us.

ALPINE SWIFT. *C. Alpinus.* Jenyns, p. 158. Eyton's Rarer Birds, p. 17. In two instances I have been informed of the appearance of this rare Bird, on evidence that seems probable.

* **GOAT SUCKER.** *Caprimulgus Europæus.* Jenyns, p. 160. Bewick's Br. B., vol. 1, p. 261. Night Crow. Common in woody places, in Summer. Its period of migration is not well known, but it had arrived, April 28th, 1830, and one was shot, as if in departure, November 27th, 1821.

PIGEONS.

* **RINGDOVE.** *Columba Palumbus.* Jenyns, p. 161. Bewick's Br. B., vol. 1, p. 275. Common.

STOCK DOVE. *C. Œnas.* Jenyns, p. 161. Eyton's Rarer Birds, p. 27. Not common.

ROCK DOVE. *C. Livia.* Jenyns, p. 162. Common in rocky Caverns on the Coast, but scarcely abundant.

* **TURTLE DOVE.** *C. Turtur.* Jenyns, p. 162. Bewick's Br. B., vol. 1, p. 277. Not uncommon; but being shy, it is not often seen.

POULTRY.

- TURKEY. *Melagris Gallopavo*. Jenyns, p. 164. Bewick's Br. B., vol. 1, p. 290.
- * PEACOCK. *Pavo Cristatus*. Jenyns, p. 164. Bewick's Br. B., vol. 1, p. 293.
- DOMESTIC FOWL. *Gallus Domesticus*. Jenyns, p. 165. Bewick's Br. B., vol. 1, p. 381.
- * PHEASANT. *Phasianus Colchicus*. Jenyns, p. 166. Bewick's Br. B., vol. 1, p. 286. In the Museum are specimens of the Mule Bird, the white and the ring necked varieties.
- GUINEA FOWL. *Numida Melagris*. Jenyns, p. 168. Bewick's Br. B., vol. 1, p. 296. Gallina.

GALLINACIOUS BIRDS.

- BLACK GROUSE. *Tetrao Tetrix*. Jenyns, p. 169. Bewick's Br. B., vol. 1, p. 301. Rare.
- * PARTRIDGE. *Perdix Cinerea*. Jenyns, p. 172. Bewick's Br. B., vol. 1, p. 307. Common.
- * QUAIL. *P. Coturnix*. Jenyns, p. 174. Bewick's Br. B., vol. 1, p. 309. Scarce; but seeming more so than it really is, from the habit of lying close, on the appearance of danger. A few remain through the Winter.
- LITTLE BUSTARD. *Otis Tetrax*. Jenyns, p. 175. Bewick's Br. B., vol. 1, p. 320. Two or three Specimens have occurred in Cornwall; one of which I have seen.

PLOVERS.

- GREAT PLOVER. *Edicnemus Crepitans*. Jenyns, p. 177. Bewick's Br. B., vol. 1, p. 320. In addition to a Specimen mentioned by Montagu, one was shot at Morval, near Looe, December 31, 1830.
- * GOLDEN PLOVER. *Charadrius Pluvialis*. Jenyns, p. 177. Bewick's Br. B., vol. 1, p. 326. It changes its quarters from the high grounds in Summer, to the Coast in Winter.
- RINGED PLOVER. *C. Hiaticula*. Jenyns, p. 179. Bewick's Br. B., vol. 1, p. 329. Common in solitary places along the shores.
- * GREY PLOVER. *Vanellus griseus*. Jenyns, p. 181. Bewick's Br. B., Sup. p. 49.
- * LAPWING. *Vanellus Cristatus*. Jenyns, p. 182. Bewick's Br. B., vol. 1, p. 322. It breeds on the high lands in the middle of the County, and descends to the Coast in Winter.
- * TURNSTONE. *Streptilus Interpres*. Jenyns, p. 182. Bewick's Br. B., vol. 2, p. 123. Not uncommon.
- * SANDERLIN. *Calidris Arenaria*. Jenyns, p. 183. Bewick's Br. B., vol. 2, p. 19. Scarce.

- * OYSTER CATCHER. *Hematopus Ostralegus*. Jenyns, p. 184. Bewick's Br. B., vol. 2, p. 23. Scarce.

THE HERON TRIBE.

- CRANE. *Grus Cinerea*. Jenyns, p. 185. Bewick's Br. B., vol. 2, p. 43. One or two Specimens have been recognized as Cornish.
- * HERON. *Ardea Cinerea*. Jenyns, p. 186. Bewick's Br. B., vol. 2, p. 49. Common.
- PURPLE HERON. *A. Purpurea*. Jenyns, p. 186. Bewick's Br. B., vol. 2. Last Edition. One Specimen only is known as Cornish.
- SQUACCO HERON. *A. Ralloides*. Jenyns, p. 189. Bewick's Br. B., vol. 2. Last Edition. Two Specimens killed near Penzance, and formerly supposed to be the Egret, prove to be of this Species.
- EGRET. *A. Garzetta*. Jenyns, p. 187. One or two Specimens are known.
- * LITTLE BITTERN. *A. Minuta*. Jenyns, p. 189. Bewick's Br. B., vol. 2, Sup. p. 9. Rare.
- * COMMON BITTERN, *A. Stellaris*. Jenyns, p. 190. Bewick's Br. B., vol. 2, p. 58. Not uncommon in Winter.
- COMMON NIGHT HERON. *Ardea Nycticorax*. Jenyns, p. 191. Bewick's Br. B., vol. 2, p. 54. Rare.
- BLACK STORK. *Ciconia Nigra*. Jenyns, p. 193. Eyton's Rarer Birds, p. 33. One Specimen only is known to have been killed in Cornwall, on the borders of the Tamar.
- GLOSSY IBIS. *Ibis Falcinellus*. Jenyns, p. 194. Bewick's Br. B., vol. 2. Last Edition. Several Specimens have occurred in Cornwall.
- * CURLEW. *Numerius Arquata*. Jenyns, p. 195. Bewick's Br. B., vol. 2, p. 64. In Winter; and a few remain to breed in the high grounds.
- * WHIMBREL. *N. Phæopus*. Jenyns, p. 195. Bewick's Br. B., vol. 2, p. 66. Half Curlew, and May Bird, from arriving in small flocks in May; at which season the fishermen see them crossing the Channel from France.
- * RED SHANK. *Totanus Calidris*. Jenyns, p. 196. Bewick's Br. B., vol. 2, p. 95. In Winter, rare.
- GREEN SANDPIPER. *T. Ochropus*. Jenyns, p. 197. Bewick's Br. B., vol. 2, p. 102. Rare.
- * COMMON SANDPIPER. *T. Hypoleucos*. Jenyns, p. 199. Bewick's Br. B., vol. 2, p. 106. Not uncommon.
- * GREEN SHANK. *T. Glottis*. Jenyns, p. 200. Bewick's Br. B., vol. 2, p. 91. In Winter, rare.
- * AVOSET. *Recurvirostra Avocetta*. Jenyns, p. 201. Bewick's Br. B., vol. 2, p. 149. This Bird has been seen near Swanpool, and the Specimen in the Museum of the Royal Institution at Truro, was shot near that place.

- * **BARTAILED GODWIT.** *Limosa Rufa.* Jenyns, p. 202. Bewick's Br. B., vol. 2, p. 85 and 86. Rare. In the beginning of May, 1836, numerous flocks, containing many hundreds were seen by fishermen at about three leagues from land, coming from the West and flying up the Channel, as if pursuing a migration to the Eastward. One of them, that from fatigue was taken and brought to me, had far advanced in assuming its Summer plumage.
- * **WOODCOCK.** *Scolopax Rusticola.* Jenyns, p. 204. Bewick's Br. B., vol. 2, p. 69. Common in Winter, but in a few instances known to have remained through the Summer. The earliest immigrant I have known shot, was on the 24th of Sept., but their most usual period is about the first ten days of October.
- GREAT SNIPE.** *S. Major.* Jenyns, p. 205. Bewick's Br. B., vol. 2. Last Edition. Somewhat rare.
- * **COMMON SNIPE.** *S. Gallinago.* Jenyns, p. 205. Bewick's Br. B., vol. 2, p. 76. Common. It breeds in our elevated Moors.
- * **JACK SNIPE.** *S. Gallinula.* Jenyns, p. 206. Bewick's Br. B., vol. 2, p. 80. Less common than the last, and never remaining to breed.
- * **RUFF.** *Tringa Pugnax.* Jenyns, p. 207. Bewick's Br. B., vol. 2, p. 98. A Specimen of the Reeve was killed near Truro, in March 1829, by Mr. Wright of Lambessow, and by him presented to the Museum; but it does not regularly visit Cornwall.
- * **PIGMY CURLEW.** *T. Subarquata.* Jenyns, p. 208. Bewick's Br. B., vol. 2, Sup. p. 11. Several have been killed at the Swanpool near Falmouth.
- * **DUNLIN.** *T. Variabilis.* Jenyns, p. 209. Bewick's Br. B., vol. 2, p. 115, and 117. Purr. Rather scarce.
- PURPLE SANDPIPER.** *T. Maritima.* Jenyns, p. 211. Not uncommon.
- TEMMINCK'S STINT.** *T. Temminckii.* Jenyns, p. 211. Eyton's rarer Birds, p. 44. Two Specimens in the possession of Mr. Clement Jackson, of East Looe, were killed at the Swanpool, in the Autumn of 1822.
- * **LITTLE STINT.** *T. Minuta.* Jenyns, p. 212. Bewick's Br. B., vol. 2, p. 120. Mr. Jackson informs me, "I have several times shot this Species at Swanpool singly, and once saw a flock of Ten or Twelve there. I have also found it in company with the Purr."
- * **KNOT.** *T. Canutus.* Jenyns, p. 213. A few in Winter.
- * **GRAY PHALAROPE.** *Phalaropus Lobatus.* Jenyns, p. 215. Bewick's Br. B., vol. 2, p. 133. Sometimes abundant on the Coast in Autumn, in stormy weather.

RAILS.

- * **WATER RAIL.** *Rallus Aquaticus.* Jenyns, p. 217. Bewick's Br. B., vol. 2, p. 28. Billeoek. Not uncommon.
- * **LAND RAIL.** *Crex Pratensis.* Jenyns, p. 217. Bewick's Br. B., vol. 1, p. 312. Crake. In Summer, not uncommon. I have known one shot, December the 24th, after the occurrence of frost and snow; but in another instance of this Bird's remaining late in the season it was ascertained to have been caused by injury, that rendered it incapable of distant flight.
- * **SPOTTED RAIL.** *C. Porzana.* Jenyns, p. 128. Bewick's Br. B., vol. 2, p. 52. Searee.
- LITTLE GALLINULE.** *C. Puzilla.* Jenyns, p. 219. Bewick's Br. B., vol. 1, Sup. p 1. Rarc.
- * **COMMON GALLINULE.** *Gallinula Chloropus.* Jenyns, p. 220. Bewick's Br. B., vol. 2, p. 125. Water Hen. Not uncommon.
- * **COOT.** *Fulica Atra.* Jenyns, p. 221. Bewick's Br. B., vol. 2, p. 129. I have seen it only in Winter: and its change of quarters according to the season is made, like that of most migratory birds, by night. It is capable of alighting on a tree; which we should scarcely have imagined, from the structure of its feet.

THE DUCK TRIBE.

- WILD GOOSE.** *Anser Ferus.* Jenyns, p. 222. Bewick's Br. B., vol. 2, p. 265. In Winter.
- * **BEAN GOOSE.** *A. Segetum.* Jenyns, p. 223. Not common.
- * **WHITE FRONTED GOOSE.** *A. Albifrons.* Jenyns, p. 223. Bewick's Br. B., vol. 2, Sup. p. 33. In the Cold Winter of 1829, they appeared in large flocks, keeping chiefly in fields of Turnips.
- * **COMMON BERNICLE.** *A. Leucopsis.* Jenyns, p. 224. Bewick's Br. B., vol. 2, p. 277.
- * **BRENT GOOSE.** *A. Torquatus.* Jenyns, p. 224. Bewick's Br. B., vol. 2, p. 280. Not common.
- REDBREASTED GOOSE.** *A. Ruficollis.* Jenyns, p. 225.
- SPURWINGED GOOSE.** *A. Gambensis.* Jenyns, p. 226. Bewick's Br. B., vol. 2. Last Edition. One Specimen only is on record; and that was mutilated when ascertained.
- SWAN GOOSE.** *Cygnus Guineensis.* Jenyns, p. 226. Bewick's Br. B., vol. 2, p. 256. It is domesticated by a few Gentlemen.

* WHISTLING SWAN. *C. Ferus*. Jenyns, p. 227. Bewick's Br. B., vol. 2. Last Edit. An irregular visitor, in small flocks, in cold Winters.

The discovery of Bewick's Swan, *C. Bewickii*, Jenyns, p. 228, and Transactions of the Linnean Society, vol. 16,—is too recent to have permitted the making of a comparison with the Cornish Specimens of the Whistling Swan; but it is not improbable that this newly ascertained Species may also be found in Cornwall.

* TAME SWAN. *C. Olor*. Jenyns, p. 228. Bewick's Br. B., vol. 2, p. 252.

* CRAVAT GOOSE. *C. Canadensis*. Jenyns, p. 227. Bewick's Br. B., vol. 2, Sup. p. 32.

SHIELD DUCK. *Tadorna Bailonii*. Jenyns, p. 229. Bewick's Br. B., vol. 2, p. 307.

MUSCOVY DUCK. *Cairina Moschata*. Jenyns, p. 230. Domestic; but is not much regarded, though so much larger than the common kind.

* SHOVELLER. *Anas Clypeata*. Jenyns, p. 230. Bewick's Br. B., vol. 2, p. 311. Scarce.

GADWALL. *A. Strepera*. Jenyns, p. 230. Rare.

* PINTAIL. *A. Acuta*. Jenyns, p. 232. Bewick's Br. B., vol. 2, p. 324. Rare.

* WILD DUCK. *A. Boschas*. Jenyns, p. 233. Bewick's Br. B., vol. 2, p. 292. In Winter.

GARGANY. *A. Querquedula*. Jenyns, p. 234. Bewick's Br. B., vol. 2, p. 336. Scarce. It has been seen at the Swanpool in April.

* TEAL. *A. Crecca*. Jenyns, p. 235. Bewick's Br. B., vol. 2, p. 338. In Winter.

* WIGEON. *Mareca Penelope*. Jenyns, p. 236. Bewick's Br. B., vol. 2, p. 317. Common in Winter.

* VELVET SCOTER. *Oidemia Fusca*. Jenyns, p. 239. Bewick's Br. B., vol. 2, p. 287.

* BLACK SCOTER. *Oidemia Nigra*. Jenyns, p. 239. Bewick's Br. B., vol. 2, p. 289. Common on the Coast in Winter, and a Specimen was taken in Falmouth Harbour, Aug. 2nd, 1824.

SURF DUCK. *O. Perspicillata*. Eyton's Rarer Birds, p. 81. I quote this Species, supposing it to be the Bird figured in London's Magazine of Nat. Hist., vol. 2, p. 101, by the Rev. Mr. Lakes.

* POCHARD. *Fuligula Ferina*. Jenyns, p. 241. Bewick's Br. B., vol. 2, p. 321. Rare.

* SCAUP. *F. Marila*. Jenyns, p. 243. Bewick's Br. B., vol. 2, p. 305. Scarce.

* TUFTED DUCK. *F. Cristata*. Jenyns, p. 244. Bewick's Br. B., vol. 2, p. 334. Scarce.

GOLDEN EYE. *Clangula Chrysophthalmos*. Jenyns, p. 245. Bewick's Br. B., vol. 2, p. 320. Scarce.

GOOSANDERS.

- * GOOSANDER. *Mergus Merganser*. Jenyns, p. 248. Bewick's Br. B., vol. 2, p. 231. Dundiver, the female.
- * REDBREASTED GOOSANDER *M. Serrator*. Jenyns, p. 240. Bewick's Br. B., vol. 2, p. 233.
- * SMEW. *M. Albellus*. Jenyns, p. 250. Bewick's Br. B., vol. 2, p. 241.

These three Species of Goosanders are seen only in the severest Winters; and with the Dundiver,—*M. Castor*, Lin. which is the female of the *M. Merganser*, were taken in Cornwall in the Cold Winters of 1829—30, and 1837—8.

GREBES OR DOBCHICKS.

- * CRESTED GREBE. *Podiceps Cristatus*. Jenyns, p. 25. Bewick's Br. B., vol. 2, p. 137. Tippet Grebe. On the Coast in Winter.
- * REDNECKED GREBE. *P. Rubricollis*. Jenyns, p. 252. Bewick's Br. B., vol. 2, p. 144. Scarce.
- SCLAVONIAN GREBE. *P. Cornutus* Jenyns, p. 252. The Eared Grebe of Bewick's Br. B., vol. 2, p. 141. Scarce.
- * EARED GREBE. *P. Auritus*. Jenyns, p. 253. Rare.
- * LITTLE GREBE. *P. Minor*. Jenyns, p. 254. Bewick's Br. B., vol. 2, p. 146. Dabehiek. Not uncommon, and sometimes in the Sea.
- * The DUSKY GREBE. *P. Obscurus*,—is also found in Cornwall; but it is still doubtful whether it be a distinct Species, or the young of the Selavonian Grebe.

DIVERS.

- * NORTHERN DIVER. *Colymbus Glacialis*. Jenyns, p. 255. Bewick's Br. B., vol. 2, p. 170. Not uncommon in Winter; but I have also seen it in its most brilliant Summer plumage.
- * REDTHROATED DIVER. *C. Septentrionalis*. Jenyns, p. 257. Bewick's Br. B., vol. 2, p. 176. Scarce. A Specimen of the young Bird, Bewick's Speckled Diver, is in the Museum.
- * FOOLISH GUILLEMOT. *Uria Troile*. Jenyns, p. 258. Bewick's Br. B., vol. 2, p. 163. Common.
- * BLACK GUILLEMOT. *U. Grylle*. Jenyns, p. 258. Bewick's Br. B., vol. 2, p. 167, in its Winter Clothing; in which state it has been taken in Cornwall.
- ROTCHIE. *Mergulus Alle*. Jenyns, p. 259. Bewick's Br. B., vol. 2, p. 160. Little Auk. Rare.
- * RAZOR BILL. *Alca Torda*. Jenyns, p. 260. Bewick's Br. B., vol. 2, p. 154, and Sup., p. 19. Common in Summer.

