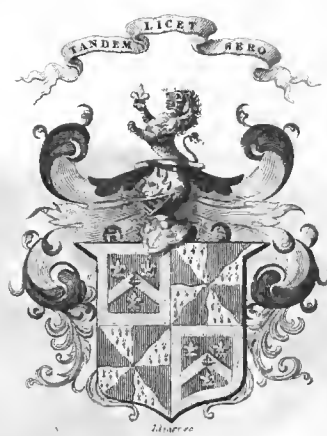


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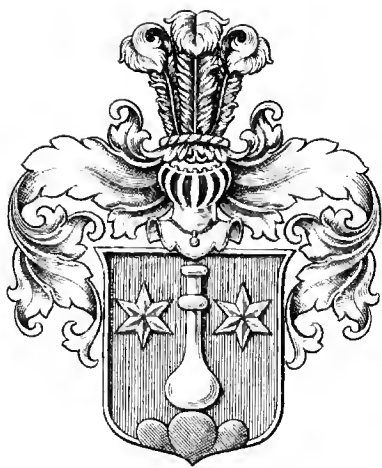
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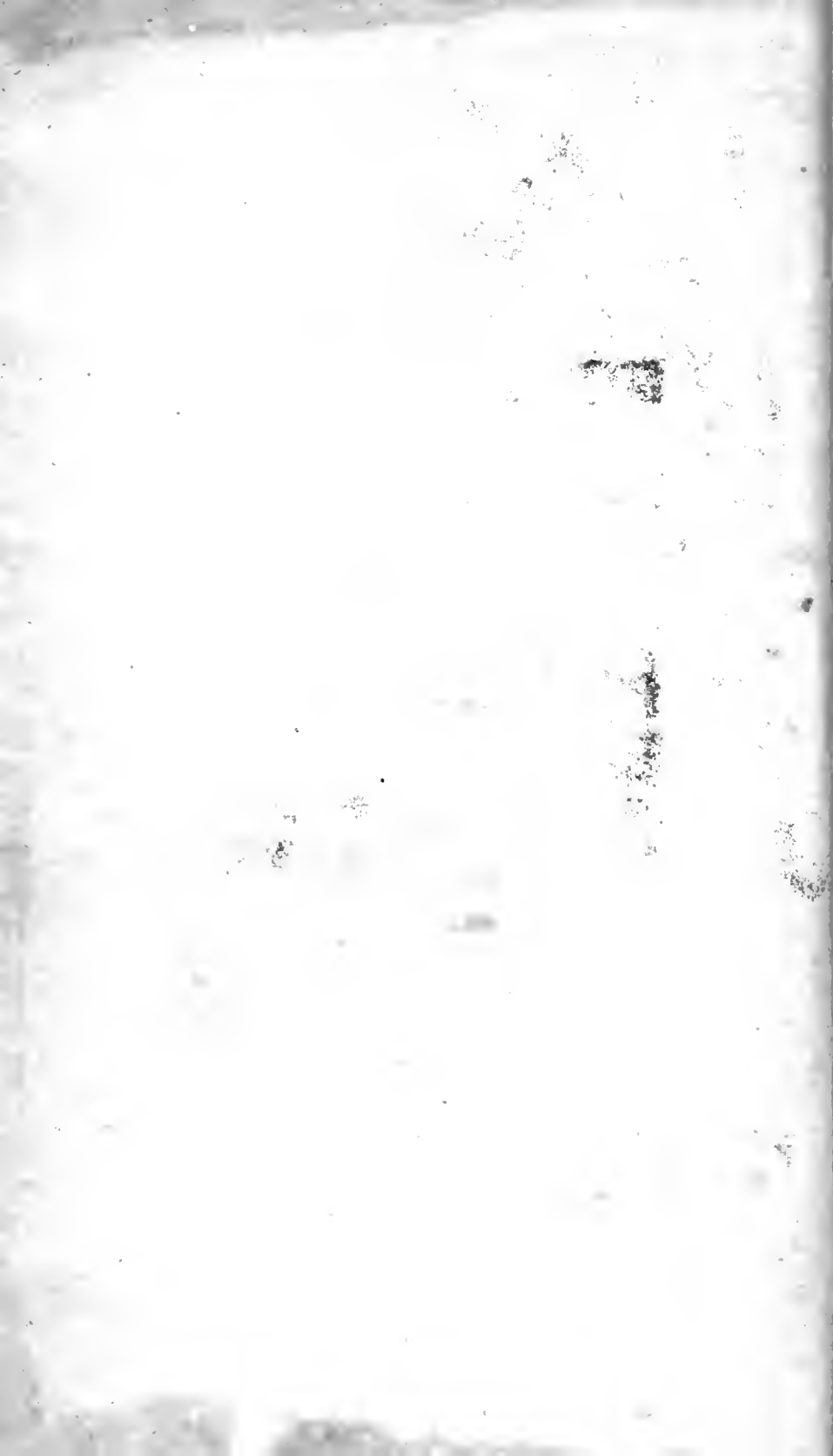
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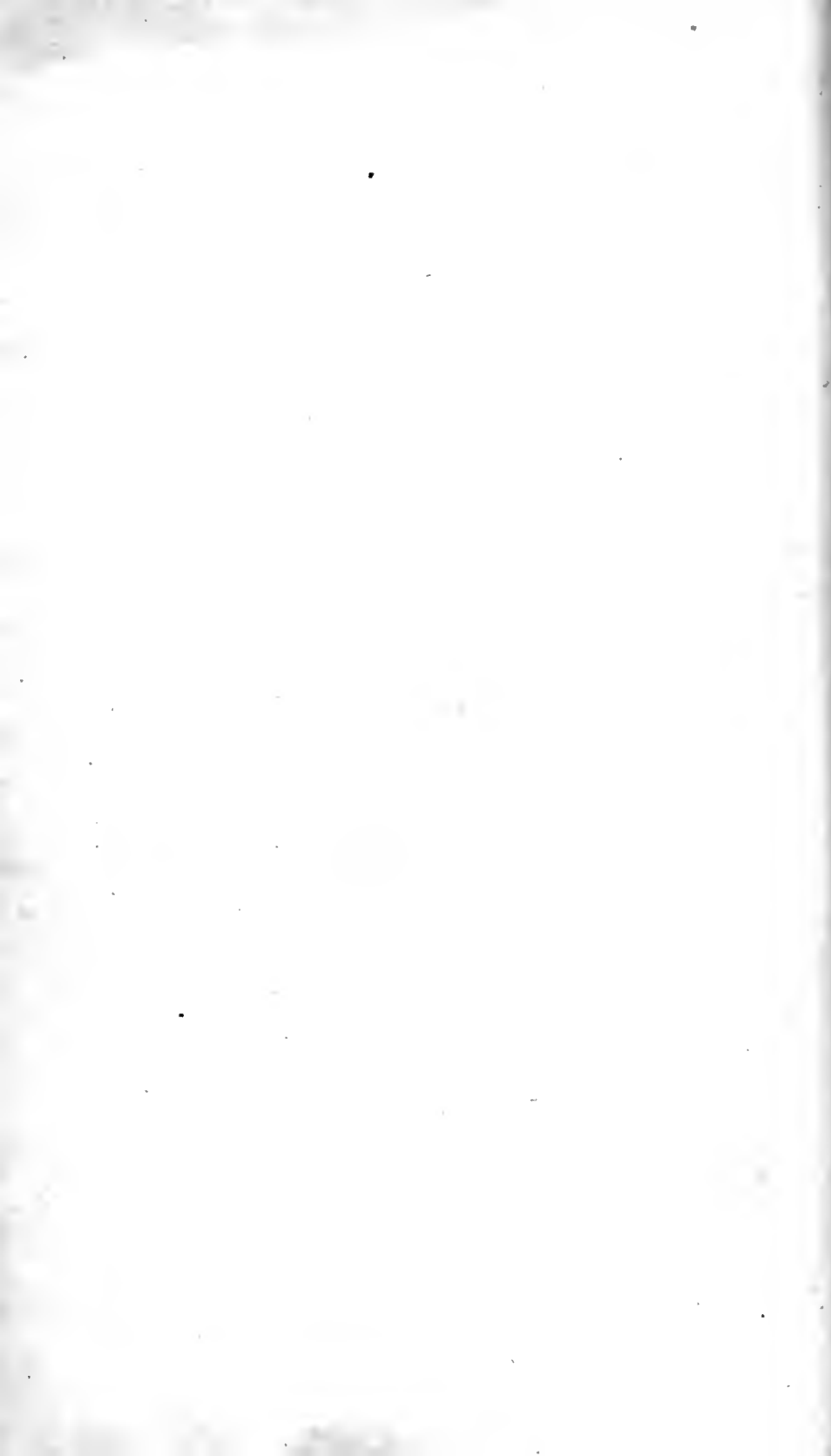
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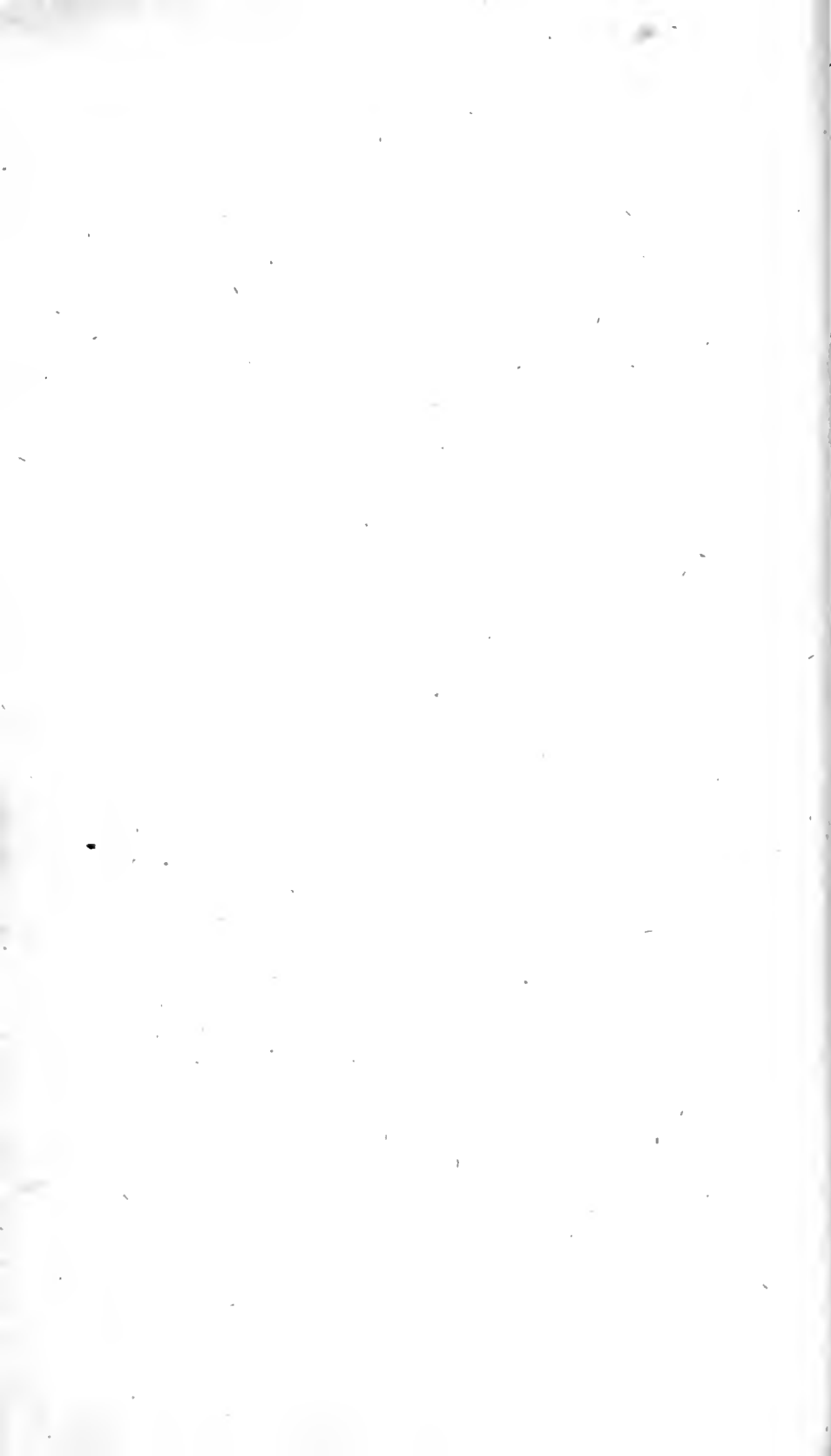
DR. GEORGE WILLIAM STAEMPFLI







THE
NATURAL HISTORY
OF
BRITISH FISHES.

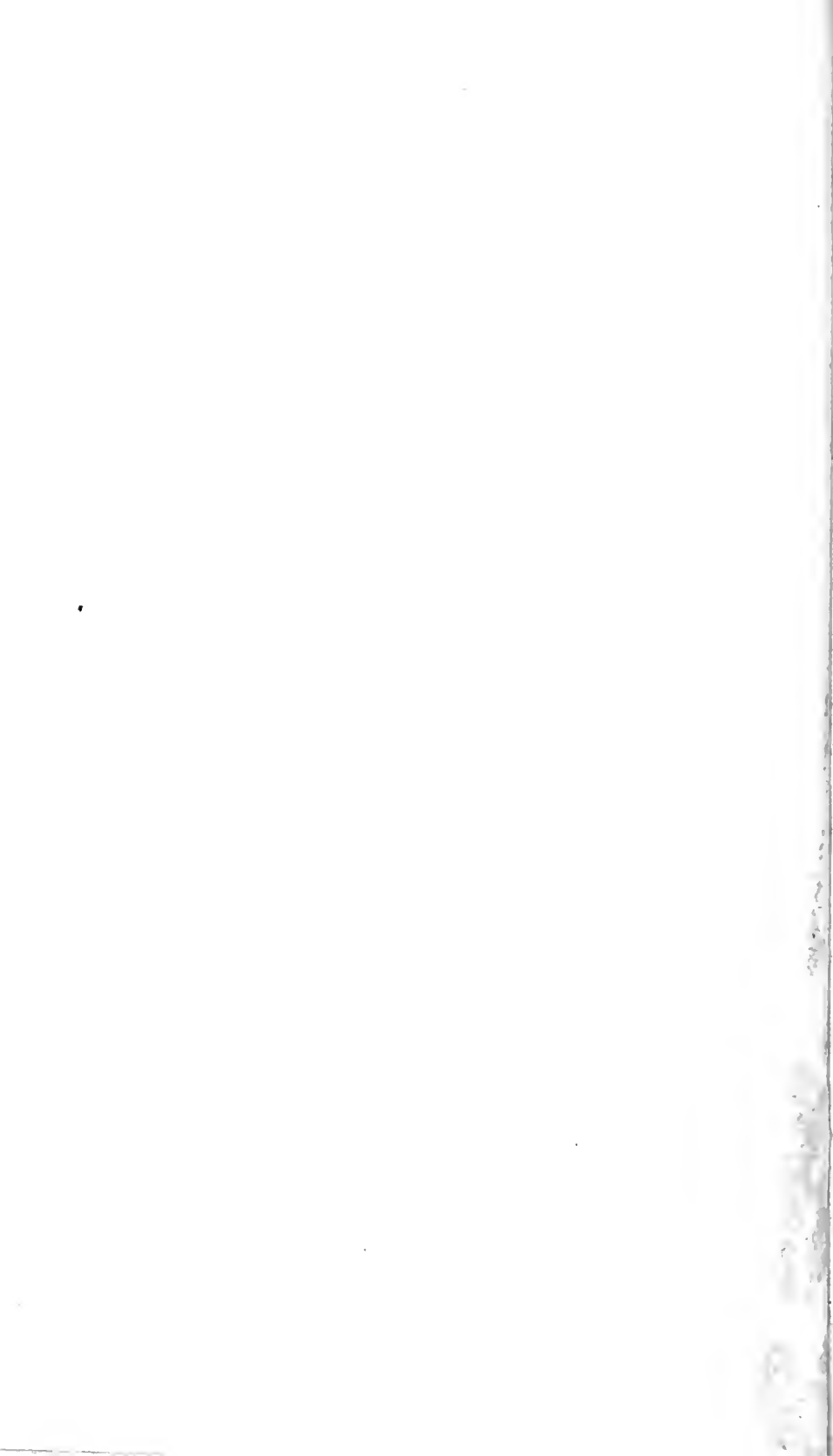


This Natural History of British Fishes was originally published in five volumes, but the fishes were not arranged systematically.

The five volumes in this case have been bound up in two, and before binding the fishes were arranged systematically according to the order laid down in the advertisement at the commencement of volume 1.

Although it may appear at first sight, (by the original numbers of the plates being out of sequence), that the work is not complete, it is really so, and is in more systematic order than when originally published in five volumes, which is a considerable advantage.

W. C. C. C. C.
Chief Inspector
Fishmongers Company
London 1829



THE
NATURAL HISTORY
OF
BRITISH FISHES,

INCLUDING
SCIENTIFIC AND GENERAL DESCRIPTIONS

OF THE
MOST INTERESTING SPECIES,

AND AN
EXTENSIVE SELECTION

OF
ACCURATELY FINISHED COLOURED PLATES.

TAKEN ENTIRELY FROM

ORIGINAL DRAWINGS,

PURPOSELY MADE FROM THE SPECIMENS IN A RECENT STATE,
AND FOR THE MOST PART WHILST LIVING.

IN FIVE VOLUMES. BOUND IN TWO.
VOL. I.

BY E. DONOVAN, F. L. S.

AUTHOR OF THE NATURAL HISTORIES OF BRITISH BIRDS,
INSECTS, SHELLS, &c.

London:

PRINTED FOR THE AUTHOR,

AND FOR

F. C. AND J. RIVINGTON, No 62, ST. PAUL'S CHURCH-YARD.

1808.

ADVERTISEMENT.

THE present Volumes are submitted with deference to the Public taste as a splendid illustration of the Ichthyology of Great Britain; and as a work, which, from the interest of its nature, and extent of design, no less than the superiority of its embellishments, may be considered as a valuable addition to the library of the English reader.

This work contains a descriptive account of those fishes which are usually denominated natives of the British Isles, either from constantly residing in our streams, and rivers; our seas, and the vicinities of our coasts, or those occasional wanderers from other climates, which either visit us at stated seasons, or are accidentally discovered near our shores.—The author has throughout endeavoured to render it a work of general utility both to the scientific and general reader, and as he trusts, not altogether without success. The plates have also been executed with the utmost care, and it is apprehended will not be found in any respect inferior to those included in either of his former Zoological undertakings. Those embellishments indeed form no inconsiderable portion of the present work; as they consist altogether of one hundred and twenty plates, the whole of which are correctly finished in colours

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in imitation of the original drawings; which latter, with few exceptions, it should be observed, were taken from living or recent examples of the respective fishes for the express purpose of this publication.

The outline of our design is sufficiently developed in the foregoing observations, but it may still be necessary to enter into a further explanation:—something more than a general notice of its leading object will be naturally expected as an introduction to an undertaking of such an extensive nature. With respect to the general merits of its execution the author will forbear adducing any observation. The progressive manner in which it has been brought before the Public must have enabled every reader to form his own conclusion on that subject, and it is not therefore for the author to interfere in their decision, whether favourable to his endeavours, or otherwise. He may nevertheless be allowed to mention, that the attention it has obtained was sufficiently flattering to induce him to extend the work to its present bulk, or at least to add the fifth volume to the four originally proposed; and this he is inclined to think may be considered as some criterion of public countenance and approbation.

When the author first conceived the idea of producing a work on British Fishes in part of his engagements to elucidate the Natural History of the country, the difficulty of procuring the subjects requisite for such a work seemed to present an insurmountable obstacle to the undertaking. He clearly saw the impropriety of proceeding a single step till he became possessed of the whole, or greater part of them. But in this instance he was content to solicit the

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kind communications of those friends of science who had favoured him with subjects in other departments; and who, from their local situations in various parts of the country, might be enabled to assist him. But in this particular branch of Natural History it must be acknowledged their best endeavours proved ineffectual: the number of species so procured were inconsiderable, and it became necessary to visit those coasts where the more rare and local kinds are sometimes found, in order to possess them.

This task was not exempt from difficulty; it was not enough to visit those coasts, but to seek the objects in request in the depths and recesses of the ocean; and in the accomplishment of which he could only avail himself of such opportunities of venturing to sea as the accommodation of the fishing craft, or open boats of such remote and unfrequented places, would allow. Those, it may be conceived, were not at all times calculated for comfort or even convenience, nor wholly free from peril. This mode of procuring the specimens proved, however, in the end, successful; in the space of a few months, devoted at different periods to this purpose, many extremely scarce and curious articles were obtained, not only of the Ichthyology kind, but in every other class of marine productions: and with respect to the fishes of the country in particular, it afforded the best, if not the only means of ascertaining with accuracy the precise characters of those perishable beings. By this means also the author was enabled to delineate a variety of the more brilliant species in the highest state of perfection, and while they yet glowed with the vivid hues of life. This was assuredly a

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matter of serious importance, as it is obviously known that nothing can be more fugitive in general than the colours of the more resplendent creatures of this tribe, many of which while alive and vigorous display the most fascinating emanations of colour; but snatched from their native element, those fervid hues alternately fade and revive with the transitory struggles of life, and, evanescent as their breath, are lost entirely in the expiring gasp of death.

The Public will be aware of the advantages which materials so collected have afforded the author in perfecting his design. Those who have hitherto treated on British Fishes, however respectable, it is not to be denied, have sometimes been induced to describe species they have never seen, or ascertained from sufficient authority; and errors have been thus foisted upon the public, without perhaps any latent motive for imposing on them. Of the danger resulting from this, the author was so fully convinced in the outset of the present work, that he proposed to omit every kind which had not fallen under his own immediate observation, and of which examples even did not remain in his Museum, in order to remove every doubt of scepticism as to the actual existence of such splendid and unusual creatures. To this intention he has invariably adhered throughout, with the solitary exception of a single fish, the *Cyclopterus Montagui**, represented, as will appear in the body of the work, on the authority of a drawing, communicated from a very respectable friend;

* Plate 68.

ADVERTISEMENT.

and which, as the specimen itself could not be obtained, was thought sufficiently interesting to justify such a deviation from our first resolution.

At the commencement of the publication of this work in parts, the number of fishes in preparation was stated at about one hundred subjects. This extensive number, it was understood, included all the more common and abundant kinds of fishes, in addition to such a selection of the rarer species as had been procured through the exertions of the author and the medium of his friends. Possessing those, the work was undertaken with the design of being comprised in four volumes, or in the event of obtaining a further number, and the publication itself being favourably received, a fifth volume was intended to be added, in order to include the remainder. The addition of a fifth volume has been made accordingly; but in the course of time elapsed since the publication began, the author has so considerably enriched his collection with new acquisitions, that even this was found inadequate to comprise the whole. The number of those latter additions amount altogether to above thirty species; and in order to include them in the work without exceeding the utmost limits proposed, it was conceived advisable to exclude some of the most familiar fishes of our markets, and insert those rarities in place of them. This will sufficiently explain the cause of several omissions of the common kinds of fishes in the present publication, and will unquestionably be considered a peculiar advantage, the work itself being thus rendered more copious in point of rare and beautiful subjects than it could otherwise have been. It must be concluded, that the omission of the *common Eel*, the

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Salmon, and the *Sprat*, is amply compensated by the insertion of the *Toothed Gilt-head*, the *Opah*, and *Saury Pike*; and that the *Starry Ray* and *Salvelian Charr*; or the *Trumpet Fish*, and *variegated Sole*, will certainly be admitted as interesting equivalents for the *common Skate* and the *Herring*.

The works that have hitherto appeared professedly on the subject of British Ichthyology are very few. Among the principal of those may be mentioned the *Icones Piscium* of Albin, an inconsiderable work, but one of remote date; the *Catalogues* of Ray, and *Piscium Anglicorum* of the same author; the *Ichthyological Observations* to be found in the *Miscellaneous Works* of Dale, and Borlase; a few detached *papers* in the *Transactions* of the Royal Society; that curious production, the *Complete Angler* of old Walton; and the third volume of Mr. Pennant's *British Zoology*. It may be superfluous to add, that neither of those are on the same plan as the present illustration.

The following systematic arrangement of the British Fishes included in this work will serve more fully to explain its nature and contents:

SYSTEMATIC ARRANGEMENT.

VOLUME. 1.

APODES.

			Original number	PLATE	new number
Muræna Conger, Conger Eel	-	-	119	-	1
Anarhichas Lupus, ravenous Wolf-fish	-	-	24	-	2
Ammodytes Tobianus, Sand Launce	-	-	33	-	3

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JUGULARES.

	Original number	PLATE	Revised number
Callionymus Lyra, Gemmous Dragonet	-	9	4
Callionymus Dracunculus, Sordid Dragonet	-	85	5
Trachinus Major, Greater Weever, or Sting-bull	-	107	6
Trachinus Draco, Common Weever	-	23	7
Gadus Æglefinus, Haddock	-	59	8
Gadus Morhua, common Cod-fish	-	106	9
Gadus Luscus, Bib	-	19	10
Gadus Merlangius, Whiting	-	26	11
Gadus Carbonarius, Coal-fish	-	13	12
Gadus Pollachius, Pollack	-	7	13
Gadus Merluccius, Hake	-	28	14
Gadus Molva, Ling	-	102	15
Gadus lota, Burbot	-	92	16
Gadus mustella, Five-bearded Cod	-	14	17
Gadus tricirratu, Three-bearded Cod, or Rockling	-	2	18
Gadus Brosme, Scotch Torsk	-	70	19
Blennius Gattorugine, Gattorugine Blenny	-	86	20
Blennius pholis, Smooth Blenny	-	79	21
Blennius gunnellus, Spotted Blenny	-	27	22
Blennius viviparus, Viviparous Blenny	-	34	23

THORACICI.

Cepola rubescens, Rubescent Band-fish	-	105	24
Gobius niger, Black Goby	-	104	25
Gobius minutus, Spotted Goby	-	38	26
Cottus Cataphractus, Pogge, or armed Bull-head	-	16	27
Cottus Scorpius, Father Lasher	-	35	28
Cottus gobio, River Bull-head	-	80	29
Zeus Luna, Opah, or King-fish	-	97	30
Zeus Faber, Dorce	-	8	31
Pleuronectes Hippoglossus, Hollibut	-	75	32
Pleuronectes platessa, Plaise	-	6	33
Pleuronectes flossus, Flounder	-	94	34
Pleuronectes microcephalus, Small-headed Dab	-	42	35

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Original
Number

	PLATE
Pleuronectes limanda, Dab	44-36
Pleuronectes Solea, Sole	62-37
Pleuronectes variegatus, Variegated Sole	117-38
Pleuronectes maximus, Turbot	46-39
Pleuronectes rhombus, Brill	95-41
Pleuronectes megastoma, Whiff	51-42
Pleuronectes Cyclops, Cyclops Flounder	90-43
Sparus aurata, Lunulated Gilt-head	89-44
Sparus dentex, Four-toothed Sparus	73-45
Sparus Raii, Ray's toothed Gilt-head	37-40
Labrus Tinca, Old Wife Wrasse	83-46
Labrus variegatus, Striped Wrasse	21-47
Labrus lineatus, streaked Wrasse	74-48
Labrus Julis, Indented-striped Wrasse	96-49
Labrus trimaculatus, Trimaculated Wrasse	49-50
Labrus Cornubiensis, Gold-fenny	72-51
Perca fluviatilis, Common Perch	52-52
Perca labrax, Basse	43-53
Perca cernua, Ruffe	39-54
Gasterosteus aculeatus, Three-spined Stickleback	11-55
Gasterosteus pungitius, Ten-spined Stickleback	32-56
Gasterosteus spinachia, Fifteen-spined Stickleback	45-57
Scomber Scomber, Mackarel	120-58
Scomber Thynnus, Tunny	5-59
Scomber Trachurus, Scad	3-60
Mullus surmuletus, Striped Surmullet	12-61
Trigla Lyra, Piper	118-62
Trigla Gurnardus, Grey Gurnard	30-63
Trigla Hirundo, Sapphirine	1-64
Trigla lineata, Streaked Gurnard	4-65

VOLUME. 2.

ABDOMINALES.

Cobitis barbatula, Bearded Loche	22-66
Salmo Fario, Trout	85-120
Salmo Cambicus, Sewen	91-67

ADVERTISEMENT.

Original number New

	PLATE	Original	New
<i>Salmo alpinus</i> , Alpine Charr	61	—	68
<i>Salmo Salvelinus</i> , Salvelian Charr	112	—	69
<i>Salmo eperlanus</i> , Smelt	48	—	70
<i>Salmo Thymallus</i> , Grayling	88	—	71
<i>Esox Lucius</i> , Common Pike	109	—	72
<i>Esox Osseus</i> , Great, or Bony Gar-fish	100	—	73
<i>Esox belone</i> , Common Gar-fish	64	—	74
<i>Esox saurus</i> , Saury, or Skipper Pike	116	—	75
<i>Atherina Hepsetus</i> , European Atherine	87	—	76
<i>Mugil cephalus</i> , Mullet	15	—	77
<i>Exocoetus Volitans</i> , Flying-fish	31	—	78
<i>Clupea pilcardus</i> , Pilchard	69	—	79
<i>Clupea alosa</i> , Shad	57	—	80
<i>Clupea alosa</i> , young, White Bait	98	—	81
<i>Clupea encrasicolus</i> , Anchovy	50	—	82
<i>Cyprinus Barbus</i> , Barbel	29	—	83
<i>Cyprinus Carpio</i> , Carp	110	—	84
<i>Cyprinus Tinca</i> , Tench	113	—	85
<i>Cyprinus gobio</i> , Gudgeon	71	—	86
<i>Cyprinus Jeses</i> , Chub	115	—	87
<i>Cyprinus Leuciscus</i> , Dace	77	—	88
<i>Cyprinus phoxinus</i> , Minow	60	—	89
<i>Cyprinus ritulus</i> , Roach	67	—	90
<i>Cyprinus erythrophthalmus</i> , Red-eye	40	—	91
<i>Cyprinus alburnus</i> , Bleak	18	—	92
<i>Cyprinus Brama</i> , Bream	93	—	93

BRANCHIOSTEGI.

<i>Tetrodon stellatus</i> , Stellated Globe Diodon	66	—	94
<i>Tetrodon Mola</i> , Short Sun-fish	25	—	95
<i>Tetrodon truncatus</i> , Truncated Sun-fish	41	—	96
<i>Syngnathus Typhle</i> , Shorter Pipe-fish	56	—	97
<i>Syngnathus Pelagicus</i> , Pelagic Pipe-fish	58	—	98
<i>Centriscus Scolopax</i> , Snipe, or Tumpet-fish	63	—	99

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Original Series
Numbers
PLATE

Cyclopterus Lumpus, Lump sucker, or Lump fish	-	1 - 100
Cyclopterus liparis, Unctuous Sucker	-	47 - 101
Cyclopterus ocellatus, Ocellated Sucker	-	76 - 102
Cyclopterus bimaculatus, Bimaculated Sucker	-	78 - 103
Cyclopterus Montagu, Diminutive Sucker	-	68 - 104
Lophius Piscatorius, Fishing Frog, or Common Angler	-	101 - 105

CHONDROPTERYGII.

Acipenser Sturio, Common Sturgeon	-	65 - 106
Chimera monstrosa, Sea Monster	-	111 - 107
Squalus Catulus, Lesser Spotted Dog-fish	-	55 - 108
Squalus Cornubicus, Porbeagle Shark	-	108 - 109
Squalus Acanthias, Spine-backed Shark	-	82 - 110
Squalus Squatina, Angel Shark	-	17 - 111
Raja Torpedo, Electric Ray	-	53 - 112
Raja miraletus, Mirror Ray	-	103 - 113
Raja rubus, Rough Ray	-	20 - 114
Raja Pastinaca, Sting Ray	-	99 - 115
Raja clavata, Thornback	-	26 - 116
Raja radiata, Starry Ray	-	114 - 117
Petromyzon marinus, Great, or Sea Lamprey	-	81 - 118
Petromyzon fluviatilis, Lesser Lamprey	-	54 - 119

In the above arrangement we have adhered to the Linnean mode of classification, and of course excluded the *cetaceous mammalia*, or animals of the whale kind, from the class of fishes, to which some writers erroneously refer them.

From the enumeration of those fishes it will be found, that many species are introduced into the present work which have not been before recorded as natives of the country, and others that are perfectly undescribed. It

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will be furthermore perceived, that, independently of a few of the more abundant kinds of the fish tribe, which, as already intimated, were purposely omitted, others, considered rare, and described as such by several writers, have been excluded. The latter omissions, we feel some gratification in stating, have rarely arisen from the want of the particular subjects intended, or even in many instances the individual specimens, or drawings, to which the respective writers refer, but because there appeared some weighty or sufficient reason for believing them inadmissible into a work of this nature.

There is indeed too much cause to apprehend, that our best historians on the subject of British Ichthyology have suffered themselves in various instances to be misled, and from the want of opportunity, or inclination in their successors to investigate the truth, the mistakes of one writer have become confirmed by the subsequent testimony of others; and thus varieties, or even species, are established, which have existence only in the writings of the authors by whom they are described. Errors of this kind are immediately within our knowledge, and which we cannot hesitate to consider of such serious moment as to require particular mention in this place. We really disclaim every allusion to the general veracity of the respectable writers involved in this explanation, but feel at the same time that we ought not, consistently with our desire of promoting science, lend our countenance to error when it remains in our power to correct it.

From the time even of the illustrious Ray it is strongly suspected that some few of the errors alluded to have

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obtained their currency. There are two or three ambiguous fishes described by that author, but of which at this remote period we can procure no very correct information. We can neither comprehend the *Cook cornubiensium* (or *Labrus Coquus*) of that writer, nor the "*Black Fish*" of his friend Mr. Jago, the minister of Loo.—Perhaps the observations of future naturalists on the Cornish coasts may confirm the accuracy of those writers; we only mean to infer, that they are either obscurely described, or fishes unknown to us.—The "*Long Fishing Frog*" of Mount's Bay, an account of which is given by Dr. Borlase in the Natural History of Cornwall, we are not at present acquainted with; but are inclined to think the description might be taken from a dried example of the common Angler, which would assume the linear appearance he describes;—and the *Latern Sole* of Borlase is also another fish we have never seen.