- * **CORMORANT.** *Phalacrocorax Carbo.* Jenyns, p. 262. Bewick's Br. B., vol. 2, p. 343. Common.
- * **SHAG.** *P. Cristatus.* Jenyns, p. 262. Bewick's Br. B., vol. 2, p. 351. Common.
- * **GANNET.** *Sula Bassana,* Jenyns, p. 263. Bewick's Br. B., vol. 2, p. 353. This Bird is not known to breed in Cornwall, but according to Dr. E. Moore, it frequents Lundy Island for that purpose, in considerable numbers. Specimens in various Stages of Plumage are seen with us in all the months of the year, though the adult Birds are most abundant in Autumn and Winter; at which time their falling on Pilehards is an indication of the presence of these Fish, and a guide to the Fishermen, in the direction they are pursuing. The Gannet takes its prey in a different manner from any other of our Aquatic Birds; for traversing the air in all directions with an heavy and irregular flight, as soon as it discovers the Fish it rises to such an height as experience shows best calculated to carry it by a downward motion, to the required depth; and then partially closing its wings, it falls perpendicularly on the prey, and rarely without success, the time between the plunge and emersion being about fifteen seconds. When Pilehards are collected into a narrow space, the number and eagerness of the Gannets are such, that it is surprising they do not fall on and kill each other. Their clamour indeed, at such times proves them to be well on their guard; but it is also probable that every one in falling has its eye fixed on the fish it intends to seize; and the well poised wings direct it unerringly to its prey. The form and setting on of the Gannet's wings well fit it for assuming the perpendicular attitude preparatory to its fall, which is effected with ease, rapidity and precision. They are attached to the body about the centre of gravity, so that the anterior parts drop as on a pivot; and the elbow being about the middle of the distance between the shoulder and wrist a slight inclination in any direction is sufficient to regulate the motion.

TERNs.

- SANDWICH TERN.** *Sterna Cantiaca.* Jenyns, p. 265. Bewick's Br. B., vol. 2, p. 188. Rare. One was shot at Looe in March.
- ROSEATE TERN.** *S. Dougallii.* Jenyns, p. 265. Bewick's Br. B., vol. 2, Sup. p. 23. A few Cornish Specimens are recorded.
- * **COMMON TERN.** *S. Hirundo.* Jenyns, p. 266. Bewick's Br. B., vol. 2, p. 184. Mired; a name which from this Species is extended indiscriminately to the whole genus.

It visits us in September in considerable numbers, and sometimes also in Spring.

LESSER TERN. *S. Minuta*. Jenyns, p. 267 Bewick's Br. B., vol. 2, p. 188. It visits us with the common Tern.

BLACK TERN. *S. Nigra*. Jenyns, p. 268. Bewick's Br. B., vol. 2, Sup. p. 21.

GULLS.

LITTLE GULL. *Larus Minutus*. Jenyns, p. 271. Eyton's Rarer Birds, p. 61. Two or three Specimens have been taken, all in the plumage of the first year.

* BLACK HEADED GULL. *L. Ridibundus*. Jenyns, p. 272. Bewick's Br. B., vol. 2, p. 213. Common in Winter.

* KITTIWAKE. *L. Tridactylus*. Jenyns, p. 274. Bewick's Br. B., vol. 2, p. 209. And the young Bird of the year, Sup. p. 39, in which state it visits us in Autumn. They do not breed with us.

* GREY GULL. *L. Canus*. Jenyns, p. 275. Bewick's Br. B., vol. 2, p. 200. Common.

* HERRING GULL. *L. Argentatus*. Jenyns, p. 276. Bewick's Br. B., vol. 2, Ad. p. 50. Common.

In the month of March, 1837, I had an opportunity of examining a couple of Gulls killed by Mr. Clement Jackson, of East Looe, and of comparing them with the Herring Gull, shot at the same time; and the comparison has convinced both of us, that they are distinct Species, though hitherto confounded together. Their plumage agrees in all respects with that of the Herring Gull, except that it seems to be more glossy; and therefore I will only mention those particulars in which they differ.

Herring Gull, weight, 2 lbs. 1 oz., length, 1 ft. 10 in., breadth, 4 ft. 3 in.

First new bird 3 .. 1 2 .. 2 5

Second new bird ... 2 $\frac{3}{4}$ 2 .. 2 5

In the former the bill, from the point to the angle of the mouth, is 3 inches, while in the two latter, this part measures respectively 3 $\frac{3}{4}$ and 3 $\frac{1}{2}$. In the new Birds also the bill is far stouter in proportion, and much paler; and the legs a livid flesh colour, the membrane of the feet being of the finest silky texture to the feeling and sight, while in the Herring Gull the colour of these parts is a palcish buff; and though a smaller bird, more rough and coarse. From the Glaucous Gull, which in size it resembles, this Bird is distinguished by having the quill feathers marked with black and white, as in the Herring Gull. These Birds seem equally common as the Herring Gull; and if it should appear that they are now for the first time recognized as a distinct Species, I propose to designate the Species by the name of the discoverer, to whom Cornish Ornithology is much indebted.

- JACKSON'S GULL.** *L. Jacksonii*. Nobis.
- GLAUCOUS GULL.** *L. Glaucus*. Jenyns, p. 279. Bewick's Br. B., vol. 2, last Edition. Rare.
- LESSER BLACK BACKED GULL.** *L. Fuscus*. Jenyns, p. 277. Bewick's Br. B., vol. 2, Sup. p. 30 and 198.
- GREAT BLACK BACKED GULL.** *L. Marinus*. Jenyns, p. 278. Bewick's Br. B., vol. 2, p. 194. Strip. Not uncommon.
- * **SKUA GULL.** *Lestris Cataractes*. Jenyns, p. 280. Bewick's Br. B., vol. 2, p. 212. It is not uncommon in Autumn, at a few leagues from land, but never approaches the shore. I have obtained it from fishermen, who have caught it alive, with a baited hook.
- RICHARDSON'S SKUA.** *L. Richardsonii*. Jenyns, p. 282. Bewick's Br. B., vol. 2, p. 115; and Ad. p. 6. In Winter. It bears the name of Tom Horry, in common with the last and next named Species.
- ARCTIC JAGER.** *L. Parasiticus*. Eyton's Rarer Birds, p. 55. One that I possessed, was taken with a baited hook.

Most of the larger Gulls are bold and ferocious Birds, preying not only on dead matter and insects and fishes, but also on the smaller Birds. The Herring Gull has been seen to pursue and devour the Sky Lark, in the fields, and the Skua, in like manner, to make a meal of the Stormy Petrel.

PETRELS.

- * **FULMAR.** *Procellaria glacialis*. Jenyns, p. 284. Bewick's Br. vol. 2, p. 329.
- * **CINEREOUS SHEARWATER.** *Procellaria Puffinus*. Jenyns, p. 284. Eyton's Rarer Birds. p. 49. I have only seen one Specimen, which was brought to me alive, having seized a fisherman's bait, in October, 1833.
- MANK'S SHEARWATER.** *P. Anglorum*. Jenyns, p. 285. Bewick's Br. B., vol. 2, p. 223. Skidden. Abundant late in Autumn, watching for the fisherman's baits, which they seize with eagerness.
- GREY PETREL.** *P. Cinerea*. Br. Mus. This is inserted on the authority of a Fishermen, who gave me an account of a bird that approached within a few feet of him, having all the actions of a Petrel, and about the size of a Black-bird, with a bluish grey back, and white below. This Species is a native of the Mediterranean.
- * **STORMY PETREL.** *P. Pelagica*. Jenyns, p. 285. Bewick's Br. B., vol. 2, p. 226. Common, chiefly in misty weather in Autumn; when, in the dusk of the evening, our fisherboys catch great numbers with their keep nets.
- * **FORKTAILED PETREL.** *P. Leachii*. Jenyns, p. 286. Bewick's Br. B., vol. 2, last Edition. I have known the taking of several Specimens, in stormy weather, late in the year.

Dr. Fleming supposes the Petrel of which a figure is given by Dr. Borlase in his Natural History of Cornwall, to be the *P. Oceanica* of Forster: chiefly on account of the great length of its wings, exceeding those of the common Petrel. Fleming's Br. An. p. 136.

REPTILES.

CORIACIOUS TURTLE. *Sphargis Coriacea*. Jenyns, p. 290. Borlase is the only good authority for the taking of this Species on the Cornish Coast; but I have been informed of the occurrence of another Specimen, which however was not secured.

LIZARD. *Lacerta Agilis*. Jenyns, p. 292. Borlase's Nat. Hist. of Cornwall, pl. 28, f. 35. Evet. Long Cripple. Common in dry uncultivated places.

* **SLOW WORM.** *Anguis Fragilis*. Jenyns, p. 294. Called Long Cripple, through mistake, by Borlase, Nat. H. Cornwall, pl. 28, f. 34. Ray's Syn. Quad., p. 289. The skin is too slight to be cast off in a continuous whole, as in the Snake.

* **SNAKE.** *Natrix Torquata*. Jenyns, p. 296. Ray's Syn. Quad., p. 334. It has been found six feet in length. Common.

* **VIPER.** *Vipera Communis*. Jenyns, p. 297. Ray's Syn. Quad., p. 285. Borlase's Nat. H. Cornwall, pl. 28, f. 33.

* **RED VIPER.** *Coluber Cherssea, Lin.* Whether this be a distinct Species is still disputed; but I have no doubt of its being the tail-pointed Slow Worm of Borlase: Nat. H. of Cornwall, p. 28. Rare.

WARTY EFT. *Triton Palustris*. Jenyns, p. 303. Local.

WATER EFT. *T. Punctatus*. Jenyns, p. 304. Common.

FROG. *Rana Temporaria*. Jenyns, p. 300. Ray's Syn. Quad., p. 247. Wilkie. Common. On the 28th of March, a very cold season, several Tadpoles were seen in active exercise, in a pool so firmly frozen over as to sustain no slight weight. In other years I have seen them in the middle of January.

TOAD. *Bufo Vulgaris*. Jenyns, p. 301. Ray's Syn. Quad. p. 252. Common.

EDIBLE FROG. *Rana Esculenta*. Fleming's Br. An., p. 159. Jenyns, p. 301. I feel some hesitation in inserting this Species, which has not been well defined as an inhabitant of Britain. A Specimen that I saw in the neighbour-

hood of the Village of St. Neot, was at the time referred by me to this Species as described by Dr. Fleming; but I have not been able to prosecute the enquiry.

FISHES.

THE PERCH KIND.

- PERCH.** *Perca Fluviatilis*. Jenyns, p. 330. Yarrell's Br. Fishes, vol. 1, p. 1. Not a Native of Cornwall; but it has been introduced, particularly by R. Lakes, Esq. of St. Austle, and thrives well. It is easily transferred from one pond to another, and would well repay the labour.
- BASS.** *P. Labrax*. Jenyns, p. 331. Yarrell's Br. F., vol. 1, p. 6. The Lupus of the Roman Poets. Common, in harbours and sandy bays.
- SMOOTH SERRANUS.** *Serranus Cabrilla*. Jenyns, p. 332. Yarrell's Br. F., vol. 1, p. 8. Comber. Common, near rocks, at a few miles from land, and used for bait. It spawns in Summer.
- DUSKY SERRANUS.** *S. Gigas*. Jenyns, p. 333. Yarrell's Br. F., vol. 1, p. 15. Loudon's Mag. Nat. Hist. vol. 5, p. 21. Only one Specimen is yet recorded as British.
- STONE BASS.** *S. Couchii*. Yarrell's Br. F., vol. 1, p. 12. Polyprion Cernium, Cuvier and Valenciennes, Hist. des Poissons, vol. 2. The description of this fish was omitted in Mr. Yarrell's work, as above quoted, through accident; and its publication here is unnecessary, since little doubt is felt either by that Gentleman or myself, that it is the Polyprion Cernium of Cuvier. The doubt here intimated arises from the great bulk assigned to the Species by the French Naturalist, and because of some difference in the colours. We know however, that a variation in water and light will greatly influence the tints of colour, and therefore the only real difficulty arises from the enormous size of an hundred pounds, ascribed to it by Cuvier, while a weight of twenty is regarded as extraordinary in the Cornish Fish.
- SQUIRREL FISH.** *Hemulon Formosum*. Cuv. Poiss. vol. 5, p. 230,—who refers to *Perca Formosa*, Lin. Baraco da Velha. Ray's Syn. Pisc. p. 134. One Specimen has been taken at Looc. It is a native of the West Indies.
- WIEVER.** *Trachinus Draco*. Jenyns, p. 335. Yarrell's Br. F., vol. 1, p. 20. Sting Bull. Not uncommon towards the end of Summer.

- SURMULLET.** *Mullus Surmuletus*. Jenyns, p. 337. Yarrell's Br. F., vol 1, p. 27. In Summer it abounds near the shore, but goes into deeper water in Winter, and is then only taken in Trawls.
- RED SURMULLET.** *M. Barbatus*. Jenyns, p. 338. Yarrell's Br. F., vol. 1, p. 32. Some doubt still exists, as to the identity of the Cornish Specimens, compared with the genuine Species.

GURNARDS.

- RED GURNARD.** *Trigla Cuculus*. Yarrell's Br. F., vol. 1, p. 34. T. Pini, Jenyns, p. 338. Red Ellick, Soldier. When in fine condition, it is sometimes spotted with gold. Common.
- TUBFISH.** *T. Hirundo*. Jenyns, p. 340. Yarrell's Br. F., vol. 1, p. 41. Common.
- PIPER.** *T. Lyra*. Jenyns, p. 341. Yarrell's Br. F., vol. 1, p. 44. Common.
- GREY GURNARD.** *T. Gurnardus*. Jenyns, p. 342. Yarrell's Br. F., vol. 1, p. 48. Common.
- STREAKED GURNARD.** *T. Lineata*. Jenyns, p. 339. Yarrell's Br. F., vol. 1, p. 46. Not uncommon in Summer.
- CUVIER'S GURNARD.** Hist. des Poissons, Cuv. and Val., vol. 4, p. 67, and Loudon's Mag. Nat. Hist., vol. 9, p. 463. Rare. This seems to be distinct from Bloch's Gurnard of Mr. Yarrell, unless there be some mistake in the account of the latter, as given by Montagu and Jenyns.

Beside the above, two Species claim to be mentioned, as probably occurring on our Coasts, but hitherto overlooked through the inattention of observers. The first, the high finned Trigla, *T. Lucerna*, Lin. has been observed on the Coast of Devon by Dr. Parnell (Jardine's Mag. of Zoology, vol. 1,) and is perhaps not uncommonly taken in Trawls. The second Species, which may not improperly be claimed as Cornish, having been caught near the Eddystone, is the Maile Gurnard, *T. Cataphracta*, Lin. Peristedion Malarmat, of Laccpede and Cuvier; the only British Specimen of which I had an opportunity of examining, through the kindness of Dr. Edw. Moore, of Plymouth; who has given an account of it in Loudon's Mag. of Nat. H., for 1837, p. 19.

Ray observes that the word Gurnard, which may be regarded as the English Generic Term, is derived "a grunnitu" from the sounds which the Species are found to utter when newly caught, and from which the Piper more especially takes its name. But in this etymology I have no doubt that this eminent Naturalist was mistaken. Pengurn is the ancient Cornu-British name, which signifies Hardhead; and its English equivalent is now often given to the Grey Gurnard. From this Cornish word Gurn therefore I derive the name, as descriptive of the head of these fishes.

The Streaked Gurnard was called by the older Naturalists *Mullus Imberbis*; and no small reproach has been poured upon them on account of a name that is supposed to bear very little reference to the nature of the fish referred to. But those laborious, and usually accurate observers may be more easily excused than a Naturalist of the closet might suppose. The Streaked Gurnard and Surmullet frequent the same haunts—feed on the same food—are taken in the same almost peculiar sort of Net, during the same limited season of the year; and when first drawn from the Sea the distinction between them is not very obvious, the longitudinal yellow lines of the Surmullet being concealed in the general bright and glowing colours, that fade as the creature dies; and the barbs at the mouth lie concealed in a depression fitted to receive them:—we need not wonder therefore, taking also into consideration their general similarity of form, that one of these fishes was termed the Bearded, and the other the Unbearded Mullet. The Streaked Gurnard approaches to the nature of a foreign Species (*T. Volitans*) in its habit of making considerable springs out of the water. The generality of these Fishes spawn in Winter or early in the Spring; but I have known this function delayed until near Midsummer, and believe that sometimes they breed at both seasons, though not perhaps the same individual Fishes.

BULLHEAD. *Cottus Gobio*. Jenyns, p. 343. Yarrell's Br. F., vol. 1, p. 56. Miller's Thumb. In brooks, common.

SEA SCORPION. *C. Scorpius*. Jenyns, p. 344. Yarrell's Br. F., vol. 1, p. 60. Stingfish. Common, chiefly in harbours.

STINGFISH. *C. Bubalis*. Jenyns, p. 345. Yarrell's Br. F., vol. 1, p. 63. Common, but not usually distinguished from the last Species. It goes, however, into deeper water, and is more apt to vary in colour, being sometimes found of a bright scarlet.

POGGE. *Aspidophorus Cataphractus*. Jenyns, p. 346. Yarrell's Br. F., vol. 1, p. 70. Black Stingfish. Not uncommon.

STICKLEBACKS.

THREE SPINED STICKLEBACK, *Gasterosteus Aculeatus*. Jenyns, p. 348. Yarrell's Br. F., vol. 1, p. 76. Not uncommon, though not in abundance. It ascends our rivers in May.

HALF ARMED STICKLEBACK. *G. Semiarmatus*. Yarrell's Br. F., vol. 1, p. 80.

SMOOTH TAILED STICKLEBACK. *G. Letourus*. Yarrell's Br. F., vol. 1, p. 81.

Mr. Jenyns doubts whether these three Species should be considered as distinct; but having kept the first and third alive in glass vessels, and finding them to manifest very different habits, I have no hesitation in believing Mr. Yarrell to be correct in his opinion of their being specifically different.

FIFTEEN SPINED STICKLEBACK. *G. Spinachia.*

Jenyns, p. 352. Yarrell's Br. F., vol. 1, p. 87. Common.

MAIGRE. *Sciæna Aquila.* Jenyns, p. 352. Yarrell's Br.

F., vol. 1, p. 90. Having had an opportunity of inspecting a Specimen of this Fish in company with my friend Mr. Yarrell, I am able to refer with confidence to two individuals that were taken in Cornwall. The colours of the latter were far more splendid than those of the former, and it is to be remembered that the serrations of the gillcovers, as represented in Mr. Yarrell's figure, disappear with age.

SEA BREAMS.

BECKER. *Sparus Pagrus.* Jenyns, p. 354. Yarrell's Br. F., vol. 1, p. 102. Common in Summer and Autumn.

SPANISH BREAM. *S. Erythrinus.* Jenyns, p. 355. Yarrell's Br. F., vol. 1, p. 104. In Summer, not common. I have also known it taken at Christmas.

BREAM. *S. Centrodontus.* Jenyns, p. 356. Yarrell's Br. F., vol. 1, p. 107. The young Fish of the year, being without the lateral spot, is termed a Chad. Abundant, but most so in Summer. I have known it with developed Roe at opposite seasons of the year.

OLD WIFE. *Cantharus Griseus.* Jenyns, p. 358. Yarrell's Br. F., vol. 1, p. 114. Common in Summer and Autumn; I have also seen it in Spring, but in a meagre condition.

RAY'S BREAM. *Brama Raii.* Jenyns, p. 359. Yarrell's Br. F., vol. 1, p. 117. I have considered the kindred Fish referred to in the transactions of the Linnæan Society, vol. 14, p. 78, as a different Species; but the sketch of its figure, having been presented to Mr. Bewick, the celebrated engraver, cannot now be referred to.

THE MACKAREL TRIBE.

MACKAREL. *Scomber Scombus.* Jenyns, p. 360. Yarrell's Br. F., vol. 1, p. 121. This Fish can scarcely be said to disappear from the Cornish Coast through the year; but according to the observations which I have made for a few years, the males precede the females in their migrations in Spring: thus in 1834, March 24, out of 8 taken indiscriminately, 7 were males; on the 28th, of 8, 6 were males; April 1st, of 4, 3 were males. In 1835, March 25, from a capture of 7,000, 17 out of 20 were males. In 1836, April

13, of 6 all were males. The season of spawning is towards the end of June; at which time drawing somewhat off the Land, the Schulls are dispersed, and the general season of Sean Fishing ends.

- SPANISH MACKAREL. *S. Colias*. Yarrell's Br. F., vol. 1, p. 131. Scarcely common.
- TUNNY. *S. Thynnus*. Jenyns, p. 362. Yarrell's Br. F., vol. 1, p. 134. Not often taken.
- BONITO. *S. Pelamys*. Jenyns, p. 363. Yarrell's Br. F., vol. 1, p. 140. Not often taken.
- BELTED BONITO. *Pelamys Sarda*. Cuv. and Val. Poissons, vol. 8. I have never seen this Fish caught; but it has been described to me in a manner that leaves no doubt of its occasional occurrence on our Coasts.
- SWORDFISH. *Xiphias Gladius*. Jenyns, p. 364. Cuv. and Val. Pois., vol. 8. Not often seen.
- PILOTFISH. *Centronotus Ductor*. Jenyns, p. 365. Yarrell's Br. F., vol. 1, p. 149. Rare.
- SCAD. *Caranx Trachurus*. Jenyns, p. 366. Yarrell's Br. F., vol. 1, p. 154. Common in Summer and Autumn; but in Spring it keeps in the deeper water.
- DORY. *Zeus Faber*. Jenyns, p. 367. Yarrell's Br. F., vol. 1, p. 162. Common.
- BOARFISH. *Z. Aper*. Jenyns, p. 368. Yarrell's Br. F., vol. 1, p. 169. Only one Specimen has been taken in Cornwall, which was observed by Dr. Boase.
- OPAH. *Lampris Luna*. Jenyns, p. 369. Yarrell's Br. F. vol. 1, p. 173. I have been informed of one Specimen taken in Cornwall.
- SCABBARD FISII. *Lepidopus Argyreus*. Jenyns, p. 371. Yarrell's Br. F., vol 1, p. 176. I have been informed of one Specimen only, which was caught by a boat from Mount's Bay.
- BLACK FISH. *Coryphana Pompilus Lin*. Yarrell's Br. F., vol. 1, p. 158. Borlase's Nat. Hist. of Cornwall, pl. 26. Rare.
- CEIL CONIN. *Gymnetrus Hawkenji*. Yarrell's Br. F., vol. 1, p. 183. Much uncertainty exists concerning this fish, of which one Specimen was taken on shore at Newlyn in 1791; and it is not easy to reconcile the account of it by Bloch, with the researches of M. Valenciennes, Poissons, vol. 10. In the original drawing from which Mr. Yarrell's figure is taken it is called "Ceil Conin, or King of the Herrings;" which seems also to imply the confusion of two separate Species in the mind of him who wrote it.
- REDBAND FISH. *Cepola Rubescens*. Jenyns, p. 374. Yarrell's Br. F., vol. 1, p. 195, where however, the tail is not represented as sufficiently distinct. Red Snake Fish.

Instead of being simply scarlet, I have seen it with the dorsal fin remarkably wide, the margin purple, the base yellow, and the middle red, the Specimen about 18 inches long. The *C. Tænia* probably does not differ from this Species. It is not uncommon.

GREY MULLET. *Mugil Capito.* Jenyns, p. 374. Yarrell's Br. F., vol. 1, p. 200. Common.

THICKLIPPED MULLET. *M. Chelo.* Yarrell's Br. F., vol. 1, p. 207. Common, sometimes in great numbers. The pea of both these kinds of Mulletts is shed in harbours, and the mouths of rivers; and the young, which associate in Shoals, are commonly at the margin of the tide, and often in freshwater.

ATHERINE. *Atherina Presbyter.* Jenyns, p. 377. Yarrell's Br. F., vol. 1, p. 377. Smelt:—a word fancifully interpreted by Pennant, to signify a peculiar odour; but derived from the transparent appearance of two or three Species bearing it, and signifying to melt; in which sense it is still employed in the liquefaction of metals from their ore. No less than three kinds of British Fishes have been called Smelt:—the immature Salmon, another Species of the same Genus (*S. Eperlanus*) and the Atherine; and the propriety of carefully distinguishing between these and other Fishes, that may chance to bear corresponding designations in different parts of the Kingdom, will appear from the fact, that it was a recommendation of a Committee of the House of Commons on the Salmon Fisheries, to inflict a penalty on the possession of a Whiting at the prohibited season; forgetting that the latter name is far more commonly applied to a Fish of the Cod than Salmon kind.

BLENNIES.

GATTORUGINE. *Blennius Gattorugine.* Jenyns, p. 379. Yarrell's Br. F., vol. 1, p. 227. Tompot. Common.

MONTAGU'S BLENNY. *B. Montagui.* Jenyns, p. 381. Yarrell's Br. F., vol. 1, p. 219. Not uncommon.

SHANNY. *B. Pholis.* Jenyns, p. 382. Yarrell's Br. F., vol. 1, p. 230. Common.

SPOTTED GUNNEL. *B. Gunnellus.* Jenyns, p. 383. Yarrell's Br. F., vol. 1, p. 239. Butterfish. Nine Eyes. I have no doubt that the word Gunnel, first applied to this Fish by Ray, and supposed by him to be its Cornish name, is a corruption of the word Gunwhale, from the part of the boat which the form of the Fish was supposed to resemble; but I question whether it was any thing more than a momentary invention of his informant, who probably knew no name for the Species.

GOBIES.

ROCK GOBY. *Gobius Niger*. Jenyns, p. 385. Yarrell's Br. F., vol. 1, p. 251. Miller's Thumb—Black Goby; but the latter name is inappropriate, since the colour is often light grey, or brown, according to the colour of the ground it occupies. I have taken a Shanny, two inches long, from the stomach of a Rock Goby of about six inches.

TWO SPOTTED GOBY. *G. Bipunctatus*. Jenyns, p. 386. Yarrell's Br. F., vol. 1, p. 255.

SPOTTED GOBY. *G. Minutus*. Jenyns, p. 386. Yarrell's Br. F., vol. 1, p. 258. The two last Species are commonly confounded together; but the last seems the most abundant.

YELLOW SKULPIN. *Callionymus Lyra*. Jenyns, p. 388. Yarrell's Br. F., vol. 1, p. 261. Not uncommon.

DUSKY SKULPIN. *C. Dracunculus*. Jenyns, p. 389. Yarrell's Br. F., vol. 1, p. 266. Common.

The Gobies and Skulpins are excellent bait for the more valuable Fishes, and form a portion of the attraction that draws them to our Coasts.

ANGLER. *Lophius Piscatorius*. Jenyns, p. 389. Yarrell's Br. F., vol. 1, p. 269. The monk of our Fishermen. Common.

Denied by nature the power of actively pursuing its prey, this curiously shaped fish is well fitted to discover and seize it, when it comes within its reach. The olfactory nerves, which terminate in two hollow tubes on its snout, are thin and feeble, so that the sense of smell can profit it but little; and the eyes are directed from rather than to, the presence of its prey; but the fishing apparatus on the head is erected on a complicated muscular and bony structure, that is capable of guiding it in all directions; whilst the nerves with which it is furnished, derived from the origin of the spinal marrow, and passing forward over the top of the head, distributing branches to the fin like structure there, thus endowing them with ready sensibility, enable it to discern the presence of any little unsuspecting creature and to lead it forward to the gulf below. The roof of the mouth is rendered sensitive by a distribution of nerves that have penetrated through the bone from the cavity of the skull, where they communicate with the brain (very small for the size of the Fish) by means of a large ganglion far in front of it, but within the same cavity. Branches of the fifth pair of nerves of very large size, are supplied over the cheeks and jaws, but the largest of all to the lower jaw; where the teeth are furnished with them in a manner to render their sensation exquisite. Woe betides the unsuspecting creature that touches any part of this well formed trap; the presence of a stranger is

instantly perceived, and the closure of the entrance by the long and moveable teeth is the work of an instant. Dull as are the general sensations of this curious creature, the organization of its mouth and head are such as to warrant the belief that the stories related of its stratagems in fishing are not devoid of truth.

SMALL-WINGED ANGLER. *L. Parvipinnis.* Cuv.

Animal Kingdom. It is probable that I have seen a Specimen; but both it and the next are introduced with doubt, because in the one a minute description was not taken, and in the other it is uncertain whether the Specimen was not a mutilated example of the Common Angler.

LONG ANGLER. *L. Borlasii.* Borlase's Hist. of Cornwall.

WRASSES.

COMMON WRASS. *Labrus Maculatus.* Jenyns, p. 390.

Yarrell's Br. F., vol. 1, p. 275. *L. Tinca* of some authors. Common.

This Fish, and generally most of the Genus, are subject to a great variety of colour, according to the seasons, station, or the influence of the passions, especially, as I have witnessed, that of fear: on which account much confusion has formerly crept into their History, as given by different writers, and which is only now begun to be cleared up. Whether the Green Streaked Wrass, of Jenyns, and Yarrell, is to be distinguished from this Species, I am unable to determine; but I have examined many Wrasses of a fine bright Green colour, from deeper water than this Fish usually chooses for its residence, without being able to discover any specific difference.

COOK. *L. Variegatus.* Yarrell's Br. F., vol. p. 281. *L.*

Coquus. Ray's Syn. Pisc. and Pennant. vol. 3, p. 340. Common. It varies but little in its colours, except in their intensity.

THREE SPOTTED WRASS. *L. Trimaculatus.* Jenyns,

p. 396. Yarrell's Br. F., vol. 1, p. 286. *L. Carneus.* Bloch and Cuv. Common, and often termed the Cook by Fishermen.

COMBER. *L. Comber.* Yarrell's Br. F., vol. 1, p. 289.

Pennant, vol. 3, p. 342. Rare. It must not be confounded with the *Serranus Cabrilla*, which bears the same name.

RAINBOW WRASS. *Julis Mediterranea.* Yarrell's Br. F., vol. 1, p. 291. Rare.

CORKWING. *Crenilabrus Cornubicus.* Yarrell's Br. F.,

vol. 1, p. 296. I have little doubt that the Gibbous Wrass of Pennant and Mr. Yarrell, is a full grown Specimen of the same Species; both states being of frequent occurrence, and the spot at the termination of the lateral line near the

tail (the only distinction between them) though constant in the smaller Specimens, is often wanting in the larger. The quotation in Mr. Yarrell's work, p. 297, from my M.S., is misapplied to this Fish, and belongs to the proper Goldsinny *C. Tinca*, Yarrell, p. 293.

GOLDSINNY. *C. Tinca*. Yarrell's Br. F., vol. 1, p. 293. Connor. Common. There are sufficient marks of distinction between this Fish, and the Species described and figured by Mr. Selby, in Sir Wm. Jardine's Magazine of Zoology, vol. 1, p. 167, and pl. 6. to cause me to believe the Goldsinny is not the *Lutjanus Rupestris* of Bloch, as that Gentleman supposes.

ROCK COOK. This Species, not described by Mr. Yarrell, was first found in Cornwall; and named *C. Microstoma*, in my M.S. a name adopted by Mr. Thompson who has found it in Ireland. See Jardine's Mag. Zool., vol. 2, Pl. 14. It is less common than the Goldsinny, and is chiefly taken in Crab Pots.

SCALE-RAYED WRASS. *C. Luscus*. Yarrell's Br. F., vol. 1, p. 300. Rare.

The two following are introduced on doubtful authority:

TWO SPOTTED WRASS. *Labrus Bimaculatus* Lin. On the authority of Pennant, who however did not see the Specimen.

HOG WRASS. *L. Suillus* Lin. On the authority of Osbeck, who may have confounded it with the Rock Cook; if indeed they be different.

TRUMPETFISH. *Centriscus Scolopax*. Jenyns, p. 400. Yarrell's Br. F., vol. 1, p. 302. One Cornish Specimen only is on record.

DACE. *Cyprinus Leuciscus*. Jenyns, p. 410. Yarrell's Br. F., vol. 1, p. 353. I know of this fish from no other of our Rivers beside the Tamar.

MINNOW. *C. Phoxinus*. Jenyns, p. 415. Yarrell's Br. F., vol. 1, p. 372. Common in many of our Rivers, but not in all.

THE CARP. *C. Carpio*; and the Tench, *C. Tinca*, are not natives of Cornwall, but are kept in ponds.

LOACH. *Cobitis Barbatula*. Jenyns, p. 416. Yarrell's Br. F., vol. 1, p. 376. Common in some Rivers.

GARFISH. *Belone Vulgaris*. Jenyns, p. 418. Yarrell's Br. F., vol. 1, p. 391. Long nose, and Gorefish. Common at all seasons, but less abundant in Spring. It is voracious and of very quick digestion; feeding on every variety of living being it is able to seize.

LITTLE GOREFISH. ——— Trans. of Lin. Soc., vol. 14, p. 85. Hemiramphus *Europæus*, Loudon's Mag. Nat. H., vol. 2, N. S.

SKIPPER. *Scomberesox Saurus*. Jenyns, p. 419. Yarrell's Br. F., vol. 1, p. 394. Skopster, Haliou. Abundant in Summer, but rarely appearing before June.

FLYING FISH. A few instances are on record, of a fish of this Genus, *Exocoetus*, having been seen or taken in Cornwall; and Mr. Yarrell, following Pennant, has referred them to the Linnean Species, *E. Volitans*, though with an expression of doubt. In one instance, however, I have ascertained from inspection that the Specimen, which threw itself on the Quay at Plymouth, was the Greater Flying-fish *E. Exiliens*, or *Le Muge Volant* of Bloch, the common Species of the Mediterranean; and I have reason to believe from its dimensions as given to me by its possessor, that the individual which was found at Helford, where it was discovered on the sand, having just then expired, was of the same Species.

THE SALMON KIND.

SALMON. *S. Salar*. Jenyns, p. 421. Yarrell's Br. F., vol. 2, p. 1. Common, but far less abundant than formerly, perhaps in consequence of the extension of Mining; for it is found to diminish in, or even to forsake, Rivers, into which water pumped from Copper Mines, is discharged. Running through an hilly Country, in a course of no great length, the Rivers of Cornwall are generally too shallow in Summer, and too liable to fluctuation at all Seasons, to admit of the regular ascent of Salmon at the time when they are esteemed best in Season in other parts of the Island; they are therefore chiefly taken in Autumn and the beginning of Winter. A smaller run of good fish takes place also in February and March, consisting of such as have not been disposed for spawning at the ordinary Season; which is in December and January. These latter fish can have no intention to spawn at this time, for their roe shews little marks of developement; and it is equally clear that they do not remain until the next Season, as many Naturalists have asserted; for in that case they could not have escaped detection. In some Cornish Rivers it is unlawful to catch these Fish, from an apprehension that under the pretence of doing so, such as are heavy with spawn may be destroyed, to the great injury of the Fishery; but to render this reason effectual, it should be applied more extensively than it is at present; for there are, I believe, no more than three Rivers which have definite times of Fishing appointed by Law.

Fence days appointed by the Justices in quarter Sessions, in Cornwall, for the preservation of Salmon in the Rivers of that County.

River Fowey, from the 15th December, to the 1st May, both inclusive.

River Camel, from the 23rd December, to the 15th May, both inclusive.

River Tamar, from the 1st November, to the 27th April, both inclusive.

Second Parliamentary Report on the Salmon Fisheries, 1825, p. 154.

BULL TROUT. *S. Eriox.* Jenyns, p. 423. Yarrell's Br. F., vol. 2, p. 31. Less common than the Salmon, and not found in some Rivers. It may be questioned whether more than one Species has not been confounded with this; and at least it is certain that various names have been employed to designate it—as Pugtrout, Sea Trout, Bartholemew Trout, and Sea Truff.

PEAL. *S. Trutta.* Jenyns, p. 423. Yarrell's Br. F., vol. 2, p. 36. Salmon Peal. This is far more abundant than the Salmon. It spawns in December or January, the females being much more numerous than the males; in so much that in one instance that came under my own notice, to a proportion of not less than twenty engaged in shedding their roe, there was only one male. With regard to the latter indeed, an error has existed, that it is a distinct Species, so different are its markings and colour. The young Peal are not easily distinguished from those of the Salmon: more especially as they abound, and descend the Rivers together; but in the Winter, and first months of Spring, at the commencement of their second year, when half grown, they are known in the Rivers by the name of the White Trout; after which they are not distinguished from the adult fish.

TROUT. *S. Fario.* Jenyns, p. 424. Yarrell's Br. F., vol. 2, p. 51. The Shot. This fish, though abundant, does not reach so large a size in Cornwall, as in the more central and Northern parts of the Kingdom: and the instances where it is recorded to have attained to the weight of two pounds, must be considered extraordinary. Dr. Borlase makes especial mention of the size and beauty of the Loe Trout; which indeed in both these respects surpasses the common race. But having been furnished, through the kindness of the late G. S. Borlase Esq., of Helston, with a coloured Drawing and a couple of Specimens of this fish—one of which has also been examined by Sir William Jardine and Mr. Yarrell, I have the authority of these competent judges to pronounce, that it is not specifically different from the common sort. In the Spring it is not uncommon for the Trout to go into salt water; and on its return to be so marked on the sides as to bear considerable likeness to the Samlet.

SAMLET. *S. Salmulus*. Jenyns, p. 426. Yarrell's Br. F., vol. 2, p. 42. Palmer Trout, and I believe, the Farthing Trout of Carew. I have known it in the Rivers, in Summer only; but it is probable that it also ascends in Winter to spawn.

THE HERRING TRIBE.

PILCHARD. *Clupea Pilchardus*. Jenyns, p. 436. Yarrell's Br. F., vol. 2, p. 96.

The natural and oecounouical History of this fish is given at considerable length in the report of the Royal Cornwall Polytechnic Society for 1835; and the following notes are here collected that the subject may be rendered as perfect as our present state of information will admit.

The earliest mention of the Pilchard that I have found in any public document, is in the 35th Eliz. ch. 11 (misprinted 37th Eliz. in the report) where they are termed Pilchers; and Gesner about the same date calls the fish a Pylcher or Pylcharde, but makes it the same as the "Herring."

The small size of the Meshes of a Sean are rendered legal for the taking of Herrings, Pilchards, Sprats and Lavidnian (the latter name not being explained in any book to which I have access, but which I have ventured to guess as signifying the Anchovy) by the 3rd James 1st, ch. 12. (1605). By the 2nd (Vulgo 1st) of the same, ch. 23, for the better perservation of fishing in the Counties of Somerset, Devon and Cornwall, and for the relief of Balkers, Coudors and Fishermen against malicious suits, it is made *legal* for Balkers, Huors, Condors, Directors or Guidors, in pursuance of their calling to go upon high hills and grounds, without being guilty of trespass. It also permits other persons "to attend their Seans or Nets for the drawing or carring off the said fish on land or shore;" or as it is afterwards said, "landing the said Fish."