The author of the British Zoology introduces all the species abovementioned on the authority of Ray and Borlase, and it is not without regret we may add, has included others on less authentic observation. The *Trifurcated Hake* of this writer, communicated, as his work informs us, by the Rev. Mr. Hugh Davies, of Beaumaris, we have been enabled to testify, on the most indubitable authority, is not in being;—the description was taken from a damaged skin of the forked Hake, which latter is also described by the same author, who thus constitutes two species of the same fish*. The *Beaumaris*

* Vide *Donov. Tour of South Wales and Monmouthshire*; wherein the circumstances attending the origin of this error is detailed at length on the authority of the Rev. Mr. Hugh Davies:

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Shark of Pennant is also the same species as his *Porbeagle**; and his *Ballan Wrasse* †, a variety only in colour of his *ancient Wrasse*, by which means two other supposed species are erroneously added to the tribe of fishes.—We are furthermore persuaded, that the little fish called the *Morris* in the *British Zoology* (which first obtained a place in the works of Gronovius, and since that time in the *Gmelinian Systema*, as a new genus, under the title of *LEPTOCEPHALUS*) is by no means correctly ascertained. From an example in our Museum, and an acquaintance with the peculiar circumstances under which Mr. Pennant describes it, we are pretty well convinced it will eventually prove to be nothing more than a young and mutilated example of the *Blennius gunnellus* ‡. The *White Bait* is also ascertained to be neither the young of the common Bleak, nor a distinct species allied to it, as Mr. Pennant infers, but clearly the young of the common Shad. Some few other fishes of the Shark and Ray tribe, in the *British Zoology*, are also confessedly obscure, and will be found, we suspect, on further investigation, to be improperly described as distinct species.

Several material errors, besides the adoption of those above mentioned, occur likewise in the Ichthyological Works of Dr. Shaw. Those to which we allude particularly appeared originally in the *Naturalists' Miscellany*, and have been of late repeated in the *General Zoology*

* See the description of *Squalus cornubicus*, plate 108.

† See *Labrus Tinca*, plate 83

‡ A copy of the original drawing, made by Mr. Morris, upon the credit of which Mr. Pennant describes the fish, is in our possession. The specimen was found in the sea, on the coast of Anglesea, near Holyhead, in which place the *Blennius gunnellus* was formerly very abundant.

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of the same author. The *Rosy Flounder* (*Pleuronectes roseus*) of Dr. Shaw, is certainly only an accidental variety in colour of the common Flounder, examples of which the river Thames affords in amazing number during spring, and summer †. The *Pyramidal Lump-sucker* (*Cyclopterus pyramidalis*) of the same writer, is only a distorted subject of the common Lump-sucker †; and his *Sparus Formosus*, a fish, not of the Sparus, but Labrus genus, being no other than the *striped Wrasse* of Pennant, and *Labrus variegatus* of Gmelin and other writers †.

The *oblong Sun-fish* of the Leverian Museum was not an authentic specimen, but an ill-preserved skin of the round or common Sun-fish, and which has misled some authors so far as to consider the oblong Sun-fish a mere variety of the other.

We could have wished also, that Dr. Turton, who has favoured the English reader with a valuable and useful translation of the Gmelinian System, had occasionally consulted the various publications, from whence his additions to that work were selected, with greater caution; for by inserting those, the species have, in some instances, been improperly multiplied, Gmelin having before described the same fishes under other names. A striking example of this occurs in the genus *Gadus*, to which Dr. Turton adds as a new species the Scotch Torsk of Pennant, under the trivial appellation of *Scoticus*, not being aware that the same species is immediately before described by

††† The specimens described by Dr. Shaw, formerly preserved in the Leverian Museum, are at present in the collection of the author.

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his author under the name of *Brosme**, and by this means two kinds of the Torsk are described, though in reality they are both the same fish. Dr. Turton, it should be added likewise, admits the whole of the before-mentioned exceptionable fishes as distinct and genuine species.

We could still proceed further, but what has been advanced already may be sufficient to show, that some few of the remaining ambiguous kinds of British fishes, recorded by different writers, when attentively examined, may prove to have no better claim to the distinction of species than those already mentioned, and that it is therefore better to pass over such in silence than involve ourselves in similar errors by introducing any account of them. The amount of those ambiguous fishes, which we have had no opportunity of examining, may be stated altogether at about eight or ten species.

As a sequel to our remarks, we can only repeat our former assurances that our motive for noticing the above circumstances arose entirely from the considerations imposed on an impartial investigation of facts, which cannot, we are of opinion, be too generally known to the Naturalists of this country, and even of Europe, in order to enable them to form a correct idea of the native products of the British isles, in this important department of nature.—It is not without regret we are compelled to make such a material reduction from the *British Fauna*; it would have proved, on the contrary, a source of infinitely greater satisfaction could we have been enabled to encrease its number in the

* See our description of *Gadus Brosme*, plate 70.

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same proportion we are obliged to reduce it; but we are satisfied of its necessity, and must in truth submit. Our assertions have not been incautiously advanced: they are the result of mature deliberation, and authentic evidences; our inferences being for the most part taken from the original drawings and manuscripts, to which those very writers were indebted for their information, or from the individual specimens described in different collections, which have been since concentrated in our possession, and at present constitute a part of our own Museum.



CONGER EEL.

119
1



London: Published by the Editor of the Illustrated London News, 1850.

PLATE CXIX.

MURÆNA CONGER.

CONGER EEL.

* PISCES APODES.

GENERIC CHARACTER.

Head smooth: nostrils tubular: gill-membrane with ten rays: eyes covered with a common skin: body round and mucous: caudal, dorsal, and anal fin united.

SPECIFIC CHARACTER

AND

SYNONYMS.

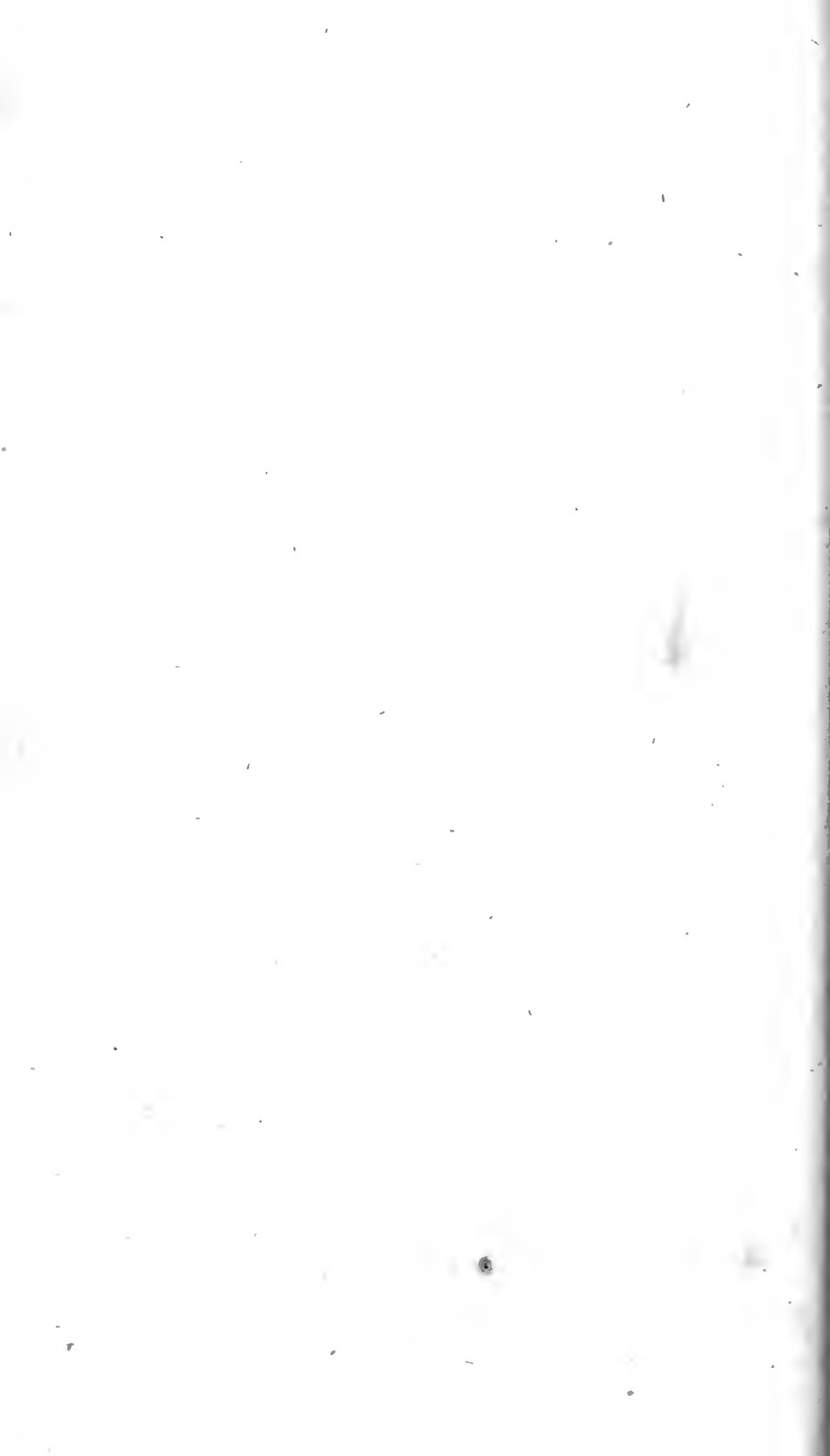
Snout with two tentacula; lateral line whitish with a row of dots.

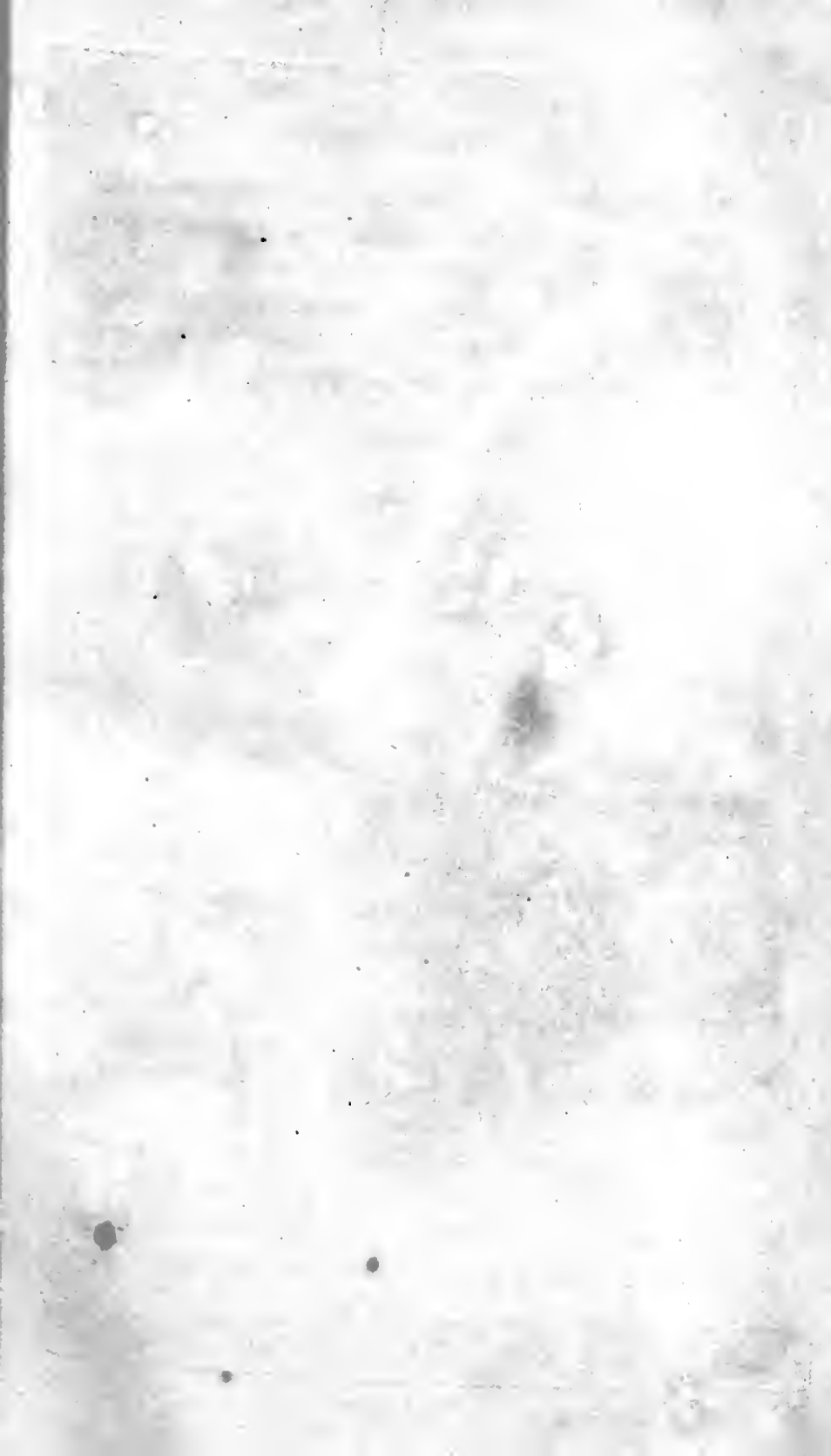
MURÆNA CONGER: rostro tentaculis duobus, linea laterali ex puncto albida. *Gmel. Linn. Syst. Nat. T. 3. p. 1. p. 1135. sp. 9.*

Muræna supremo margine pinnae dorsalis nigro. *Art. Gen. Syn. 24. syn. 40.*

Muræna pinna ani caudæ dorsique coadunata, linea laterali alba. *Bloch. Aust. Fisch. 2. p. 37. t. 155.*

Conger Eel. *Will. Ichth. 111.—Raii. Syn. pisc. 37. Penn. Brit. Zool. Vol. 3. p. 147.*





STRIPED SEA WOLF.

2



London, Pub. by the late Sir J. D. ... & F. & C. ...

PLATE XXIV.

ANARHICHAS LUPUS *var?*

STRIPED SEA WOLF.

APODES.

GENERIC CHARACTER.

Head obtuse: fore teeth in each jaw, conic, divergent, six in number, or more: grinders in the lower jaw, and palate rounded: branchiostegous membrane with six rays: body roundish: tail fin distinct.

SPECIFIC CHARACTER

AND

SYNONYMS.

Dusky ash colour, with irregular transverse brown streaks.

ANARHICHAS LUPUS, WOLF FISH. *Penn. Brit. Zool. V. 3.*
n. 65. p. 151.

ANARHICHAS STRIGOSUS: strigis irregularibus fere transversis fuscis.
Gmel. Syst. T. 1. p. 3. p. 1144. sp. 4.

ANARHICHAS LUPUS: ex cinereo niger, lateribus, pinnis anali
caudalisque et abdomine albis? *Linn. Syst.*
Nat. 1. p. 430. n. 1.

Whether the Linnæan definition of *Anarhichas Lupus* be sufficiently expressive, may admit of doubt; yet we cannot still believe

PLATE XXIV.

row of smaller teeth, which in the upper jaw makes the whole amount to about eighteen, and in the lower one to twelve: the grinding teeth join to the canine teeth in the lower jaw, but in the upper one are separated from them; and in the centre are two rows of strong flat teeth, fixed upon an oblong basis, upon the bones of the palate and the nose. These grinding teeth, or some resembling them, are sometimes found in a fossil state, and are called cramp stones, bufonites, and toad stones, and were formerly supposed to possess many secret virtues, for which reason they were set in gold, and worn upon rings, &c.

This is a fierce and most voracious fish, and it requires both caution and address to escape its fury when taken. Schonevelde relates, that its bite is so hard that it will seize an anchor, and leave the marks of its teeth in it; and the Danish and German names of *Steenbider* and *Steinbeisser*, express the sense of its great strength, as if it were capable of crushing even stones with its jaws. The fishermen therefore endeavour, as soon as possible, to beat out its fore teeth, and then kill it by striking it behind the head*.

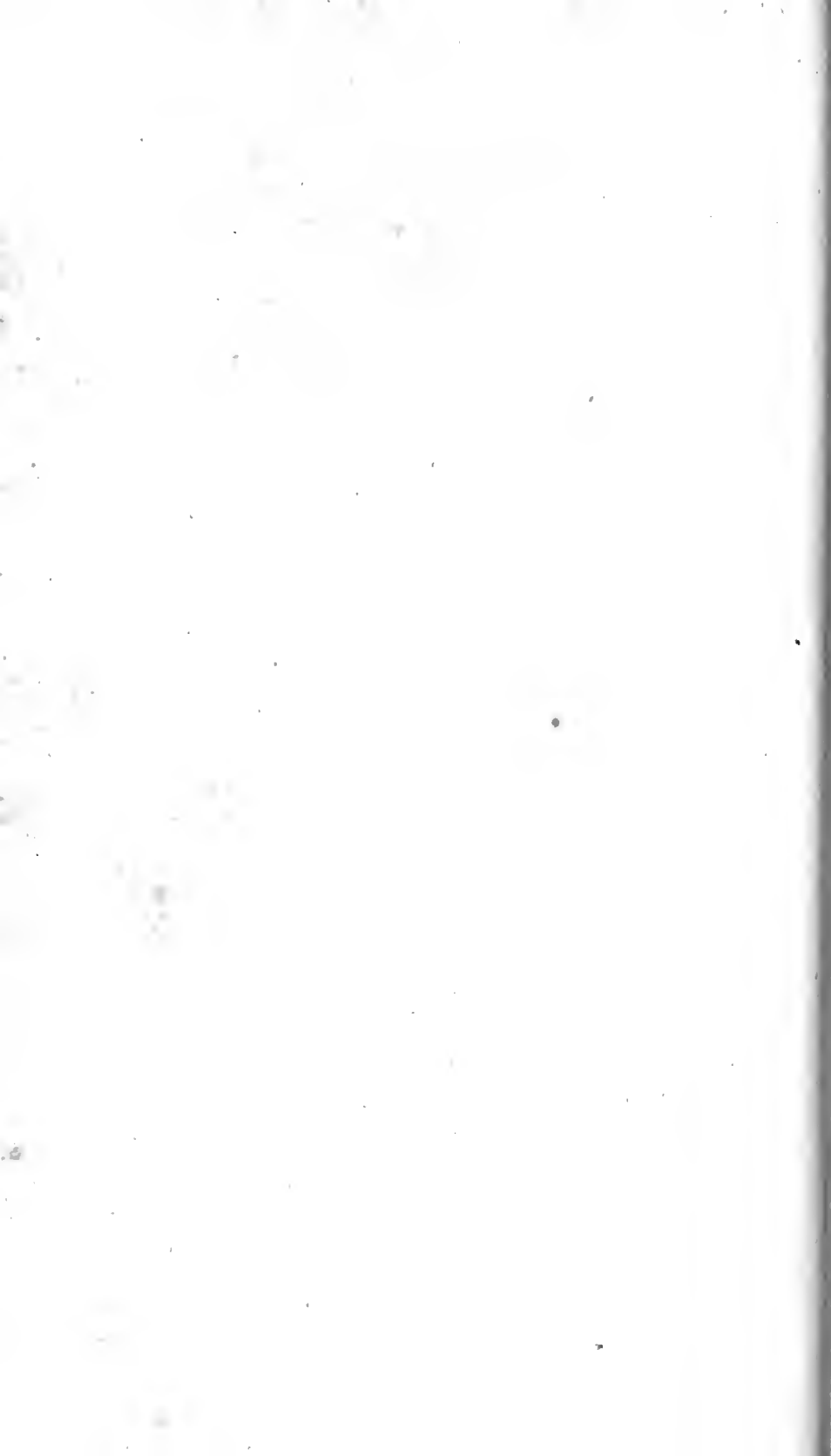
It is sometimes taken with a hook and line, and sometimes by spearing; the latter mode of capture is successfully practised by the Norwegians, who use a kind of trident for the purpose, and when they observe the Wolf Fish prowling about the shore in search of lobsters and shell fish, can take them by that means with little difficulty. The Greenlanders eat the flesh raw, and make bags and other articles of the skin. The aspect of this creature is so truly hideous, that it is no matter of surprize it is seldom eaten in England,

* Pennant.

PLATE XXIV.

except by the fishermen; and they take the head and skin off before it is boiled. The smell, when raw, is peculiarly sickly; but we once overcame our prejudice so far as to taste the flesh of it when dressed, with fennel, parsley, and butter, and must say it was delicious: it was entirely divested of every unpleasant odour, the appearance was delicate, like that of mackarel, and the flavour not unlike it, though in our opinion it was far superior.

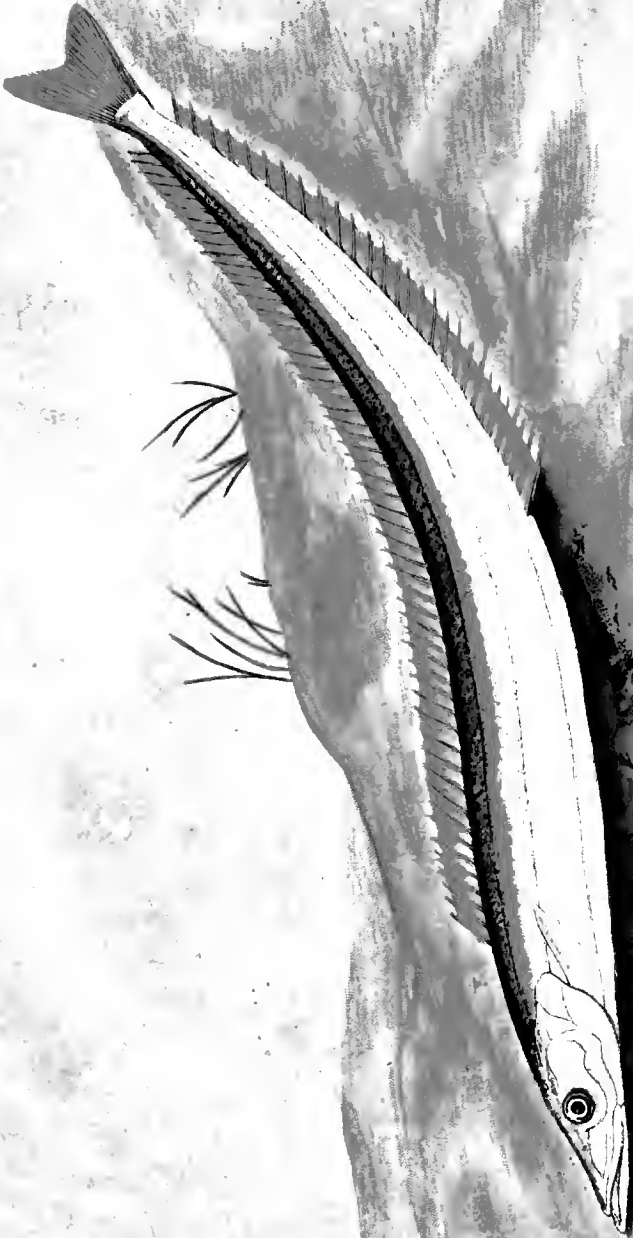
The Wolf Fish approaches the shore in the months of May and June, and deposits the spawn upon the leaves of marine plants. The young, according to Mr. Pennant, are of a greenish cast, resembling the sea wrack, amongst which they reside for some time after their birth.





SAND LAUNCE OR EEL.

3



London, Pub. as the Act directed by E. Dimsdale & F. McCulloch on July 1, 1863.

PLATE XXXIII.

AMMODYTES TOBIANUS.

SAND-LAUNCE, OR SAND-EEL.

* APODES.

GENERIC CHARACTER.

Head compressed, narrower than the body; upper lip doubled, lower jaw narrow and pointed: teeth sharp pointed. Gill membrane of seven rays: body long, square. Tail fin distinct.

SPECIFIC CHARACTER.

AND

SYNONYMS.

SAND-LAUNCE, inferior jaw pointed.

AMMODYTES TOBIANUS. *Art. gen.* 16. *syn.* 29. *spec.* 35.—

Fn. Succ. 302.—*Gmel.* p. 1144. 147. *sp.* 1.

Ammodytes maxilla inferiore acuminata. *Bloch Fisch. Deutschl.*

3. p. 24. t. 75. f. 2.

Sandels or Launce. *Ray pisc.* p. 38. n. 165. t. 11. fig. 12.

Sand-Launce. *Penn. Brit. Zool.* 3. p. 156. n. 65. t. 25.

The common Sand-Launce is the only species of its genus hitherto discovered. It inhabits most of the sandy shores in the northern

PLATE XXXIII.

parts of Europe ; and is considered as a fish of excellent flavour ; yet it is seldom taken, except for baiting the hooks by the fishermen, to catch other fish.

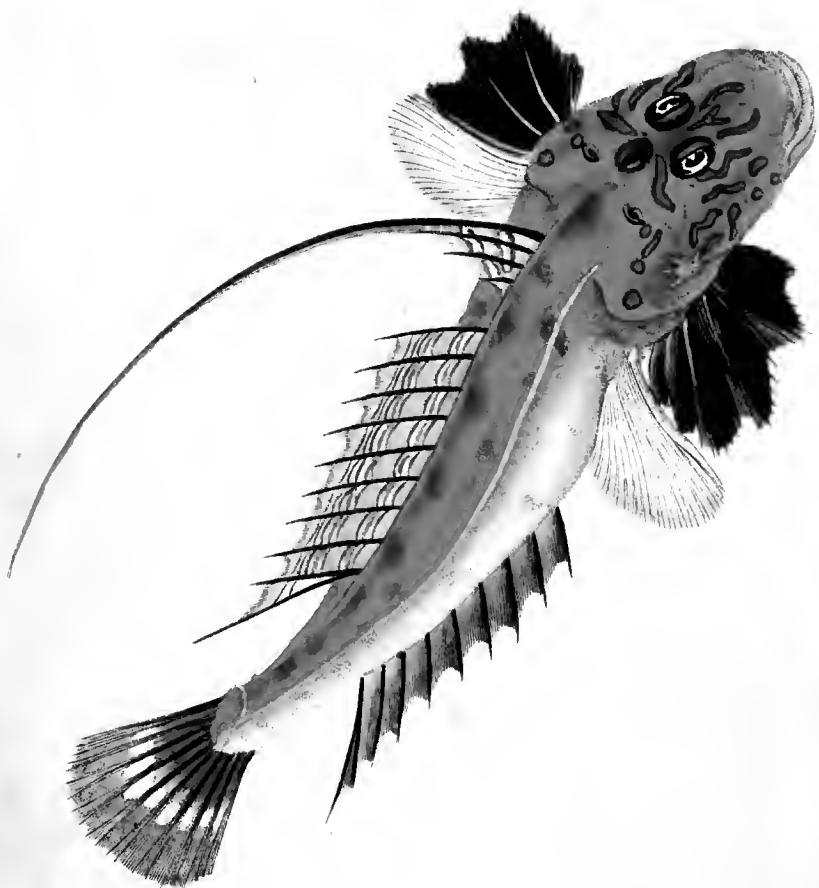
At the ebb of the sea it buries itself at about the depth of a foot in the sand, and there remains concealed till the returning tide : sometimes at low water its nose may be just perceived above the surface of the sand, and in general its lurking place may be discovered by a little dimple or bubbling in the sand.

These fish grow to the length of ten or twelve inches : on our coasts they are more frequently observed about two or three inches less. They feed on worms, and are the prey of the Porpesse, and other voracious creatures : in the month of May they deposit their spawn in the sands.

In the dorsal fin of one specimen in our possession are fifty-four rays : in the pectoral fin fifteen : anal twenty-eight ; and caudal sixteen.

GEMMOUS DRAGONET.

4



London. P. 8^o as the illustration is published by the Royal Society.

PLATE IX.

CALLIONYMUS LYRA.

GEMMOUS DRAGONET.

JUGULARES.

GENERIC CHARACTER.

Superior lip doubled; eyes approximate. Six rays in the gill, membrane, gills closed, aperture for breathing in the neck. Body naked. Ventral fins very remote.

SPECIFIC CHARACTER.

First ray of the first dorsal fin as long as the body.

CALLIONYMUS LYRA: dorsalis prioris radii longitudine corporis.
Gmel. Linn. Syst. Nat. 1151. 151. *sp.* 1.

GEMMOUS DRAGONET. *Penn. Brit. Zool.* 3. *p.* 164. *n.* 69. *t.* 27.

This species was formerly known amongst English naturalists by the name of Yellow Gurnard, but which Mr. Pennant altered with much propriety; for it could not certainly have been confounded with that genus, had those authors attended to its essential character. The extreme length of the first ray of the dorsal fin at once distinguishes this creature from any other found on our coast.

PLATE IX.

We believe the Dragonet is far from common, at least it is a local kind. The specimen from which the annexed figure is taken, was caught on the western coast, among Smelts.

The predominant colour of this fish, when living, is a fine pellucid brown, with marks and spots of pale blue, white, yellow, and black, disposed with peculiar elegance, and especially about the head and dorsal fin: the ventral fin is dark purple, which finely contrasts with the pellucidity and whiteness of the pectoral fin. The throat is black.

The ventral fin consists of five rays: pectoral of twenty: first dorsal fin of four rays, the first very long: second dorsal ray of nine; the last doubled up: anal fin nine rays, and caudal ten.



SORDID DRAGONET.

5

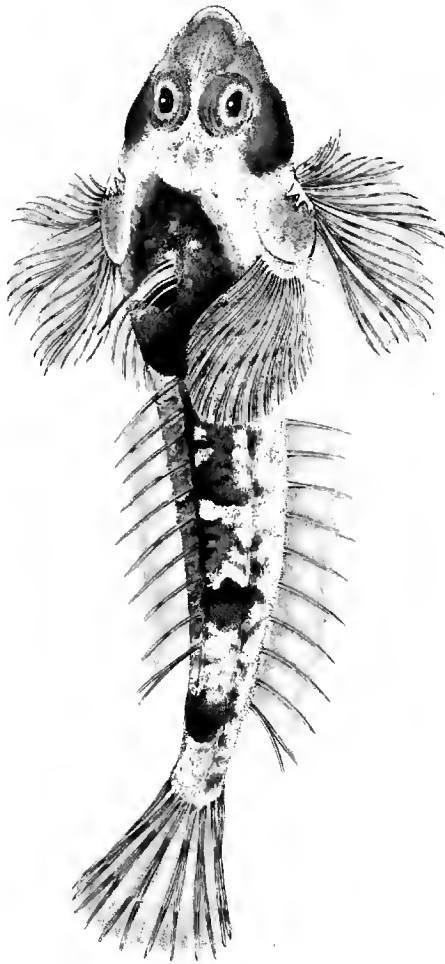


PLATE LXXXIV.

CALLIONYMUS DRACUNCULUS.

SORDID DRAGONET.

* PISCES JUGULARES.

GENERIC CHARACTER.

Superior lip doubled; eyes approximate. Six rays in the gill-membrane; gills closed, aperture for breathing in the neck: Body naked. Ventral fins very remote.

SPECIFIC CHARACTER

AND

SYNONYMS.

Rays of the first dorsal fin short, and four in number:

CALLIONYMUS DRACUNCULUS. C. radius quatuor in primâ pinna dorsali brevibus. *Bloch, Aust. Fisch.* 2. p. 84. t. 162. fig. 2.

Callionymus. Dorsalis prioris radiis corpore brevioribus *O. F. Müller. Zool. dan.* t. 20.—*Gmel. Linn. Syst. Nat.* p. 1152. sp. 2.

Cottus pinna secunda dorsi alba. *Art. Gen.* 49. syn. 77.

DRACUNCULUS. *Will. Ichth.* 136. *Raii Syn. pisc.* 79.

SORDID DRAGONET. *Penn. Brit. Zool.* v. 3. p. 167. sp. 70.

PLATE LXXXIV.

The length of this fish is from five to six or eight inches, which last it rarely exceeds: the body is somewhat pellucid, varied with livid brown, and yellowish, and marbled with white. The first dorsal fin is remarkable for having the anterior part white, and the rest black. All the other fins are singularly pellucid, whitish, and have the rays marked with a few brownish dots. The head is broad, pointed, slightly convex above, and flatish beneath; the eyes prominent, and the upper jaw advanced beyond the lower one.

This species is of the marine tribe of fishes. It is found chiefly in the South of Europe. Müller includes it among the Danish fishes, and Duhamel as an inhabitant of the coasts of Normandy. Mr. Pennant received it from Mr. Travis, who, as we understand, met with it on the coast of Scarborough. We have observed it on the sandy shallows of the sea, on the coast of Wales. The French fishermen conceive this to be the female of the Gemmous Dragonet, *Callionymus Lyra*; they bear a remote resemblance to each other, but are, we think, certainly distinct.

The first dorsal fin in our specimen contains four rays, the second ten: the pectoral fin sixteen: the ventral fin is subdivided into lobes, and contain in each, five principal ribs, from which arise a number of lateral rays, as in the ventral fins of the Gemmous Dragonet. The anal fin contains ten rays, the posterior one of which is furcated like the posterior ray in the second dorsal fin; and the tail contains eight rays, all which, except the exterior one on each side, are ramosæ.



GREATER WEEVER.

107
6



London. Published for the Director by F. Dorman, 25, Abchurch Lane, 1862.

PLATE CVII.

TRACHINUS MAJOR,

GREATER WEEVER, or STING-BULL,

** PISCES JUGULARES.

GENERIC CHARACTER.

Head smooth, compressed: branchiostegous membrane with six rays: inferior lamina of the gill-covers, serrated. Vent near the breast.

SPECIFIC CHARACTER

AND

SYNONYMS.

Front of the head sloping downwards, and armed with two prominent spines before the eyes: pectoral fin emarginate at the tip.

TRACHINUS MAJOR: fronte declivi ante oculos bispinato, pinna pectorali apice emarginata.

Draco Major seu araneus. *Salvian.* 70.