By the 13th and 14th Chas. 2nd, ch. 23, (1662) it is further provided that idle suspicious persons assembling by night about Boats, Nets, or Cellars, having no business and being warned of and not departing, shall pay five shillings, and be placed in the stocks for five hours.

The fence months during which Drift Nets may not be employed within a league and half of the land, are, from the first day of June to the last day of November, by the 13th and 14th Chas. 2nd, ch. 23.

The Act, 35th Eliz. ch. 11, already referred to, complaining of the modern destruction of timber, orders that for every six tons of Pichards or other Fish carried out of the Kingdom, the same ship shall bring back either the old casks formerly exported, new casks in their places, or 200 clapboards, each 3 feet 2 inches long, as staves for casks.

By 13 and 14 Chas. 2nd, ch. 23, if any person not an adventurer in the Fishery, shall make any Pilehards in Casks or Fumathoes, to be sold or transported, except of the Adventurers, he shall forfeit the whole of their value. Also any Owner or Partner embezzling the Fish, shall pay to the others treble the value, and be committed to the House of Correction for the space of three months. Pilehards in any state may not be imported into England by Foreigners, on pain of forfeiture, by 18 Chas. 2nd, ch. 2, and 9 Geo. 2nd, ch. 33.

Since the publication of the Report of 1835, I have satisfied myself that the Pilehard feeds eagerly on the Mackarel Midge, *Motella Glauca*; and that abundance of Pilchards heavy with roe, were on our Coasts in April, 1836, thus establishing the fact of a vernal as well as autumnal spawning, though probably not by the same individual Fishes. In the present year 1837, the Fish were full of Melts and Roe, at the end of July, and the first fortnight in August, chiefly perhaps through the lateness and coldness of the spring; which delayed the spawning of several other kinds of Fishes.

HERRING. *C. Harengus*. Jenyns, p. 434. Yarrell's Br. F., vol. 2, p. 110.

A few scattered Herrings are taken in August and September; and in October and November, they are sufficiently abundant to be an object of interest to the Fisherman. No extensive Fishery, however, is carried on along the Western Coasts, and none of the Fish are prepared for exportation.

SPRAT. *C. Sprattus*. Jenyns, p. 435. Yarrell's Br. F., vol. 2, p. 121. The young of the Herring and Pilchard are by Cornish Fishermen separately termed Herring and Pilchard Sprats; but the difference of both the latter are readily allowed when the real Sprat is laid before them. This Fish does not appear until the end of the year; when it is found in the stomachs of Fishes, and at times is taken in some abundance in Rivers within reach of the tide. That they have not been more noticed, seems to have proceeded from their small size, the season of their appearance, and the great abundance of other Fish.

TWAITE SHAD. *C. Finta*. Jenyns, p. 437. Yarrell's Br. F., vol. 2, p. 131. This is sparingly taken in Pilchard or Herring Drift Nets, towards the close of the year.

ALLIS SHAD. *C. Alosa*. Jenyns, p. 438. Yarrell's Br. F., vol. 2, p. 137. Scadina, Alose, and corruptly Alewite. Common but not abundant. It more frequently takes a bait than others of this Genus.

ANCHOVY. *Engraulis Encrasicholus*. Jenyns, p. 439. Yarrell's Br. F., vol. 2, p. 140. This Fish abounds towards

the end of Summer; and if attention were paid to the Fishery, enough might be caught to supply the consumption of the British Islands. Bloch informs us that the fishery in the Mediterranean is carried on from May to July, at which period this Fish enters that Sea for the purpose of shedding its spawn; and that when this function is performed it returns to the Atlantic. I have not found them on our Coast until the Autumnal equinox; and the Fishery would be chiefly followed in October and November, when the Fish are in fine condition; but some are met with through the Winter and until the month of March.

THE CODFISH TRIBE.

- CODFISH** *Gadus Morrhua*. Jenyns, p. 440. Mr. Yarrell supposes the Sharpnosed Codfish of the Western Coast to be a variety of that of which he has given a figure; Br. F., vol. 2, p. 151, but perhaps in this as in most other instances it will be found, that though colour in Fishes is exceedingly liable to variation, according to the ground and temperature, yet a variety of form is proof of a difference of Species. This Fish is abundant, large, in fine condition in its season, on the Cornish Coast, chiefly from feeding on the smaller kinds of Crabs, which are in great number; but out of season, as it is for nine months in the year, few Species offer a greater contrast to their best perfection. The younger Codfish is termed a Tamlin Cod, and is good food at all times; and it sometimes happens also, that the Fish which has not been exhausted by spawning, is found in excellent condition at a time when others are thin and meagre, or as fishermen denominate it, Louning.
- HADDOCK.** *G. Æglefinus*. Jenyns, p. 441. Yarrell's Br. F., vol. 2, p. 153. This Fish is variable in its habits, sometimes abounding for a year or two, and then again becoming scarce. This seems to arise from its manner of feeding, which is on Sea eggs (Echini,) the Crab kind, and Ascideæ, or as fishermen term them, Water bags; and when these have become scarce, their haunts are again changed.
- BIB.** *G. Luscus*. Jenyns, p. 442. Yarrell's Br. F., vol. 2, p. 157. Common.
- POWER.** *G. Minutus*. Jenyns, p. 444. Yarrell's Br. F., vol. 2, p. 161. Common.
- WHITING.** *Merlangus Vulgaris*. Jenyns, p. 445. Yarrell's Br. F., vol. 2, p. 167. Common.
- POLLACK.** *M. Pollachius*. Jenyns, p. 446. Yarrell's Br. F., vol. 2, p. 172. Common.
- RAUNING POLLACK.** *M. Carbonarius*. Jenyns, p. 446. Yarrell's Br. F., vol. 2, p. 169. Common.
- GREEN COD.** *M. Virens*. Jenyns, p. 447. Yarrell's Br. F., vol. 2, p. 175. I suppose this to be the Young of the last Species.

HAKE. *Merlucius Vulgaris*. Jenyns, p. 447. Yarrell's Br. F., vol. 2, p. 177. This Fish is of great importance to the poorer classes, being salted and dried for their winter's food. I have been informed of 40,000, that were landed in Mount's Bay in one day, and that 1100 were taken in one boat in two nights.

LING. *Lota Molva*. Jenyns, p. 448. Yarrell's Br. F., vol. 2, p. 180. Common.

THREE BEARDED ROCKLING. *Motella Tricirrata*. Jenyns, p. 449. Yarrell's Br. F., vol. 2, p. 186. Common.

FIVE BEARDED ROCKLING. *M. Mustela*. Jenyns, p. 450. Yarrell's Br. F., vol. 2, p. 190. Common.

MACKAREL MIDGE. *M. Glauca*. Jenyns, p. 451. Yarrell's Br. F., vol. 2, p. 193. This little fish, which abounds in summer, is of value for attracting within reach of the fisherman, the wandering tribes of larger size and national importance. On this account, with the Skulpins, Gobies, Launces, Sprats, and others, too small or deficient in delicacy, to be esteemed for the table, their importance to the fisheries demands their adequate protection.

FORK BEARD. *Phycis Furcatus*. Jenyns, p. 452. Yarrell's Br. F., vol. 2, p. 201. Not uncommon, but chiefly in Winter. Hake's Dame.

LESSER FORKBEARD. *Raniceps Jago*. Yarrell's Br. F., vol. 2, p. 204. Rare. It is the opinion of Naturalists, that this Species and the Tadpole fish, *R. Trifurcatus*, Jenyns, p. 451, are the same; but comparing four specimens that have come into my possession, with a figure of the latter, by Dr. Parnell in Jardine's Magazine of Zoology, vol. 1, the question does not appear to be decisively settled.

The family of Codfishes (*Gadidæ*) deposit their spawn, from the beginning of January to April, in moderately deep water, in the situations commonly resorted to by the parent fishes. The prevalence of cold winds, however, will influence this function in them as in other Genera; and in the remarkably late spring of 1837, the Hakes had not shed their roe until after Midsummer. It would appear that it is not simply cold weather, that exerts this influence on the fishes of the ocean; which are observed to be even more affected by change of weather than animals of the land. But as winds between South and West accelerate the advance of the Gulf stream of warm water from the tropics, the Eastern winds retard it, and thus repress the vital energies of such Fishes as have been accustomed to this usual excitement. All but our more hardy Fishes retire into deep water under these circumstances; and when again emerging they are observed to be ill-fed

and in bad condition: circumstances not favourable to propagation. Further observation enables us to remark, that a delayed propagation of one Season is not necessarily followed by a late spawning in the next.

FLAT FISHES.

- PLAICE.** *Platessa Vulgaris.* Jenyns, p. 454. Yarrell's Br. F., vol. 2, p. 209. Common, but far less abundant than formerly; a remark which may be applied to all the Flat Fishes, and to be accounted for by the destructive influence of Trawl fishing.
- FLOUNDER.** *P. Flesus.* Jenyns, p. 455. Yarrell's Br. F., vol. 2, p. 215. Fluke, a name derived from its form, as Flounder is from its motion. Varieties, in which all the organs are on the reversed side of the body, are not uncommon in all the flat Fishes; but more frequently in this species than in the others. Sometimes also the under surface is of the colour and texture of the upper, and in a few instances the upper surface has resembled the lower.
- DAB.** *P. Limanda.* Jenyns, p. 456. Yarrell's Br. F., vol. 2, p. 219. Common.
- SMEAR DAB.** *P. Microcephalus.* Jenyns, p. 457. Yarrell's Br. F., vol. 2, p. 221. Not uncommon.
- HOLIBUT.** *Hippoglossus Vulgaris.* Jenyns, p. 460. Yarrell's Br. F., vol. 2, p. 230. Mr. Yarrell by mistake excludes this from the Cornish Catalogue; it is however not uncommon, and one that was weighed for my satisfaction, amounted to 120 pounds, its length being six feet. As food it is far below the other flat Fishes, and differs from the rest in being very powerful when hooked, as well as very voracious.
- TURBOT.** *Pleuronectes Maximus.* Jenyns, p. 461. Yarrell's Br. F., vol. 2, p. 233. This Species, so well known to the Epieure, sometimes ascends to the surface over deep water, and remains several hours stemming the tide, without advancing.
- BRILL.** *P. Rhombus.* Jenyns, p. 462. Yarrell's Br. F., vol. 2, p. 240. Kite. Common.
- TOPKNOT.** *P. Hirtus.* Jenyns, p. 463. Yarrell's Br. F., vol. 2, p. 243. Not uncommon, and contrary to the habit of its Congeners, keeping among rocks. It is probable that the *P. Punctatus* is also a Cornish Species.
- WHIFF.** *P. Megastoma.* Jenyns, p. 464. Yarrell's Br. F., vol. 2, p. 251, where however the ocellated marks round the coloured margin are omitted, although I never saw a recent Specimen without them. Carter, and Mary Sole. Common.
- MEGRIM.** *P. Arnoglossus.* Jenyns, p. 465. Yarrell's Br. F., vol. 2, p. 254. Perhaps not so rare, as disregarded.

SOLE. *Solea Vulgaris*. Jenyns, p. 466. Yarrell's Br. F., vol. 2, p. 256. Common.

VARIEGATED SOLE. *S. Lingula*. Jenyns, p. 468. Yarrell's Br. F., vol. 2, p. 262. Scarcely common, but constant in its residence.

This family of Fishes (Pleuroneetidae) spawns in Spring, in sandy ground or among stones.

SUCKING FISHES.

CORNISH SUCKER. *Lepadogaster Cornubiensis*. Jenyns, p. 469. Yarrell's Br. F., vol. 2, p. 264. Common.

BIMACULATED SUCKER. *L. Bimaculatus*. Jenyns, p. 470. Yarrell's Br. F., vol. 2, p. 268. Less common than the last Species.

LUMPFISH. *Cyclopterus Lumpus*. Jenyns, p. 471. Yarrell's Br. F., vol. 2, p. 270. This Species is chiefly found on our Coasts in Winter, when it comes into shallower water to shed its spawn; the young however, sometimes not exceeding an inch in length, may occasionally be found through the Summer. The painted Lumpfish, *C. Pavoninus* of Shaw (Jenyns, p. 471) is considered by Naturalists as a variety of this; but the only Specimen I ever examined differed so remarkably, in having a short distinctly rayed fin at the termination of the adipose dorsal ridge, that if this mark were found in all the Specimens, I should not hesitate to regard it as a separate Species.

CORONATED LUMPFISH. *C. Coronatus*. Nobis.

Of this Species, new to the British Fauna if not to Science, I have examined only one Specimen; the small size of which causes me to suppose that it may have hitherto been overlooked from its likeness to the young of the common Lumpfish. If however, it can be supposed to attain the ordinary bulk of the last named Fish, it must be rare, as the difference is too striking to admit of their being confounded together. The Specimen was about 8 lines in length, with the figure and general proportions of the common Lumpfish: the head square, and along the beginning of the back flat and broad, rising towards the first dorsal fin, and there ridged; but channelled behind the head. About the centre of gravity, near the summit of the back, is a wide and moderately long fin, the extremity reclining; the second dorsal separated from the first by an interval, and placed opposite the anal; both of them wide and rather long, but less so than the first dorsal; neither of them approaching the tail. Central rays of the caudal fin longest. Sucking disk as in the common Lumpfish. The skin smooth; and with but little ridge, and no tubercle or adipose substance on the back. Colour a dark green on the back, lighter on the sides, whitish below; a silvery line across the head uniting the posterior portion of the eyes, and

from this on each side a line running forward, approximating, and then receding at right angles, thus resembling the Greek Ω (omega,) but with a square instead of circular summit. The specific name I have given is from this mark. The difference between this Species and the common Lumpfish, is seen in the entire absence of tubercles, which in the latter give a grotesque appearance to the back; in the want of the flat space between the termination of the ridge and the (only) dorsal fin; and more especially in the moderately elongated first dorsal fin, which bore no resemblance to the vestige of fin described as possessed by the painted Lumpfish.

This Specimen was found in a Crab Boat, in the month of June. Supposing it to be a distinct Species, I have named it as above.

MONTAGU'S SUCKER. *C. Montagui.* Jenyns, p. 473. Yarrell's Br. F., vol. 2, p. 277. Not uncommon.

THE EEL TRIBE.

SHARPNosed EEL. *Anguilla Acutirostris.* Jenyns, p. 474. Yarrell's Br. F., vol. 2, p. 284. Common.

BROADNOSED EEL. *A. Latirostris.* Jenyns, p. 476. Yarrell's Br. F., vol. 2, p. 299. Less common than the last.

SNIG EEL. *A. Medirostris.* Yarrell's Br. F., vol. 2, p. 301. It is only of late that three or four Species of Eels have been enumerated among British Fishes: though as early as the time of Gesner, and even perhaps of Aristotle, more than one Species was suspected to exist. In Cornwall the Sharpnosed seems to be the most common, and next to it the Snig, which is of much smaller size. Most of the young Eels in Cornwall, are bred in the Sea, from which they begin to ascend our rivers in the early part of March, the stream of emigration continuing until the beginning of autumn.

CONGER. *A. Conger.* Jenyns, p. 478. Yarrell's Br. F., vol. 2, p. 304. Selya, the ancient Cornish name of this Fish, offers a more probable derivation of the name of the Scilly Islands, and other places so called on our Coast, than any other with which I am acquainted.

A monstrosity is sometimes observed, in which the dorsal fin commences about opposite the vent, the greater part of the back being naked; and in one Specimen which I examined, the fin at its beginning was rolled up, in the manner of a ribbon, round its centre. The Colour varies also, from Black through every degree of shade, to a dull White:—and this so constantly according to the nature of the ground, that fishermen are able, from an inspection of the Fish, to know the place at which they have been taken.

In the memory of persons now living a trade was carried on with Spain and Portugal, in Conger douce or sweet Conger, so called from their being dried without the application

of Salt. The smaller fish were preferred, as shrinking less in the process, as being sooner prepared,—which in wet weather was an important consideration—and as being purchased of the fishermen at a less price; and the public advantage was considerable, as women and children were chiefly employed, in the labour of splitting the fish from head to tail, sewing them together with twine, edge to edge and head to tail, in the form of a sheet, and drying them on a frame work of poles. At present this trade could not be restored, as the demand and price at home are too great, to allow of a sufficient remuneration to the merchant; but the subject is worthy of the attention of an adventurous fisherman.

MURÆNE. *Murana Helena*. Jenyns, p. 479. Yarrell's Br. F., vol. 2, p. 38. Only One British Specimen is on record.

MORRIS. *Leptocephalus Morrisii*. Jenyns, p. 480. Yarrell's Br. F., vol. 2, p. 311. Not uncommon.

WIDE MOUTHED LAUNCE. *Ammodytes Tobianus*. Jenyns, p. 482. Yarrell's Br. F., vol. 2, p. 317. Common.

SMALL MOUTHED LAUNCE. *A. Lancea*. Jenyns, p. 483. Yarrell's Br. F., vol. 2, p. 322. Common. It spawns in the Sand, about Christmas.

PIPEFISHES.

GREAT PIPEFISH. *Syngnathus Acus*. Jenyns, p. 484. Yarrell's Br. F., vol. 2, p. 325. The whole of this family are provincially termed Sea Adders. Common.

LESSER PIPEFISH. *S. Typhle*. Jenyns, p. 485. Yarrell's Br. F., vol. 2, p. 332. Scarcely common.

ÆQUOREAL PIPEFISH. *S. Æquoreus*. Jenyns, p. 486. Yarrell's Br. F., vol. 2, p. 335. Scarcely Common.

SNAKE PIPEFISH. *S. Ophidion*. Jenyns, p. 437. Yarrell's Br. F., vol. 2, p. 338. Common.

WORM PIPEFISH. *S. Lumbriciformis*. Jenyns, p. 488. Yarrell's Br. F., vol. 2, p. 340. Common.

SUNFISHES.

GLOBEFISH. *Tetrodon Stellatus*. Jenyns, p. 489. T. Pennantii, Yarrell's Br. F., vol. 2, p. 347. Rare.

SHORT SUNFISH. *Orthogoriscus Mola*. Jenyns, p. 490. Yarrell's Br. F., vol. 2, p. 350. Not uncommon in Summer. The young Specimen, as figured by Mr. Yarrell, differs considerably from the adult Fish.

OBLONG SUNFISH. *O. Oblongus*. Jenyns, p. 491. Yarrell's Br. F., vol. 2, p. 354. Rare.

STURGEON. *Accipenser Sturio*. Jenyns, p. 492. Yarrell's Br. F., vol. 2, p. 360. Not uncommon.

THE SHARK TRIBE.

- **SMALLER SPOTTED DOGFISH.** *Scyllium Canicula.* Yarrell's Br. F., vol. 2, p. 367. Morgay and Rough (pronounced Rouh) Hound. Common. This and the next Species are the only British Sharks that deposit eggs, or as they are termed, purses; and the present Species performs this function both in autumn and spring; though probably not the same individual.
- **LARGER SPOTTED DOGFISH.** *S. Catulus.* Yarrell's Br. F., vol. 2, p. 273, but the figure is too short posteriorly, and I have never seen a specimen having white spots mixed with the darker. The provincial name Nursehound. Common, but less so in winter.
- EYED DOGFISH.** *S. Melanostomum.* Yarrell's Br. F., vol. 2, p. 375. Only one British Specimen is on record.
- WHITE SHARK.** *Squalus Carcharias.* Jenyns, p. 497. Yarrell's Br. F., vol. 2, p. 377. I have never seen this species, a specimen that I once supposed to be the same, proving to be different. There is authority, however for classing it with Cornish Fishes, though it must be rare, and I have no doubt that the Toper has been mistaken for it—the more especially as the latter is sometimes called the Whitehound.
- **THRASHER.** *Sq. Vulpes.* Jenyns, p. 498. Yarrell's Br. F., vol. 2, p. 373. Rarely taken.
- BLUE SHARK.** *Sq. Glaucus.* Jenyns, p. 499. Yarrell's Br. F., vol. 2, p. 381. Common in Summer and Autumn.
- **PORBEAGLE.** *Sq. Cornubicus.* Jenyns, p. 500. Yarrell's Br. F., vol. 2, p. 384. Common in Summer and Autumn.
- **TOPER.** *Sq. Galeus.* Jenyns, p. 501. Yarrell's Br. F., vol. 2, p. 390. The young of the first year being of a whiter colour, are termed Miller Dogs; and Whitehound when of full size. Common.
- **SMOOTH HOUND.** *Sq. Mustelus.* Jenyns, p. 502. Yarrell's Br. F., vol. 2, p. 393. Raymouthed Dog. Common, chiefly in summer and autumn.
- BASKING SHARK.** *Sq. Maximus, Linnei Systema Naturæ.* We learn from Mr. Jenyns, (Manual, p. 504,) that four different Species of Fishes have been confounded together under this name: and this gentleman's opinion is so far confirmed, that I have inspected two original figures of enormous Sharks taken in Cornwall, neither of which bears a close resemblance to the engraving given by Mr. Yarrell, Br. F., vol. 2, p. 396, though having the appearance of being of the same sub-genus. To the first of these drawings, which I have little hesitation in referring to the *Sq. Maximus* of Linneus, the following note is attached: "its length

was 31 feet, height $8\frac{1}{2}$ feet, and 19 feet round, the mouth $5\frac{1}{2}$ feet wide, extent of the tail 6 feet 9 inches, weight 8 tons. At day break of the 3rd of January, 1809, this enormous fish was discovered at half cable's length from Penryn Quay, steering towards the town; and three boats were manned to attack it. It was brought into shallow water, and by favour of the ebbing tide subdued. There was no oil except in the liver, from which 198 gallons were taken. Pennant represents his Basking Shark to be of rather a slender form; but the measured dimensions and figure of the specimen here referred to, represent a very bulky fish, with the snout somewhat depressed, the branchial orifices reaching from the neck to the throat, pectoral fins higher than I ever saw in a Shark, an anal fin, a raised ridge at the termination of the lateral line, and without the mark of a temporal orifice.

The second specimen I have designated the Rashleigh Shark—Sq. *Rashleighanus* (Transactions of Lin. Soc., vol. 14, p. 91) in honour of William Rashleigh, Esq., of Menabilly, who kindly favoured me with the original sketch. It was 29 feet 4 inches long, 24 feet round, fork of the tail 7 feet, the weight 4 Tons; mouth $2\frac{1}{2}$ feet wide. In the drawing, unlike the former species, the eyes are in front, so as to be opposed to a spectator standing before the fish; the snout is rather small and narrow, and somewhat turned up, the head deep, spiracles reaching from neck to throat. The first dorsal fin elevated, the second small and near the tail; no anal fin, nor mark of a temporal orifice. It may be questioned if this be not the Sq. *Peregrinus* of Blainville.

PICKED DOG. Sq. *Acanthias*. Jenyns, p. 505. Yarrell's Br. F., vol. 2, p. 400. Abundant.

HAMMER HEAD. *Zygæna Malleus*. Yarrell's Br. F., vol. 2, p. 406. Three or four species are known to have been confounded under this name; and consequently a minute description, with reference to a figure if possible, will be necessary to identify any one that may fall into the hands of an observer. One specimen is on record, as having been taken in Cornwall, but whether the true *Z. Malleus* is uncertain.

— *Mustelus Equestris*, *Fauna Italica*?

A Shark supposed to be of this species was taken with a line by one of our Fishermen. It was a male, the length 54 inches; and laid by the side of a Toper (Sq. *Galeus*) of the same length, the distinction between these species is easily recognized. In all the proportions it is a stouter fish, with great difference of physiognomy; the distinction consisting in the greater prominency of the eye, in this respect exactly re-

sembling the Blue Shark, instead of the Toper, which has a flatness or depression at that part. The temporal orifice is small and on a level with the surface. The snout is thicker than in the Toper, and being less flattened has the appearance of being shorter; the nostrils in a rather deep depression. The roots of the teeth expand, and are notched on both sides. Pectoral fins longer than in the Toper; and the superior stoutness of the body is remarkable from the abdominal fins, to the tail; from the second dorsal to which latter organ, where along the surface the Toper is convex, in this Species there is a longitudinal excavation, as is described in the White Shark (Sq. *Carcharias*) with which Fish I have no doubt this has been confounded. With the exceptions mentioned all the fins resemble those of the Toper. The colour was dark brown above, somewhat reddish at the sides, and light below. It was caught June 24, 1834.

All the smaller Sharks are used as food, fresh or salted; and the smaller Spotted Dogfish is sometimes boiled to form Morgay Soup, in the west parts of Cornwall.

ANGELFISH. *Squatina Angelus*. Jenyns, p. 507. Yarrell's Br. F., vol. 2, p. 407. Monkfish. Common.

LEWIS. *Sq. Lewis*. Transactions of Lin. Soc., vol. 14, p. 90.

THE RAY TRIBE.

This family of fishes has two English generically descriptive names, both of which appear to be derived from Saxon roots. Ray is from *reoh*, which signifies rough, and is indeed, the ancient form of that word. When appropriated to a particular species it is the name of the *Raia Clavata*, and may be considered as equivalent to its other designation, Thorn-back.

The term Skate has been derived from the word *Squatina*, though that is known to have belonged to a different Species, the Monk or Angelfish. A more probable derivation is from the Anglo Saxon *Skitan*, to throw out or reject; for this is one, and the largest, of the lishes which fishermen in general do not think of conveying to market; and which on that account are denominated Rabble Fishes: others of the same degrading appellation being several species of Dog Fishes, Rays, Grey Gurnards, Seads, Combers (*Serrani*) Powers, and most of the Wrasses; which are considered as the peculiar property of the fishermen, and are not shared by his employer. The word *Skit* is the popular denomination of a lampoon or sarcasm *thrown out* at random, and circulated without a name of the author; a Scout is one placed at a distance as a watch, and to scout is to drive away or reject.

- CRAMP RAY. *Raia Torpedo*. Jenyns, p. 509. Yarrell's Br. F., vol. 2, p. 410. Rare.
- SKATE. *R. Batis*. Jenyns, p. 510. Yarrell's Br. F., vol. 2, p. 421. Common. The smaller are used for food, either fresh or salted, in fishermen's families in the winter; and the larger specimens are chiefly employed as bait for Crabs and Lobsters; the former being attracted by the fresh bait, the latter by that which has hung in the air for a season.
- LONGNOSED SKATE. *R. Chagrinca*. Yarrell's Br. F., vol. 2, p. 414. Less common than the last species.
- SHARPNosed RAY. *R. Oxyrhynchus*. Jenyns, p. 511. Yarrell's Br. F., vol. 2, p. 424. Burton Skate. Common in deep water.
- SPOTTED RAY. *R. Maculata*. Jenyns, p. 514. Yarrell's Br. F., vol. 2, p. 429. Common. Homlyn, and sometimes the Sandy Ray, from being confounded with a species not until lately recognized as British, but decidedly distinct, *R. Circularis C*. This is the Species, of which the purses are often thrown on shore in winter, after a storm. I have known a specimen not exceeding four inches across the disk, to swallow an hook and be taken.
- PAINTED RAY. *R. Microcellata*. Jenyns, p. 515. Yarrell's Br. F., vol. 2, p. 433. Rare.
- THORNBACk. *R. Clavata*. Jenyns, p. 516. Yarrell's Br. F., vol. 2, p. 436. The Ray. Common. The best of the genus for food, and the most commonly used, fresh or salted; in the latter condition a principal subsistence for the fishermen's families in winter.
- This species is sometimes seen with the under surface rough, in which case it is the Rough Ray (*R. Rubus*) of authors; and it may be well here to remark, that the presence or absence of spines, in all this Genus, is a very uncertain characteristic of species or sex; and I have seen a full grown Skate, with scarcely the mark of spine on the body or tail.
- STING RAY. *R. Pastinaca*. Jenyns, p. 518. Yarrell's Br. F., vol. 2, p. 442. Scarce.
- EAGLE RAY. *R. Aquila*. Yarrell's Br. F., vol. 2, p. 445. I have been informed of one specimen.
- BLACK RAY. *R. Chardon*,—mentioned by Mr. Yarrell, Br. F., vol. 2, p. 425.
- SANDY RAY. *R. Circularis*. Loudon's Magazine of Natural History, vol. 2, N.S. 1838. It is common, but not esteemed as food.

LAMPREYS.

- SEA LAMPREY. *Petromyzon Marinus*. Jenyns, p. 520. Yarrell's Br. F., vol. 2, p. 448. Common, but rarely used as food.

SILVER LAMPREY. *P. Fluviatilis*. Jenyns, p. 521.

Yarrell's Br. F., vol. 2, p. 454. Common in spring; but it seems to quit our rivers in summer.

PLANER'S LAMPREY. *P. Planeri*. Jenyns, p. 522.

Yarrell's Br. F., vol. 2, p. 457. I have obtained specimens in April from the Trelawney branch of the Looe river, and probably it is not uncommon, having been confounded with the Silver Lamprey.

MUD LAMPREY. Mr. Yarrell supposes this fish to be the same as the Pride, of which a figure is given Br. F., vol 2, p. 459; I willingly yield to his judgment.

BORER. *Myxina Glutinosa*. Jenyns, p. 523. Yarrell's Br. F., vol. 2, p. 462. Rare.

LANCELET. *Amphioxus Lanceolatus*. Yarrell's Br. F., vol. 2, p. 468.

As every thing belonging to this singular little fish, hitherto found only in Cornwall, must be interesting to Naturalists, I here insert some correction of Mr. Yarrell's account; that excellent observer having fallen into some oversight concerning it. When alive this fish had a very evident, though diaphanous fin, extending from near the snout, round the extremity of the tail, which it encircled in the manner of the same organ in the Eel, and terminating at the vent; and the appearance in the engraving is probably owing to the influence of the preserving liquor which has caused the membrane to contract. The rays of this fin are arched transversedly, in a very singular manner. The specimen was not found in a pool, but lay buried in a small quantity of sand, at about 50 feet from the receding tide; and on turning over a small flat stone that was on the sand, the tail of the fish appeared exposed. When moved it exhibited signs of great activity, so that the head could not readily be distinguished from the tail; and as there can be no doubt that the fish had sought the shelter of the sand in which it was found, there is little question that such is its usual habitation: a circumstance rendered still more probable by its want of eyes. It was discovered on the 21st of December, 1831, after an heavy storm, that had torn it from its native situation, which from its rarity we may suppose to be in deep water. In February, 1838, I obtained two other specimens, which had been thrown up by a tempest. The largest measured 2 inches and 3-10 in length, which enabled me to discern still more of the internal structure of this fish.

The seasons of spawning in those fishes that are considered the most important for trade or the table, have been noted when referring to the separate genera or species; and the place in which the pea is deposited is most usually at the bottom, in situations to which the instincts of the fish lead it, as best fitted to perfect the infant brood. Those which at other times frequent the deeper water, or are engaged in wandering through the expanse of Ocean, at this season approach the shores, and are thus placed within reach of the fishermen: the great natural objects kept in view being, to obtain the combined action of light, heat and shelter; the latter implying also protection against the voracity of other fishes, by which multitudes are devoured in the state of pea or newly born embryo. The more casual influences of tides, torrents, or other variations of currents, appear also to influence the choice; and the migration, a necessity for which this natural duty imposes on many of the finny tribes, sometimes amounts to almost a change of element, for the passage from salt water to fresh is scarcely less, and however essential to some, is destructive to the life of others, and even of the same fish at different periods of its existence. The Grey Mullet, Shad, Eel, Flounder, and Salmon tribe, are examples of this; and the Salmon itself offers so well marked a specimen of the habit, as to demand especial attention. Its pea requires to be brought very near to the source of a fresh stream, where, sheltered by its covering of sand, it may experience the benefit of the running water; and in this condition it remains for a very long period, probably differing according to the severity or mildness of the climate and season. Mr. Yarrell, whose work contains the best account of the process of development of the pea of the Salmon, reports the time between the first shedding of the roe and the final escape of the young, to be about 130 days; and Mr. Hogarth observes that it requires three weeks from the time of its first activity, to its attaining the length of an inch, the whole of the yolk not having been then absorbed into the body; but at any stage of this process, from the shedding of the pea to the full perfection of the embryo, the presence of salt water is fatal to its existence. During the following stages the growth of the young Salmon is rapid, and by the end of April so great a change has passed over it, that the element which a short time before would have been destructive, is now become necessary to its health and growth.

Most sorts of fishes select spots that are exposed to the action of the free and flowing water, sheltered only by some neighbouring rocks or weeds, and somewhat removed from the direct action of the sun; for though this be necessarily moderated by the element through which it penetrates, yet

all fishes powerfully feel its influence, and the development of the embryo may be unnaturally hastened by it to its destruction. The Salmon, Peal, and perhaps most of their Congeners, make considerable trenches in the sand by the aid of the tail, which becomes excoriated in the operation; and the Lamprey in like manner, sheds its roe in a channel of its own formation, in both cases the place being again filled up by the labour of the parents, the female performing the largest share of the toil. The Launce takes a more effectual method of concealment even than this, burying itself in the sand, through which it is able to move with almost the same facility as a Mole in the earth, and leaving, as it would seem, the pea in its progress. The Conger and Eel also, are known to bury themselves in sand or mud for concealment, the operation being effected by a sort of rotatory motion, the snout serving as a pivot; and in such a situation it is probable that the roe is deposited, the young emerging as they come to life. It is not a little curious that fishes thus accustomed to burrow in the sand or mud, are supplied with a structure for circulating blood in the tail, different from any thing hitherto discovered in other species and constituting that part a sensitive, and in the Eel and Conger at least, a prehensile organ, by which they are able to seize an object, and through it lift the body over formidable obstructions. In the Eel this structure was first discovered by Dr. Marshall Hall, who has given a beautiful figure of it in his work on the circulation of the blood in the lower animals, plate 10, from which it has been copied by Mr. Yarrell; but I have also recognized something extraordinary in the circulation of the blood in the tail of the Wiever and the Launce, both of which harbour in sand; through which to be able to move, this organ must be endued with some sensibilities not common to many other fishes.

In most sorts of sea fishes the separate particles of roe when deposited have no bond of connection with each other; and even in the ovarium of the Great Lumpsucker it requires minute inspection to discover the connecting thread; the separate particles, which in this fish are of large size, appearing to hang as loosely as shot in a bag. But in some river fishes, as the Perch and Tench, we are informed that they are preserved in a tenacious slime, that in the form of a chain or ribband binds them to the spot, and perhaps also affords protection from the harsher surrounding fluid, as well as food for the supply of their first wants. This glutinous matter, moreover, in some cases produces a further effect, in addition to its own nourishing and protecting qualities; and I have seen an abundance of the roe of some inhabitant of the ocean, floating on the surface for several miles in length, exposed to the full action of the light and heat of a summer's day; the

enclosing substance being so tough as to require the employment of a cutting instrument to divide it; but at the end of a few days, decomposition took place, and the pea having passed through a part of its change, dropped to the bottom to obtain its full developement in a place of greater safety. Mr. Jesse reports the Shad to shed its spawn by night at the surface of the river, using the action of its tail to assist its efforts; the Pilchard, a kindred species, probably acts in a similar manner, being sometimes seen to lie on the surface extended on its side, multitudes together being in a quiescent state, except that the tail is employed in causing the splashing sound heard by fishermen in a still evening, when none are found to enter the net.

A greater degree of heat, more uniform and congenial than any afforded by mere shelter, is sometimes required, and the body of the parent is made the procreant cradle of the offspring:—in a manner however, even here, no less diversified than in other portions of the Almighty's works.

Fishes that produce their young alive are not confined to any one class or order; for whilst only one known species of Blenny (*Blennius Viviparus*) is viviparous, some of the Sharks are exceptions in an opposite manner, to the general habit of their race; their eggs being enclosed in purses of curious construction, that guard them from the actual presence of the salt water. That the oviparous or viviparous manner of hatching has close relation with the power of the egg to develop heat for its own use, or to exist on a smaller portion, is rendered probable by the following considerations: The late Professor Turner informs us (*Chemistry*, p. 914) that some young animals, as puppies and kittens, but especially such birds as are delivered from the egg in a naked condition, a case more in point since, being oviparous, they approach more nearly to the nature of fishes, require so small a quantity of oxygen or vital air for the purpose of supporting life, that they may be deprived of that gas altogether for twenty minutes without material injury; but then it is necessary that they should derive an artificial heat from the mother, because their own vital action is not sufficient to support their proper temperature: whereas such birds as are well feathered when they quit the egg, are able to support their own temperature, but require a good and constant supply of oxygen. We know in like manner, that the eggs of oviparous fishes, though often deposited at a cold season, are so placed as to obtain the most abundant supply of vital air; but the egg hatched within the body, almost entirely cut off from that of which it has little need, has the requisite warmth supplied from the mother. In some cases indeed, both these objects are joined in one, as in the Snake Pipelish, (*Syngnathus Ophidion*) where the

ova are deposited on the external surface of the male parent, where they possess all the benefits of free exposure, with a sufficient portion of animal heat. The eggs of the Crab and Lobster possess the same advantage, chiefly perhaps for the sake of a frequent change of water, which is equivalent to a flowing stream, the health of this class of creatures materially depending on the frequent renewal of the purest water, but in a less degree also, for the sake of vital heat and protection. They are therefore suspended to the body for a long period, but are developed very quickly after they are shed.

In our present state of knowledge we can only wonder at the variety of nature, by which it becomes the duty of the male *Syngnathus Acus* to carry about enclosed in cells, beneath the caudal portion of the body, the eggs, and afterwards the young; which take refuge there even after their first exclusion; and that too, it would seem, not only at the approach of danger, but for the sake of warmth and shelter. This curious fact displays an analogy to the Kangaroo and other marsupial animals, and finds a correspondence in the *mysis*, a genus of shrimps common on our coasts; of which one sex, carries about under its thorax, supported by an organization fitted to the purpose, the eggs and afterwards the young, until they are able to shift for themselves.