GREATER WEEVER. *Penn. Tour Scotland.* 1769. *Octavo.*

Great Weever. *Penn. Brit. Zool. T. 3. p. 171.*

This particular species is very generally confounded with the common, or small Weever, *Trachinus Draco*. Some few writers, among

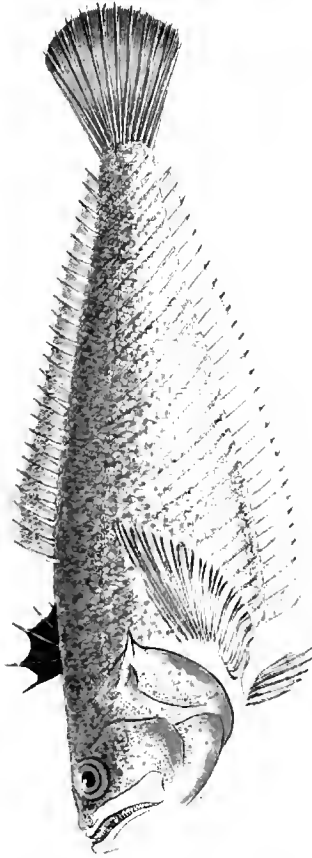
PLATE CVII.

markets, being in some esteem for the table, but those exposed for sale are generally in a mutilated state, being deprived as soon as taken by the fishermen of the first dorsal fin, and the strong spine at the posterior part of the gill-covers.



COMMON WEEVER.

7



London. Pub. by W. & A. G. & Co. 1853.

PLATE XXIII.

TRACHINUS DRACO.

COMMON WEEVER.

GENERIC CHARACTER.

Head smooth, compressed: branchiostegous membrane with six rays: inferior lamina of the gill-covers, serrated. Vcnt near the breast.

SPECIFIC CHARACTER.

Inferior jaw longest, destitute of cirri.

TRACHINUS DRACO. *Gmel. Linn. Syst. Nat. T. 1. p. 3. p. 1157.*

153. *Sp. 1.*

Trachinus maxilla inferiore longiore, cirrhis destituta. *Art. gen.*

42. *syn. 70.*

Trachinus maxilla inferiore longiore, radiis quinque in pinna dorsali prima. *Block. Fisch. Deutschl. 2. p. 131.*

t. 61.

The Weever grows sometimes to the length of ten or twelve inches; and inhabits most of the seas of Europe. It lurks under the sand on the sea-shore, with only the nose and first dorsal fin above the surface. In this posture it is a dangerous creature, and greatly dreaded by fishermen and others, who necessarily walk bare-

PLATE XXIII.

footed upon the sands, for should they happen to tread upon it, the Weever never fails to inflict a deep and grievous wound with the erected spines of this dorsal fin: in the first instance it is exceedingly painful, attended with a violent burning, and sometimes a dangerous inflammation of the whole limb almost immediately ensues.

Mr. Pennant observes, it is a common opinion that these symptoms proceed from something more than the small wound this fish is capable of inflicting; and that there is a venom infused into it; at least such as are made by the spines that form the first dorsal fin, which is dyed with black, and has a most suspicious aspect. The same writer likewise remarks, that the remedy used by the fishermen on the coast of Flintshire is the sea-sand, with which they rub the wounded part for a considerable time; at Scarborough, stale urine warmed has been used with success; and in the *Universal Museum*, for November 1765, we find an instance of a person who was reduced to great danger by a wound from one of this species, and was cured by the application of sweet oil, and taking opium and Venice treacle*.—The fishermen in the South of France, apply leaves of the *Lentisque*, or Mastic Tree, which grows in that country.

As the flesh of the Weever is excellent; they are caught in great numbers on the coast of Holland, and, to prevent accidents, the dorsal fin is cut off before they are brought to market: this is but a necessary precaution, as the fish will live a considerable time out of the water; Weevers thus deprived of their noxious weapon of offence, are sometimes exposed for sale in the fish-markets of London also.

* *Penn. Brit. Zool.*

PLATE XXIII.

In the dorsal fin of the species represented in the annexed plate are five spines; some writers describe it as having six: the second dorsal fin contains twenty-five rays; the pectoral, fifteen; ventral, six: anal, twenty-five; and tail, ten; with three short ones on each side.

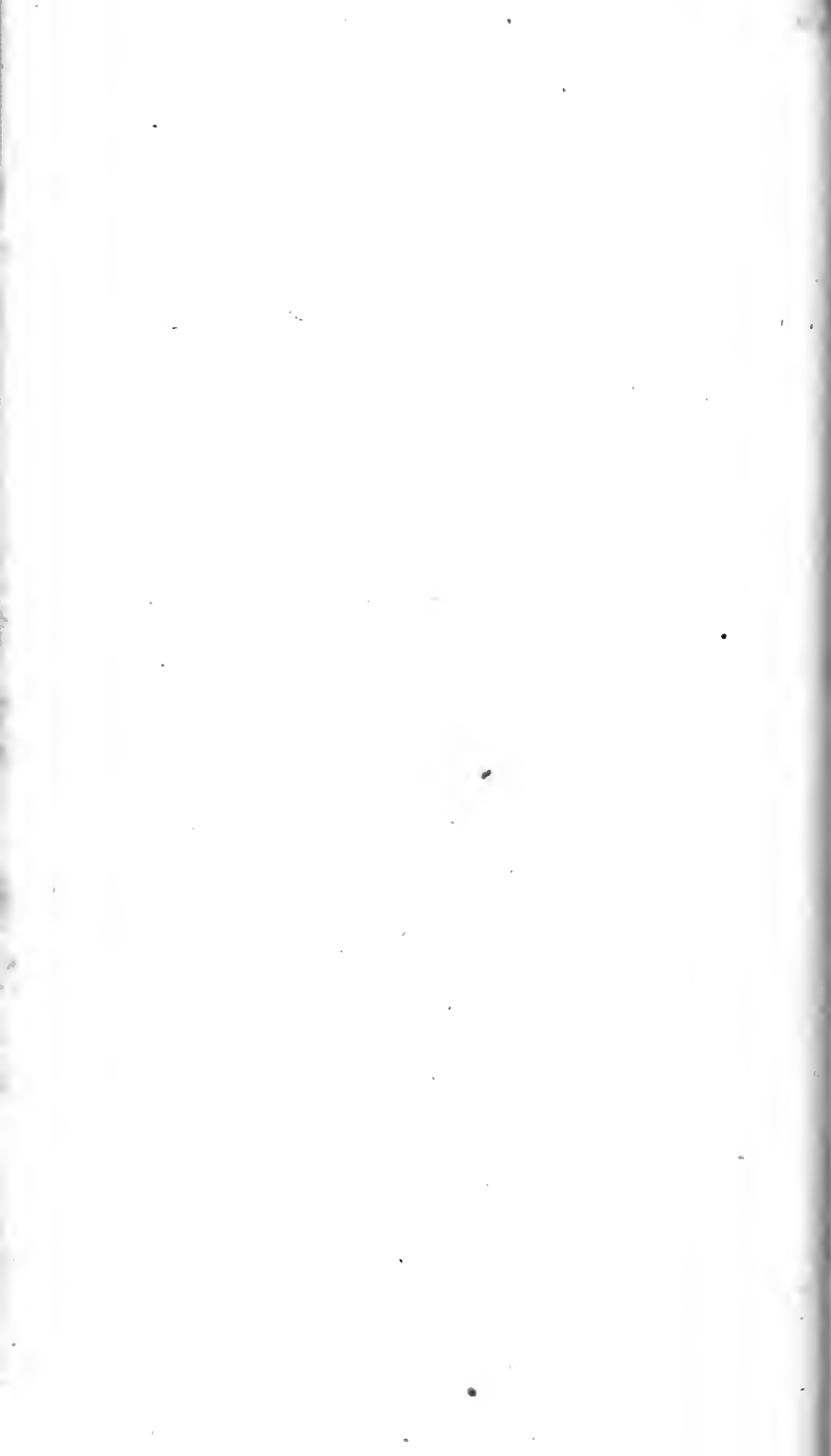




PLATE LIX.

GADUS AEGLEFINUS.

HADDOCK.

* PISCES JUGULARES.

GENERIC CHARACTER.

Head smooth. Seven slender rays in the branchiostegous membrane. Body oblong. Scales deciduous. All the fins covered with a skin. More than one dorsal and anal fin; rays unarmed. Ventral fin slender, pointed.

SPECIFIC CHARACTER

AND

SYNONYMS.

Whitish, tail forked: upper jaw longest.

GADUS AEGLEFINUS: albicans, cauda biloba, maxilla superiore longiore. *Linn. Fn. Suec.* 306.—*Gmel. Syst. Nat.* 1159. *sp.* 1.

Gadus Kolja. *It scan.* 325.—Gadus dorso tripterygio, ore papilloso. *It. Wgoth* 178.

Gadus dorso tripterygio, ore cirrato, corpore albicante, maxilla superiore longiore, cauda parum bifurca. *Art. Gen.* 20. *syn.* 36. *spec.* 64.

PLATE LIX.

Callarias barbatus ex terreo albicans, in lateribus macula nigra, cauda parum divisâ, mandibulis minutis, sed acutissimis dentibus asperis. *Klein miss. pisc. 5. p. 6. n. 2.*

Aeglefinus *Bellon. aq. p. 127.*

Asellus major *Aldrov. pisc. p. 282.*

Callarias Asellus minor. *Jonst. de pisc. p. 1. t. 1. f. 1.*

Gadus cirro unico, linea laterali nigra. *Bloch Fisch. Deutschl. 2. p. 138. t. 62.*

AIGREFIN, & EGLEFIN. *Belon. 118. &c.*

HADDOCK. *Will. Ichth. 170.—Raii Syn. pisc. 55.—Penn. Brit. Zool. 3. p. 179.*

At a certain season of the year, the Haddocks assemble together in immense shoals in the Northern seas, preparatory to their annual migrations to the southward, in the course of which they visit the coasts of the British Isles. Some short time after their appearance in the German sea, they are equally abundant upon the coasts of Sweden, Denmark, and Holland, as on the shores of Britain, but after passing down the channel to the southward, as far as the coast of France, it is not certain that they proceed any further in that direction. It has been observed, that in those periodical migrations which take place in the winter season, about the end of November, or beginning of December, that it never enters the Mediterranean: neither does it appear in the Baltic, or even pass the sound towards that sea: Copenhagen, and other markets on the coast of the Baltic, and also Hamburgh, being supplied with the Haddock by the fishermen, who take them in vast quantities in the sea, off Heiligeland.

PLATE LIX.

The winter is the most productive season for the Haddock fisheries, because, at that time, the Haddock may be taken in great abundance in our seas; it is also common at most other seasons, on our coasts, for it may be named among the small number of fishes, that is constantly brought for sale throughout the year, to the London markets.

The Haddocks are in full roe at the time of their arrival in December*, nature having directed them to seek a milder region than that which they inhabit in summer, as the winter approaches, in order to deposit their spawn. The old fishermen affirm, that the females appear in shoals upon the coast, which after laying their eggs, are followed to the same places by shoals of the males, who immediately proceed to fecundate the eggs deposited by the former.

* "The grand shoal of Haddocks," Mr. Pennant tells us, "comes periodically on the Yorkshire coasts. It is remarkable that they appeared in 1766, on the 10th of December, and exactly on the same day, in 1767: these shoals extended from the shore, near three miles in breadth, and in length from *Flamborough* head, to *Tinmouth* castle, and perhaps much further northwards. An idea may be given of their numbers, by the following fact: three fishermen, within the distance of a mile from *Scarborough* harbour, frequently loaded their *coble*, or boat, with them twice a day, taking each time about a ton of fish: when they put down their lines beyond the distance of three miles from the shore, they caught nothing but dog fish, which shows how exactly these fish keep their limits."

"The best Haddocks were sold from eight-pence, to a shilling per score, and the poor had the smaller sort at a penny, and sometimes a halfpenny per score."

"The large Haddocks quit the coast as they go out of season, and leave behind great plenty of small ones. It is said, the large ones visit the coasts of *Hamburg*, and *Jutland*, in the summer."

PLATE LIX.

Haddocks of a large size are only esteemed good for the table during the winter: those of a small size, before they begin to breed, are considered in perfection at all times, but these even are best in winter. The flesh of this fish when boiled, is not so firm as that of the Cod, to which it must also yield in the excellence of flavour; some, however, think it preferable. When salted, and cured like the Cod, the Haddock is by no means indifferent eating. Sometimes the Haddock attains to the length of three feet, one of which size in good condition, will weigh about fourteen pounds, but these are deemed much inferior to those of about half the size, or eighteen inches in length.

Upon the first approach, or appearance of a storm, the Haddock sinks to the bottom of the sea, to seek shelter till the danger is over, and when they again appear near the surface, on the return of fine weather, they are observed to have their backs soiled with mud, or sea weeds, and other marine refuse lodged at the bottom of the water. In the North seas, the fishermen are most successful in their fisheries for the Haddock in the night time, those fishes lurking at the bottom of the sea in the day time, but rising near the surface, as the evening closes, in quest of food.

The same mode of capture is pursued for the Haddock, as is adopted in the cod fisheries. They lay down in the water several lines of considerable length, to which a number of hooks are suspended, at proper distances from each other: the most tempting bait for the Haddocks, are pieces of the herring, a fish of which they are remarkably fond, for it is in pursuit of the herrings often-times, as is well known, that the Haddocks are met with in such immense shoals traversing the ocean.

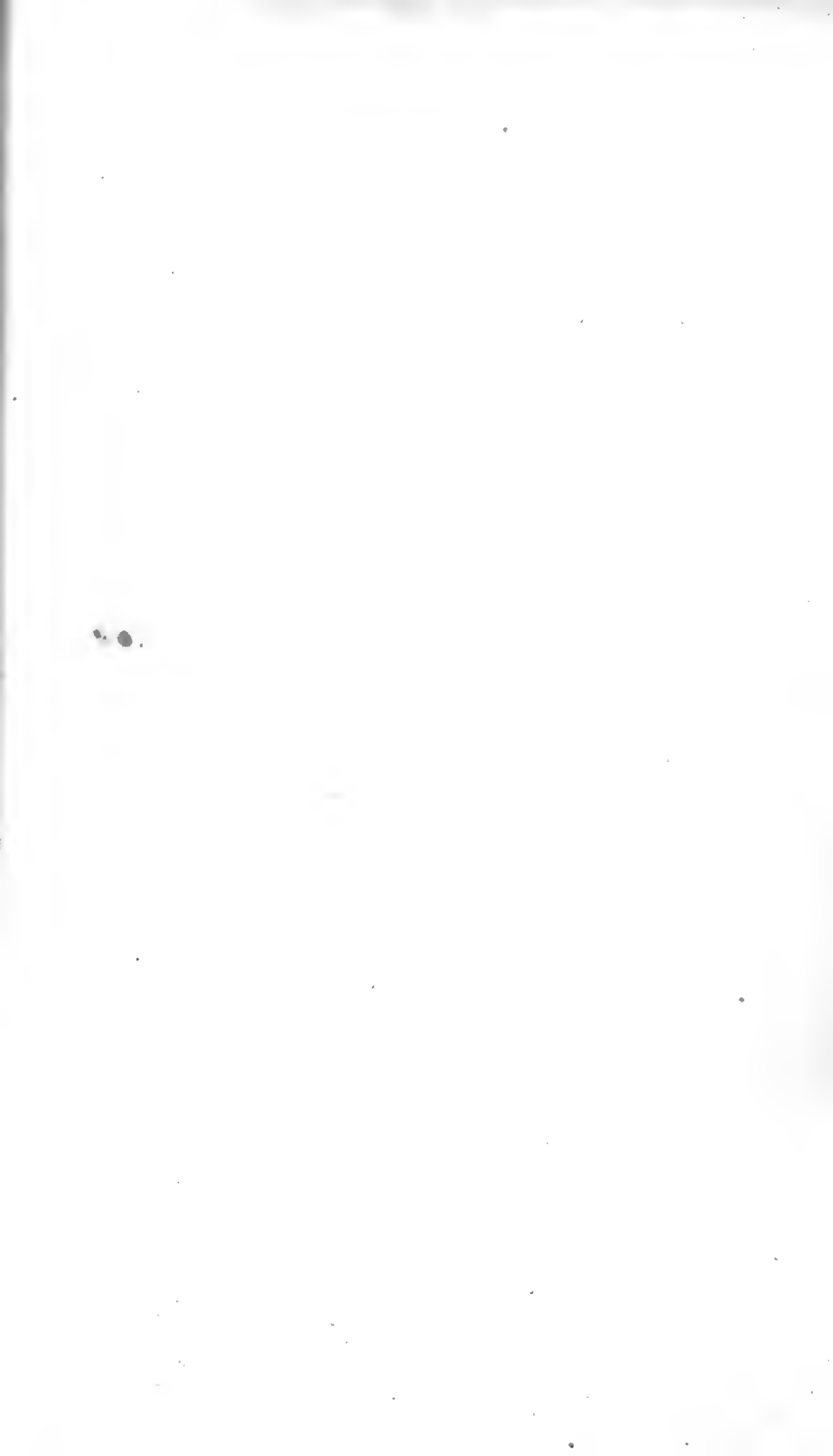
PLATE LIX.

Dr. Bloch is of opinion, that the black or dusky colour of the lateral line, in addition to the little cirrus, or beard, at the lower jaw, is a sufficient specific criterion of the Haddock. There is also another very remarkable character of the Haddock, a large square black or dusky spot on each side of the body, near the head, or a little below the first dorsal fin, from whence, in the legends of credulous devotion, it has been admitted to be the same fish, as St. Peter caught with the tribute money in its mouth. The two spots are considered as the mark of St. Peter's thumb and finger, which has ever since remained impressed on the sides of the whole race of Haddocks, to perpetuate the circumstance. But the Haddock is not without a rival, in this mark of reputed sanctity: the sides of the Dory being even more distinctly marked, than those of the Haddock.

There are three fins on the back of this fish, the first containing in the specimen we examined for this purpose, fourteen rays: second, twenty six rays: third, eighteen rays; pectoral fin nineteen rays, and ventral six rays. There are also two anal fins, the first containing twenty-two rays, the second twenty, and the tail forty-one. It should be observed, that Linnæus in *It. Wgoth*, speaks of a Haddock, with only twenty-three rays in the tail, and Bloch of another, with twenty-seven.

The first of these is the fact that the
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COD.

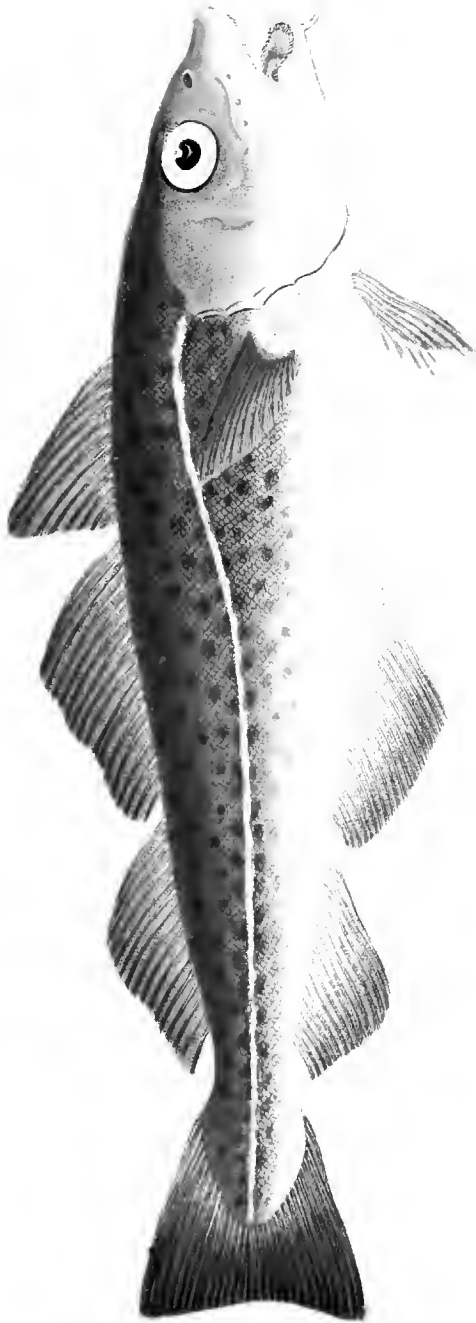


PLATE CVI.

GADUS MORHUA.

COD-FISH.

** PISCES JUGULARES.

GENERIC CHARACTER.

Head smooth. Seven slender rays in the branchiostegous membrane. Body oblong. Scales deciduous. All the fins covered with a skin. More than one dorsal and anal fin; rays unarmed. Ventral fin slender; pointed.

SPECIFIC CHARACTER

AND

SYNONYMS.

Scales large: first ray of the ventral fin spiny.

GADUS MORHUA: squamis majoribus: radio primo anali spinoso.

GADUS MORHUA: cauda subæquali, radio primo anali spinoso.
Linn. Fn. Suec.—Gmel. Linn. Syst. Nat. T. 3.
p. 1. p. 1162. sp. 3.

Gadus dorso tripterygio, ore cirrato, cauda æquali fere cum radio primo spinoso. *Art. syn. 35.*

Gallarias sordide olivaceus: maculis flavicantibus variis, linea laterali alba. *Klein. Miss. pisc. 5. p. 5. n. 1.*

Cabliau. *Ström. söndm. 317.*

COD-FISH. *Will. Ichth. p. 165.—Raj. pisc. p. 53. n. 1.—Penn: Brit. Zool. 3. p. 172. n. 73.*

PLATE CVI.

The history of the common Cod-fish is amply detailed by many writers. It is known to be a general inhabitant of all the Northern and American seas, and is found in very high latitudes, though in less abundance and perfection than in regions somewhat more temperate. The great resort of the Cod-fish are the immense sand-banks on the coast of Newfoundland, and others off the coasts of Cape Breton, Nova Scotia, and New England; and also upon those of Iceland and Norway, the Dogger Bank, and the Western Isles.

Before the discovery of Newfoundland, the principal fisheries for the Cod were carried on upon the coasts of Iceland and the Scottish islands, which were then the places of rendezvous for all commercial nations engaged in those concerns. In the year 1388 the city of Amsterdam received permission from the Crown of Sweden to form an establishment upon the isle of Schonen for the fishery of the Cod in the adjacent seas. The English resorted to Iceland for the purpose of fishing before the year 1415, as it is recorded that Henry the Fifth of England was disposed to give the King of Denmark satisfaction for certain irregularities committed in those seas by his subjects. Under Edward the Fourth the English were excluded by treaty from this fishery, under pain of death, and confiscation of property; notwithstanding which Mr. Pennant observes, that monarch gave licence to a ship of Hull to sail to Iceland, and there relade fish and other goods, without regard to any restrictions to the contrary. In later times, Queen Elizabeth condescended to ask permission to fish in those seas from Christian the Fourth, King of Denmark; though it appears she afterwards repented her request and instructed her ambaffador at that court to insist on the right of a free and universal fishery. The issue of this application is uncertain.

PLATE CVI.

but her successor, James, having espoused a princess of Denmark, the English were afterwards permitted to fish in those seas without molestation.

In a commercial view, the importance of the Cod fishery is very great; as an object of national consequence to a maritime country like Great Britain, its advantages are peculiar, and of still greater moment; the fish itself being an article of trade for the benefit of individual adventurers, the fishery a nursery of seamen for the state. The consumption of this fish in the British Isles is less considerable, except in the remoter parts of Scotland, than in Iceland, Norway, and some other northern countries, in many parts of which it constitutes a principal article of food. The English, from their hardy intrepidity and industry, hold a great share of this fishery in their own power; the Dutch, French, Spaniards, and Portuguese, also, except in time of war, take an active share in this concern.

The fisheries for Cod are carried on at all seasons of the year on the coasts of Norway, some parts of America, and also on the British shores, chiefly about the Orkneys and Western Isles, from whence they are brought alive in well-boats, or packed up fresh in ice, for the supply of the London, and other markets. This fish commonly inhabits the deeps of the open sea, where it subsists on sea polypes, and other worms: fish, of which the herring is the principal; crabs, and testaceous animals, or shell fish. In the spawning season it seeks the sand-banks, in order to deposit its spawn, and it is at that season the fishery proves most productive. The fishermen observe, that the time of spawning varies according to the age of the fish, or the greater or less degree of cold. In England they

PLATE CVI.

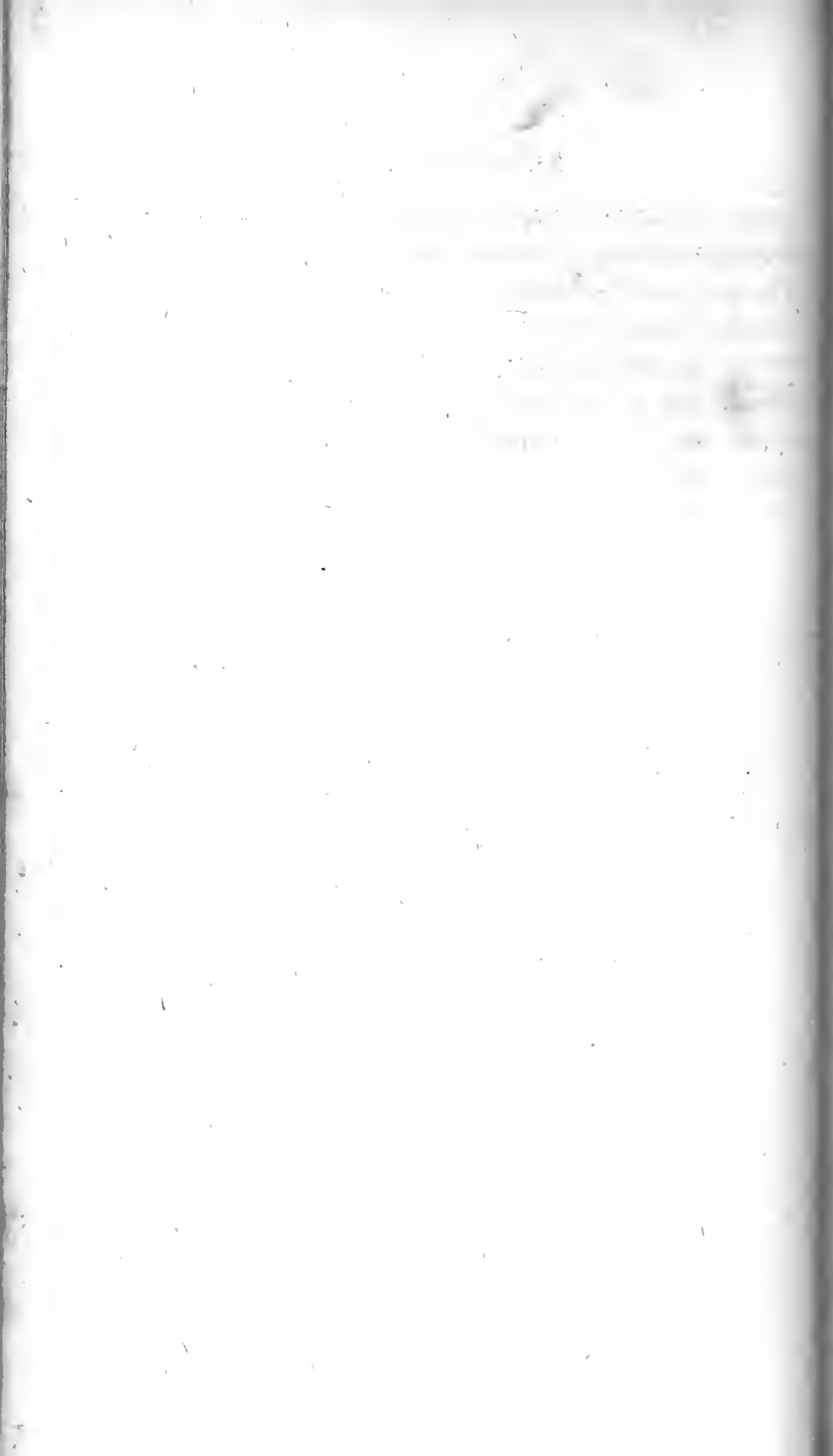
usually begin spawning about January, in Iceland about February, and on the banks of Newfoundland not till April. The greatest fishery for the Cod in Europe is therefore from the month of February to the end of March, or middle of April, but in America in May and June. They disappear after this time, and again return to their former haunts in September, at which time, however, the severity of the northern winters begin to take place, and when the waters become frozen the fishery is altogether precarious. The Cod-fish is taken by the hook and line, baited with pieces of fish, aquatic birds, clamps, or other food upon which this fish in common subsists.

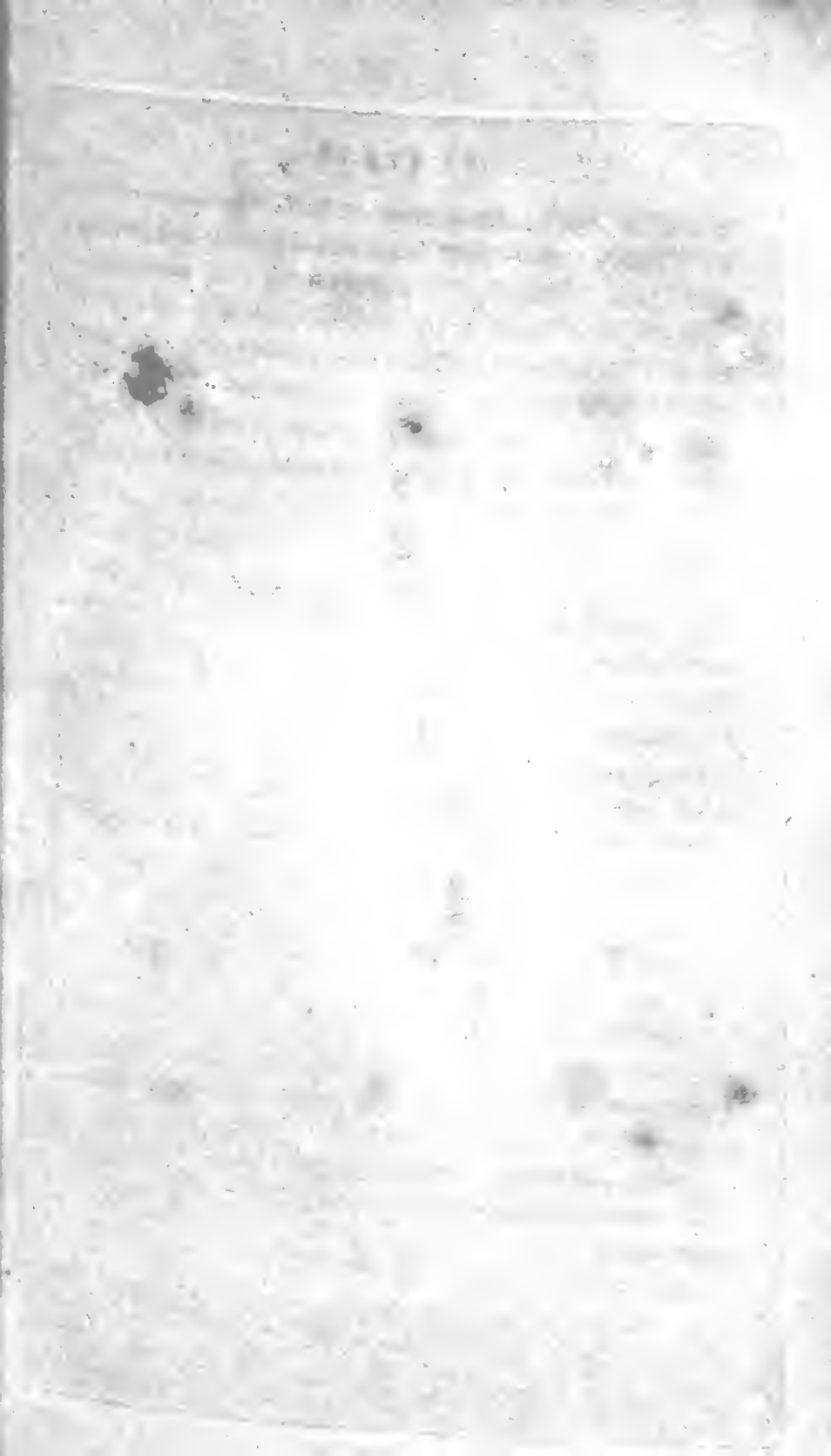
The mode of preparation adopted by different companies and nations for the curing the Cod-fish is various: in the north they distinguish different kinds by the name of *Stock-fish*, *Laberdan*, *Klipp-fish*, &c. the principal difference of which consists in preparing the flesh with a greater or less portion of salt, and in either drying it in the air, or preserving it moist, packed up in barrels. The sounds are considered delicate, and it need be scarcely added that an isinglass is prepared from this part of the fish. An oil is likewise extracted from the liver of the Cod by the Norwegians and Icelanders, which for many useful purposes is preferable to that of the whale.

It is rarely that the Cod-fish attains to a large size in the British seas. Mr. Pennant speaks of one which measured five feet in length, and five in the girth round the shoulders; the weight seventy-eight pounds: this was taken on the coast of Scarborough, in Yorkshire. Those of twenty or thirty pounds weight are esteemed of good size in England; but they occur of far greater magnitude on the coast of Newfoundland.

PLATE CVI.

The colour of the Cod-fish varies at different ages, or states of growth, and according to the climate. The general hues are cinereous on the upper parts, and white beneath, and when young, are varied with yellowish marks, which become more obscure in the full-grown fish. In vigorous healthy fishes the colours are remarkable vivid and beautiful. The first dorsal fin contains about twelve rays, the second eighteen, and the third sixteen: the pectoral fin fourteen, ventral seven: the first anal fin twenty, second sixteen: and tail thirty-six.





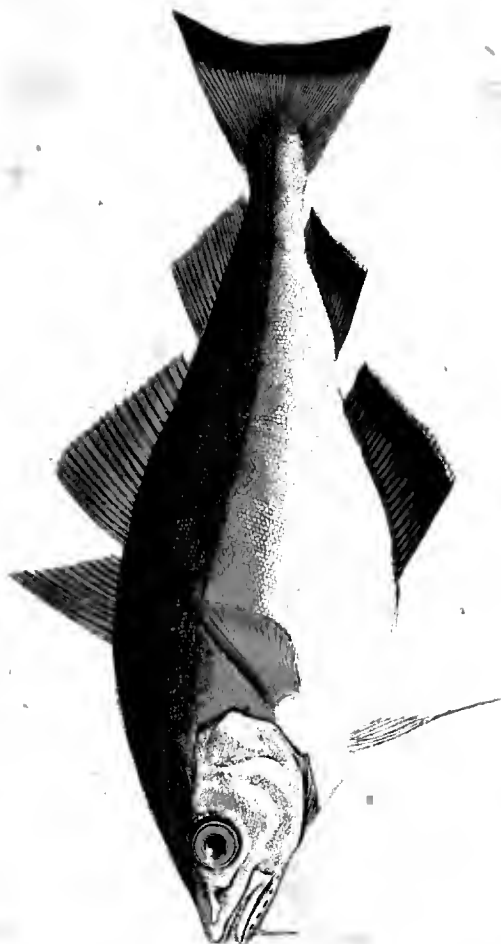


PLATE XIX.