It appears that in what are termed viviparous fishes, no direct communication of nourishment takes place between the parent and offspring; and the remark of Gesner, that one species of Shark is attached by a funis to its mother, has not been supported by further testimony. It follows then, that the quantity of nutriment originally enclosed in the egg (usually a yolk and white, though these are not clearly distinguished by their colour in most marine animals) is exactly fitted to the duration of the creature's fetal life, the whole being absorbed into the body just at the moment of birth. But there is reason to believe also, that in some species the egg increases in size after exclusion, by an endosmotic absorption from the surrounding fluid: thus allowing room for a greater increase of bulk, as well as providing a more diluted nourishment to the embryo; and at the same time affording an explanation of the fact, of the disproportionate size of the newly excluded fish, compared with the deposited pea.

A curious part of our subject is the frequent occurrence of hermaphroditism in fishes; a circumstance that displays itself most frequently in the presence of a melt on one side of the body, and a roe on the other; but I have seen an example in the Mackarel, where a single lobe of roe lay between the two usual lobes of melt. Whether fishes thus circumstanced are capable of self propagation has not been ascertained, and the

analogy of nature discountenances the opinion, among other reasons, because it is not uncommon to find fishes with one ovarium shedding spawn, while the other, though not sterile, is far from the period of development. But as the activity of the separate ovaries at different seasons, will explain the occurrence of young broods at various seasons of the year, so it is probable that the occasional activity of these separate organs of an hermaphrodite may lead to the male orgasm at one period, and to the female at another. Our common Cumber also (*Serranus Cabrilla*, Yarrell's *Br. F.*, vol. 1,) has been judged capable of independent propagation, from the occurrence of a small portion of a soft substance resembling milt, near the duct of the much larger roe or ovary. In this fish the funnel shaped organ through which the grains pass, is on ordinary occasions turned into the body; but on pressure, which perhaps the fish collects against some solid body, it becomes everted, and the ova are guided by it into a favourable situation.

The Perch is described as pressing a pointed stick or stone into contact with a pea, and by the motion of its own body drawing them over the selected spot. Other fishes are said to require the lateral pressure of a couple of males in the process of parturition, and in some the milt is diffused over the pea after it has been shed in the proper situation, the dilution of water offering no hindrance; for it has been found on trial, that the prolific fluid is not rendered less efficacious, but even more so, by being largely mixed with water; and that it is not less so even when the parent has been dead for a day or two: a circumstance worthy of notice to those who may wish to stock their ponds with fish.

The pea produced in exposed situations must suffer great diminution from the voracity of the numerous tribes that assemble at the expected season, to devour it; but this destruction bears only a limited proportion to that of the fish in the early stages of their growth, at which period they are preyed on abundantly by almost every other individual of larger growth, including those of their own kind.

The interval between the shedding of the pea and the escape of the young, has been ascertained only in a few species, and is probably subject to diversity according to the temperature and situation. Bloch observed the Perch to quit the egg in from six to eight days, and we have already noted that in some instances of the Salmon, the interval has been so great as 130 days; but the subsequent growth of few fishes is equal to that of the Salmon tribe, of which the chief, the Salmon itself, having reached the length of about three inches in April, has been known to acquire the weight of four pounds in June, six in August and thirteen in September. (Jesse's

Gleanings, first series.) Some peculiar sorts of food are necessary to the growth, and even life, of several kinds of fishes at this important period of their lives: a circumstance that will explain many of their habits and migrations; and I have noticed that the absence of sand will effectually hinder the growth of the Grey Mullet for many months, whereas when favourably situated their advance in bulk is moderately rapid. The stomach of this fish acts as a gizzard, and I have taken two table spoonsful of sand from this organ in a full grown individual.

The adult size of most fishes is not attained until the third year, and few increase in size after four or five; while the Stickleback may be judged to be only one of many that do not survive their third or fourth year, and the Tunny, with some Sharks and Rays, live and grow for a much longer period than is usual with other inhabitants of the ocean.

Most fishes are gregarious in the first stages of their existence—chiefly perhaps from the circumstance of awaking to life within a near distance of each other. But the danger of extermination to which they are thus exposed, is counterbalanced by the transparency of their texture, which enables them to escape detection; and by passing into more shallow water, where with the enjoyment of superior warmth, they are free from the presence of the more ravenous tribes. It is in this situation and at those seasons that they are exposed to their most formidable enemy, man, with his nets and engines; and therefore now is the time when the legislature might interpose with propriety, in preventing that destruction which is sapping the foundation of an important national interest, and enhancing the price of what ought to be a cheap, as it is an wholesome food, esteemed by most, and essential to the existence of the poorer inhabitants of our sea ports.

In forming our opinion on this subject, which embraces many conflicting interests and feelings, we must be careful not to be led by the idea that the value and consequent legislative importance of fishes should be estimated by the rank in which the separate species may be regarded by the merchant or for the table; for the presence on our coasts of the larger and more esteemed kinds is altogether dependent on that of others which separately viewed, appear unworthy of regard; and the protection of the Launce, the Skulpin and the Mackarel Midge, with others of the most inferior races of marine animals unnoticed by all but the scientific naturalist, is of no less consequence than that of the Codfish, Pilehard, Mackarel, or Turbot.

It is a question, then, of national importance, what methods of fishing are to be allowed or forbidden, and at what seasons they may be destructive or otherwise.

There are two kinds of nets against which a well founded charge has been brought, of causing a useless or extensive destruction of young fishes; but the difference between them is great, both in the amount of injury inflicted, and in the ease with which their use may be regulated.

The Ground Sean as employed in Cornwall, is simply a sweep net of indefinite length and depth, according to the shallowness of the water, and the extent of clear space it is intended to encircle. A district interrupted by rocks or large stones does not admit of its employment. Moderately calm weather in the summer or autumn, when the fish wander near the shore, is the time chosen, and the morning or evening the only periods of the day; and all that seems necessary to render it unobjectionable, is to fix the dimensions of the meshes, which should not be less than an inch and half from knot to knot; and to forbid the use of a double net, which by causing the meshes to cover each other, is even more destructive than a single net with meshes of very small size.

The ground sean is not always drawn on the shore with its contents; but when the middle space is formed into an hollow or bunt, it is employed after the manner of a tuck sean, and all it encloses is taken into the boat. It should be born in mind that the temptation to make the meshes of this net of small size, does not chiefly arise from a wish to catch the smaller fishes, which would sell for very little in the market; but it is to prevent the fish from becoming entangled in the meshes of the net, a circumstance that will add greatly to the fisherman's labour, with some injury to the fish and more to the net. Pilehard and Mackarel seans are of the nature of the sweep or ground net, and were originally the same, of somewhat larger size and smaller mesh. The minute size of the latter has been made lawful by a special enactment, on account of the great importance of the Pilehard fishery; and the fortunate invention of a tuck sean, by enabling the fisherman to employ a larger principal net and to go further from the shore, has obviated what might well have been feared, the destruction of a large quantity of small fishes.

The Trawl in its present form is probably a modern invention, and may be judged to have attained its present state of efficiency by a gradual process of improvement. Its use has at least increased within the space of half a century, though something like it seems to have been known in the age of Oppian: and I have been informed by an individual then engaged in the fishery, that in the year 1781, there were no more than two vessels so employed, from the port of Plymouth, both being open or without a deck, and neither exceeding the burthen of 25 tons. The number now from the same place is but little short of thirty, of about the average

measurement of 40 tons, and whilst the usual dimensions of the trawlbeam are proportionally increased little scruple is made of working at the depth of from 40 to 50 fathoms. The form and nature of a trawl are represented and described in Mr. Yarrell's *History of British Fishes*, vol. 1, p. 52, but those used on the coast of Cornwall are of the largest size, and more elaborately constructed than there figured. They are employed at the distance of ten leagues from land, in water of the depth of from fifty to sixty fathoms; and as the method of conducting this fishery is by dragging along at the stern of the ship, the enormous bag termed the trawl, the weight of the iron trawlheads causing it effectually to sweep the bottom without any selection except as to the general nature of the ground (the vessel being steered without the rudder, by fastening the trawl warp to different parts of her stern, or quarter) it can make but little difference what may be the size of the mesh in that part of the net in which the fish are taken; since the stones and weeds met with in its course must be sufficient to close every crevice through which the smallest might be able to pass. It is certain that every creature which may chance to be dragged in this manner over a considerable space must be killed; and a large proportion of such as might otherwise find purchasers, are so bruised as to be unfit for food. When we add to this the vast variety of creatures that form the subsistence of the more valuable kinds, and in search of which they visit our coasts—all involved in one common havoc, with the uprooting of their resting places and shelter; little doubt can be felt of the justice of the opinion entertained by other fishermen, that much of the falling off of the success of our fisheries on the west coast of England, is to be imputed to the operation of the trawl.

With such an impression of the hurtful nature of this kind of fishing it may be demanded, why then is it suffered to continue? In the first period of its employment the abundance and cheapness of the fish thus brought to market led necessarily to a favourable opinion concerning it, and thus prevented a close enquiry into the remote consequences. In the present day on the other hand, its existence has become mixed up with the interests of too many poor families, to be lightly dealt with; and it is of national importance to remember that few occupations are better fitted to form a race of hardy sailors and good pilots.

A prospective remedy may indeed be anticipated in the fact that the practice of trawl fishing as now carried on, must at last destroy the foundation of its own prosperity; but advantage to every party might be secured by positively forbidding the working of a trawl for four months in the spring, including those of February and May; and leaving it to the already

prescribed limits in regard to the distance from land, for the remainder of the year. The time now proposed for the restriction of the trawl fishery, is founded on the well known habits and seasons of spawning of the fishes most in danger, and which are also the most esteemed for the table; and though, after all, it must happen that multitudes will be destroyed, by no other regulation will so large a number be enabled to escape. Facility of conviction must also be regarded as an important part of any protective enactment.

CRUSTACEANS.

The class of creatures termed Crustaceans, in which are included the families of Crabs, Lobsters and Shrimps, may be popularly described as animals without a vertebral internal skeleton, but having the body divided into distinct rings moveable on each other by joints; the integument forming a crust; antennæ, or feelers, and eyes separately on foot stalks; jaws of numerous jointed portions for chewing, the slit of the mouth perpendicular. The legs with joints, the first pair with hands; vent at the extremity of the body.

The Stalk-eyed Crustaceans to which our enumeration is confined, possess a carapace or shelly crust above the thorax, within which the principal organs of life are protected; the branchiæ or gills for breathing, are not branched; legs at the thorax.

They are arranged by Dr. Milne Edwards, the last Naturalist who has extensively studied them, in two great sections, of which the separate characters are these:

DECAPOD STALK-EYED CRUSTACEANS, with the rings of the head and thorax united into a carapace; antennæ commonly four; branchiæ in a cavity protected and concealed by the carapace.

STOMAPOD STALK-EYED CRUSTACEANS, destitute of thoracic branchiæ in interior cavities.

Decapod Crustaceans are again divided into three families:

BRACHYURES, or Short Tailed Decapods, the tail or more properly the abdomen, slightly developed; without legs formed for swimming, and destitute of fanlike caudal plates.

ANAMOURS, the abdomen well developed, with a portion permanently bent under the thorax, with terminal caudal plates.

MACROÛRES, the abdomen well developed and extended, having paddles beneath, and terminal fanshaped caudal plates.

The family of Brachyures is again divided into,

OXYRHYNCHS, the carapace slender in front, and lengthened, the orbits looking downward, branchial organs much developed.

CYCLOMETOPS, the carapace large, regularly arched in front, more slender behind; the orbits obliquely upward or in advance; branchiæ as in the Oxyrhynchs.

CATOMETOPS, the carapace usually square or eggshaped; front transverse and commonly diminishing; the orbits directed forward or down; branchiæ fewer than in the two first, but situated aliko.

The family of Oxyrhynchs is again divided into the following sub-families,

MACROPODIANS—the legs slender and very long, the second or third pair much longer than the first, and more than twice as long as the post-frontal portion of the carapace.

MAIANS—the legs of moderate size, the second or third pair not commonly twice as long as the post-frontal portion of the carapace; the first pair longer and stouter than the following, but not more than twice the length of the post-frontal portion of the carapace. Inferior portion of the external antennæ well developed, forming the greater part of the inferior portion of the orbit.

PARTHENOPIANS—the four posterior pairs of legs much shorter than the first; the second pair less than a length and half of the post-frontal portion of the carapace; the first pair stout, at least in the male, and two or three times that length. Inferior portion of the antennæ usually but little developed, and forming a small part of the lower partition of the orbit.

MACROPODIANS OR SEA SPIDERS.

GENUS STENORRHYNCHUS: the second pair of legs much longer than the others; the stalk of the external antennæ inserted before the level of the eyes, of which the footstalk is very short.

SMALLER SEA SPIDER. *S. Longirostris*, Edwards' Crustacea, vol. 1, p. 280. *Maeropodia Tenuirostris*, Leach's Malaeostraea, pl. 23. Common at the depth of from 2 to 20 fathoms, and often taken in crab pots.

Another Species, *S. Phalangium* of M. Edwards, p. 279, is described as common on the coasts of the channel, but I have not hitherto recognized it as Cornish. It is the *Cancer Phalangium* of Pennant, Br. Zool. vol. 4, pl. 9, fig. 17, and *Maeropodia P.* of Leach's Malac, pl. 23.

GENUS ACHÆUS: snout not much lengthened, and on each side leaving uncovered the insertion of the stalk of the external antennæ. The terminal articulation of the two posterior pairs of legs is large, compressed and falciform.

CRANCH'S SEA SPIDER. *A. Cranchii*. M. Edwards' Crust. vol. 1, p. 281. Leach's Malac. pl. 22. A rare species, the only British recorded specimen having been taken at Falmouth.

GENUS INACHUS: differing from the two former genera in having retractile eyes capable of extensive motion, second pair of legs thrice as long as the post-frontal portion of the carapace; terminal portion of the four hinder pairs similar and slender.

SCORPION SEA SPIDER. *I. Scorpio*, M. Edwards' Crust., vol. 1, p. 288. *I. Dorsettensis*, Leach's Malac. pl. 22. Cancer D, Pennant, pl. 9, fig. 18. Commonly taken in crab pots within a few miles of the shore at all depths.

FEEBLE INACHUS. *I. Dorynchus*, M. Edwards' Crust., vol. 1, p. 288. Leach's Malac., pl. 22. Not uncommonly found on board crab boats. Except in the rostrum it has much of the aspect of *Stenorrhynchus Longirostris*, but is less common.

SMALL SNOURED INACHUS. *I. Leptorhynchus*, M. Edwards' Crust., vol. 1, p. 289. Leach's Malac., pl. 22.

M. Edwards assigns this species to the west of England, where it must be rare unless it has been confounded with the other Sea Spiders. In the Athenæum at Plymouth I was favoured by Dr. Edward Moore with the sight of a specimen marked by Mr. Prideaux with the name of *I. Leptochirus*, which is also figured by Dr. Leach as having been taken on the Cornish coast, and of which I possess a specimen; but whether, as seems probable, this be M. Edwards', *I. Leptorhynchus* I hesitate to decide. The latter author, has not referred to Leach's name.

MAIANS—SEA SPIDERS, CONTINUED.

GENUS PISA: rostrum much developed, stout, formed of two lengthened horns, somewhat conical; stalk of the external antennæ nearly on the level of the rostrum.

FOUR SPINED SEA SPIDER. *P. Tetraodon*, M. Edwards' Crust., vol. 1, p. 305. Leach's Malac. pl. 20. Pennant, pl. 8, fig. 15. Much larger than either of the former species, and far more formidable in its appearance. Not common.

GIBBS' SEA SPIDER. *P. Gibbsii*, M. Edwards' Crust., vol. 1, p. 307. Leach's Malac., pl. 19. Not uncommon in from 1 or 2 to 20 fathoms of depth, and taken in crab pots.

GENUS HYAS: distinguished from *Pisa* by the absence of the strong spine which in that forms the anterior portion of the circle of the orbit; and by the second member or articulation of the outer antennæ being flattened and widened on the outer side.

SPIDER HYAS: *H. Aranea*. M. Edwards' Crust., vol. 1, p. 312. Leach's Malac. pl. 21. Pennant, pl. 9, fig. 16.

STRAITENED HYAS. *H. Courc tata*. M. Edwards' Crust., vol. 1, p. 312. Leach's Malac. p. 21.

I am not acquainted with these species, and therefore suppose them not to be common; but there are specimens of both in the museum of the Athenæum at Plymouth, and consequently taken at or near the Cornish coast.

GENUS MAIA: the stalk of the external antennæ inserted into the internal angle of the orbit, and uncovered; nippers of the hand slender and pointed.

CORWICH CRAB OR SKERRY. *M. Verrucosa*. M. Edwards' Crust., vol. 1, p. 327. M. Squinado. Leach's Malac., pl. 18. Our species differs much from the *Cancer Horridus* of Pennant, pl. 8, fig. 14, to which M. Edwards' refers for his *M. Squinado*; and seems not exactly similar to the latter author's *M. Verrucosa*, pl. 3, fig. 1. It may possibly prove a distinct species. This in its season is the most abundant species of the family, and by far the largest, sometimes weighing so much as five pounds, and the carapace measuring 9 or 10 inches in length; so that it is commonly used as food, though only by poor people and fisher boys, who find in it a delicate meal. Its not tempting form and the small size of the legs, conspire to exclude it from the tables of the rich.

PARTHENOPIANS.

GENUS EURYNOME: eyes retractile; joint of the hand more or less triangular and armed. Lower articulation of the outer antennæ fixed in front, and giving insertion to the next articulation on the forepart of the level of the inner canthus of the eye.

ROUGH EURYNOME. *E. Aspera*. M. Edwards' Crust., vol. 1, p. 351. Leach's Malac., pl. 17. Pennant, pl. 9, fig. 20. Rare. There is a specimen in the Museum of the Athenæum at Plymouth.

The length of the legs in this family of Crabs, necessarily leads to slowness of motion; but they are well fitted to a residence among rocks and stones covered with sea weeds, among which they stride with little difficulty. In the winter they become almost, if not altogether torpid, concealing themselves at this season either in deep crevices of rocks, or

embedded in the soil; for the Corwich Crab has been observed, when caught at the time of its first activity in April, to have the inequalities of its carapace covered with the mud of the bottom. It is perhaps at this period of repose that the crops of sea weeds and corallines (*Sertulariæ*) fix themselves as they are often seen beautifully adorning them; shells of different species, but especially Oysters and Muscles, are also found adhering, and, on the smaller kinds, as of the Genera *Inachus* and *Pisa*, sponge will grow so luxuriantly as to conceal the whole carapace, with tufts on the legs to the extremities.

In the spring the Spider Crabs appear in water of the depth of a few fathoms; but as the weather grows warmer they approach the shore, and in summer climb the rocks so as sometimes to be left by the receding tide. At the season of its greatest activity the Corwich Crab becomes so abundant that, as no one thinks of purchasing them, they are regarded as a great annoyance by the fishermen; for it is found that when they occupy his crab pot no Lobster will enter it. I have been informed of nearly a cart load having been taken at one haul of a ground scan, and singularly enough, the whole were found to be females. It is indeed a general observation that the females exceed the males in the proportion of perhaps 10 to 1, and during the summer they are all well loaded with spawn; which having been carried beneath the flap, as in other Crabs, for several months, for the sake of free exposure to the water and light, are dropped in some concealed places, where they elude observation; for I have not succeed in finding one of very small size.