GADUS LUSCUS.

BIB.

GENERIC CHARACTER.

Head smooth. Seven slender rays in the branchiostegous membrane. Body oblong. Scales deciduous. All the fins covered with a skin. More than one dorsal and anal fin; rays unarmed. Ventral fin slender, pointed.

SPECIFIC CHARACTER

AND

SYNONYMS.

First ray of the ventral fin setaceous.

GADUS LUSCUS: radio ventralium primo setaceo. *Linn.—Gmel. Syst. Nat. T. 1. p. 3. p. 1163. sp. 4.*

Gadus dorso tripterygio, ore cirrato, ossiculo pinnarum ventralium primo in setam longam, producto. *Arted. gen. syn. 35.*

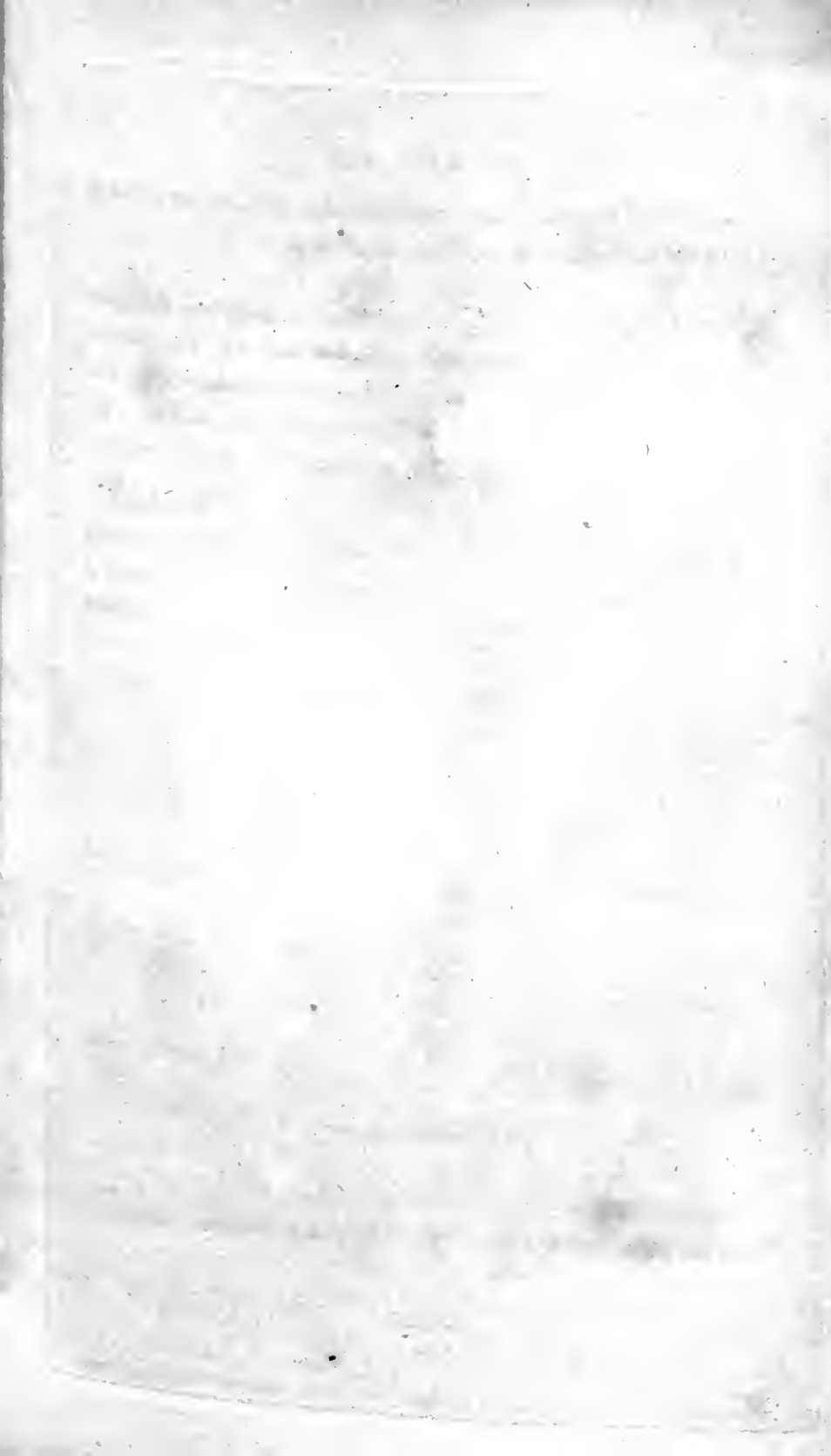
BIB. *Penn. Brit. Zool. V. 3. p. 184.*

This we apprehend to be an uncommon fish on the British coasts, having only met with a single specimen of it, and that in the sea to

PLATE XIX.

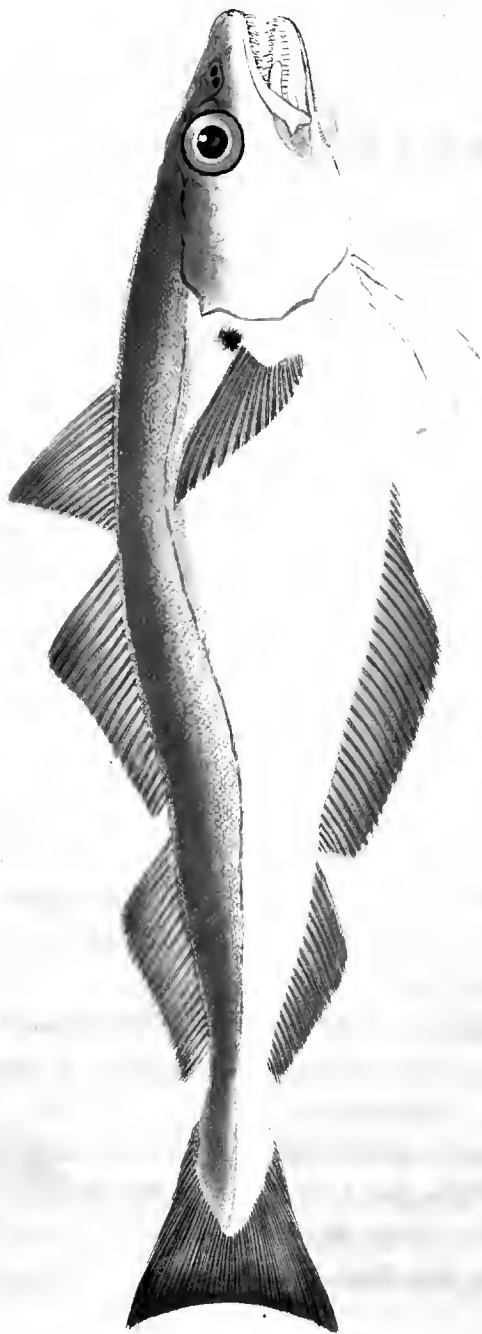
the north of Caernarvonshire: the fishermen in those parts know it by the name of the Miller's Thumb, Deillion.

The body, like that of the Whiting Pout, is deep, and the sides compressed; the colour along the back olive, and the sides beautifully glossed with gold. There is also a loose membrane over the eye, which the creature can blow up at pleasure like a bladder. In the first dorsal fin we counted thirteen rays, in the second twenty, and in the third nineteen: pectoral fins sixteen: ventral five: first anal twenty-three, second anal twenty: tail thirty-three.



WHITING.

11



London: Publ. by the Fish Commission for F. J. D. & C. Messengers, Aug. 1, 1882.

PLATE XXXVI.

GADUS MERLANGUS.

WHITING.

JUGULARES.

GENERIC CHARACTER.

Head smooth. Seven slender rays in the branchiostegous membrane. Body oblong. Scales deciduous. All the fins covered with a skin. More than one dorsal and anal fin; rays unarmed. Ventral fin slender, pointed.

SPECIFIC CHARACTER.

White; back brownish: upper jaw longest.

GADUS MERLANGUS: albus, dorso subfusco, maxilla superiore longiore.

GADUS MERLANGUS. G. albus, maxilla superiore longiore. *Fn. Suec.* 310.—*Gmel. Linn. Syst. Nat.* 1167. *sp.* 8.

Gadus dorso tripterygio, ore imberbi, corpore albo, maxilla superiore longiore. *Art. gen.* 19. *syn.* 34. *spec.* 62.

Gadus corpore albo, ore imberbi, maxilla superiore longiore. *Bloch. Asellus mollis.* *Jongst. pis.* 1. 2. *f.* 3.—*Asellus major* L. albus. *Raj. pisc.* 55. *n.* 8.

WHITING. *Penn. Brit. Zool.* V. 3. *sp.* 80.

PLATE XXXVI.

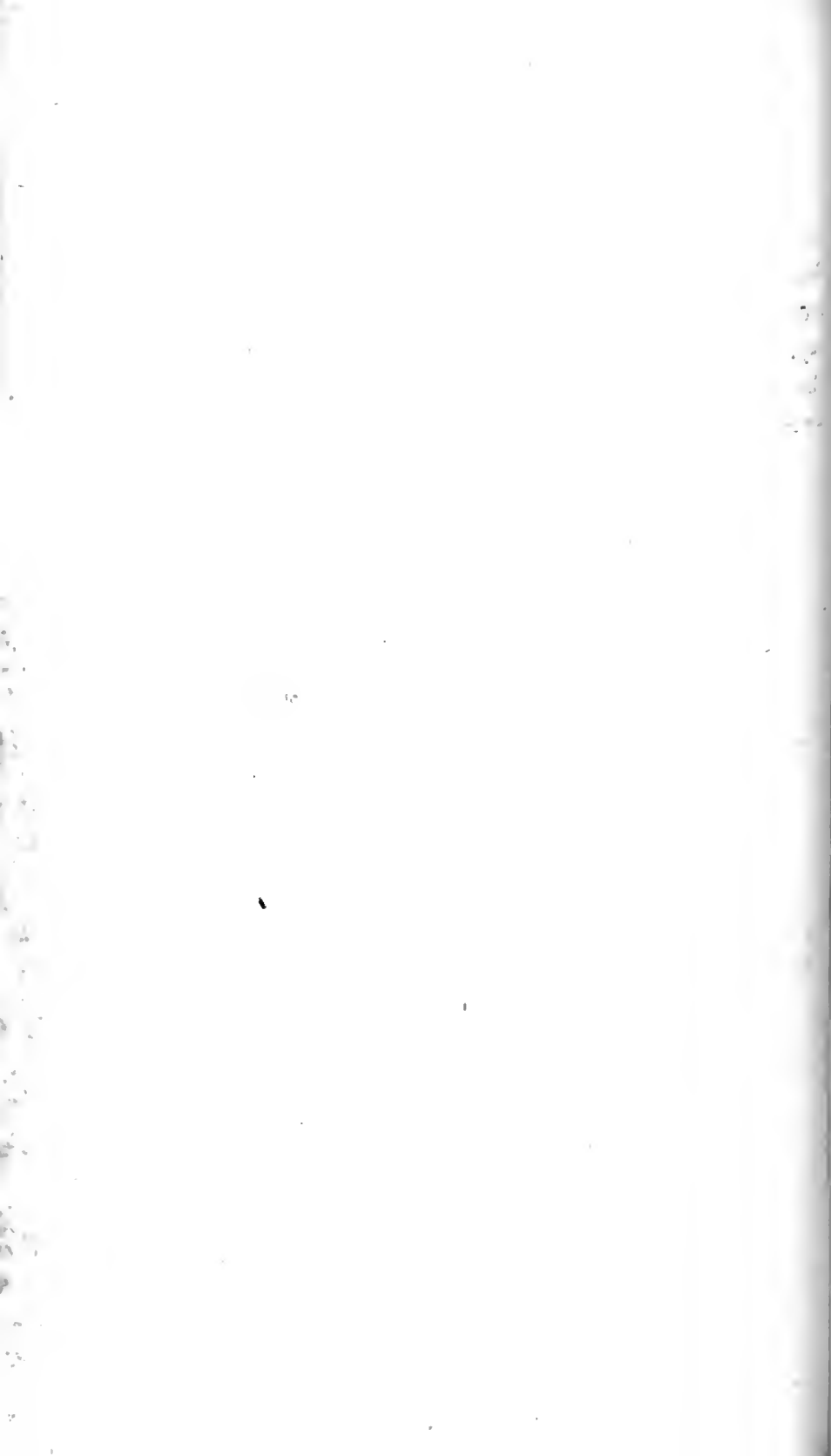
To the history of the common Whiting we can add nothing that is not already known. The Whiting is a fish sufficiently abundant in all the temperate parts of Europe. We are told it is found in the Baltic, Mediterranean, and Northern Seas; although less frequent in those, than in the seas which wash the shores of Holland, France, and England, where at most seasons of the year it is found in the greatest plenty. One circumstance should be observed, the principal fisheries for the Whiting commence upon the French coasts as early as January or February; but on the coasts of Holland and those of our own country the Whiting fisheries do not take place much before April or May.

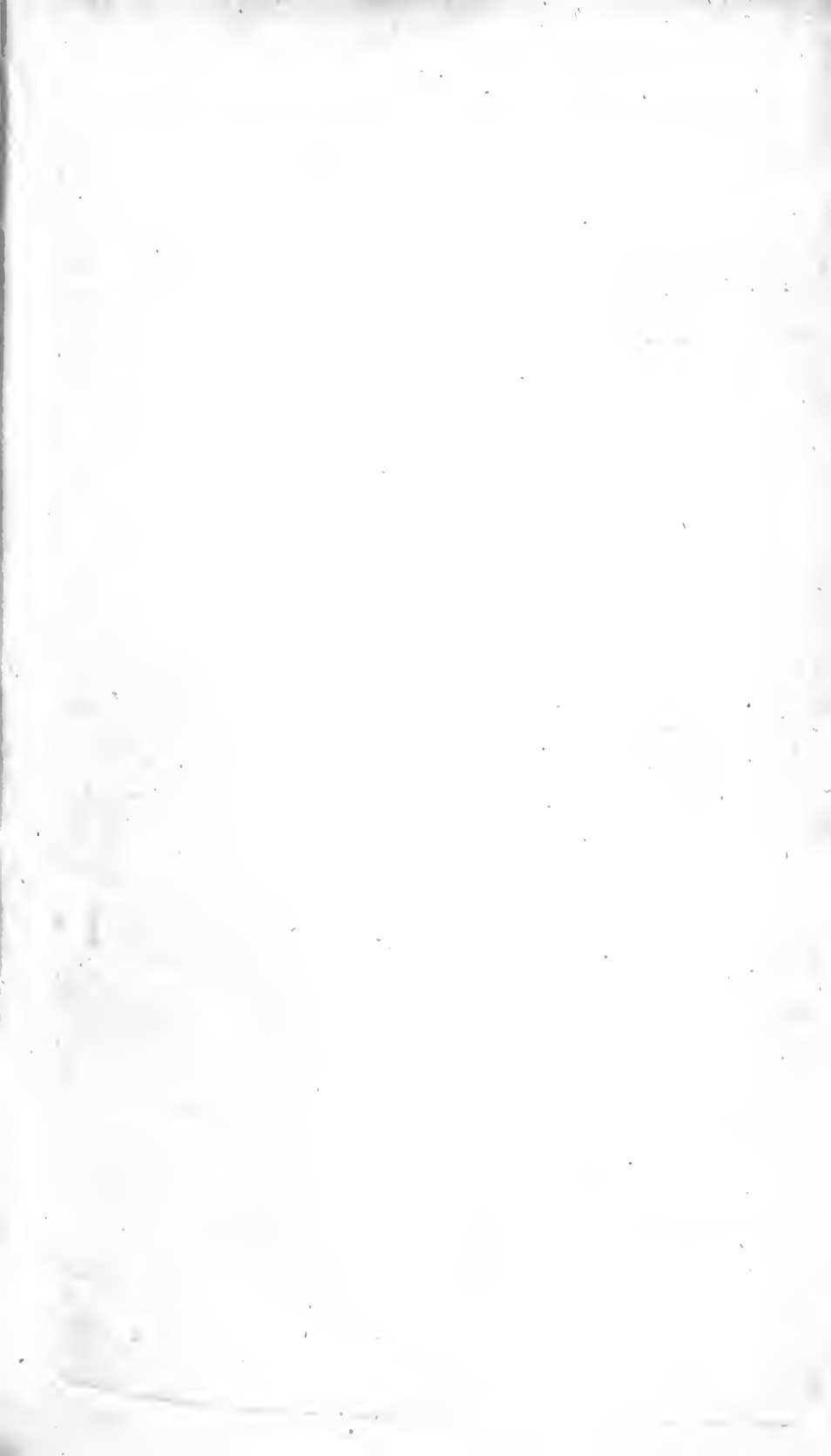
During the summer months the Whiting haunts our coasts in vast shoals, hovering at the distance of one, two, or three miles from the land. As they feed on the young of other fishes, especially Sprats and Herrings, the hooks with which they are taken are commonly baited by the fishermen with pieces of these fishes: they are also very fond of crabs and marine worms.

The Whiting spawns in the beginning of the winter; the young fry make their appearance shortly after: these increase rapidly in size, till they become ten or twelve inches in length, after which their growth is observed to be much slower. Pennant, and after him, Bloch and other writers, speak of Whiting weighing from four to eight pounds each, that have been taken in the deep water at the edge of the Doggerbank. This is not very improbable, although we may naturally conclude, they are not commonly taken there of that enormous magnitude; it is well known that the largest Whittings brought to our markets, are caught in that part of the Dutch sea, in which the Doggerbank lies. There are likewise considerable fisheries upon our

PLATE XXXVI.

western coasts. Upon the back of this species are three fins, the first containing in the specimen we have figured, fifteen rays, the second twenty, the third twenty-one. In the pectoral fin are seventeen rays; the ventral one has six. There are likewise two anal fins, in the first of which we find thirty-two rays; and in the second, twenty. Those in the tail amount to thirty-three.





COAL FISH.

12

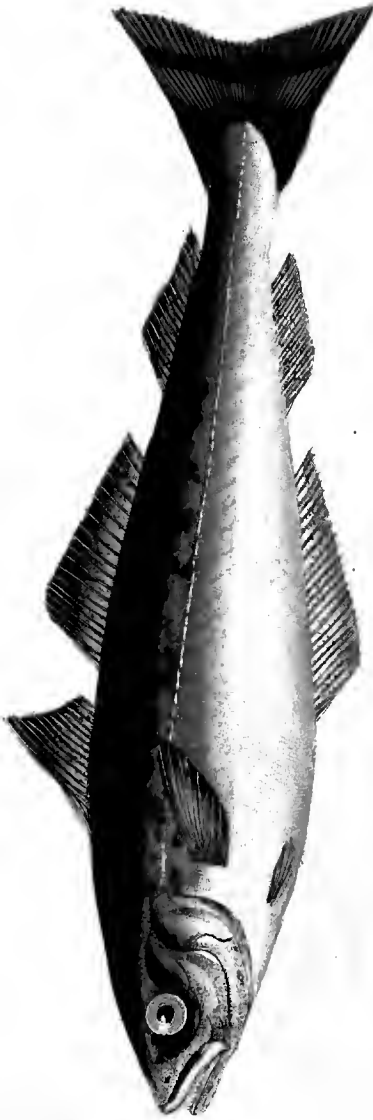


PLATE XIII.

GADUS CARBONARIUS.

COAL FISH.

* JUGULARES.

GENERIC CHARACTER.

Head smooth. Seven slender rays in the branchiostegous membrane. Body oblong. Scales deciduous. All the fins covered with a skin. More than one dorsal and anal fin; rays unarmed. Ventral fin slender, pointed.

SPECIFIC CHARACTER

AND

SYNONYMS.

Lower jaw longeft; lateral line fraight.

GADUS CARBONARIUS: maxilla inferiore, longiore, linea laterali recta. *Gmelin. Syst. Nat. T. 3. p. 1. p. 1168. sp. 9.*

Gadus dorso tripterygio imberbis, maxilla inferiore, linea laterali recta. *Art. gen. 20 syn. 34.*

COAL FISH. *Penn. Brit. Zool. 3. p. 152. n. 7.*

This species inhabits many of our rocky coasts: towards the Northern part of the island it is abundant, as it is also in the whole

PLATE XIII.

of the North and Baltic seas, and according to Gmelin of the Pacific Ocean also.

In different stages of growth the colours of this fish vary so exceedingly as to be often mistaken for distinct species, and hence they have been called Parrs, Billets and Coal fish. When young there is a certain duskiness of colour about this fish, which becomes darker as they grow older, and when very large the back, nose, dorsal fins and tail sometimes become of a deep black. Under the pectoral fin is a black spot: the mouth also is of the same colour, and the tongue silvery.

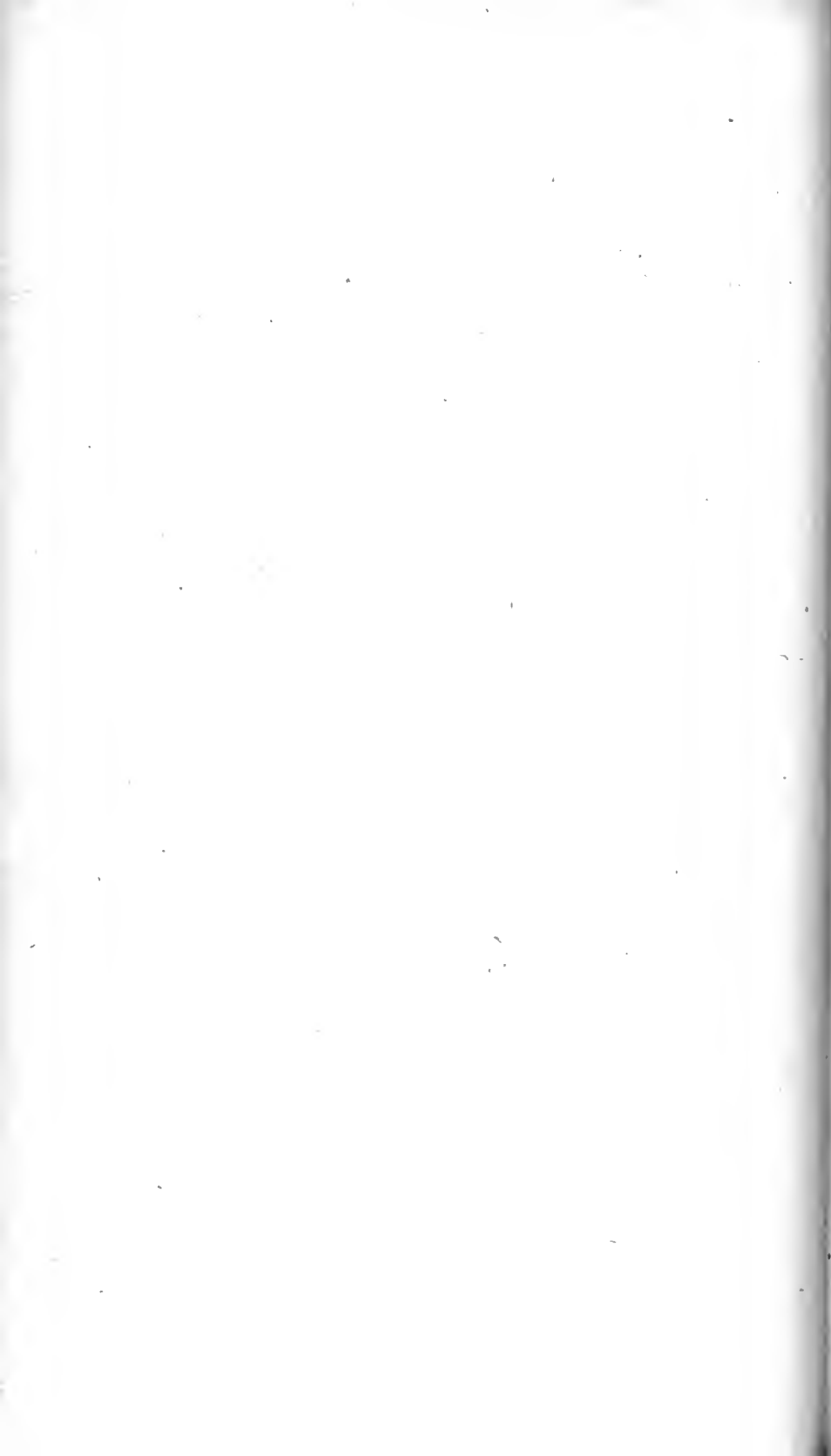
The young fry, according to Mr. Pennant, swarm about the Orkneys, and are the great support of the poor. They begin to appear on the Yorkshire coasts in vast shoals in the early part of July, and are then about an inch and an half in length. In August they are from three to five inches in length; are then very abundant, and esteemed a delicacy. They grow very coarse after that time, and when from eight to fifteen inches in length few people will eat them; at that time they are about a twelvemonth old, and appear dusky about the back and gills. They are sometimes salted and dried for sale when taken of a larger size.

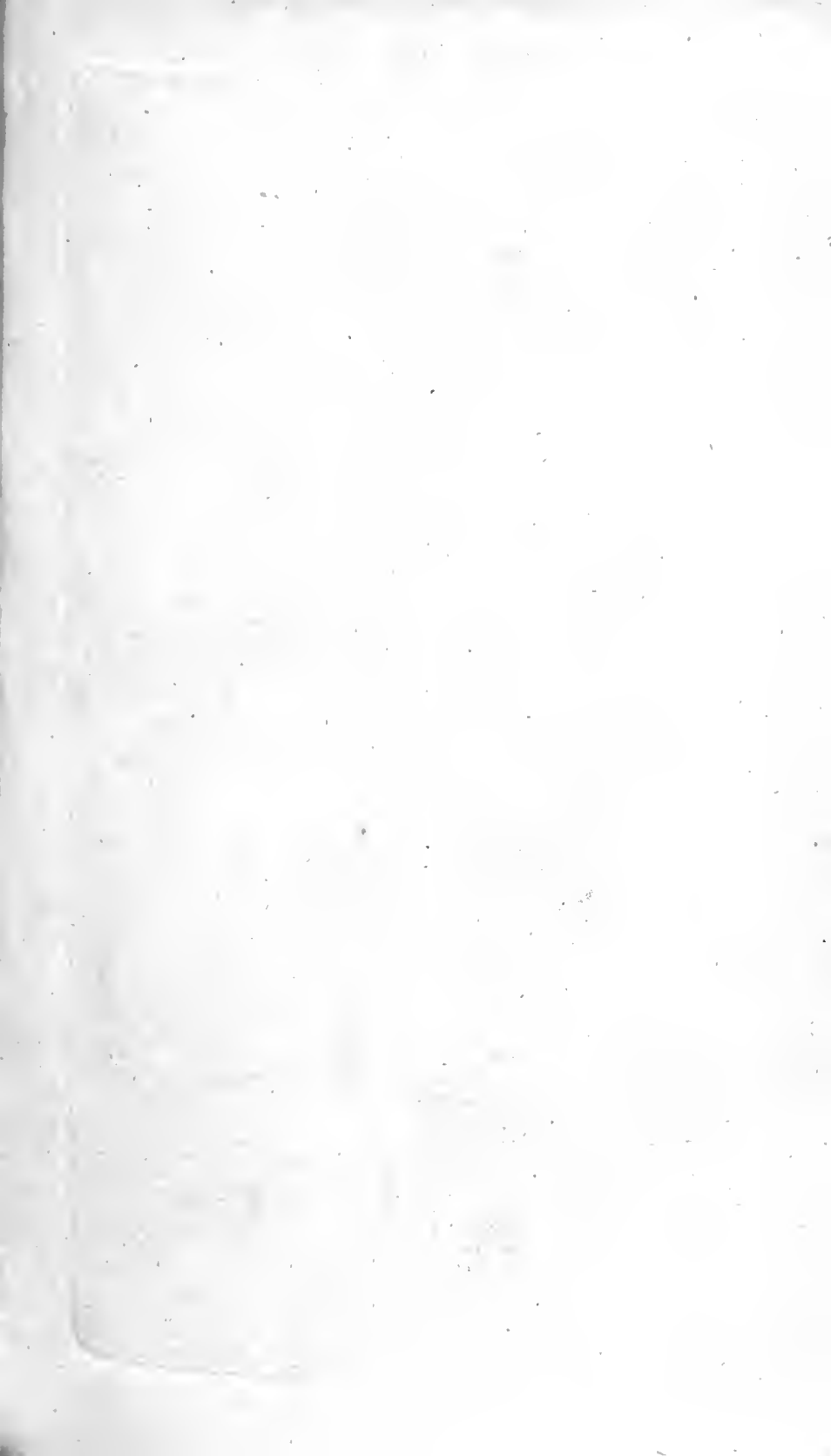
The Linnæan character is perhaps too concise, though it may be correct; Block thinks the blackness of the mouth and straight white lateral line is sufficient to discriminate the species.

This fish is covered with very small oblong scales. It has three dorsal fins, in the first arc fourteen rays, in the second eighteen, and in the third twenty: in the pectoral fin eighteen: ventral five:

PLATE XIII.

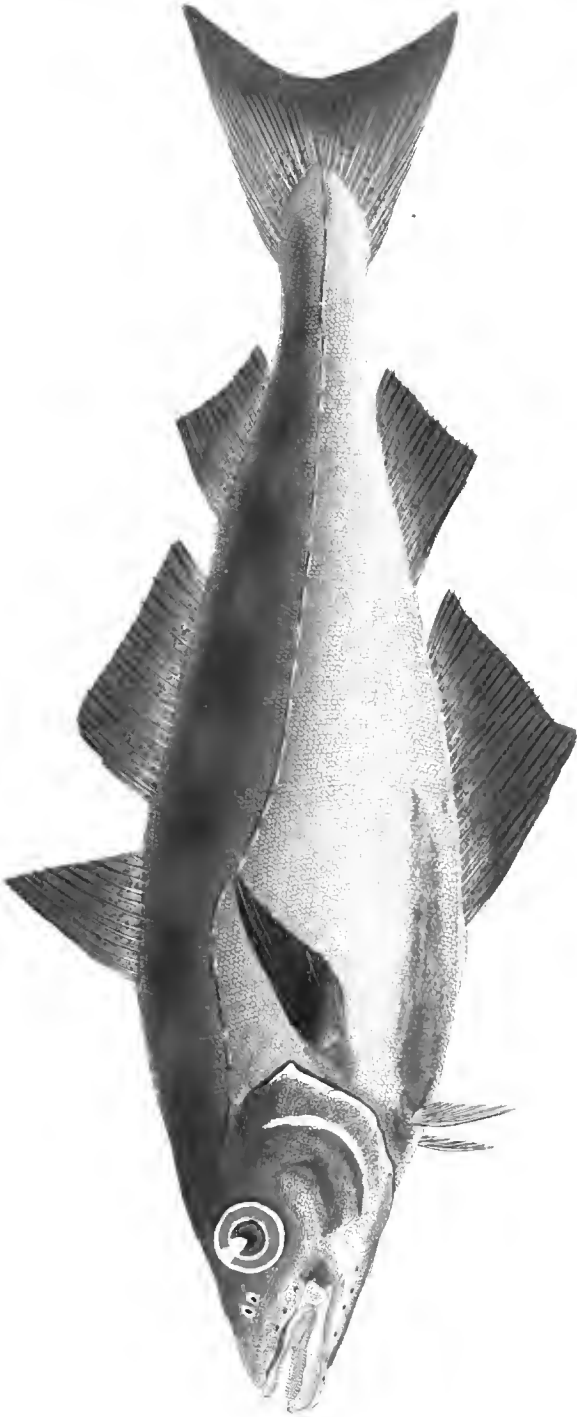
first anal fin twenty-six, second twenty-one, and in the tail thirty-three, beside ten very short ones on each side; the tail is broad and forked.





WHITING POLLACK.

13



London, Published at the 1st Street, by J. Donovan, & F. & C. Rivington, April 1, 1868.

P L A T E VII.

GADUS POLLACHIUS.

*WHITING POLLACK.**JUGULARES.*

GENERIC CHARACTER.

Head smooth; seven slender rays in the branchiostegous membrane. Body oblong, scales deciduous. All the fins covered with a skin. More than one dorsal and anal fin; rays unarmed. Ventral fin slender, pointed.

SPECIFIC CHARACTER

AND

SYNONYMS.

Lower jaw longest; lateral line bent.

GADUS POLLACHIUS: maxilla inferiore longiore, linea laterali curva.

Gmel. Linn. Syst. Nat. p. 1169. sp. 10.

Asellus Huitingo-Pollachius. Will. Icth. 167.

Whiting Pollack. Raii. syn. pisc. 53.

Pollach. Penn. Br. Zool. p. 188. sp. 79.

Our specimen of the Whiting Pollack has twelve rays in the first dorsal fin, nineteen in the second, and fifteen in the third; the pectoral fin nineteen, ventral six, first anal twenty-three, second sixteen, and the tail forty-two.

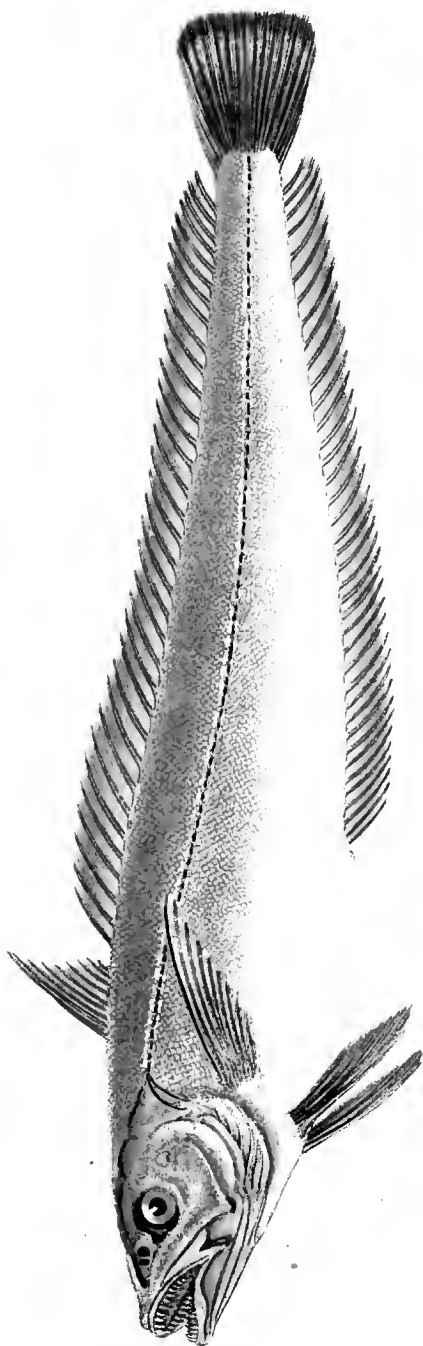
PLATE VII.

This species is frequent on several of our rocky coasts, and is in some esteem for the table. The largest we have seen did not exceed eighteen inches in length. Pennant speaks of some that weighed six or seven pounds, and mentions others that weighed near twenty-eight pounds, that were taken at Scarborough, which place they frequent during winter.



HAKE.

14



London, Pub. by the Soc. for the Diff. of Nat. Hist. and Geol. in 1861.

PLATE XXVIII.

GADUS MERLUCCIUS.

HAKE.

* JUGULARES.

GENERIC CHARACTER.

Head smooth. Seven slender rays in the branchiostegous membrane. Body oblong. Scales deciduous. All the fins covered with a skin. More than one dorsal and anal fin: rays unarmed. Ventral fin slender, pointed.

SPECIFIC CHARACTER

AND

SYNONYMS.

Beardless: inferior jaw longest.

GADUS MERLUCCIUS: imberbe, maxilla inferiore longiore. *Linn.*

Mus. Ad. Fr. 2. p. 60.—Fn. Suec. 314.—

Gmel. p. 1169. sp. 11.

Gadus dipterygius ore imberbi. *Bloch. Aus. Fisch. 2. p. 93. t.*

154.

Asellus, *Plin. hist. mund.*

Asellus primus. *Will. ichth. p. 174.—Ray, pisc. p. 56.*

HAKE. *Brit. Zool. Vol. 3. p. 156. n. 10.*

PLATE XXVIII.

M. Bloch acquaints us in his history of this species, that it may be easily distinguished from the other fishes of the *Gadus* genus by having two fins on the back, and the lower jaw beardless: by both these characters this fish may be perhaps distinguished, but it ought not to escape remark, that this is not the only species which has two fins on the back; the Gmelinian species *Molva*, *Albidus*, *Tau*, *Lota*, *Mustella*, and several others, possess the same character. These are, however, uniformly to be distinguished by having one or more beards on the chin, whilst that part in *Gadus Merluccius*, as Bloch observes, is perfectly smooth.

This fish is a native of the North and Mediterranean seas. It is of the migratory kind, frequenting our shores in immense shoals, during the Mackrel and Herring seasons, appearing for the first time in June, and then again in September, in pursuit of those fish. Mr. Pennant acquaints us that there was formerly a vast stationary fishery of Hake on Nymph Bank off the Coast of Waterford, and that it was no unusual thing for six men, with hooks and lines, to take a thousand Hake in one night, besides a considerable quantity of other fish. The flesh of the Hake, although firm and white, is so little esteemed for its flavour in England, that it is seldom eaten, even by the lower class of people. They are caught chiefly for the purpose of salting and drying them for exportation. Vast quantities, it is said, are sent every year to the port of Bilboa, and other parts of Europe. When cured, it is well known by the name of Poor John, or Stock Fish.

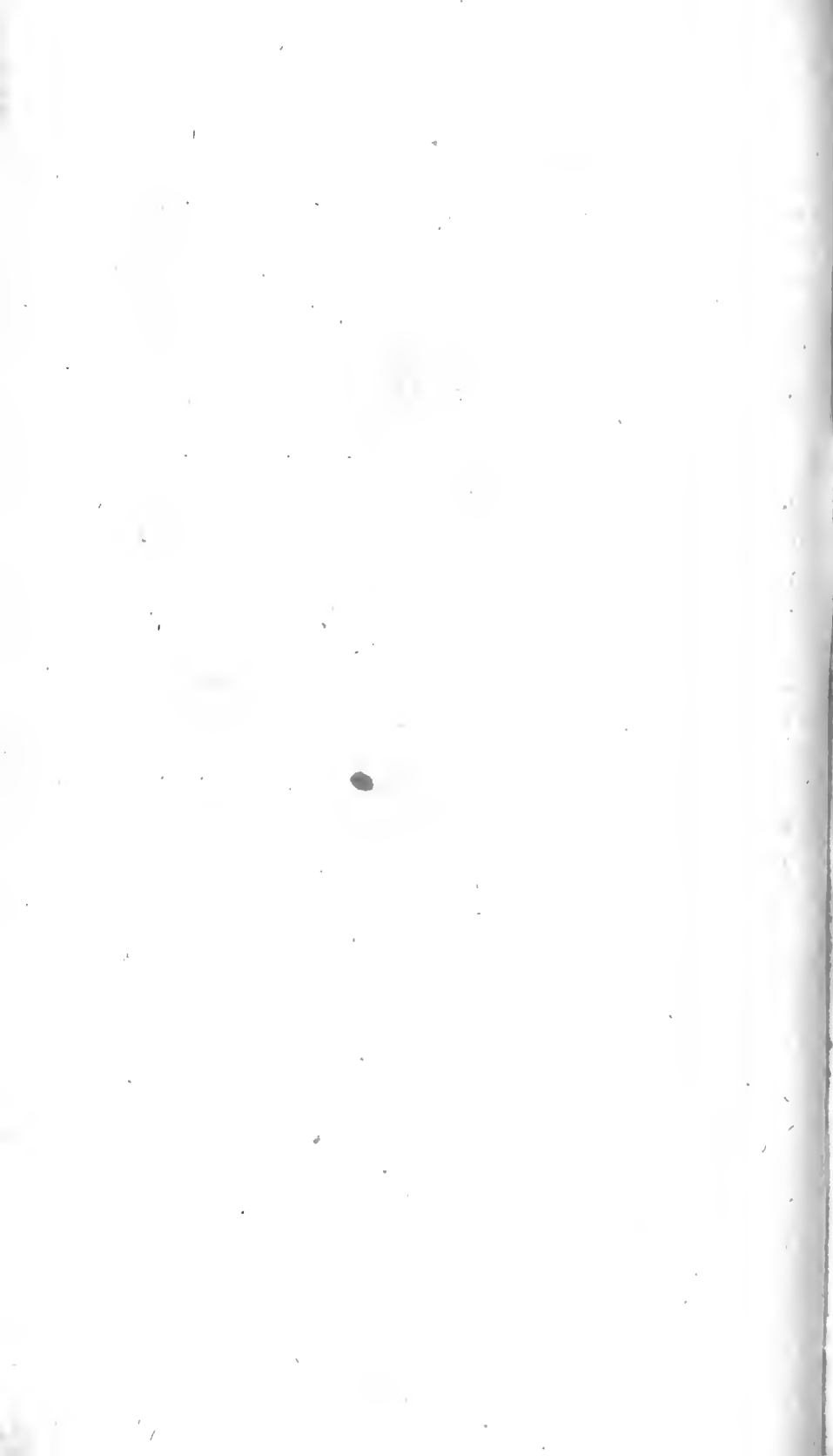
On the coast of France the Hake is also taken in great abundance, and is cured as in England, for exportation. By one of the French writers it has been remarked, that since the great naval engage-

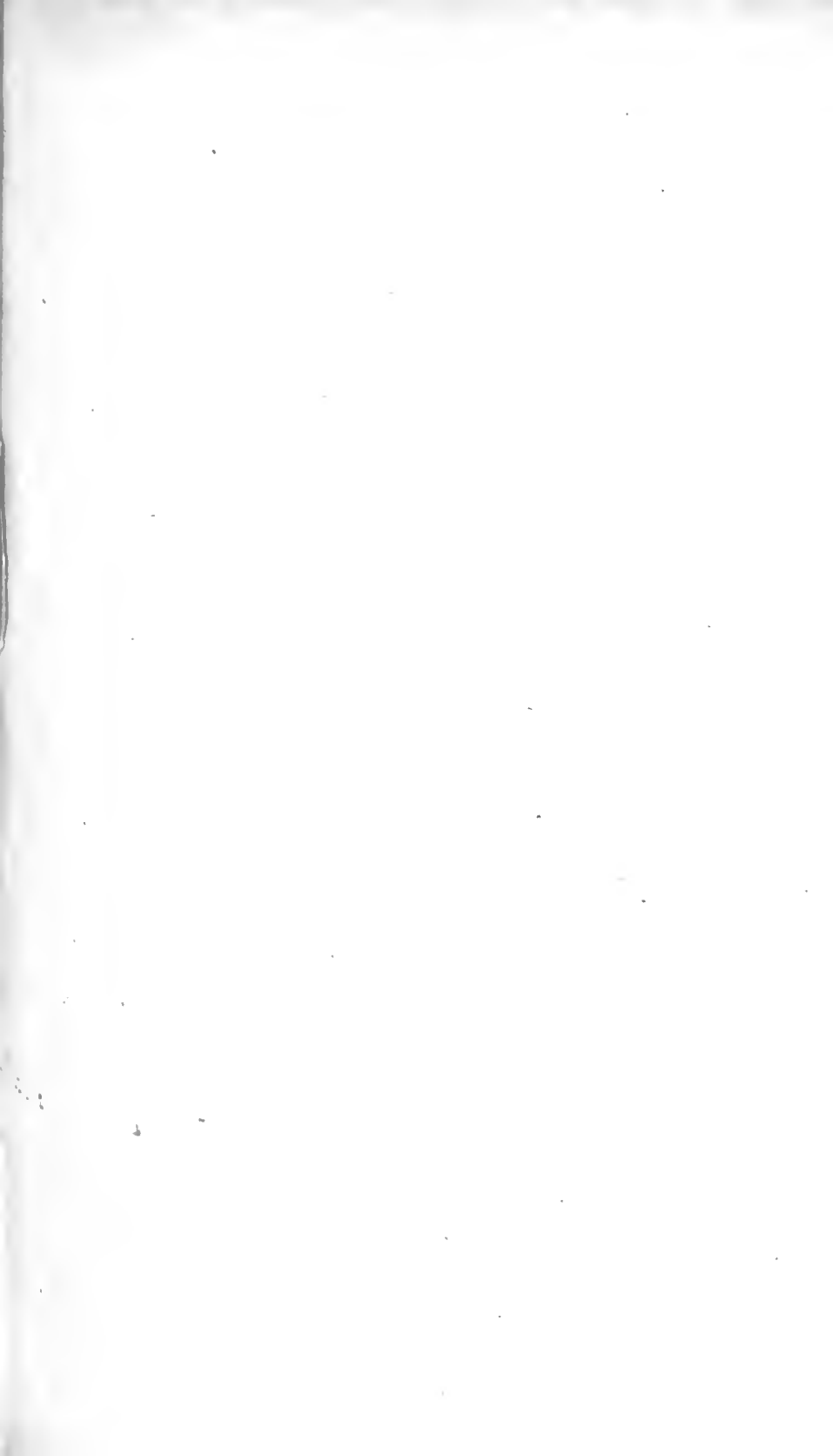
PLATE XXVIII.

ment in 1759, between the French and English, the Hake has been found in vast numbers at all seasons of the year, in the sea that washes the shores of Belle-isle. He conjectures that they were at first attracted principally to this spot, by the number of dead bodies that were here committed to the deep. Some of the Hake on that coast, we are told, measure six or seven feet in length.

The Hake is a most voracious fish, and feeds on the Mackrel and Herring, as before observed: it feeds also on other small fish; on crabs and worms. For its carnivorous mode of life its teeth are perfectly well adapted: they are numerous, strong, sharp, and much recurved, which gives it no small degree of advantage in securing its prey. The eggs found in the body of the female are of an orange colour, and about the size of a grain of millet, as ichthyologists have before mentioned.

The form of this fish is not inelegant: the head is long, and rather depressed. In the first dorsal fin are nine rays; in the second, thirty-eight; pectoral fin fifteen rays: ventral eight: anal thirty-six: and in the tail, eighteen.





LING.

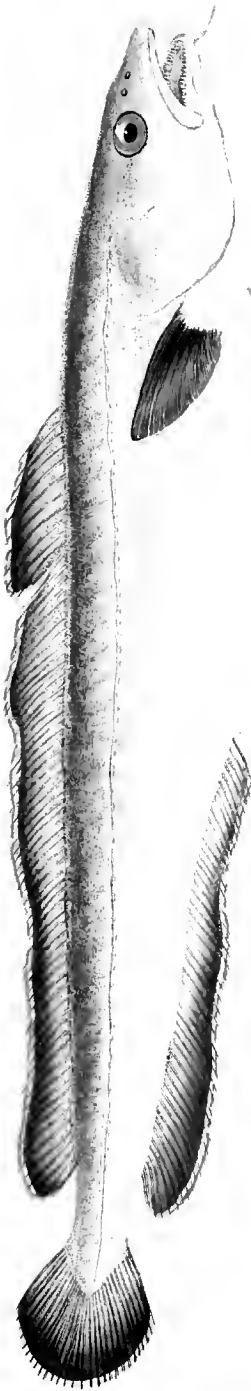


PLATE CII.

GADUS MOLVA.

LING.

*** PISCES JUGULARES.

GENERIC CHARACTER.

Head smooth. Seven slender rays in the branchiostegous membrane. Body oblong. Scales deciduous. All the fins covered with a skin. More than one dorsal and anal fin; rays unarmed. Ventral fin slender, pointed.

SPECIFIC CHARACTER

AND

SYNONYMS.

Mouth bearded; upper jaw longest.

GADUS MOLVA: cirratus, maxilla superiore longiore. *Gmel.*
Linn. Syst. Nat. 1170.

Gadus dorso dipterygio, ore serrato, maxilla superiore longiore.
Arted. syn. 36.

Langa. *Faun. Succ. N.* 313.

Ling fische. *Belon.* 130.

Ling. *Will. Ichth.* 175.—*Raii. syn. pisc.* 56.—*Penn. Brit. Zool.*
v. 3. p. 197. 85.

The Ling is abundant in the northern seas of Europe. On the coasts of Ireland, and those of Scotland in particular, the fishery of

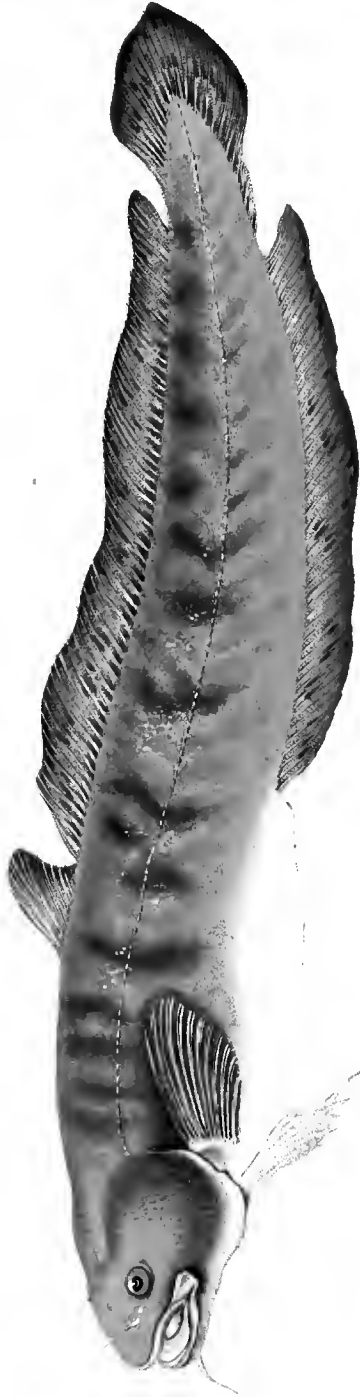
PLATE CII.

the Ling is considered as an extensive and lucrative concern, vast quantities of it being salted and cured for exportation, besides what is consumed fresh by the inhabitants. It appears in the southern parts of Britain only about Spring. In point of figure the Ling is not much unlike the Cod fish, but is longer in proportion; and it is from this circumstance it derives its name, Ling being only a corruption of Long, or Long fish.

The Ling exceeds the Cod fish in magnitude, growing to the length of five, six, or even seven feet; those of three or four feet in length are by no means uncommon. They feed on crabs and other crustaceous animals, and are in the highest season from the month of February till May: in June the spawning season commences, at which time it approaches the shore and deposits its eggs in moist ground, near the entrance of rivers. The colour of the Ling varies in a slight degree, according to the age and season of the fish, but in general they are paler than in the common Cod-fish: when first taken out of the water the head, back, and sides are nearly as white as the belly, but become darker from exposure to the air. The white margin of the fins is a remarkable character of this fish. In the specimen we have delineated, the first dorsal fin contains thirteen rays, the second fifty-six: pectoral fins twenty: ventral six: anal fifty-three; and the tail thirty-nine



BURBOT.



London: Publ'd as the Act. abridg'd by T. Donovan, & F. & J. Rivington, May 24, 1804.

PLATE XCII.

GADUS LOTA.

BURBOT.

*** PISCES JUGULARES.

GENERIC CHARACTER.

Head smooth. Seven slender rays in the branchiostegous membrane. Body oblong. Scales deciduous. All the fins covered with a skin. More than one dorsal and anal fin; rays unarmed. Ventral fin slender, pointed.

SPECIFIC CHARACTER.

AND

SYNONYMS.

Bearded: jaws equal: dorsal fins two: tail nearly oval

GADUS LOTA: cirratus, maxillis æqualibus, pinnis dorsalibus duabus, cauda subovali.

GADUS LOTA: cirratus, maxillis æqualibus. *Linn. Fn. Suec.* 315.

—*Gmel. Linn. Syst. Nat. T. 3. p. 1172.*

n. 14.

Gadus dorso dipterygio, ore cirrato, maxillis æqualibus. *Art. Gen.*

22. *syn.* 38.

Mustella fluviatilis. *Will. Ichth. p. 125.*—*Ray. pisc. p. 67.*

BURBOT. *Penn. Brit. Zool. v. 3. p. 199. n. 86.*

PLATE XCII.

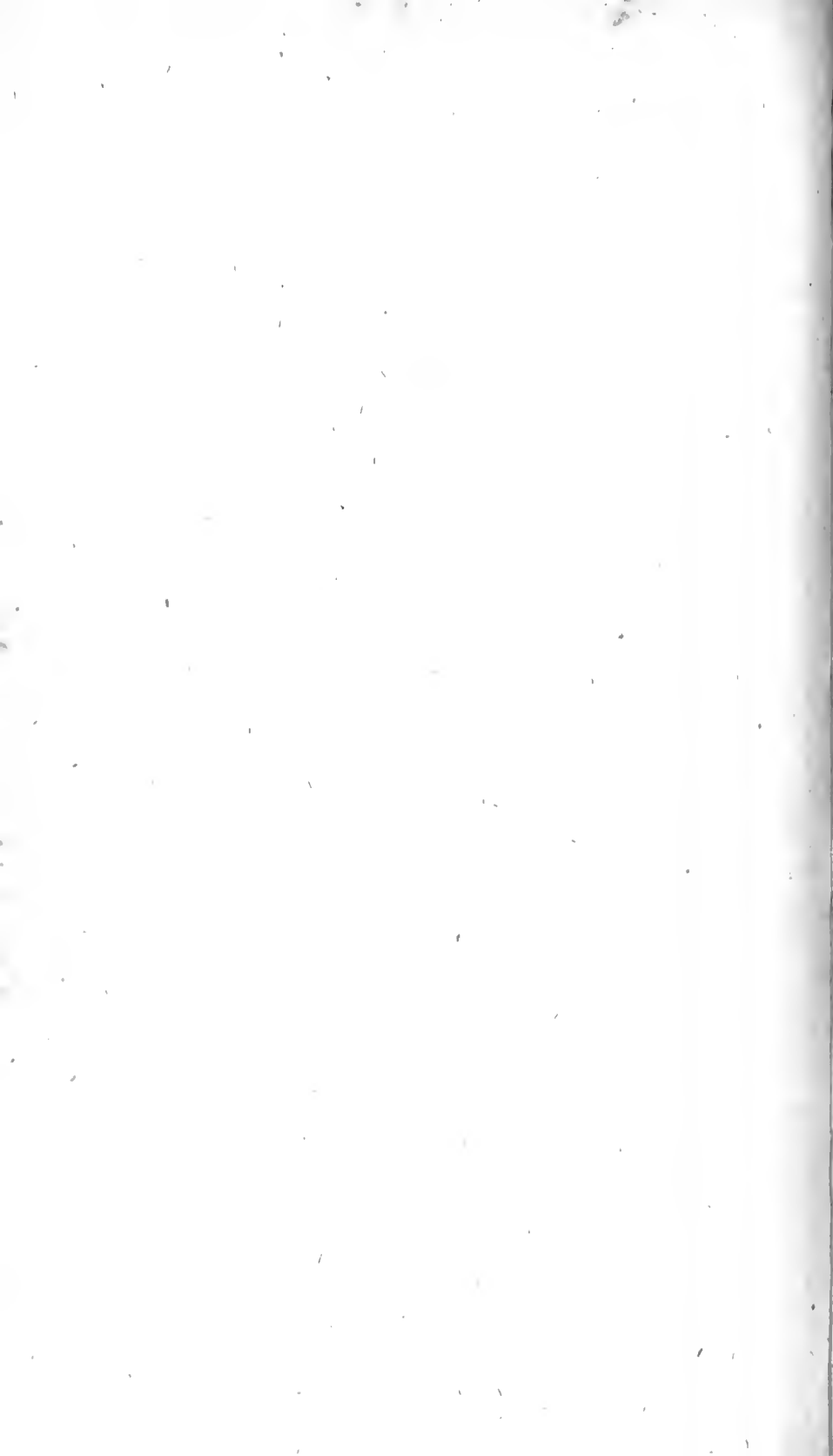
The Burbot is the only fish of the *Gadus* genus that resides constantly in fresh waters, the rest of this numerous tribe inhabiting the sea. This species prefers clear waters and rivers not greatly exposed to the agitation of winds and currents, at the bottom of which it lurks for better security in hollows and cavities between stones, where it can watch the smaller fishes and aquatic insects, on which it preys as they swim over it, and dart, unperceived, upon them from its hiding place. The greatest enemy of the Burbot is the Perch, but in the lake of Geneva, where those fish abound, and in other lakes and rivers on the Continent, the Silure (*Silurus Glanis*) is to be numbered among its most ferocious destroyers. When pressed by hunger, the Burbot attacks the Stickleback, but to no small disadvantage, and he is even sometimes beaten off by the resistance this little fish is able to make with the strong aculeated processes on its back and sides.

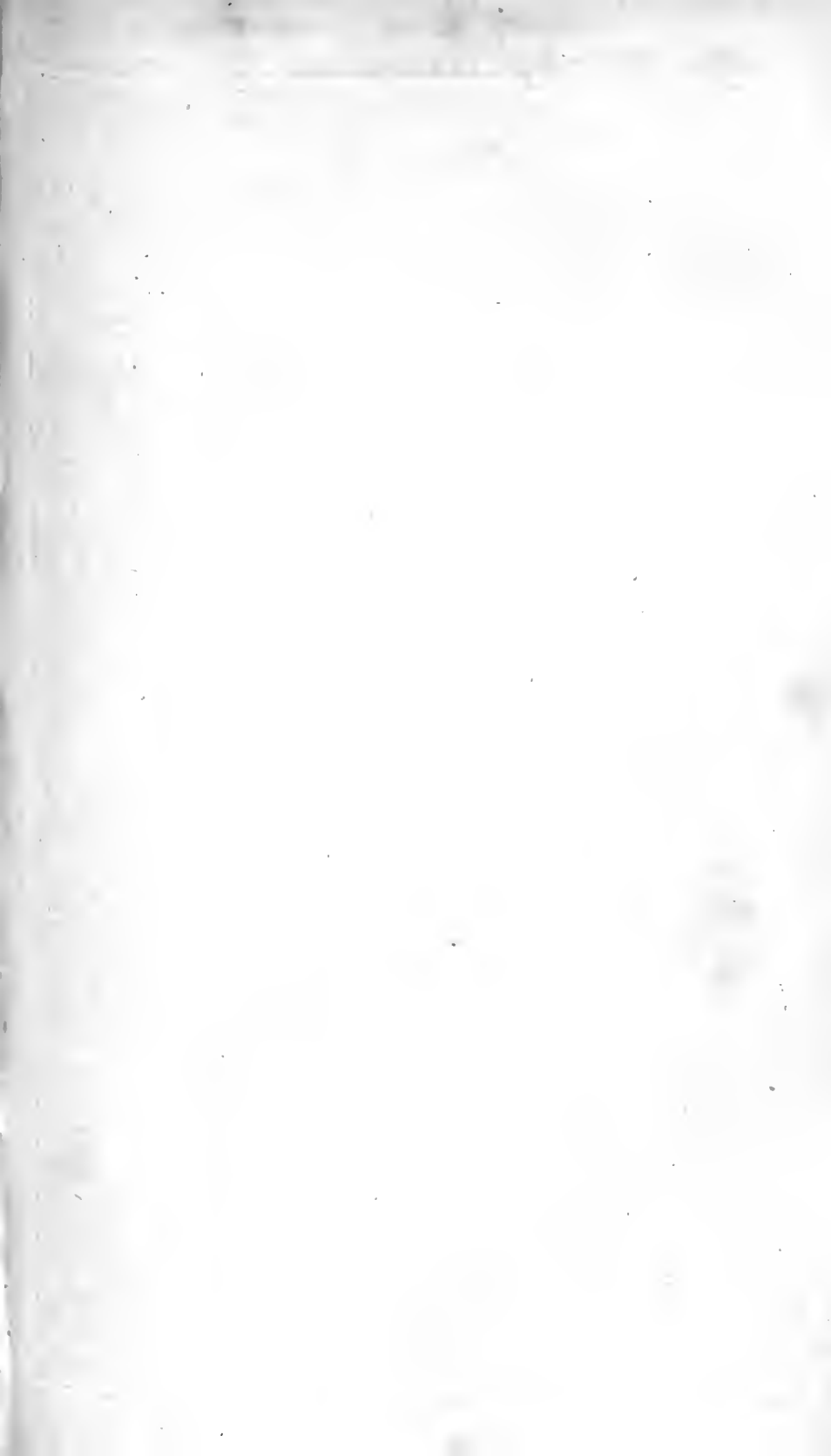
This fish is natural to all the countries of Europe: it is also found in the lakes of Siberia, and, according to some writers, the same species occurs in the East Indies. In England it is a local fish, being found only in a few of our rivers. Pennant says in the Trent, but in greater plenty in the river Witham, and in the great East Fen in Lincolnshire. The Burbot is known to live to a great age, and to attain to a considerable size. Pennant says, the largest he ever heard of being taken in our waters, weighed between two and three pounds, but that abroad they are sometimes found of double that weight. Other writers speak of those found in the North of Europe growing to the length of three feet, and weighing twelve or fourteen pounds. This fish is in great repute for the excellence of its flesh, which is white and delicate; the liver also is esteemed a delicious morsel, but the eggs, on the contrary, are deemed unwholesome, or even poisonous. As

PLATE XCII.

this fish is tenacious of life, it will subsist for some time on small fishes and raw meat, if kept in a cold and damp situation. The spawning season is in December and January. It bears the character of a fertile, cunning, and voracious fish.

The head of this species is large, flattish, and shaped in some degree like that of a toad; the body is long, and bears a distant resemblance to that of an Eel, but is broader in proportion to its length than that fish. It is from the latter circumstance this fish has derived the trivial English appellation of Eel-pout, and for the same reason the Dutch call it *Putuel*. The colour of the body varies from a dark to pale brown, and is marked with greenish olive, fuscous, and yellowish, disposed in blotches and bands, and is sometimes thickly spotted with blackish. The surface is smooth, the scales being very minute, and the body covered with a slimy mucous. The teeth are very numerous, small, and disposed in about seven rows in each jaw: the lateral line is straight, and parallel with the back: the first dorsal fin is of a sub-triangular form, and contains eleven rays; the second dorsal fin, which commences immediately behind the first, continues close to the region of the tail, and consists of sixty-one rays: in the pectoral fin are sixteen rays: the ventral fin, which is fleshy, contains seven rays, the exterior one of which, is short, and the next longer than either of the others: the anal fin includes fifty rays; and the tail, which is nearly of an oval figure, and very slightly pointed, thirty-five rays.





FIVE BEARDED COD.

17



London, pub^d as the Five Bearded by F. D. Owen and S. P. & C. Huntington, Sep. 1, 1862.

P L A T E X I V .

GADUS MUSTELA.

FIVE BEARDED COD FISH.

** JUGULARES.

GENERIC CHARACTER.

Head smooth. Seven slender rays in the branchiostegous-membrane. Body oblong. Scales deciduous. All the fins covered with a skin. More than one dorsal and anal fin; rays unarmed. Ventral fin slender, pointed.

SPECIFIC CHARACTER

AND

SYNONYMS.

Five beards. First dorsal fin obsolete.

GADUS MUSTELLA: cirris quinque, pinna dorsali priore exsoleta.
Gmel. Syst. Nat. T. 1. p. 3. p. 1173.
sp. 25.

Dorsó dipterygio, cirris maxillæ superioris 4, inferioris 1. *Mus.*
Ad. Fr. 1.

FIVE BEARDED COD. *Penn. Brit. Zool. Vol. 3. p. 202. sp. 88.*

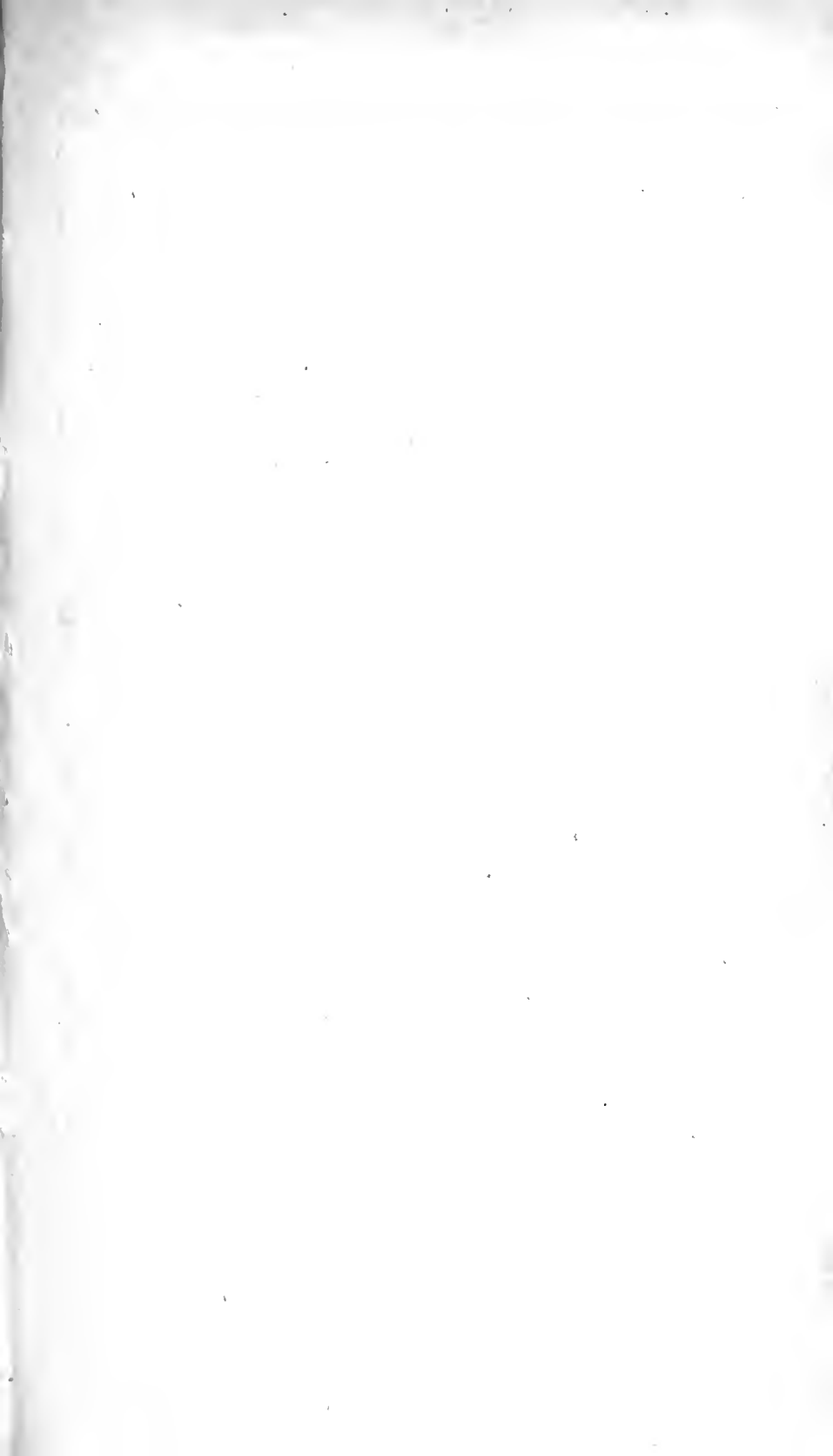
This, and the small species of *Gadus*, *triccirratus*, have been considered by some as varieties of the same species. Our reason for dis-

PLATE XIV.

senting from that opinion has been already given in the description of the latter, plate 2. of this work. Its greatest length is mentioned at nineteen inches, and our specimen is much smaller; it feeds on shell fish and crabs, and inhabits most of the European shores; but at the same time it must be observed that on those of Great Britain it is very uncommon.