The family of Cyclometops is divided into two sub-familios,

CANCERIANs: posterior legs as in the former family, ending in a pointed articulation, and thus unfit for swimming.

PORTUNIANs: posterior legs more enlarged than the preceding, ending in a broad plate ciliated at the edges, and fitted for swimming.

CANCERIANs, OR CRABs.

GENUS ZANTHO: carapace large, horizontal; a narrow fissure dividing it into two portions, the separating line furrowed; cavities of the antennæ transverse, separated by a slender partition; antennæ short.

FURROWED CRAB. *Z. Floridus*. M. Edwards' Crust., vol. 1, p. 394. Leach's Malac. pl. 11. Common.

LESS FURROWED CRAB. *Z. Rivulosus*. M. Edwards' Crust., vol. 1, p. 394. Equally common with the last, and in similar situations, under stones about low water mark.

GENUS PLATYCARCINUS: carapace approaching to a transverse oval, without furrows.

EATABLE CRAB. *P. Pagurus*. M. Edwards' Crust., vol. 1, p. 413. Cancer P. Leach's Malac., pl. Pennant, pl. 3, fig. 7.

This is the species so highly esteemed for the table, and for which a regular fishery is carried on. The male, called the Stool Crab, is much the largest, not uncommonly weighing a dozen pounds, whilst the female, termed the Bon Crab, is rarely of half that size. Although this Crab is somewhat effected by cold weather, so that it is most abundantly caught in summer, its activity is not diminished by it, and some may be obtained at all seasons. The fishery therefore, is more influenced by the danger to which the pots set to take them are exposed in stormy weather, than by the absolute scarcity of the crabs. Their haunts are along the edges of rocks, in situations varying from low water mark to about 20 fathoms; and the selection is perhaps as much influenced by the facility of hiding or burrowing, as by the supply of food. The Bon Crab begins to breed when about 3 inches across the carapace; and the spawn after remaining long attached to the parent, is buried beneath some shelter, at all seasons of the year; but as when engaged in this duty the female feeds but little and commonly hides herself, few of them are taken in the pots. Fishermen mention such instances as somewhat remarkable, though most other crustaceans are familiarly taken with the pea attached.

The eggs are commonly shed while the parent is hid in the sand; and the young, of very small size, may be found beneath stones at low water mark; but there are some differences in this as in some other of the habits of the different sexes; for among the multitudes of young found as described, I have never been able to discover a female.

The trap made use of in taking Crabs and Lobsters is formed of wicker work, in the form of the ordinary dome-shaped mouse-trap, with the difference that the only entrance is at the top, and that the bottom is immoveably joined to the structure. It is about $2\frac{1}{2}$ feet high, and the bait is fastened within, between the neck of the entrance and the sides, by wooden skewers, so as to be seen at the greatest distance. The skate and other fishes not generally sold in the market, are used for bait, and it is found that the freshest only will attract the Crab, whilst for the Lobster it is best when hung for several days to become tainted. The pot is weighed down by a couple of stones fastened within, and the place is marked by a line, with single corks along its course, and a buoy at the end. The pots are *hauled* or examined every morning, at which time they are rebaited, and the Crabs and Lobsters

conveyed to the store pots; which are much larger than the others, and are suspended near the surface by a small barrel fastened above, the more effectually to secure them from the voracity of ravenous fishes that prowl below. In this manner the fish are preserved until the arrival of the Well boat or Lobster smack, which comes periodically to convey them to the market. When first taken it is usual to drive a wooden peg into the joint of the prehensile portion of the claw, to prevent their injuring each other; and no food is afforded, as they will endure long abstinence without suffering, although they can live but a very short time without a renewal of water. In the small collection of a few dozens kept together in the store pots, this source of injury is, indeed, of small importance; but in the well of the Lobster smack it is essential; and I have been informed that when the vessel has been detained in harbour, it has been found necessary to go to the open sea and back, to renew the water in the hold, that the cargo might be kept alive.

The master of a Lobster smack has a method of dealing with the fishermen, that must not a little redound to his own advantage. If the Lobster exceeds the length of 11 inches from snout to tail it is considered a full size fish, or tale, of which the price is now 10 shillings the dozen; but all that fall short of this, are regarded as only amounting to half of this price. A crab of the largest size can pass for no more than half the value of a full Lobster, but if less than 8 inches across the shell or carapace, they are half of a full or tale crab; and none are admitted that measure less than 4 inches.

Crab fishing is followed chiefly by the poorer fishermen, or by those whose activity has given way to the infirmities of age.

It was formerly more profitable than now, and seems to be gradually decreasing. The Lobster smacks that pass along the Cornish coast, collecting the produce of the fishery of the two or three preceeding weeks are mostly from Southampton; but the destination of the cargo seems to be the port of London.

GENUS CANCER: the carapace large, oval, somewhat elevated in the middle; points of the nippers not spoon shaped. Legs short, compressed, those which are prehensile furnished above with a crest formed of a row of spines or tubercles. Terminal portion of the walking legs short and pointed.

Section with the carapace covered with granulations, but without spines.

No British example of this genus has hitherto been known; but a specimen has come to my hands, that belongs to this section, though I have not been able to refer it to any known species.

It was found in a crab pot in June 1837, and though of small size, appearing to the fisherman to be of rare occurrence, it was reserved for my inspection. It was scarcely the fourth of an inch across the carapace, the form and colour resembling those of the common Edible Crab, but the area was covered with small warty protuberances. On the margin between the ocular cavities were five segments, the central most projecting; on the lateral margin nine crenations, each, as also those between the eyes, distinctly but finely notched. Antennæ small, fine, simple, and with the palpi resembling those of the common crab. Hand claws and walking legs short, the two outer segments of the former with a serrated crest; the finger also notched at its root. Walking legs with short bristles.

It may be that this is not uncommon, as its small size may easily cause it to be overlooked; but uncertain whether it has been described before, I have provisionally named it:

C. Incisocrenatus. Couch's M.S. and fig.

GENUS PILUMNUS: second portion of the outer antennæ placed in the inner canthus of the orbit, and extending beyond the front. Carapace rounded over the summit and without lines.

FURRY PILUMNUS. *P. Hirtellus*. M. Edwards' Crust., vol. 1, p. 417. Leach's Malac., pl. 12. Pennant, pl. 6, fig. 11. Common under stones at low water mark.

GENUS PIRIMELA: carapace rounded in front, and about as wide as long, strongly embossed, and toothed at the sides; the third articulation of the inner foot jaws giving insertion to the next on its internal edge.

DENTICULATED PIRIMELA. *P. Denticulata*. M. Edwards' Crust., vol. 1, p. 424. Leach's Malac., pl. 3. This is the only known species of the Genus, and it is not common.

PORTUNIANS, SWIMMING CRABS.

GENUS CARCINUS: terminal articulation of the hindmost legs lancet shaped and straight. Front of the carapace advanced, broader than long.

? **COMMON HARBOUR CRAB.** *Carcinus Mænas*. M. Edwards' Crust., vol. 1, p. 434. Leach's Malac., pl. 5. Pennant, pl. 2, fig. 5.

One of the commonest Crabs of our shores, where it hides under stones or in the beach, but never goes far from land. It is an hardy species, easily kept in confinement for the sake of observation, and has even survived the being kept in fresh water.

GENUS PLATYONICHUS: hinder legs with a wide and oval terminal articulation; corresponding part of the other legs straight and unfit for swimming.

WIDEFOOT. *P. Latipes.* M. Edwards' Crust., vol. 1, p. 436. *Portunus Variegatus*, Leach's Malac., pl. 4.

GENUS POLYBIUS: all the legs having the terminal articulation wide, oval and thin, well formed for swimming.

NIPPER CRAB, SWIMMING CRAB. *P. Henslowii.* M. Edwards' Crust., vol. 1, p. 439. Leach's Malac. pl. 9.

This is, more than any of the others, a swimming crab: for whilst the other British species of this family are only able to shoot themselves along from one low prominence to another, the Nipper crab, as our fishermen term it, mounts to the surface over the deepest water in pursuit of its prey; among which are numbered the most active fishes, as the Maekarel and Rauning Pollock; the skin of which it pierces with its sharp pincers keeping its hold until the terrified victim becomes exhausted. We are witnesses to this curious method of obtaining food in the summer only, at which season the fishermen's nets intercept them and their prey together; and it is probable that in colder weather they keep at the bottom in deep water; from which however I have never seen them brought in the stomachs of fishes. So far as my observation extends, it is chiefly or only the male that pursues this actively predaceous existence; but that for a time they also remain quietly at the bottom, appears from the fact that while for the most part the smooth and flattened carapace is clean, I have seen it covered with small corallines (*sertulariæ*.)

GENUS PORTUNUS: the terminal articulation of the three hinder legs styliform. Moveable stem of the outer antennæ composed of only two articulations, and inserted on the same line with the eyes and inner antennæ; their basilar articulation fixed in front and entirely separating the orbit and cavity of the antennæ.

VELVET CRAB. *P. Puber.* M. Edwards' Crust., vol. 1, p. 441. Leach's Malac. pl. 6. *Cancer Velutinus*, Pennant, pl. 4, fig. 8.

This is the largest British species of the family, sometimes measuring 4 or 5 inches across the carapace. It is also the most active and fierce, running with great agility on the appearance of danger, but stopping and assuming the attitude of defence when closely pressed. It seizes an enemy in an instant, and holds with tenacity. The largest keep in water of the depth of a few fathoms, and the smaller about low water mark, among stones; beneath which they shelter themselves.

MARY CRAB. *P. Plicatus.* M. Edwards' Crust., vol. 1, p. 442. *P. Depurator*, Leach's Malac., pl. 9. Pennant, pl. 4, fig. 6, a. Common, and with much of the habits of the last species. There is some difficulty in assigning the proper synonyms to this and the two following species,

which are described as inhabiting our coasts, and it is probable that we have one or more to which none of their descriptions apply. They are all termed Harbour or Mary Crabs, and are exceedingly ravenous, fastening eagerly on any animal substance that comes within their reach.

MARBLED CRAB. *P. Marmoreus*. M. Edwards' Crust., vol. 1, p. 442. Cancer Depurator, Pennant, p. 2, fig. 6.

—————. *P. Holsatus*. M. Edwards' Crust., vol. 1, p. 443. *P. Lividus*, Leach's Malac., pl. 9.

WRINKLED CRAB. *P. Corrugatus*. M. Edwards' Crust., vol. 1, p. 443. Leach's Malac., pl. 7. Pennant, pl. 5, fig. 9. Scarce.

DWARF CRAB. *P. Pusilus*. M. Edwards' Crust., vol. 1, p. 444. Leach's Malac., pl. 9. Common.

PINNOTHERIANS, PARASITIC CRABS.

GENUS PINNOTHERAS: front large to conceal the inner antennæ, which are transverse.

PEA CRAB. *P. Pisum*. M. Edwards' Crust., vol. 2, p. 30. Leach's Malac., pl. 14. Pennant, pl. 1, fig. 1.

This species seems rare with us, and only found in the Muscle Shell, the natural inhabitant of which it either finds diseased or renders so. I have never found it in the Pinna, as reported by authors, though many have been examined for that purpose.

ANCIENT PEA CRAB. *P. Veterum*. M. Edwards' Crust., vol. 2, p. 32, and pl. 19. Leach's Malac., pl. 15.

This is more rare than the last named, but there is a specimen in the Museum of the Athenæum at Plymouth, as also of the *P. Varius* of Leach; and either marked by that gentleman or Mr. Prideaux, but which is supposed by Dr. M. Edwards to be identical with *P. Pisum*: a species that is subject to variation at different stages of growth.

GONOPLACIANS, ANGULATED CRABS.

GENUS GONOPLAX: footstalks of the eyes long, received into a cavity occupying the chief part of the anterior border of the carapace. Carapace angular and extended laterally.

SQUARE CRAB. *G. Angulata*. M. Edwards' Crust. vol. 2, p. 61. *G. Bispinosa*, Leach's Malac. pl. 13. Pennant, pl. 5, fig. 10.

Common in moderately deep water, and often in the stomachs of fishes.

GENUS GELASIMUS: Foot stalk of the eye long and slender, the transparent cornea small. Carapace resembling that of Gonoplax, but more advanced in front, and less extended laterally.

This family is by Dr. M. Edwards placed among the Ocy-podes, but is here coupled with Gonoplax, from the great similarity of form and habit of the following Species.

In the history of Crustaceans by Dr. M. Edwards, no notice is given of any species of this genus as found in the European seas; and therefore I feel some hesitation in assigning to it a species frequently found in the stomachs of fishes taken in depths varying from 5 to more than 20 fathoms; but of which no figure is found in the works of Pennant or Leach.

The form of the carapace is represented by Dr. M. Edwards, pl. 18, fig. 10, and consequently much resembling that of Gonoplax; but that of the present species differs from the figure by that gentleman in possessing a second well marked hook on the lateral margin, a little behind the anterior angle, and at the place where in the Gonoplax Bispinosa there is a protuberance much less marked, but giving origin to the trivial name. Both claws are of equal size, and less than the transverse breadth of the carapace. The eye stalks are concealed, in the manner of the gonoplax; but as the carapace is more advanced at the separation of the ocular cavities, when withdrawn their extremities point a little backward. I find but little difference in the form of the male and female, and none in the proportions of the claws, though such is the case for the most part in Crustaceans. I have provisionally designated it:

G. Bellii, Couch's M.S. and fig.

in honour of the professor of Zoology in King's College, whose labours have been eminent in this department of science.

A species of the Genus *Grapsus* is in the Athenæum at Plymouth, under the name of *G. Pelagicus*, by Mr. Prideaux and known to Dr. Leach, but not in any published work. It is understood that the collection in the Museum of that Institution is confined to specimens taken on the borders of Devon and Cornwall.

OXYSTOMES OR SHARPMOUTHS.

GENUS EBALIA: Carapace dilated at the sides, the general figure rhomboidal; feelers of the footjaws not dilated at the sides.

BRYER'S EBALIA. *E. Bryerii*. Leach's Malac. pl. 25. M. Edwards' Crust. vol. 2, p. 128. Rare.

This is the only species that I have myself met with, and Dr. M. Edwards supposes that the others named are no more than varieties. The other two are in the Athenæum at Plymouth.

CRANCH'S EBALIA. *E. Cranchii*. Leach's Malac. pl. 25. M. Edwards' Crust. vol. 2, p. 129.

PENNANT'S EBALIA. *E. Pennantii*. Leach's Malac., pl. 25. M. Edwards' Crust. vol. 2, p. 129. Pennant pl. 9. a. fig. 19.

GENUS ATELECYCLUS: Carapace large, arched anteriorly, more contracted behind. Cavities of the antennæ longitudinal, the front denticulated.

BIDENTICULATED CRAB. *A. Heterodon*. M. Edwards' Crust., vol. 2, p. 143.

Common in the stomachs of fishes, chiefly Cod fishes and Rays, from the depth of 20 to 50 fathoms. They must abound at these depths, as I have found more than thirty in a single fish, and almost every Ray opened for several days in succession was found to contain them.

GENUS CORYSTES: Carapace much larger than wide, and in shape approaching to an ellipse. Outer Antennæ very long, and inserted in a cavity of the orbitary foramen.
LONG CRAB. *C. Dentatus*. M. Edwards' Crust., vol. 2, p. 148. *C. Cassivalanus*, Leach's Malac., pl. 1. *Cancer*, *C. Pennant*, pl. 7. *C. Personatus* of some writers.

It is scarcely common, which may be accounted for from its habit of burrowing in the sand, leaving the extremities of its antennæ alone projecting above the surface. These organs are of some use beyond their common office of feelers; perhaps as in some other Crustaceans, they assist in the process of excavation; and when soiled by labour I have seen the Crab effect their cleaning by alternately bending the joints of their stalks, which stand conveniently angular for this purpose. Each of the long antennæ is thus drawn along the brush that fringes the internal face of the other, until both are cleared of every particle that adhered to them.

FAMILY OF ANOMOURS.

PTERYGURES, a subfamily having a pair of moveable appendages at the extremity of the abdomen.

PAGURIANS, OR HERMIT CRABS.

GENUS PAGURUS: the abdomen large and membranous, turned sideways; the pairs of abdominal feet irregular.

HERMIT CRAB. *P. Bernardus*. M. Edwards' Crust., vol. 2, p. 215. *P. Streblonyx*, Leach's Malac., pl. 26. *Pennant*, pl. 17.

Common and abundant, the smaller in pools left by the tide, the larger in a considerable depth of water; where they become so large as to occupy Whelk shells (*Buccinum*) of the largest size: for as Crabs of this genus are weak and defenceless on the hinder parts of their body, they exercise the well known habit of residing in the empty shells of various species of the turbinated family; moving about in this covering, from the earliest ascertained stage of their existence, as if the structure were a portion of their own bodies. They

cannot indeed, be easily made to quit this habitation, but shrink into it on the least appearance of danger; so that the usual way in which they fall victims to an enemy is when the shell and its inhabitant are swallowed together. Few Crustaceans are more frequently found in the stomachs of fishes; and as they quit the shell when about to die, they soon become the food of their devourer, the empty shell being speedily rejected from the mouth. These Crustaceans also quit their assumed tabernacle from increase of size, which as in others, is at the time of exuviation; and on one occasion when I was observing the combat of a pair in captivity, the smaller, which seemed to have felt itself fettered by its unwieldy covering, quitted the encumbrance, and manœvered round the enemy with great alacrity in its naked condition. They often seize the fisherman's bait, and are drawn up in deep water by the line; and in feeding I have seen it hold the prey with the smaller (or left) hand, while the other was engaged in nipping off pieces and conveying them to the mouth. They breed when of small size, the pea being thrown round on the back; from which position it is certain that they must quit the shell in order to deposit it.

SMOOTH HANDED HERMIT CRAB. *P. Prideauxii*.

M. Edwards' Crust., vol. 2, p. 216. Leach's Malac., pl. 26.

More scarce than the last species.

I have examined a specimen of this Genus, with a line of hair encompassing the thorax, with a few rather long fibres also pointing forward from the first segment of the abdomen; but further observation is necessary to decide whether it be a distinct species.

PORCELLANIANS.

GENUS PORCELLANA: carapace nearly circular; the hands broad and twisted; the hinder pair of legs slight and weak, bent on the others, and ending with a finger. The abdomen bent under as in Brachyures, but ending in a fan shaped tail.

HAIRY CRAB. *P. Platychelus*. M. Edwards' Crust., vol. 2, p. 255. Pennant, pl. 6, fig. 12.

Abundant under stones at low water mark. It is incapable of moving in any direction except backward, not lifting its claws, but drawing them after it; the antennæ lying on the sides of the carapace in the direction of its march. Unlike our other Crabs, it does not wait for an attack to throw off its legs; but seizing an enemy with the nippers, it leaves them to do all the injury of which they are capable, whilst itself has retreated to a place of safety.

LONG HORNED PORCELLANA. *P. Longicornis*, M. Edwards' Crust., vol. 2, p. 257. Pisidia L. Leach's Malac. Pennant pl. 1 fig. 3. Common.