In the course of our enquiries respecting the Cornish fisheries we cannot learn that it is known on that coast. Mr. Pennant observes, that the Cornish fishermen are said to whistle and make use of the words *Bod, Bod Vean*, when they are desirous of taking this fish, as if by that they facilitated the capture; in the same manner as the Sicilian fishermen repeat their *Mamussu di pajanu*, &c. when they are in pursuit of the Sword fish.

The first dorsal fin consists of one ray, and many very obsolete; the second of forty-nine rays: the pectoral fin of fourteen rays: ventral of six rays; anal of forty rays; and tail of twenty-four.



THREE BEARDED COD, OR ROCKLING.

18



London. Pub'd for the Aet. direct. by E. Donovan & F. & C. Birmington. April 1. 802.

P L A T E II.

GADUS TRICIRRATUS.

THREE BEARDED COD, OR ROCKLING.

** JUGULARES.

GENERIC CHARACTER.

Head smooth. Seven slender rays in the branchiostegous membrane. Body oblong. Scales deciduous. All the fins covered with a skin. More than one dorsal and anal fin; rays unarmed. Ventral fin slender, pointed.

SPECIFIC CHARACTER

AND

SYNONYMS.

Three beards: first dorsal fin obsolete: body spotted.

GADUS TRICIRRATUS: cirris tribus, pinna dorsali priore exsoleta, corpore maculato.

GADUS MUSTELLA β . *Gmel. Linn. Syst. Nat. p. 1174. sp. 25.*

Mustella vulgaris. Rondel. 281. Gesn. pisc. 89.

Sea Loche *Cestriae*, Whistle fish *Cornubæ. Will. Icth. 121.*

Raii. syn. pisc. 67.

Rockling, Jago. *Raii. syn. pisc. 164. fig. 9.*

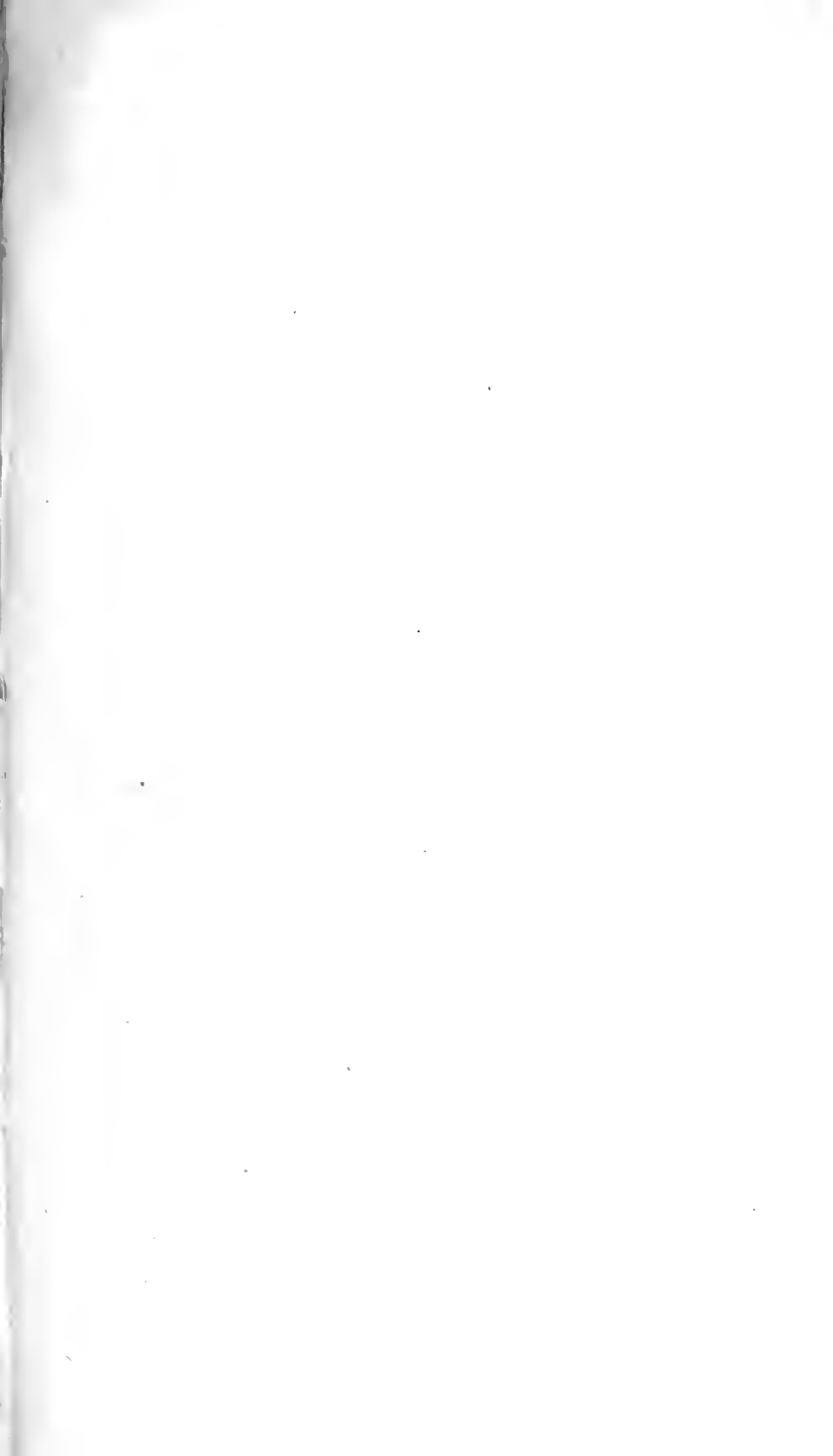
Three bearded Cod. *Penn. Br. Zool. p. 201. sp. 87.*

PLATE II.

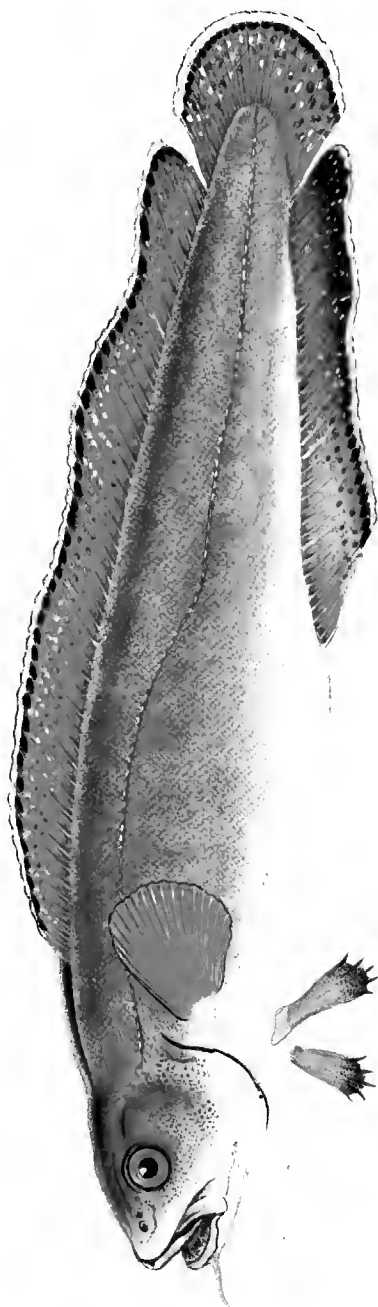
Bloch and Gmelin have followed Willughby in making this kind a mere variety of the *Gadus Mustella*, or Five bearded Cod; but we must agree with Pennant, who considers it as a distinct species.

Pennant says, he has always observed the number of the beards in the spotted kind not to exceed three, nor the number in the brown kind to be less than five; that the first ray of the dorsal fin is longer, and that there is some difference in the form as well as colour; the Five bearded Cod being thicker in proportion than the other. Having both kinds before us, we cannot hesitate to believe they are distinct species, and have assigned the present a specific character in consequence.

Our specimen is fifteen inches in length. The branchiostegous rays seven. In the first dorsal fin, one distinct ray, the rest minute and numerous. Second dorsal fin of fifty-four rays. Pectoral fin twenty rays. Ventral fins fleshy; second ray longest. Anal fin forty-six. Tail twenty-four.



BROSME, OR SCOTCH TORSK.



London Fish for the Art directed by E. Donovan, F.C.S., J. Wainwright, Lond., 1864

P L A T E L X X .

GADUS BROSME.

*BROSME, OR SCOTCH TORSK.*** *PISCES JUGULARES.*

GENERIC CHARACTER.

Head smooth. Seven slender rays in the branchiostegous membrane. Body oblong. Scales deciduous. All the fins covered with a skin. More than one dorsal and anal fin; rays unarmed. Ventral fin slender, pointed.

SPECIFIC CHARACTER

AND

SYNONYMS.

Lower jaw longest: tail rounded, and with the dorsal and anal fin edged with white: ventral fins fleshy, with five cirri.

GADUS BROSME: maxilla inferiore cirroso, cauda rotundata pinnis ventralibus carnosis cirris 5: pinnisque dorsali analique albo-marginatis.

GADUS BROSME, ore cirroso, cauda ovali acuta. *Gmel. Syst. Nat.*
T. I. p. 3. p. 1175. Sp. 21.

PLATE LXX.

BROSME. *Ström. Hist. of Sondmör. v. I. p. 272. t. 1. f. 19.*
Ascan. ic. rer. nat. t. 17. Pontoppidam.
Norv. 2. p. 1788.

TORSK. *Penn. Brit. Zool. v. 21. p. 203. sp. 89.*

The Torsk of the Norwegians, Swedes, and Danes, is a very different fish from that known in Scotland under the same name; a circumstance that has given rise to much misunderstanding among English writers respecting those two fishes. The Torsk, or Dorsk, of the north of Europe, with the exception of Scotland only, is the *Gadus Callarias* of Linnæus, a fish distinguished in a particular manner from the Scotch Torsk, by having three fins upon the back, as we find in our common Codfish and Haddock, while the latter is furnished with only one dorsal fin: they are also materially distinct in other respects, but these are the most decisive and unerring characters that prevail in those two species.

The same name being common to both those fishes in different countries, it was long supposed, and admitted without further investigation, that they must be both of the same species. Pennant, in an early edition of the *British Zoology*, was led into this error through that circumstance: he had learnt that there existed a fish called the Torsk, in the Orkneys, and northern parts of Scotland, and not having seen it concluded it to be of the same kind as Linnæus describes under that name in his *Fauna Suecica*. At a subsequent period this mistake was corrected, on the information of Mr. Low, who sent Mr. Pennant the description, and drawing from which the plate was engraven, that appears in the last edition of the *British Zoology*.

PLATE LXX.

Mr. Low was then minister of Birsa in the Orkneys, and in 1774, undertook the voyage of Shetland at the request of Mr. Pennant. This gentleman was enabled, from his own immediate observations, to determine that the Torsk of the Swedes is not the Torsk of the Scotch, which renders his remarks not a little interesting. The Torsk it seems, from his account, or as it is called in the Shetlands, Tusk and *Brismak**, is a northern fish, which as yet has not been discovered lower to the southward than the Orknies, and is even rather scarce there. In the seas about Shetland it swarms, and forms either dried, or salted and packed in barrels, a considerable article of commerce.

Ström, a Norwegian clergyman, in his History of Sondmör, speaks to the same effect: he informs us in the north it is called Brosme; and being found in great plenty in the seas adjacent to Sondmör, it constitutes an article of extensive trade there, either salted and barrelled, or dried. His specific description of Brosme is in latin *Gadus Monopterygius, ore cirroso, cauda ovali acuta*, and a figure of the fish, very well agreeing with this description, is given in the miscellaneous plate that accompanies the first volume.

There are three different varieties of the Danish Torsk in the works of Ascanius, all which agree with the Linnæan description of *Gadus Callarias*. According to Ascanius these are all well known to the Danish fishermen by the name of 'Torsk, and to the Germans by that of Dorsk: they are taken in abundance in the sea between the island of Borholm and the north of Bergen, in the Categat, and the

* Perhaps corrupted from *Brosme*, its Norwegian name.

PLATE LXX.

Baltic. This writer also figures, and describes the *Brosme** in a manner so far correct at least, as to leave no doubt of its being the same as the Torsk of Scotland: the latter species, he observes, connects the *Gadus* with the *Blennius* genus, and is, from its resemblance to the Blenny, called *Brosme* by the fishermen; that being the name by which the Blenny is generally distinguished amongst them. We have also the authority of Bloch to shew, that the *Gadus Callarias* is the Torsk of the Baltic, and the *Brosme* a different fish.

The result of those remarks will be sufficient to prove that the Torsk of Scotland agrees in no respect, except in name, with the Torsk of the other northern parts of Europe, and that the Scotch Torsk is beyond a doubt the *Brosme* of those countries.

Linnæus was constrained to form a new section in his *Gadus* genus for the reception of his species *Mediterraneus*, the only one he was acquainted with that has but one dorsal fin. Gmelin retaining this section of the *Gadus*, describes our fish after *G. Mediterraneus*, as a second species of the same family, upon the authority of Muller, Ström, Ascanius, and others; and in adopting this species he is certainly correct. But besides those two species in the section "*Pinna dorsali unica*," a third occurs in Dr. Turton's translation of Gmelin's work, which does not appear in the original. We could have wished for the sake of perspicuity, Dr. Turton had confined himself in this particular to the two species mentioned by Gmelin, for by the introduction of this third kind the translator has fallen into the lamentable error of describing our Fish under different

* Ic. rer. pl. 17.

PLATE LXX.

names, as two distinct species; first following Gmelin in the description of *Gadus Brosme*, and then placing the Scotch Torsk immediately after it as a new species, under the name of *Scotius*, not being aware that the Gmelinian *Gadus Brosme*, and the Scotch Torsk are the same!

Dr. Shaw takes occasion to remark, in his account of the Torsk*, that in the Gmelinian edition of *Systema Naturæ*, this species is described from Müller as having an ovate-acute tail, but that the descriptions and figures of other authors uniformly represent that part as of a rounded shape. The description and figure of this Fish in Ström's *History of Sondmör*, must then have escaped Dr. Shaw's notice, for in that work it is represented as Gmelin mentions, with an ovate-acute tail; and it is also described by Ström as being of that form. It is probable that this circumstance, as well as the authority of Müller, might induce Gmelin to describe the tail as above mentioned. But should this be true, Gmelin is not altogether excusable; for in the works of Ascanius, to which he refers as explicitly as to Müller and Ström, the tail is represented of a rounded form; and surely it would have been more advisable, between two such authorities, for Gmelin to have avoided mentioning the shape of the tail in his specific definition (presuming that the fish was unknown to him) than to have given an unqualified assent to either of those authorities. We even suspect it might be this circumstance that misled Dr. Turton; Gmelin having expressly described the tail in his species *Brosme*, to be ovate-acute, and Pennant describing the Scotch Torsk with the tail rounded. We are satisfied the different statements of writers in this respect may have

* Shaw's *Gen. Zool.* V. 4. p. L. p. 162.

PLATE LXX.

arisen from the condition of the Fish at the time they describe it ; the tail of this Fish, when alive or very recent, being certainly rounded, but becoming somewhat pointed as it dries *. In our specimen it is so : in Pennant's figure it is the same, and so also in that of Ascanius ; we cannot therefore upon the whole but be inclined to think that the figure in Ström, and Müller's description, were taken from the dried fish rather than from recent subjects.

Although the Brosme, or Scotch Torsk, swarms in the North Seas, it is scarcely ever seen more to the southward of Britain than Caithness, in Scotland, and even there very seldom †. It is sometimes brought from Shetland to London for sale, with other salt-fish. In this state it is without the head, that part being taken off previous to salting ; but it is easily distinguished from other salt-fish even then by its single dorsal fin. Some short time ago a friend, who had an opportunity of visiting Shetland and the Orknies, obliged us with a specimen of this interesting fish, which was brought alive in the

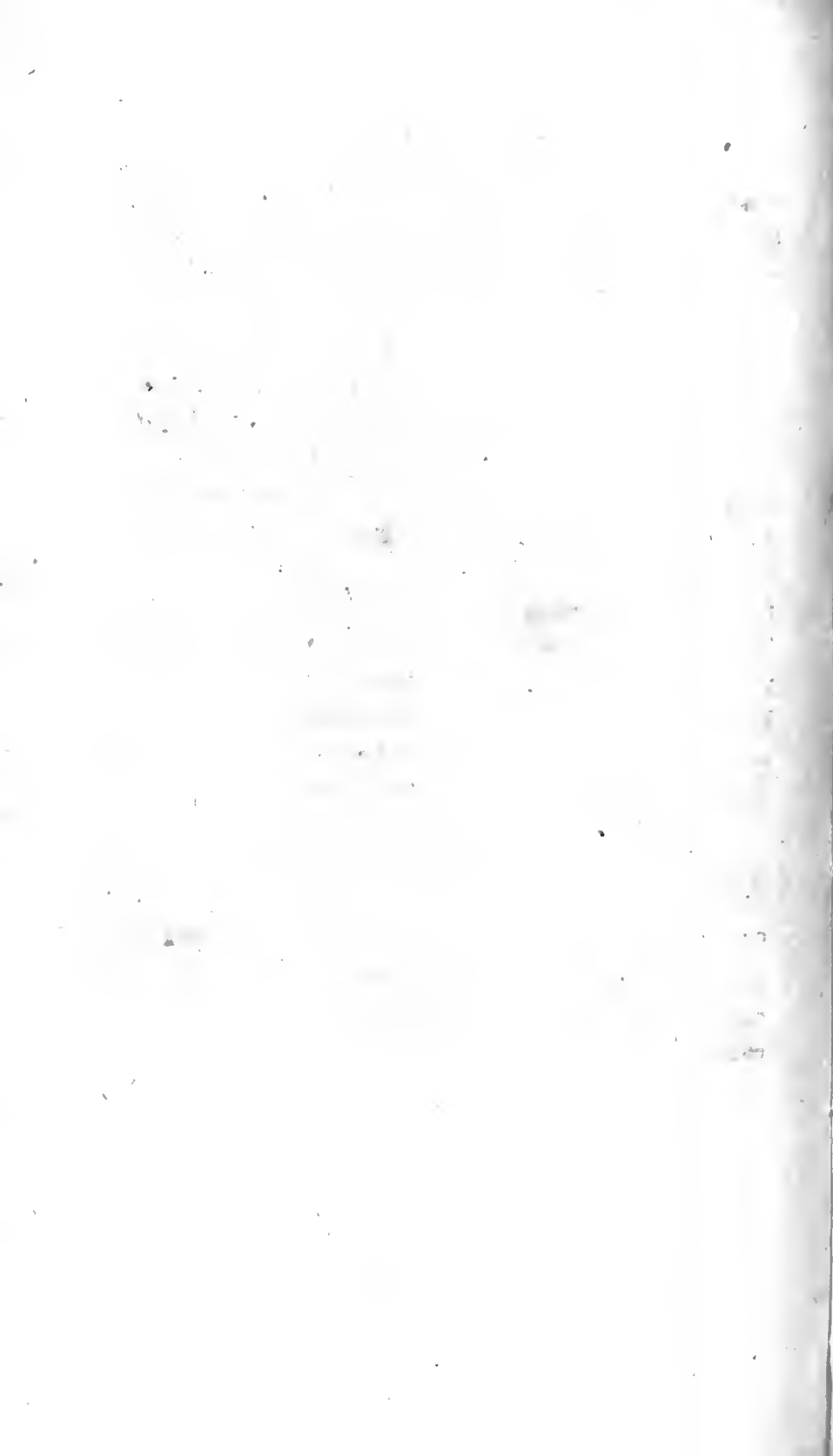
* This singularity may be explained with little difficulty: the tail, like the rest of the fins of this fish, when alive or recent, is invested with a skin of such a fleshy nature, as to conceal in a great measure the number and situation of the rays that lie within ; but in drying, this fleshy skin perishes, or shrinks so materially, as to leave the rays almost bare : the tail thus divested of its fleshy skin, assumes the more pointed form of the skeleton of the tail ; for the central rays are in reality longer than the rest, though they appear so only in a very slight degree in the recent fish.

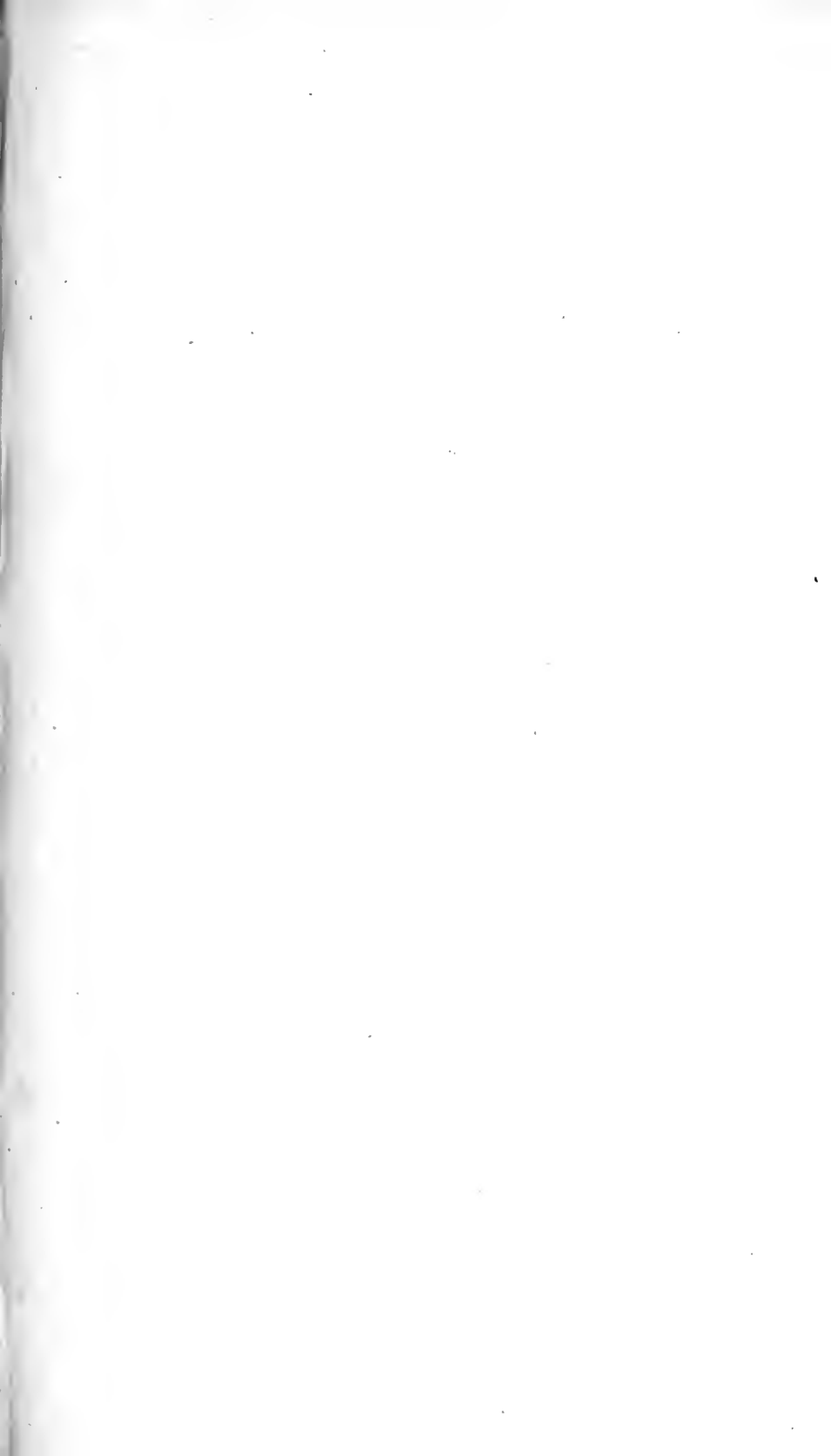
† The Torsk, we are informed in the Swansea Guide, has been found on the coast of Glamorganshire, in South Wales, most likely on erroneous authority ; the writer calls it *Gadus Callarias*, but no doubt means the Torsk of English authors, our (*Gadus Brosme*). *Vide Donovan's Tour through South Wales*, Vol. II. p. 108.

PLATE LXX.

well-boat of a fishing smack to London, with the view of enabling us to make our observations on the fish in its most recent state, and it was from this specimen our drawing was immediately taken.

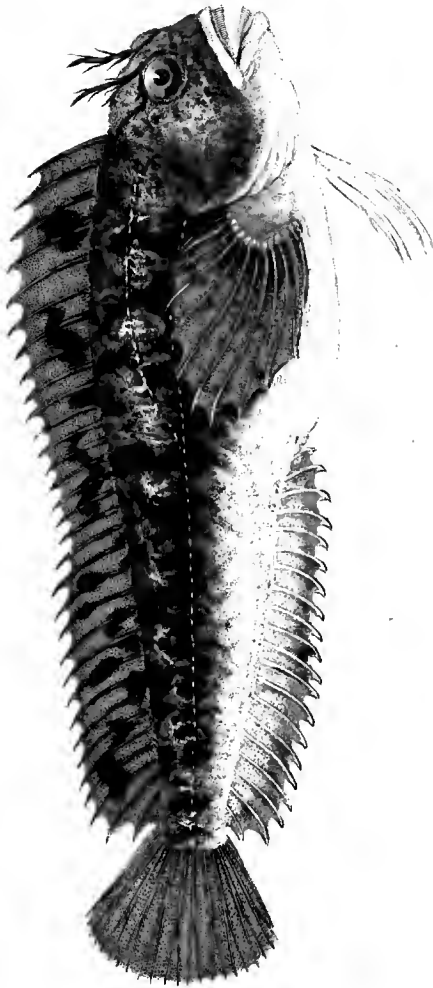
Our figure will render any very copious description of this fish superfluous, its form and colours being represented with accuracy. The length of this specimen is twenty-five inches. All the fins while the fish was recent were fleshy, and, as Mr. Low observes in his account communicated to Mr. Pennant, the skin so thick, and the rays so soft, that they could not be counted without difficulty; but as the fish dried, they appeared sufficiently visible even in the ventral fins, which were thicker, and more fleshy at first than the others. The dorsal fin contains forty-nine rays: pectoral twenty-one: ventral five: anal thirty-seven; and caudal thirty-five. One peculiarity, which we observed in our recent specimen, was a narrow white fillet, extending the whole way along the edge of the dorsal, anal, and caudal fin. This, we are informed by the Scotch fishermen, is characteristic of the Torsk; and it is indeed observable, even in the salted specimens: Mr. Low speaks of this white margin, and upon the whole we think it right to include it in the specific character of the fish. The singular shape, and fleshy consistency of the ventral fins, is also a strong character, but these last are invariably very badly expressed in all the figures of the fish that have occurred to our observation.





GATTORUGINE.

20



London. Fish & the Sea. directed by E. Donovan. R.C. & J. Herington. Ed. 1866.

P L A T E LXXXVI.

BLENNIUS GATTORUGINE.

GATTORUGINE.

* PISCES JUGULARES.

GENERIC CHARACTER.

Head sloping: six rays in the gill-membrane: body lanceolate:
ventral fins of two united rays: anal fin distinct.

SPECIFIC CHARACTER

AND

SYNONYMS.

Over each eye, and on the hind head a palmated membrane.

BLENNIUS GATTORUGINE: pinnulis superciliarum nuchaeque pal-
matis. *Linn. Mus. Ad. Fr.* 2. p. 61. *Gmel.*
Linn. Syst. Nat. T. 3. p. 1177. *Sp.* 5.

Blennius pinnulis duabus ad oculos, pinna ani ossiculorum 23. *Art.*
gen. 26. *syn.* 44.

Blennius capite cristato ex radio simplici inermi supra utrumque ocu-
lum. *Gronov. Zooph.* p. 76. n. 264.

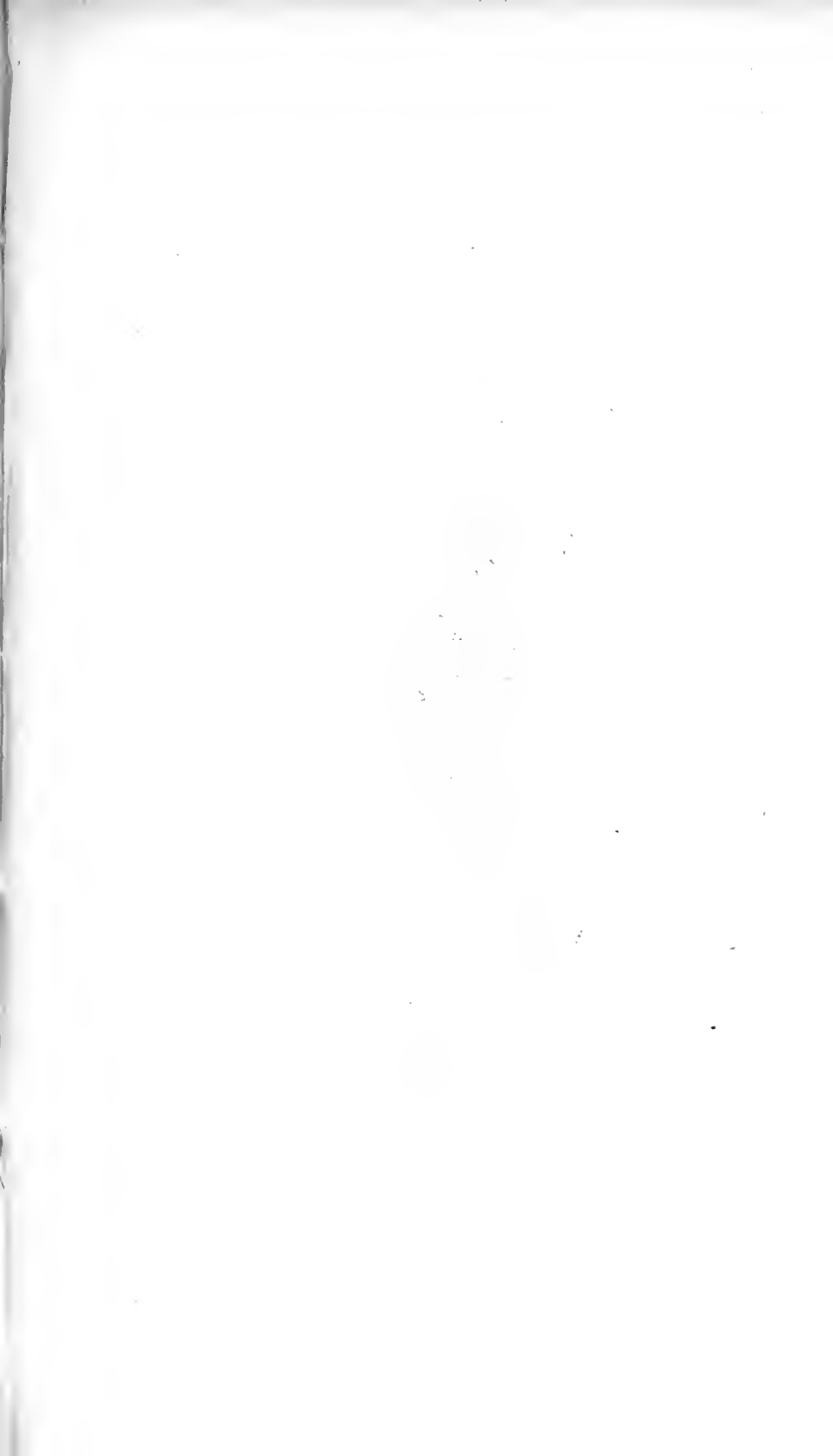
GATTORUGINE. *Will. ichth.* p. 132. t. H. 2. f. 2.—*Ray, pisc.* p. 72.
n. 14.—*Penn. Brit. Zool.* v. 3. p. 207. n. 91.

The Gattorugine is an inhabitant of the Mediterranean and Atlantic
Seas; Willughby, Brunniche, and other writers, mention it as a na-

PLATE LXXXVI.

tive of the Southern parts of Europe; Gronovius received it from the Cape of good Hope, and according to Pennant, it was discovered to be a British fish on the coast of Anglesea. It appears to be one of the most local and uncommon of our littoral fishes, and has much the same habits as *Blennius Pholis*, the smooth Blenny.

This species seldom attains to a greater length than six or eight inches, the colours are variable in different specimens according to most authors. In general, however, the back and sides are an intermixture of reddish, and cinereous, marked transversely with irregular waves of brown, and the lower parts white and silvery. The head of this fish is rather small in proportion, with the eyes remarkably prominent, and of a fine scarlet colour, and the palmated membranes on the head red. The body is rather compressed on the sides. The anterior half of the lateral line is double, its lower limb extending in a straight direction from the gills to the tail, and midway between this and the back is an arched lateral line originating at the hind part of the head, and curving down to the former, with which it is united a little behind the tip of the pectoral fin. In our specimen the first dorsal fin contains thirty-two rays: pectoral fin thirteen rays: ventral two rays of nearly equal length, with a very small lateral appendage: in the anal fin are twenty rays, and in the tail twelve: the rays of the tail are branched, all the rest are simple, or undivided.



SMOOTH BLENNY.

2



London. Published for the Author by F. Johnson & E. C. & J. Nevinson, 25, Abchurch Lane.

PLATE LXXIX.

BLENNIUS PHOLIS.

SMOOTH BLENNY.

* PISCES JUGULARES.

GENERIC CHARACTER.

Head sloping; six rays in the gill-membrane: body lanceolate: ventral fins of two united rays: anal fin distinct.

* Section. *Head not crested.*

SPECIFIC CHARACTER

AND

SYNONYMS.

Lateral line curved, and somewhat bifid: nostrils tubular, and fimbriated.

BLENNIUS PHOLIS: linea laterali curvata sub-bifida; naribus tubulosis fimbriatisque.

BLENNIUS PHOLIS: linea laterali sub-bifida. *Linn. Mus. Ad. Fr. 2. p. 62.—Gmel. Linn. Syst. Nat. 1180. sp. 8.*

Blennius capite summo acuminato, maxilla superiore longiore. *Art. gen. 27. syn. 45, et 116*

PLATE LXXIX.

BLENNIUS PHOLIS: naribus tubulosis fimbriatisque. *Bloch. Fisch. Deutschl.* 2. p. 184. n. 1. t. 71. f. 2.

Mulgranoc et Bulcard *Cornubiæ Will. Ichth.* p. 133. t. h. 6. fig. 2. 4.—*Raii syn. pisc.* 73.

Cataphractus lævis *Cornubiensis*, Smooth Shan. *Jago apud Raii syn. pisc.* 164. fig. 10.

SMOOTH BLENNY. *Penn. Brit. Zool. T.* 3. p. 203. 92.

The Smooth Blenny is a very local fish. Willughby, Ray, and Jago, speak of it as a species inhabiting the coast of Cornwall, where we are informed it is still observed occasionally, but is considered as a rare fish. Pennant mentions finding this fish on the coast of Anglesea as a remarkable incident, presuming most probably that it had not been noticed before on any other of the British coasts than that of Cornwall. "We discovered (says Mr. Pennant) this species in plenty, lying under the stones among the tang, on the rocky coasts of Anglesea, at the low water-mark. It was very active and vivacious, and would, by the help of its ventral fins, creep up between the stones with great facility. It bit extremely hard, and would hang to ones finger for a considerable time. It was very tenacious of life, and would live for near a day out of water." The exact situation in which Mr. Pennant found the Smooth Blenny in such plenty, lies on the south side of the island, extending from the town of Beaumaris, along the skirts of Beaumaris bay, in a westerly direction through the straits of Menai to Bangor ferry, or Plas Newydd. This is not stated by Mr. Pennant himself, but was kindly communicated to us by the Rev. Hugh Davies, of Aber, who assisted that writer in collecting materials

PLATE LXXIX.

for his British Zoology. The time to which Mr. Pennant alludes, in which the Smooth Blenny was so abundant on this coast, is now above thirty years ago; and we may venture to affirm, on the assurance of Mr. Davies, and from our own repeated observation, that it is no longer an inhabitant of that part of the coast of Anglesea. The importance of the article tang, in which this species, and a variety of other littoral fishes, were known to secrete themselves, was then unknown: its utility in making glass, and other useful arts, has been since discovered; and for the last ten or fifteen years, the tang has been so frequently gathered by the landholders, for those purposes, that the broods of those fishes are now destroyed. The same reason may be assigned, most probably, for the rarity of the Smooth Blenny on the Cornish coast at this time.

In a recent tour round the maritime parts of the island of Anglesea, we ascertained one satisfactory point, to the surprise of Mr. Davies, namely, that the Smooth Blenny still inhabits the shore of a small rocky extremity on the north-west side of the island. We discovered it among the recesses of the shelving rocks, close to the low-water mark, in a situation nearly opposite to the Skerry Islands. In this spot we met with several specimens of various sizes, and had an opportunity of observing that, in their natural state, it is almost impossible to find two fishes alike in their colours and variegations. Some were dark brown speckled, and spotted with black, and whitish; the irides of the eye a bright scarlet, and fins deep orange; others olivaceous clouded with grey, and some blackish variously mottled. The most elegant among them is that selected for our figure, the pervading colour of which was a fine green, very beautifully marked with irregular and some-

PLATE LXXIX.

what transverse marks of silvery white, changeable to yellowish: the belly silvery, and fins orange spotted with greenish. One peculiarity in those fishes we could not avoid observing; throughout all the varieties, though so strikingly dissimilar, in other respects the eyes were scarlet, the lips white, or slightly tinged with reddish, and the extremity of every ray in the anal fin perfectly white. The posterior nostrils in all the specimens were tubular and fringed with small fibres, or ciliations, as Bloch observes, and which appears to be one of the most invariable characters of the species, though it was not so greatly protruded in any of the specimens we examined as the drawing of his fish represents. The teeth are of a slender form, long, and set remarkably close and even. Those fishes are so tenacious of life, that several of them lived more than thirty hours out of the sea. They subsist on small crabs, testaceous vermes, and other worms.—We also discovered this local species of *Blennius* on the coast of Pembroke-shire*.

The general size of this fish varies from three, to four, or five inches. The dorsal fin, which extends from the nape close to the tail, is nearly divided into two parts, and contains in our selected specimen thirty-one rays: the pectoral fin twelve rays; ventral two: anal twenty: and caudal thirteen.

* Vide *Donov. Tour South Wales, A. D. 1804.*

TABLE 1

Table with multiple columns and rows of data, including numerical values and text descriptions. The text is extremely faded and illegible.

SPOTTED BLENNY, OR BUTTER FISH.



London, Pub.^d at the Nat. observ. & F. & C. Hoington, May 1863.

PLATE XXVII.

BLENNIUS GUNNELLUS.

SPOTTED BLENNY, or BUTTER FISH,

*JUGULARES.

GENERIC CHARACTER.

Head sloping: six rays in the gill-membrane: body lanceolate:
ventral fins of two united rays: anal fin distinct.

SPECIFIC CHARACTER

AND

SYNONYMS.

Dorsal fin with about ten black ocellated spots.

BLENNIUS GUNNELLUS: pinna dorsali ocellis decem nigris. *Mus.*
Ad. Fr. I. p. 69.—Fr. Succ. 318. Linn.
—Gmel. Syst. Nat. 1181. sp. 9.

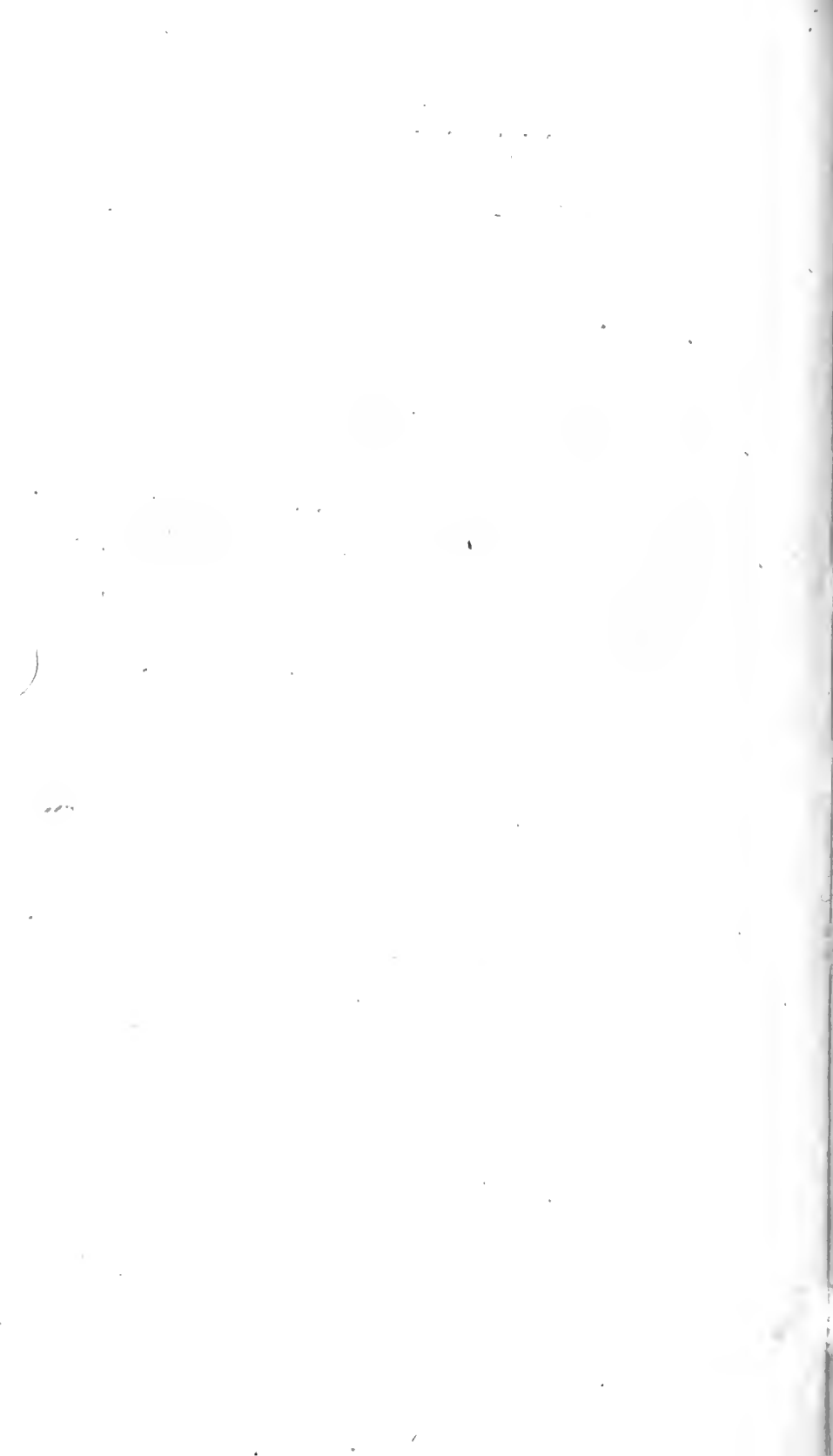
Blennius maculis circiter decem nigris, limbo albo, utrinque, ad
pinnam dorsalem. *Art. 27. 45.*

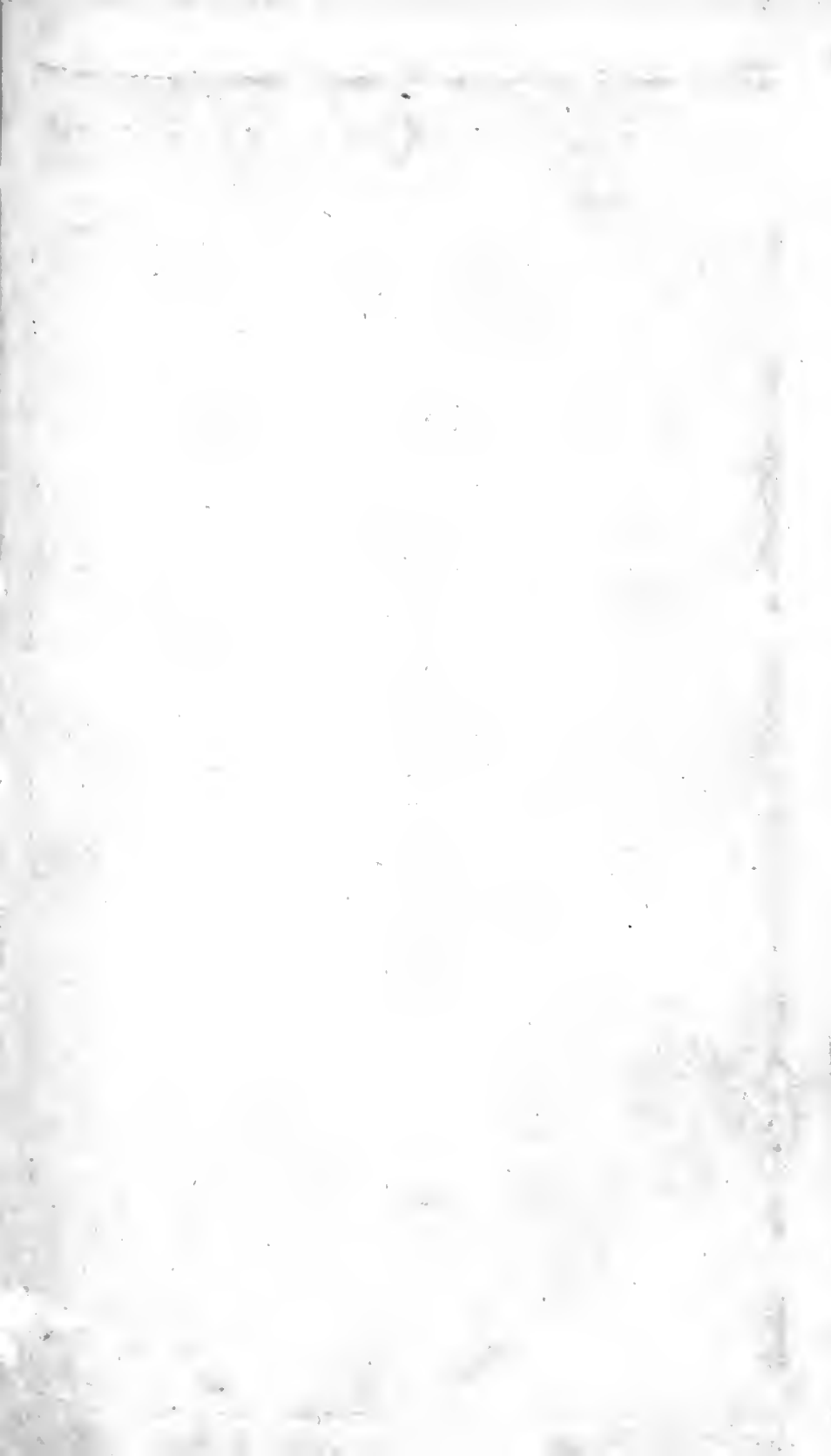
Blennius ocellis plurimis in pinna dorsali.—Le Papillon de Mer.
Bloch. Fisch. Deutsch. 186.

Photis maculis annulatis ad pinnam dorsalem, pinnis ventralibus ob-
soletis. *Gronov. mus. I. n. 77.*

Gunnellus *Cornubiensium*, nonnullis *Butterfish*—Liparis. *Wil-*
lughby, Ray, &c.

SPOTTED BLENNY. *Penn. Brit. Zool. 3. 210. 93.*





VIVIPARUS BLENNY.

23



Endon. Nat. 2 as the *1st* directed by F. Linnéus & F. L. C. Pinnipon. July 1803

PLATE XXXIV.

BLENNIUS VIVIPARUS.

VIVIPARUS BLENNY.

*JUGULARES.

GENERIC CHARACTER.

Head sloping: six rays in the gill-membrane: body lanceolate:
ventral fins of two united rays: anal fin distinct.

SPECIFIC CHARACTER

AND

SYNONYMS.

Mouth with two tentacula: dorsal, anal and caudal fins united.

BLENNIUS VIVIPARUS: ore tentaculis duobus.

BLENNIUS VIVIPARUS: ore tentaculis duobus. *Linn. Fn. Succ.*
317.—*Gmel. p. 1182. sp. 11.*

Enchelyopus corpore lituris variegato pinna dorsi ad caudam sinuata.
Gron. mus. 1. 65. n. 145.

Blennius capite dorsoque fusco-flavescente lituris nigris, pinna ani
flava. *Art. syn. 45.*

Blennius naribus tubulosis, *Bloch Fisch. Deutschl. 2. p. 183. n. 3.*
t. 72.

MUSTELLA VIVIPARA. *Will. ichth. p. 122. Raii. pisc. p. 69.*

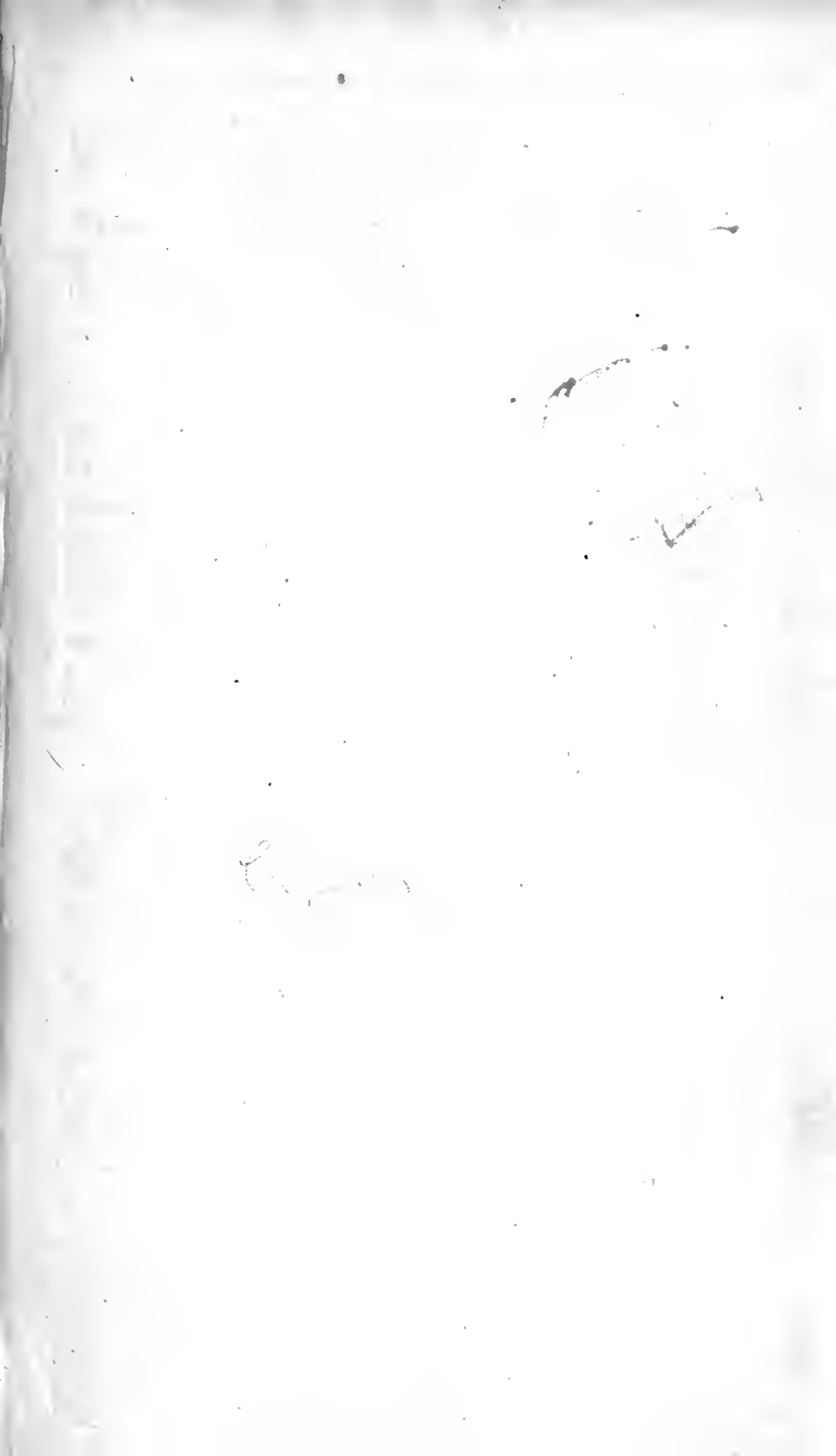
VIVIPAROUS BLENNY. *Penn. Brit. Zool. 3. p. 172. n. 5. t. 10.*

PLATE XXXIV.

The Viviparous Blenny is a most prolific creature, producing according to some naturalists from two to three or four hundred young at a time. It grows to the length of twelve or fifteen inches, and feeds on worms, crabs, and small fish. The flesh is coarse, and scarcely eatable.

Whether they are common, except in the mouth of the river Esk, at Whitby, Yorkshire (as Mr. Pennant acquaints us) we are not informed. It appears to us to be a rare, or at least a local kind, and it was not without some trouble we procured a specimen of it for the present work.

In the dorsal fin are 92 rays: pectoral 48: ventral 2: anal 68: and in the tail 48.



RUBESCENT BAND-FISH.

103 24



Tendin, Valenciennes, Atlas Ichth., pl. 12, fig. 1.

P L A T E C V .

CEPOLA RUBESCENS.

RUBESCENT BAND-FISH.

*** PISCES THORACICI.

GENERIC CHARACTER.

Head subrotund and compressed: teeth curved, and usually in a single row: gill-membrane with about six rays: body ensiform, naked: abdomen scarcely the length of the head.

SPECIFIC CHARACTER.

Rubescens: caudal fin tapering: jaws pointed.

CEPOLA RUBESCENS. Rubescens, pinnæ caudæ attenuata, maxillis acutis.

CEPOLA RUBESCENS: pinna caudæ attenuata maxillis acutis. *Mus. Ad. Fr. 2. p. 63.*

Ophidium macrophthalmum. *Linn. Syst. Nat. X. 1. p. 259.*

Taenia serpens rubescens dicta. *Art. Syn. 115?*

Encheloyopus totus pallide rubent, 'in imo ventre albescens, &c. *Klein. miss. pisc. 14. p. 57. n. 10?*

Taenia rubra. *Will. Ichth. p. 117.—Raj. pisc. p. 71. n. 10.*

Cepola rubescens. *Mont. Linn. Trans. v. 7. p. 291.*

An interesting account of this beautiful and curious species appears in a paper written by G. Montagu, Esq. in the seventh volume of

PLATE CV.

the Linnæan Transactions, accompanied by a coloured representation of the fish in its natural size. The specimen from which the description and figure were taken, was caught in Salcomb Bay, on the south coast of Devonshire, on the 25th of February, 1803; and since that period another was captured in the same place, which Mr. Montagu has kindly favoured us with for the purpose of investigation, and with permission to delineate in the present work.—We deem it a species of considerable rarity, and are happy in being enabled to present it to our readers.

The specimen first caught, and described in the Linnæan Transactions, is supposed to be a female; it measured ten inches in length, the depth behind the head rather more than three quarters of an inch, and the breadth half an inch. The colour pale carmine, darkest above and towards the tail: the gill-plates and undulated transverse lines along the sides silvery, and the fins the same colour as the body, except the ventral, which are nearly white. That which we have figured (presumed to be the male) is eleven inches in length, not quite so deep, and rather of a darker colour.

From the observations of Mr. Montagu, in the paper above mentioned, it is obvious he considers the *Cepola rubescens* to be altogether a different species from *Cepola Tænia*; while Gmelin, on the contrary, thinks the *rubescens* may be only a variety of the other kind.—We must confess ourselves not entirely satisfied whether it ought to be admitted as a distinct species, or a variety; for it appears to us that the precise characters of the two fishes are not at present distinctly understood;—it certainly still remains a point on which a difference of opinion may be maintained.

PLATE CV.

If the definition of the two fishes are inexplicit, the *Cepolæ* figured by Rondeletius, Gesner, and Jonston are likewise to be consulted with caution. By late writers these are referred to the species *Tænia*; should this be correct, we must express our doubt how far they are authorized in placing the *Tænia rubra* of Ray and Willoughby, and the *Enchelyopus* of Klein, with the same species. The latter we suspect to be the *Cepola rubescens*, and think ought rather to be placcd with the "*Tænia serpens rubescens dicta*" of Artedi than as synonymous with *Cepola Tænia*.—The *Cepola rubescens* is describ'd in the tenth edition of the Linnæan *Systema* under the appellation of "*Ophidion macrophthalmum, maxillis imberbibus pinna cæudæ acuminata.*" In the last edition of that work the description is different; it occurs in the new genus *Cepola* under the specific name *rubescens*, and is thus described: "*pinna cæudæ attenuata maxillis acutis;*"—the *Cepola Tænia*, to which it is so closely allied, appears under the character of "*pinna cæudæ attenuata maxillis acutis.*"

Bloch seems to be the first writer who describes the *Cepola* with accuracy, and he only speaks of one species, the *Cepola Tænia*, the description of which very nearly corresponds with our *rubescens*, and would almost incline us to believe them both the same species. In the first place, according to this writer, *Cepola Tænia* is known by having the head truncated in front; Gmelin says it is very obtuse, while that of *rubescens* has the jaws sharp-pointed. This being regarded as the most material character, deserves attention.—The figure of the head in Bloch, though obtuse, does not deserve the appellation of *obtusissima*, neither are the jaws of the fish before us so pointed as to accord with that of *acuminata*; it is in a very slight degree of a more lengthened form than the figure of Bloch represents;

PLATE CV.

the difference is scarcely perceptible, and the head is so much flattened in front as to be really truncated; in this respect, therefore, so far as we can judge, the two fishes are not very, if at all, different. According to the Gmelinian Systema, this is the only distinction between the two fishes; for although he mentions, besides this, the form of the caudal fin, he describes it as being attenuated in both species, and which consequently therefore ceases to be a decisive character of either.

“Gmelin (says Mr. Montagu) is inclined to think the *Cepola rubescens* a variety of the *Cepola Tænia*, but that is out of all question, as the body of this species is not carinated on each side, nor has the lower jaw a double row of teeth; and in other respects it differs.” These observations are worthy of further consideration. The most material objection arises from a supposed difference with regard to the sides of the two fishes, those of the *Cepola Tænia* being conceived to be carinated, while in *rubescens* the sides are perfectly smooth.

This conclusion is not correct, and the error seems to originate with Gmelin, who in his general description of the *Cepola Tænia* employs the terms, “*utrinque carinata*,” from which it may be inferred, that the fish is carinated at the sides, in the literal acceptance of the words, but this is not the fact; what is usually understood by the sides, being depressed instead of carinated. Bloch, from whom Gmelin evidently takes his description, affords a satisfactory explanation on this point. “Le tronc (says this author) est terminé en tranchant à sa partie supérieure et inférieure. Les côtés sont fort comprimés, et se rétrécissent en approchant de la queue.” The true character of the carination is thus unequivocally explained: it is not the middle of the sides which is carinated, that part being

PLATE CV.

compressed, but their extreme edges above and beneath, occasioned by the upper and lower part of the fish being slightly flattened, and appearing somewhat truncated. This character, observable in *Cepola Tænia*, is equally obvious in *rubescens*, and may be at once perceived when the dorsal and anal fins are expanded. The commencement even of the carinations along the upper part begins before the dorsal fin, taking their rise from the back of the head in an oblique course, gradually approximating towards the first ray of the dorsal fin, and thence continuing pretty near the base of that fin at each side throughout the whole length of the fish. The carinations beneath are likewise contiguous, and run close to the base of the anal fin on each side.—The last difference alluded to, consists in the number of the teeth; those in *Cepola rubescens* constituting only a single series in each jaw, while in *Cepola Tænia* the lower jaw has a double series. We cannot surely admit this as an absolute distinction, when it is remembered, that the number of teeth increases in many fishes as they advance in age; and that the lower jaw of our *C. rubescens* presents a broader space than the upper; it is possible the latter may have more than one row of teeth when full grown, and that our fish has not yet attained to perfect maturity.

Every circumstance considered, it will be allowed that neither of the above characters are sufficient to authorise us in forming two species of *C. Tænia* and *C. rubescens*; the characters proposed accord with both. We are still, inclined to allow that the difference between the colour of the two fishes is very remarkable; and that, should the delineation of *Cepola Tænia* given by Bloch be correct in all respects, we ought not too hastily decide on their being of the

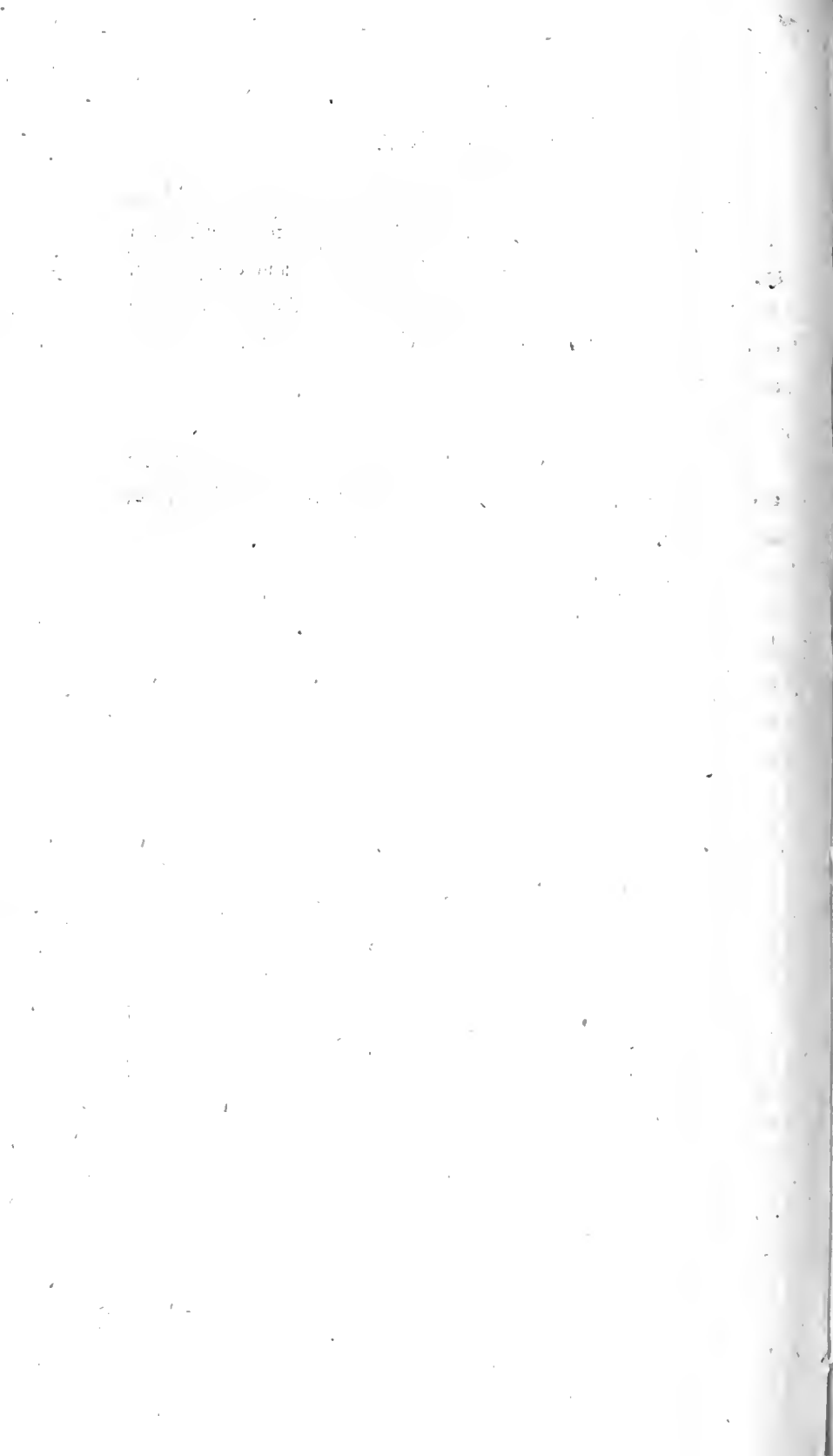
PLATE CV.

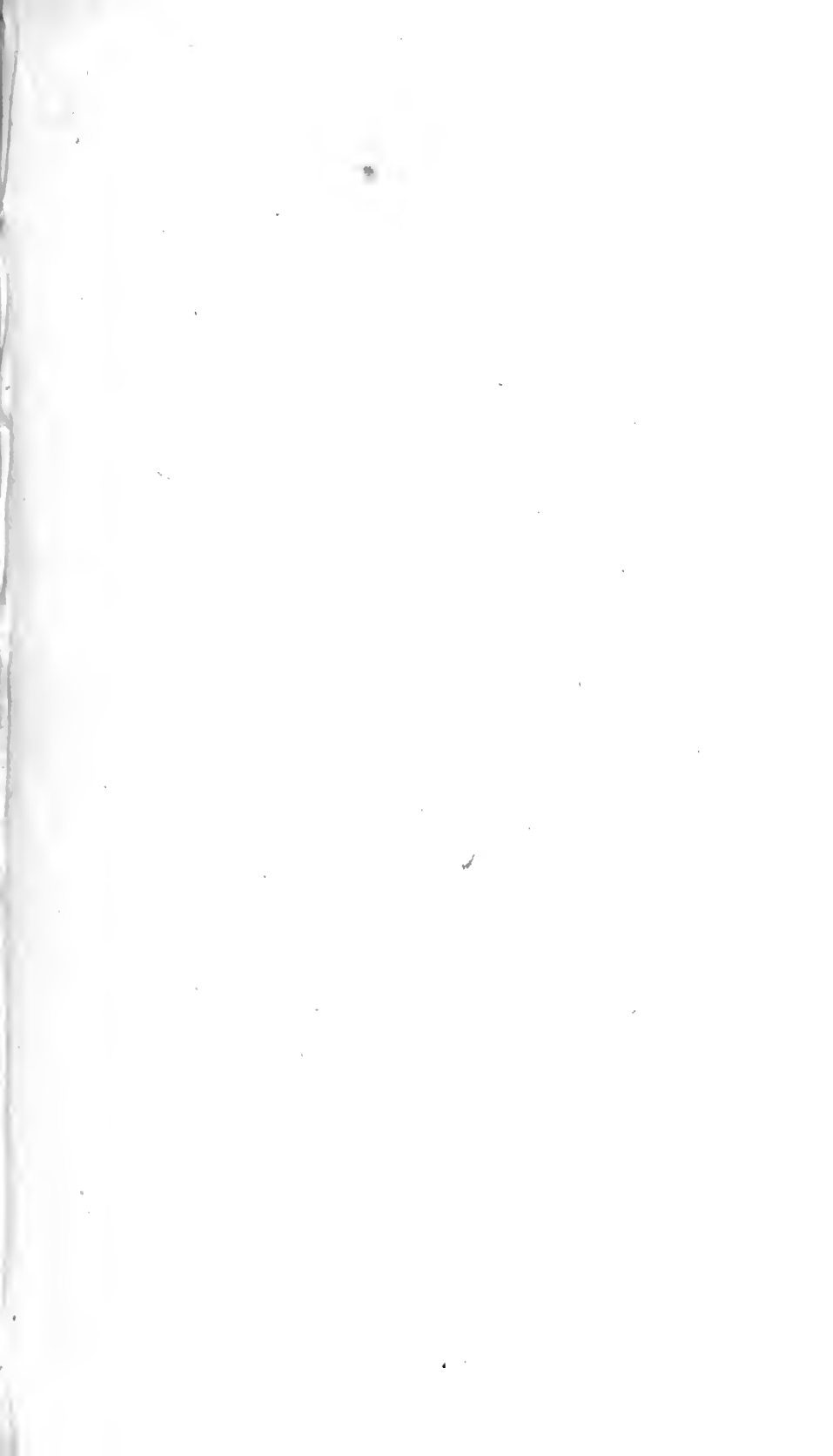
same species. His figure represents the fish of a silvery grey colour with the fins red, and several equidistant spots or patches of red on the cheeks, and along the side below the lateral line: his description accords with this, and so far deviates very materially from *C. rubescens*, which is throughout of a pale carmine colour, and entirely destitute of those remarkable spots so conspicuous in the above-mentioned figure.—This is a strong character, but still insufficient to induce us at once to pronounce them different; the colours of some fishes are extremely fugitive and variable; the young of various kinds are decorated with spots, which disappear in the adult state; and again in others, spots and marks appear in the fish at maturity, which in the younger state are invisible; as is abundantly proved in many instances of the Salmon tribe. Sometimes likewise it is the criterion of a sexual difference, as in the Torpedo, a young male of which, in our possession, exhibits those characteristic marks in the most singular manner. In the figure of *Cepola Tænia*, given by Bloch, the tips of the rays of both the anal and dorsal fin are bifurcated, while in our fish they appear single; and this we imagined to be a striking character, till on expanding the fins of our fish they proved to be bifurcated likewise. We should observe, that both those fins in our fish are very entire, while in Bloch's figure the edges of them appear to have sustained some injury, as the tips of the rays extend much beyond the connecting membrane.—Mr. Montagu thinks the two fishes he has met with male and female; could this be determined, it would remove from our own minds a strong suspicion that the *Tænia* and *rubescens* are in reality only the two sexes of the same species. If we admit them as distinct species we have more reliance on the difference of their colours than any other character the two fishes appear to exhibit; and this, upon the whole, inclines us to believe they may be distinct.