LEACHI'S PORCELLANA. *P. Leachii*, Gray's Zool. Misc., p. 15. Common.

Beside these I possess a specimen of a minute species which, though much resembling the latter, yet differs from it in several particulars. The Carapace advances further in front, where it is divided into three scarcely separated portions, somewhat resembling the *P. Longicornis*: and retiring from this it turns off angularly towards the eyes. On the ridge of the second section of the handlegs are two well marked spines; the three remaining are rather shorter than in the last species and margined thinly with hairs, whereas in the other they are smooth. I found this specimen on a coralline from deep water, and in ignorance of its being hitherto described, I have provisionally named it

P. Acanthecheles. Couch's M.S. and fig.

FAMILY OF MACRÓURES.

This is divided into the following sections:

CUIRASSIANS: crust remarkably thick and hard; carapace depressed and wide; without a moveable scale below the second pair of antennæ.

ASTACIANS: crust firm; body lengthened and somewhat compressed; abdomen large, but less developed in proportion to the thorax than in the salicoques; a moveable scale below the outer antennæ.

SALICOQUES: the body compressed laterally; abdomen large, its covering horny; scale below the outer antennæ large, the natatory false legs covered by the lateral enlargement of the abdominal rings. Caudal fan large.

The Cuirassians are further divided into the following sub-families:

GALATHEANS: fifth pair of legs slender and not fit for walking, but bent up under the base of the preceding.

LANGOUSTIANS: fifth pair of legs as the others, and not bent up; hands with an imperfect finger, the other legs without that organ.

GALATHEANS.

GENUS GALATHEA: the carapace covered with transverse sections edged with short hair; snout advanced and spiny; half of the abdomen permanently bent under.

PLATED LOBSTER. *G. Strigosa*. M. Edwards' Crust., vol. 2, p. 273. *G. Spinigera*, Leach's Malac., pl. 28. Pen- nant, pl. 14, fig. 26.

Common and in its younger state not easily distinguished from the next species. It is incapable of any motion but backward, and rarely rises above the bottom, where by a laborious motion of its tail it contrives to retreat from its enemies; but its usual progress is creeping, and by the legs only.

————— *G. Squamifera*. M. Edwards' Crust., vol. 2, p. 275. Leach's Malae., pl. 28. Common, under stones at low water mark.

LANGOUSTIANS.

GENUS PALINURUS: the body almost cylindrical; in front a deep depression, having on each side a prominent spine, with others scattered about. The legs one-fingered.

CRAWFISH, RED CRAB. *P. Vulgaris*. M. Edwards' Crust., vol. 2, p. 292. Leach's Malae., pl. 30. Cancer Homarus, Pennant, pl. 11, fig. 22.

A large and valuable species, inhabiting along the borders of rocks, where it is often taken in Crab pots; which however its long and unyielding antennæ frequently hinder it from entering. Keeping in companies it also gets entangled in the Trammel Net, and in some abundance on the fishermen's lines. It meets a ready sale in the market, though not so highly esteemed for the table as the Lobster.

GENUS CALLIANASSA: the integuments, except of the claw legs, soft; caudal plates large and foliaceous; second pair of legs didactyle, of the third pair larger at their ends.

BURYING SHRIMP. *C. Subterranea*. M. Edwards' Crust., vol. 2, p. 309. Leach's Malae., pl. 32.

GENUS AXIUS: integuments moderately firm. Caudal plates large and foliaceous; second pair of legs didactyle, and the third pair slender and not enlarged at the end. Carapace with a slightly projecting snout.

SLOW SHRIMP. *A. Stirynchus*, M. Edwards' Crust., vol. 2, p. 311. Leach's Malae., pl. 33. The male of what I judge to be the same species differs from the female, in the snout, which in my specimen of the latter was finely notched, and without the well marked longitudinal ridge of the former. The outer antennæ of the male are furnished with a ridge of firm hair on their inward line, decreasing towards the point, which the female is without, and the former also has well marked brushes near the lateral edges of the abdominal rings. This species, like those of the Genus Callianassa, has the habit of burrowing in the sand, from which it rarely emerges; and then it seeks shelter in a crevice covered with weeds, for it is sluggish in its motions, and if distant from a soft bottom in which to sink, incapable of escaping an enemy. A female, that I obtained loaded with spawn, was dug out of the sand in the middle of summer.

GENUS GEBIA: carapace terminating in a rostrum large enough to conceal the eyes, the sides forming a ridge passing back and encircling the region of the stomach. Outer antennæ without a scale. Abdomen long, more enlarged

behind, the caudal plates large. The clawlegs straitened, the moveable finger large, but not met by a corresponding portion in opposition. The following legs one-fingered, those of the second pair having the next to the last articulation large and eiliated.

————— *G. Stellata*. M. Edwards' Crust., vol. 2, p. 313. Leach's Malac., pl. 31.

G. Deltura. M. Edwards' Crust., vol. 2, p. 214. Leach's Malac., pl. 31.

I find what appears to me to be the latter species, in abundance in Ray fishes (*Raia Maculata* and *R. Clavata*) caught in from 30 to 50 fathoms of water.

ASTACIANS—SHRIMPS AND LOBSTERS.

GENUS HOMARUS: the rostrum armed with a few spines on each side; seale of the outer antennæ very small and like a tooth. The hands large, ovate, compressed.

LOBSTER. II. *Vulgaris*. M. Edwards' Crust., vol. 2, p. 334. *Astacus Marinus*, Pennant, pl. 10, fig. 21.

Lobsters are common among the borders of not very elevated rocks, from close to the shore to the depth of about 20 fathoms. It is certain that they are less abundant at present than about the beginning of the present century; for whilst now, with an hundred pots, a dozen in a day is regarded as tolerable success, persons now living have caught above an hundred in the same space, and in one instance an hundred and forty seven. One fisherman has taken 640 in a week, where now another has secured only 300 in a season. The reason assigned for this falling off is that the fishery for eongers is not followed as formerly; and it is certain that this fish feeds eagerly on them. Perhaps however, too little is ascribed to the increased demand in the market, and the consequent extension of the fishery; for the number of edible crabs has also diminished within the few years that an advanced price has been obtained for them. On the coast of Scotland, where it does not appear that fishes likely to destroy them are less abundant than with us, Lobsters are in great multitudes; for Sir Wm. Jardine informs us that at Montrose, from 60,000 to 70,000 are annually sent to London, at the rate of 2½d. for each Lobster of full size.

Lobsters do not wander much from their accustomed haunts, and hence the discovery of a new station is a fortunate circumstance for the fisherman; and each situation is found to impress its own shade of colour on the shell. The same means are employed in fishing for Lobsters as for Crabs; but whilst the Crab prefers bait perfectly fresh, the Lobster is attracted by that which has hung up to become tainted, or has been preserved by salting. Some other particulars of this fishery are given when speaking of the common crab.

GENUS CRANGON: Carapace somewhat depressed, with only the rudiment of a rostrum, antennæ inserted on about the same transverse line, on the outer side a large scale. The claw legs expanded, the moveable finger opposed to a slight rudiment of a process.

SAND SHRIMP. *C. Vulgaris.* M. Edwards' Crust., vol. 2, p. 341. Leach's Malac. pl. 37. *Astacus C.* Pennant, pl. 15, fig. 30.

Common in harbours on a sandy bottom, in which it buries itself; an operation performed by the aid of the hinder legs, but it heaps the loose sand on itself by the action of the antennæ.

ROUGH SAND SHRIMP. *C. Cataphractus.* M. Edwards' Crust., vol. 2, p. 343. *Pontophilus Spinus,* Leach's Malac. pl. 37.

I have possessed only one specimen, which came from the stomach of a fish taken at a depth of from 12 to 15 fathoms.

GENUS AUTONOMEA: eyes on short footstalks, projecting from beneath the border of the carapace. The snout scarcely passing beyond the eyes. The inner antennæ double, one filament much longer than the other. Outer antennæ slender, and much longer than the body. First pair of legs only with hands.

LONG HORNED SHRIMP. *A. Olivii.* M. Edwards' Crust., vol. 2, p. 361.

This species has been hitherto unknown as British, but I have examined several specimens taken from the stomachs of fishes from the depth of 15 or 20 fathoms. Some of these were of larger size than described from the Mediterranean: one, not the largest measuring 3 inches from snout to tail, with antennæ of the length of 5 inches.

GENUS HIPPOLYTE: Carapace inflated on the top; rostrum large, compressed, toothed.

CRANCH'S HIPPOLYTE. *H. Cranchii* M. Edwards' Crust., vol. 2, p. 376. Leach's Malac., pl. 38.

Common in crab boats, and consequently living where the fishery is carried on for Lobsters.

GENUS PANDALUS: The two first legs single fingered, the second pair slender and with a minute finger. Rostrum long, elevated towards the end, and toothed above and below.

LONG SNOUTED SHRIMP. *P. Annulicornis.* M. Edwards' Crust., vol. 2, p. 384. Common in crab boats.

There appear to be two other species of this minute genus on our coasts; which I have been accustomed to call *Æsop* Shrimps, from their habit of bending up the back into an hump; but further observation is necessary to decide whether they are known to Naturalists.

GENUS PALÆMON: Carapace elongated into a serrated snout of considerable length; inner antennæ with three processes having numerous articulations. Second pair of legs stouter than the anterior, and two-fingered like them.

PRAWN. *P. Serratus*. M. Edwards' Crust., vol. 2, p. 389. Leach's Malac., pl. 43. *Astacus* S. Pennant, pl. 16. fig. 28.

A common species, found of largest size on the rockiest coasts, where it seeks the shelter of large stones and places overhung with weeds. It prefers the stillest waters, advancing and retiring with the tide; in Summer preferring water that has a distinct feeling of warmth, and in winter going into what is at that season less cold than at the margin, but never far from land.

It is sought after as a delicacy, the usual method of taking it being with a bag net suspended from a circular ring of iron at the end of a pole. Another method is by small pots, resembling those employed for the Crab and Lobster. The Prawn is a tempting bait for most sea fishes.

SHRIMP PRAWN. *P. Squilla*. M. Edwards' Crust., vol. 2, p. 390. Leach's Malac., pl. 43.

Scarce, and generally confounded with the last named species.

THE FAMILY OF STOMAPODS,

Is formed of stalk-eyed Crustaceans that are destitute of branchiæ in interior cavities. It is divided into

CARIDIOIDANS, having legs formed alike, and fitted for swimming; the carapace reflexed against the base of the legs, and again nearly covering the thorax, abdomen much developed.

SINGLE CURASSIANS; the legs various, the first large and cheliform, the three next short and subcheliform, the three last slender and natatory. Most of the thoracic rings distinct, abdomen well developed.

CARIDIOIDANS.

OPOSSUM SHRIMPS.

GENUS MYSIS: The form slender and lengthened; scale slender, on a long peduncle. Thoracic legs slender and bifid, each anterior one shortest, abdominal paddles minute and simple.

OPOSSUM SHRIMP. *M. Spinulosus*. M. Edwards' Crust., vol. 2, p. 457.

Common in summer, when it draws near the shallows from deeper water: it also enters rivers in multitudes, forming a long line of migration, at which season it is much devoured by the Trout. Its English name is taken from its habit of carrying the eggs in a receptacle under the thorax until they are hatched as in the analogous genus of Quadrupeds, the Opossum tribe.

There are other species, as well as the nearly allied Genus *Cynthia*, on our coast; but they are here omitted for want of a recent opportunity for comparison.

SINGLE CUIRASSIANS.

SQUILLIANS.

GENUS SQUILLA: the carapace in three distinct lobes; lateral appendix of the three last thoracic legs long, slender and styliform. Claws of the hands flat and strongly denticulated on the inner border.

DESMAREST'S SQUILLA. *S. Desmarestii*. M. Edwards' Crust., vol. 2, p. 523. Loudon's Mag. Nat., Hist. vol. 6, p. 230 and vol. 8, p. 462.

Rare. A few specimens have come into my possession; and it seems to be the species alluded to by Pennant and Turton, under the name of Mantis.

SEPIADÆ.

CUTTLE FISHES.

GENUS SEPIA: The body furnished with a narrow fin round its circumference.

BOM CUTTLE. *S. Officinalis*. Fleming's Br. An., p. 252. Figure in Gesner's Nomenclator, de Mollibus, p. 186.

Common, keeping near the bottom; and I have known hundreds, or perhaps thousands, to be found swimming, their heads having been bitten off by an herd of Cetaceans, which had been unable to swallow the body, on account of the hard shell, that had been broken in the effort. This internal shell or dorsal bone, is used for polishing, and has had medical virtues ascribed to it: being used with other ingredients, under the name of Mouseshell, to excite perspiration.

GENUS LOLIGO: Sides of the body only having fins.

CUTTLE. *L. Vulgaris*. Fleming's Br. An., p. 252. *Sepia L. Lin.*, Pennant, vol. 4, pl. 27, fig. 43. Common, and sometimes abundant, but changing quarters according to the season and weather. In the autumn companies of them, either in eagerness after prey, or through fear, will sometimes rush on the shore and be stranded. On the occurrence of a difficulty, their colour changes to dark red, and on the appearance of an enemy their method of escape, common to the genus, is to diffuse their ink in the water, escaping under cover of the obscurity; and this may be done two or three times in succession, the advance or retreat being without turning the body.

The Cuttle is a favourite bait among fishermen, few fish being able to resist it. To catch them they are enticed near the boat by a bait, and then secured with a rod armed at the end with several hooks; but they are easily caught at night,

by the attraction of a light. They will devour fishes that are left for a time dead in a net; and are themselves excellent food bearing a considerable resemblance to tripe.

SQUID. *L. Media.* Fleming's Br. An., p. 253. Pennant, pl. 29. fig. 45. Abundant, but rarer in winter.

SMALL WINGED CUTTLE. *L. Sepiola.* Fleming's Br. An., p. 253. Pennant, pl. 29. fig. 46.

I have seen only one specimen, which I took from the stomach of a Whiting; and this differed from Pennant's figure in having the hinder margin of the fins opposite the middle of the body, whereas in the plate referred to, they are placed far behind.

GENUS OCTOPUS: Creeping Cuttle.

NEGUER. *O. Vulgaris.* Fleming's Br. An., p. 253. The figure in Pennant, pl. 28. fig. 44, well represents this species, except that in this the suckers are in a double row. Common. It is scarcely capable of swimming; but it is a common amusement of boys to cause it to climb up the ascent of a pole or mast.

RADIATED ANIMALS.

With organs regularly branched from a common centre.

GENUS ECHINUS: Sea Eggs.

SEA EGG, SEA HOG. *E. Esculentus.* Fleming's Br. An. p. 478. Pennant, vol. 4, pl. 34. fig. 74, without the spines. Common.

Motion is effected by suckers at the end of tendrils, the spines acting as levers or crutches; and so firmly will the disks adhere, that they are sometimes torn off in removing it from its station on the rock. Slow in motion and without any apparent organ of sense, this creature will enter the crabpot and mount over the rods on the inner side, to the bait, placed as it is in a seemingly inaccessible situation

GENUS SPATANGUS: Sand Eggs.

SAND EGG. *S. Cordatus.* Fleming's Br. An., p. 480. Pennant, pl. 3. fig. 75. Local, but in some sandy places common. It burrows by means of the lesser spines, and then covers itself by the aid of the long ones on the back; which thus have a very different office from those of the Genus Echinus.

OVAL SAND EGG. *S. Ovatus.* Fleming's Br. An., p. 480. Less common.

GENUS ECHINOCYAMUS: Flat Sand eggs.

LITTLE SAND EGG. *E. Pusillus.* Fleming's Br. An., p. 481. Borlase's Nat. Hist. Corn., pl. 28, fig. 26.

STARFISHES.

GENUS ASTERIAS:—first section, the margin of the body with five angles. Cake Starfishes.

THIN STARFISH. *A. Cartilaginea.* Fleming's Br. A., p. 485. A. Placenta, Pennant, pl. 31, fig. 590. Common, in rather deep water.

GIBBOUS STARFISH. *A. Gibbosa.* Fleming's Br. A., p. 487. Borlase's Nat. H. Corn., pl. 25, fig. 25, 26. Common, in pools left by the tide.

JOHNSTON'S STARFISH. *A. Johnstonii.* Loudon's Mag. Nat. H., vol. 9, p. 146, but there represented with only four angles. It seems as yet uncertain whether this be the same as the *A. Equestris*, Flem. Br. An., p. 486. I have seen only one specimen; but this and other species would probably be found abundant, if the contents of the Trawl net were more frequently examined.

Second section: the body divided into rays.

PALE RED STARFISH. *A. Rubens.* Fleming's Br. A., p. 486. Pennant, pl. 30, fig. 58. Common.

MANYRAYED STARFISH. *A. Papposa.* Fleming's Br. A., p. 487. Loudon's Mag. Nat. H., vol. 9, p. 475. Rare within my observation.

CLAM STARFISH. *A. Glaciulis.* Fleming's Br. A., p. 487. Abundant in the early months of spring, but they retire to deeper water in summer.

SPINY STARFISH. *A. Spinosa.* Fleming's Br. A., p. 487. Borlase's Nat. H., Cornwall.

DOTTED STARFISH. *A. Oculata.* Fleming's Br. A., p. 487. Pennant, pl. 30, fig. 56. Not uncommon.

GENUS OPHIURA—Snake Starfishes.

GRANULAR SNAKE STAR. *O. Granulata.* Fleming's Br. An. p. 448. Loudon's Mag. Nat. H., vol. 8, p. 596.

LIZARD TAIL. *O. Bracteata.* Fleming's Br. A., p. 488. Loudon's Mag. Nat. H., vol. 8, p. 466.

LONGARMED SNAKE STAR. *O. Brachiata.* Fleming's Br. A., p. 488.

DAISY SNAKESTAR. *O. Bellis.* Fleming's Br. A., p. 488. Loudon's Mag. Nat. H., vol. 8, p. 595.

BEADED SNAKESTAR. *O. Rosula.* Fleming's Br. A. p. 489. Loudon's Mag. Nat. H., vol. 9, p. 231.

MINUTE SNAKESTAR. *O. Neglecta.* Loudon's Mag. Nat. H., vol. 8, p. 467.

The whole family of Starfishes, though seemingly sluggish are voracious, feeding mostly on shell fish, which they swallow whole, and rejecting the shells when the animal has been digested. It is scarcely to be imagined how they contrive to swallow this prey, of the size sometimes found within them;

I have known the *Rostellaria Pes Pelicani* of full size, to be taken from the stomach of a small Clam Star and a Venus of the width of half a crown from that of the many rayed Star of not more than twice its diameter.

GENUS COMATULA: Double rayed Starfishes.

MANY ARMED COMATULA. *C. Rosacea.* Fleming's Br. A., p. 490.

FEWER ARMED COMATULA. *C. Barbata.* Fleming's Br. A., p. 490. Pennant, pl. 33, fig. 71. Often in Crab boats.

GENUS ASTROPHYTON: Medusa's Heads.

WARTY MEDUSA'S HEAD. *A. Scutatatum.* Fleming's Br. A., p. 489. *A. Caput, Medusæ,* Turton. Borlase is our authority for the occurrence of this rare species in Cornwall.