PLATE CV.

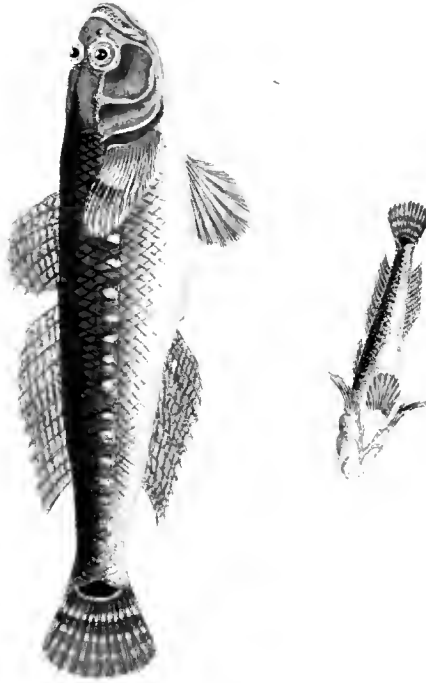
We have only to add our regret, that the *Cepola Tania* of Bloch has never fallen under our own observation, and that our inferences are for this reason necessarily drawn from figures and descriptions, which, however correct, are not sufficiently satisfactory to inspire confidence, and authorise us in determining whether the two fishes are specifically distinct or not.

In the specimen of *Cepola rubescens* now before us, the dorsal fin contains seventy rays: pectoral twelve: ventral six: anal sixty-nine; and tail nine.





BLACK GOBY.



Larvæ. Fish of the Sea. Drawn by J. Thompson & F. C. Richardson. Part 17. 1844.

PLATE CIV.

GOBIUS NIGER.

BLACK GOBY.

***PISCES THORACICI.

GENERIC CHARACTER.

Head small. Eyes placed nearly together, with two pores between them. Gill-membrane, with four rays. Body small, compressed at both sides, and covered with small scales; behind the vent a tubercle. Ventral fins united into the form of a funnel. Dorsal fins two.

SPECIFIC CHARACTER

AND

SYNONYMS.

Varied: white and fuscous; second dorsal fin with about fourteen rays.

GOBIUS NIGER: ex albo et fusco varius, pinna dorsali secunda radiis xiv. *Bloch. Fisch. Deutsch.* 2. p. 5. t. 38. f. 1, 2, 5.

GOBIUS NIGER: pinna dorsali secunda radiis quatuordecim. *Mus. Ad. Fr.* 2. p. 64.—*Gmel. Linn. Syst. Nat. T. I.* p. 3. p. 1196.

Electris capite catheto plateo, pinnis ventralibus concretis. *Gronov. Zooph.* No. 281?

Gobius Niger, Sea Gudgeon, Rock fish. *Will. Ichth.* 206.—*Raii syn. pisc.* 76.

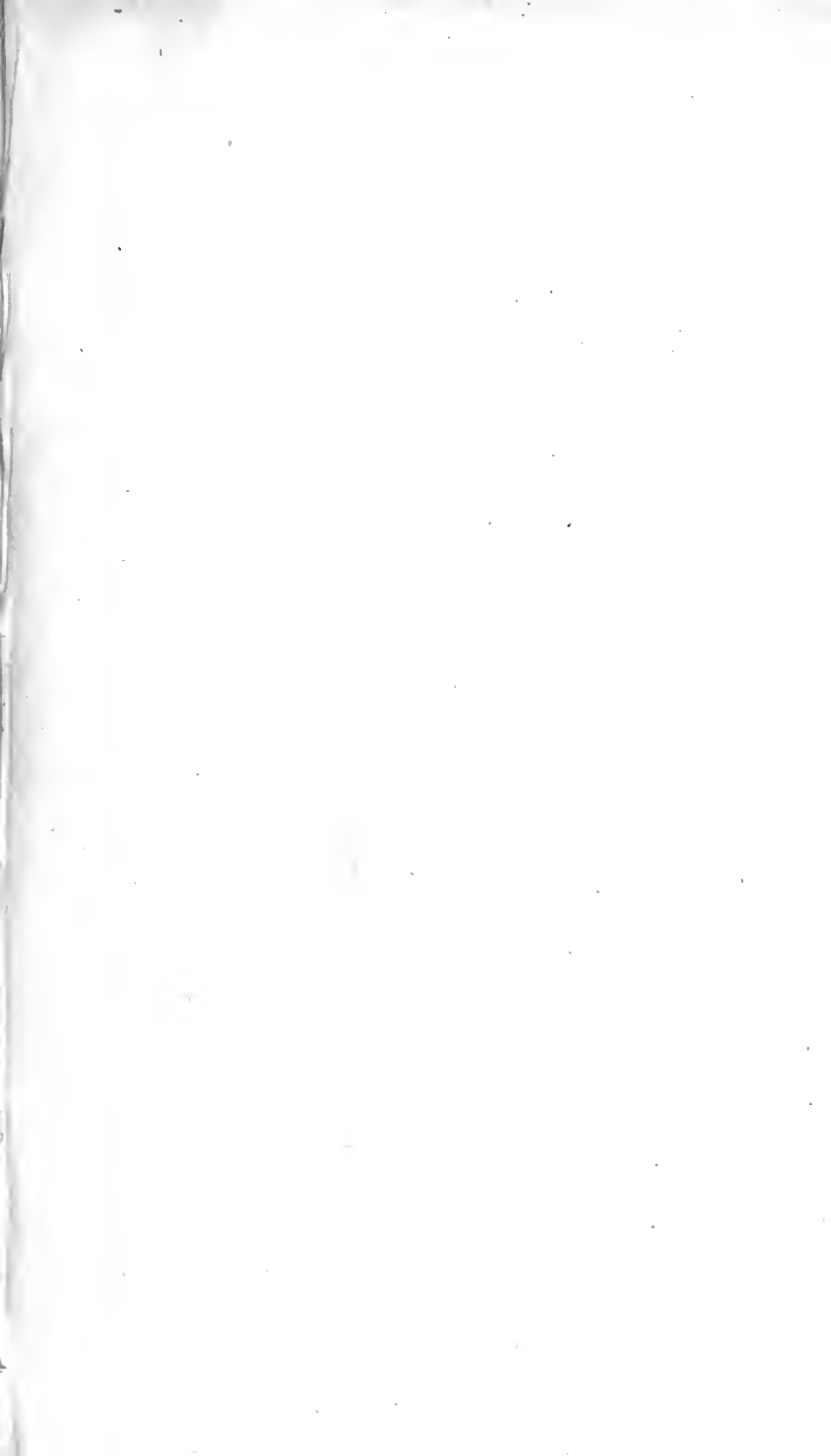
BOULEREAU, or Gougeon de Mer. *Lacepede, &c.*

BLACK GOBY. *Penn. Brit. Zool.* v. 3. p. 213. 21.

PLATE CIV.

This little fish is not entirely of a black colour, as its trivial appellation may imply; the ground colour is dusky above, beneath white, and the whole of the upper part and sides varied with pale testaceous, dark streaks, and spots of black; the head and darker parts glossed with blueish, and the fins partaking of the same colour. In the first dorsal fin of our specimen are seven rays, in the second twelve, pectoral eighteen, ventral eight, anal twelve; and caudal sixteen. The rays of all the fins are spotted with black. One peculiarity in the structure of the ventral fins should be observed; these unite and form a kind of funnel, by means of which this fish affixes itself so firmly to the rocks as to require some force in removing it, and has hence acquired the synonymous title of rock fish.

The Black Goby seldom exceeds the length of five or six inches; it is of the voracious kind, preying on smaller fishes and aquatic insects. Except in the spawning season it remains in the sea; about May or June it ascends rivers for the purpose of depositing its spawn, which it generally secretes under stones near the shallows, and then returns again to the marine element. The Black Goby is taken in great abundance in the North Seas, and is esteemed delicate and wholesome as an article of food. Upon the coast of France this fish appears to be very common, but we have reason to apprehend that it cannot be frequent in the vicinity of the British shores. Our specimen is from the coast of Devonshire.



SPOTTED GOBY.

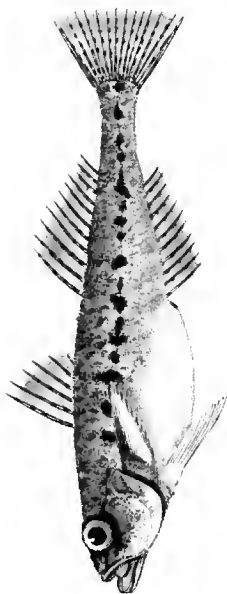


PLATE XXXVIII.

GOBIUS MINUTUS.

SPOTTED GOBY.

THORACICI.

GENERIC CHARACTER.

Head small. Eyes placed nearly together, with two pores between them. Gill-membrane, with four rays. Body small, compressed both sides, covered with small scales, behind the vent a tubercle. Ventral fins united into the form of a funnel. Dorsal fins two.

SPECIFIC CHARACTER

AND

SYNONYMS.

Whitish, spotted with ferruginous; rays of the dorsal, and caudal fin obscurely streaked with the latter colour.

GOBIUS MINUTUS: albicans ferrugineo-maculatus, radiis dorsalibus, et caudalibus ferrugineo obsolete striatis.
Pall. spic. Zool. 8. p. 4. Gmel. Linn. Syst. Nat. p. 1199. sp. 13.

Gobius Minutus. G. albidus, ferrugineo maculatus, oculis cæruleis.
Shaw. Zool. V. 4. n. 2. p. 36.

SPOTTED GOBY. *Penn. Brit. Zool. V. 3. sp.*

PLATE XXXVIII.

Mr. Pennant acquaints us, that he saw several of this species taken on our sandy coasts, in the summer of the year 1775, in the shrimp nets: he does not certainly mean by this to say, that they frequent the sandy shores of our island during the summer months only, as some have imagined; or if he does, the idea is unfounded. We have received them from various parts of the sea coasts in all seasons of the year, where they seem to be not less common during the winter, than the summer months. In the wide sweep of sands, called *Tracth Levan*, that extends along the south side of *Beaumaris* bay, opposite the island of *Anglesea*; upon the shores of the *Severn*, and indeed on many other of our sandy coasts, this fish has attracted our remark lurking or swimming with the shrimps, in the shallow pools of water left by the sea at ebb-tide. The same species also is not unfrequently taken with the shoals of sprats captured at a little distance from the shore.

The spotted Goby is a pretty, delicate little creature, whose usual length very rarely exceeds two inches, or two inches and a half; three inches or rather better is the length of that from whence our figure is taken, but that is of an uncommon size. *Pallas*, who describes this species, has defined its character with much precision; he speaks especially of the obsolete streaks across the rays of the dorsal fins, and tail, which are sufficiently distinct, except when the fins happen to be expanded, at which time they indeed appear as unconnected dots: the same may be said also of those across the anal fin, which he does not notice. These dots or streaks, are uniformly constant on all the specimens of the fish that have fallen under our observation, varying a trifle only in their tint of colour.—In the first dorsal fin are six rays, in the second are eleven; the pectoral fin has twenty, the ventral nineteen, anal eleven, caudal sixteen.

PLATE XXXVIII.

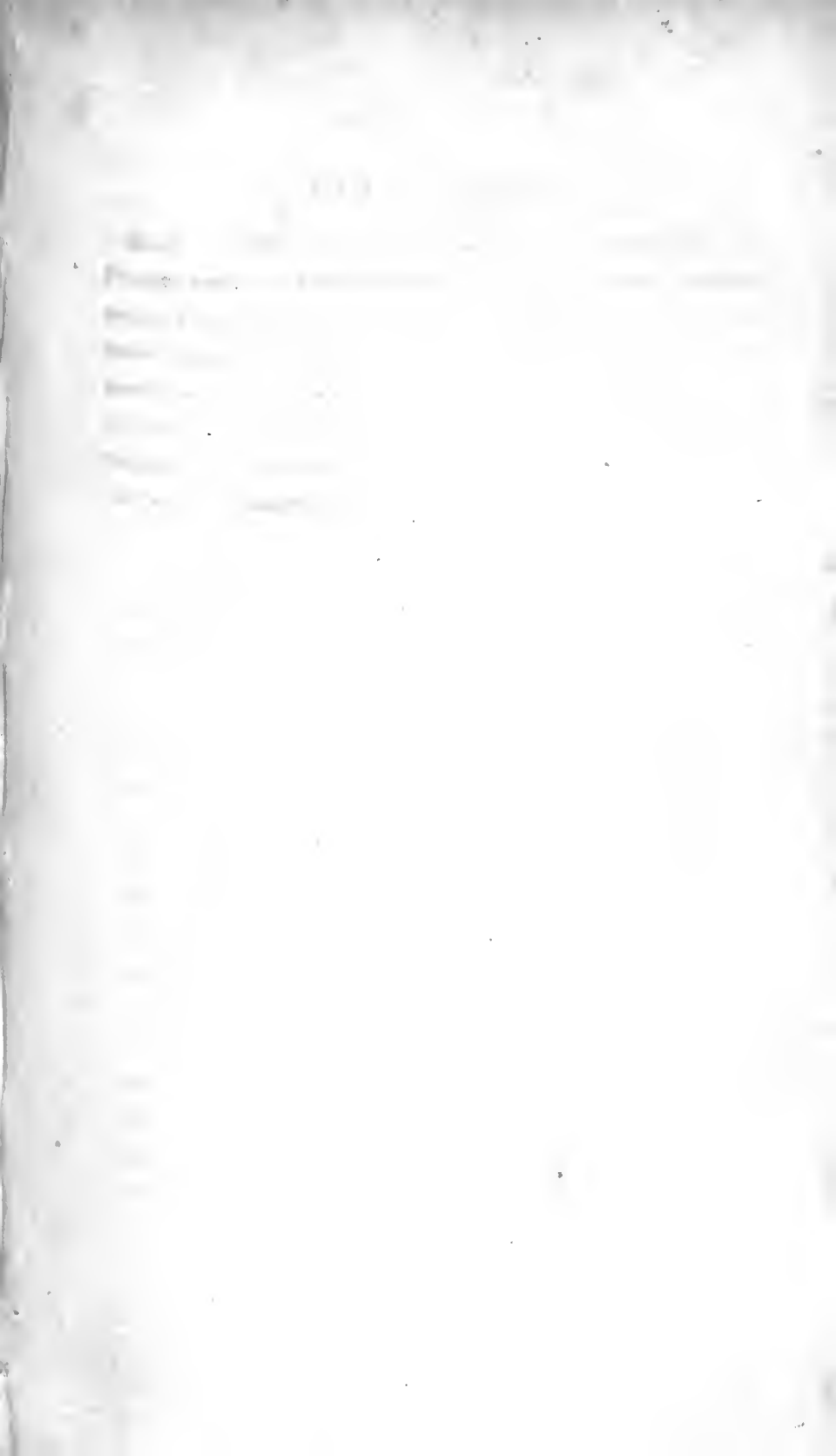
Bloch does not include this species in either of his works on fishes. Pennant considers it as the *Gobius Aphyia* of Linnæus, in which particular, later writers are persuaded he is mistaken; it must be confessed, however, that there still remains some little doubt as to the precise difference between the *Aphyia* and *Minutus*; Linnæus tells us the former has the body and fins barred with brown, which will in a certain degree apply to the characters of *minutus* likewise. That our fish is the *minutus* of Pallas, will not admit of doubt.

1875

Received of
the Treasurer
of the
County of
the sum of
Five Dollars
for
the year
1875

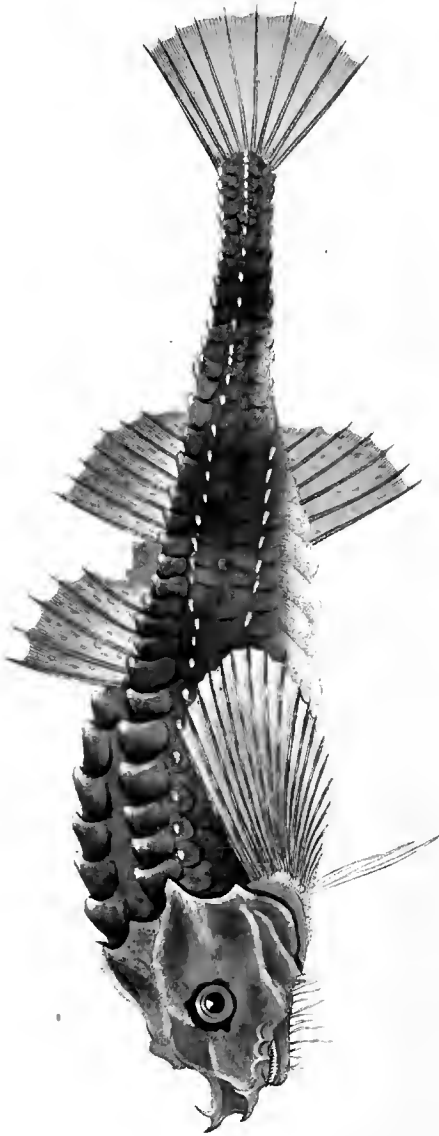
1875

1875



POGGE, OR ARMED BULL-HEAD

27



London, Pub^d at the Art Directs by K. Dumas & C. Curington, Oct^r, 1862.

P L A T E X V I .

COTTUS CATAPHRACTUS.

POGGE, OR ARMED BULL-HEAD.

GENERIC CHARACTER.

Head broader than the body, and spinous: eyes vertical, and furnished with a nictitant membrane: six rays in the gill membrane: body round, without scales, and tapering towards the tail: one or more dorsal fin.

SPECIFIC CHARACTER.

Loricated or mailed, beak or upper jaw warted, and furnished with two upright bifid spines: under jaw and throat beset with cirri.

COTTUS CATAPHRACTUS: loricatus, rostro verrucis 2 bifidis, capite subtus cirroso. *Faun. Suec.* 324.—*Gmel. Linn. Syst. Nat. T. 1. p. 3. p. 1207. sp. 1*

Cottus cirris plurimis, corpore octagono. *Mus. Ad. Fr. 1. p. 70.*
Pogge. *Will. Ichth.* 211.—*Raii. Syn. pisc.* 77.

ARMED BULL-HEAD, OR POGGE. *Penn. Brit. Zool. Vol. 3. p. 217. sp. 98.*

This species frequents the British shores in some plenty, and is found on most other coasts of Europe. It feeds on crabs, and other marine insects, worms, &c.

PLATE XVI.

The usual length is four or five inches, but it sometimes, though rarely, increases to above the length of six inches. In our specimen the first dorsal fin contains five rays, the second seven: the pectoral fin eighteen, ventral three: anal six; and the tail ten.

THE BIRTH

of the nation of the United States
in the year of our Lord one thousand seven hundred and eighty six
and in the month of September on the eighth day of the same

Costello

FATHER LASHER, OR SEA SCORPION,



London. Fish? as the sea scorpion by E. Donovan & F. C. Chapman. No. 1. 1893.

P L A T E X X X V .

COTTUS SCORPIUS.

FATHER LASHER, or SEA SCORPION.

*THORACICI.

GENERIC CHARACTER.

Head broader than the body, and spinous: eyes vertical, and furnished with a nictitant membrane: six rays in the gill membrane: body round, without scales, and tapering towards the tail: one or more dorsal fin.

SPECIFIC CHARACTER

AND

SYNONYMS.

Head armed with many spines: upper jaw rather longer than the under one.

COTTUS SCORPIUS: capite spinis pluribus, maxilla superiore paulo longiore. *Linn. Fn. Suec.* 323.

Cottus alepidotus, capite polyacantho, maxilla superiore paulo longiore. *Mus. Ad. Fr. I. p.* 70.

LA SCORPENE *Belon*, 242.

Scorpænæ *Belonii* similis *Cornub.* Father-lasher. *Will. ichth.* 133.
—*Raii syn. pisc.* 145.

SEA SCORPION *Edw. glean. t.* 284.

FATHER-LASHER. *Penn. Brit. Zool.* 3. p. 218. sp. 99.

PLATE XXXV.

This fish is a very general inhabitant of rocky shores in all the northern parts of Europe and Siberia. On our coasts it is seldom found above six or eight inches in length, but we have seen them rather exceeding the length of a foot; and in the North Seas, the Greenlanders, with whom it is a principal article of food, in general take them of a far greater size.

The Sea Scorpion is a very variable fish in its colours, lurks under stones or among the sea weeds, and feeds on crabs and small fish. The head is furnished with many strong and sharply pointed spines, which it is capable of exerting in a very formidable manner. It will follow Sharks and other voracious fish with the greatest temerity, lashing and wounding them with these spines, and effectually drive them from those places where it is accustomed to haunt itself. To the Blenny, as before said, it is a desperate enemy.

When the mouth is closed the upper jaw projects considerably beyond the lower one, but this latter it is capable of advancing in order to take its prey. In the first dorsal fin are eight strong rays: in the second fourteen: pectoral nine: ventral three: anal eleven: and caudal fourteen.



RIVER BULL-HEAD.



Ameiurus nebulosus as the star-dragon by K. Donovon & F. C. & L. Livingston, May 1865.

PLATE LXXX.

COTTUS GOBIO.

RIVER BULL HEAD.

* PISCES THORACICI.

GENERIC CHARACTER.

Head broader than the body, and spinous: eyes vertical, and furnished with a nictitant membrane: six rays in the gill membrane: body round, without scales, and tapering towards the tail: one or more dorsal fin.

SPECIFIC CHARACTER

AND

SYNONYMS.

Smooth: body tapering: head broad: gill covers armed with two spines each.

COTTUS GOBIO: lævis, corpore attenuato; capite lato, operculis bispinosis.

COTTUS GOBIO: spinis curvatis duabus ad utrumque operculum.
Bloch. Fisch. Deutschl. 2. p. 12. n. 1. t. 38. fig. 1. 2.

COTTUS GOBIO: lævis, capite spinis duabus. *Müll. prodr. Zool. Dan. p. 44. n. 368.*

COTTUS GOBIO. *Linn. Fn. Suec. 322.*

Cottus alepidotus glaber capite diacantho. *Art. Gen. 48. syn. 76. spec. 82.*

Gobius fluviatilis alter. *Bel. uq. p. 321.*

Bull-head, Miller's Thumb. *Will. Ichth. 137.—Raii syn. pisc. 76.*

RIVER BULL-HEAD. *Pen. Brit. Zool. v. 3. p. 216. sp. 97.*

PLATE LXXX.

The ordinary size of this fish is from three to four, or rarely five inches. In the northern parts of Europe, and in Siberia, it sometimes attains to the length of half a foot, or even seven inches; which latter appears to be the utmost size of any individual of this species hitherto discovered.

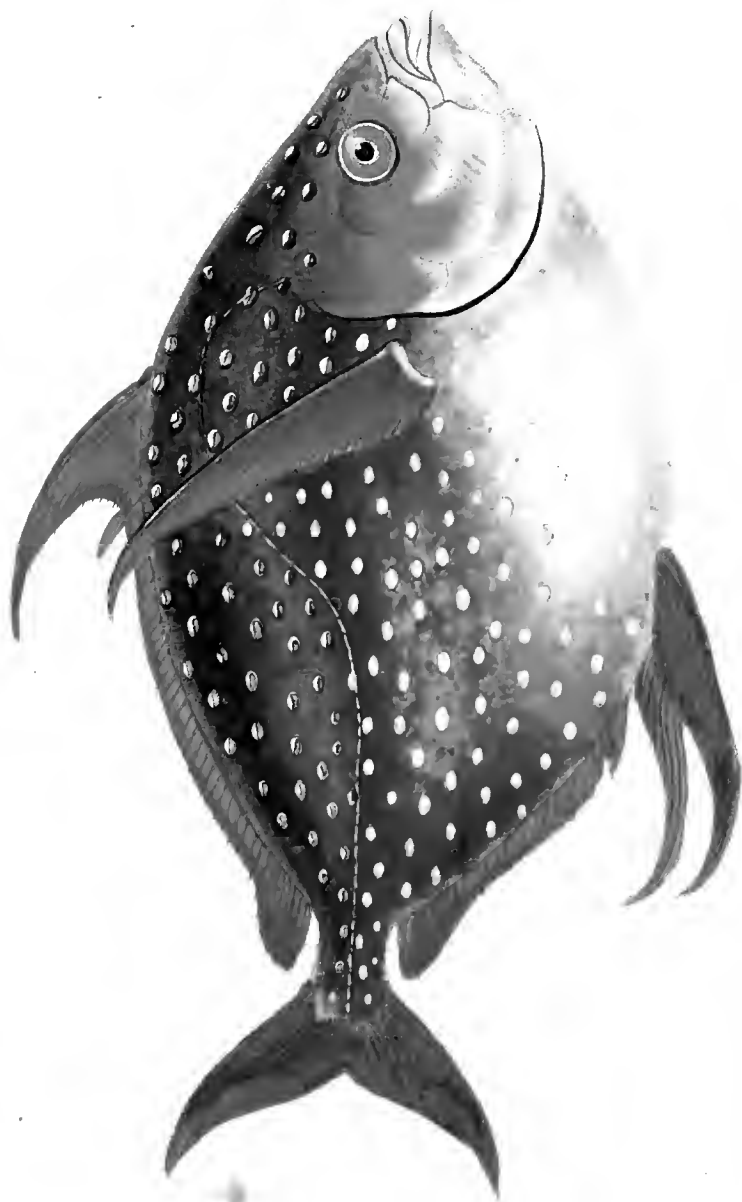
This fish inhabits most fresh water streams and rivers, where it is commonly observed lying at the bottom, lurking upon the gravel, or among stones, beneath which it oftentimes secretes itself when closely pursued by other voracious fishes. The spawning season is in March and April. It has been affirmed, though certainly without probability, or sufficient authority, that the female deposits her eggs in holes, which she purposely forms for their reception, and that she will not quit the spot even at the peril of her life. Marsigli asserts that the female rests for the space of a month on the eggs. This species subsists chiefly on aquatic insects, and the eggs or fry of other fishes.

The prevailing colours are nearly the same in all the individuals of this species, namely, a livid brown, more or less speckled with yellow, and spotted with dusky or black, the belly silvery white, and fins varied with brown. The anterior dorsal fin is of a darker colour than the others, and is sometimes edged with white, or whitish; this fin, in the largest specimen delineated in our plate, contains eight rays: the second dorsal fin, seventeen: pectoral fin, eleven: ventral four: and the anal and caudal fins, twelve each.



OPAH, OR KING FISH.

31
30



London: Published for the proprietors by Chapman & Pickett, Abchurch Lane, Sept. 1846.

THE
 NATURAL HISTORY
 OF
 BRITISH FISHES.

PLATE XCVII.

ZEUS LUNA.

OPAH, OR KING FISH.

** *PISCES THORACICI.*

GENERIC CHARACTER.

Head compressed, sloping: upper lip arched by a transverse membrane. Tongue subulate: gill membrane with seven perpendicular rays, the lower transverse: body compressed, thin, shining: rays of the dorsal fin in general filamentous.

SPECIFIC CHARACTER

AND

SYNONYMS.

Tail lunated: body smooth: back violaceous, and sides green, with oblong silvery spots: fins falcated, and scarlet.

ZEUS LUNA: cauda lunari, corpore lævi, dorso violaceo, lateribus viridibus argenteo guttato, pinnis falcatis coccineis.

PLATE XCVII.

- ZEUS LUNA : cauda sublunari, corpore rubente albo-guttato. *Gmel.*
Linn. Syst. Nat. T. 1. p. 3. 1225. n. 7.
- ZEUS OPAH : cauda sublunari, corpore nunc rubente, nunc viridi ;
nunc purpureo, albo-guttato. *Vivarium Naturæ.*
—*Shaw Nat. Miscel. v. 4. p. 140.*
- ZEUS GUTTATUS. *Brunnich.*
- POISSON DE LUNE. *Duhamel des peches. 3. p. 74. t. 15.*
- CHRYSOSTOSE LUNE. *Lacepede, &c.*
- OPAH. *Phil. Trans. abr. 11. p. 879. t. 5. Penn. Brit. Zool. 3.*
n. 101.
- OPAH OR KING-FISH. *Turt. Linn. Syst. v. 1. p. 760. n. 3.*
- Opah Dory. *Shaw Gen. Zool. v. 4. p. 2. 287.*
- Opah or King-fish. *Sowerby, Brit. Miscel. p. 22.*

The Opah claims a distinguished place in the history of British fishes: it is admitted by writers as one of the most beautiful examples of the finny race hitherto discovered in the European seas, nor is it less deserving our attention for its rarity than beauty.

That this splendid fish has at various times been observed in the northern seas of Europe we have the authority of several naturalists of respectability; it is in particular described as a northern fish by Strom in his History of Sondmor. According to Duhamel, Lacepede, and other French writers, it is likewise found, though rarely as far to the southward as the coast of Normandy: its occasional appearance in the British seas is sufficiently well attested; and if Dr. Mortimer was not misled by the information obtained from the Prince of Anamaboo, it is also a native of the seas of Africa, and in the latter far more abundant than it appears to be elsewhere.

PLATE XCVII.

Several specimens of this splendid fish have been captured or cast ashore upon our coasts, notwithstanding which we cannot hesitate to consider it as a scarce fish. Its appearance on our coasts has been at periods very remote from each other, and we think it not improbable that it has seldom occurred without being duly noticed by some intelligent, if not very scientific characters. We are inclined to suspect that several of the British species of fish much less rare than the Opah have hitherto been considered more uncommon, either because they are deficient of beauty, singularity, or magnitude, to recommend them to the immediate attention of general observers, and that, from their localiry, they have rarely occurred to the observation of naturalists. The Opah is, on the contrary, a superlatively grand and striking object, such as would naturally arrest remark, and it is therefore not unlikely that in almost every instance of its being captured on our coast, it has excited so much curiosity as to be recorded in some of the diurnal prints; and the description of such a fish, if only slightly accurate, could not easily be mistaken.

The Opah is described by Sibbald, in his History of Scotland, under the title of *Pisces maculis aspersus non scriptus pollices, 42 longus*, and figured in the sixth plate of that work. Mr. Pennant tells us, "we have only five instances of this fish being taken in our seas, four of them in the north, viz. twice off Scotland, once off Northumberland, one in Fileybay, Yorksire, and a fifth at Brixham in Torbay, in 1772."

The first account we have of the Opah that merits particular observation appeared in the Philosophical Transactions for the year 1750. This was drawn up by Dr. Mortimer, from a specimen of the fish, captured on the shore of Leith, and submitted about that period to the inspection of the Royal Society. Dr. Mortimer's

PLATE XCVII.

description is at some length, and deserves, for its accuracy, to be repeated in this place.—“ This fish,” says Dr. Mortimer, “ is smooth skinned, has no scales, or teeth : it has one erect fin on its back, which arises below its neck, and runs within a little of its tail : on each side, about the middle, between its back and belly, a little forward of the vent, arise a pair of fins : from behind the vent runs one fin, within a little of the tail : the tail-fin is large and forked : the eyes are large ; the irides are scarlet, encompassed with a circle of gold-colour, verged with scarlet : its nostrils are placed above its eyes : the back and upper part of the body, quite to the tail, was of a dark blue or violet-colour ; these and the sides of the body, which were of a bright green, were all speckled with oblong white spots : the chaps were of a pale red ; the nose, gills, and belly, were of a silver-colour, and all the fins of a bright scarlet. It was three feet seven inches long, and three feet ten inches round, in the thickest part : it weighed eighty-two pounds : its mouth was small ; its tongue thick, almost like the human tongue in shape, but rough, and thick set with beads or prickles, which pointed backwards ; so that any thing might easily pass down, but could not easily slip back again : therefore these might serve instead of teeth for retaining its prey or food : its gills resembled those of the salmon : its body grows very taper towards the tail ; and from being compressed to ten inches thickness, becomes near the tail almost round, and about three inches thick : the whole shape of this fish much resembles that of the sea-bream, but it differs in size, being much larger, and in not having teeth nor scales : the fin standing erect on the back has some aculéi next the neck, and rises up to eight inches ; but in the middle diminishes to one inch ; and near the tail rises again to about three inches, the belly-fin, opposite to this, spreads three inches near the tail, and diminishes towards the vent : the tail-fin is forked, and spreads twelve inches : the gill fins are nine inches long and three

PLATE XCVII.

wide at their basis: the two belly fins were eleven inches long and three wide at their basis: it seems to be a new species of fish, not yet described by any author." Dr. Mortimer adds, that the Prince of Anamaboo, a country on the coast of Africa, being then in England, recognized the fish immediately as a species common on that coast, and said it was good to eat.

In the year 1769, another specimen was taken near Newcastle, of which the following account was written by Mr. Robert Harrison, of that place.

" Newcastle, Sept. 12th, 1769.—On Saturday last was thrown upon the sands at Blyth, a very rare and beautiful fish, weighing between seventy and eighty pounds; shaped like the Sea-Bream: the length was three feet and a half; the breadth, from back to belly, almost two feet; but the thickness, from side to side, not above six inches: the mouth small for the size of the fish, forming a square opening, and without any teeth in the jaws: the tongue was thick, resembling that of a man, but rough, and thick set with beards or prickles, so that any thing might easily pass down, but could not easily return back; therefore these might serve instead of teeth to retain its prey: the eyes remarkably large, covered with a membrane, and shining with a glare of gold: the cover of the gills like the Salmon; the body diminishes very small to the tail, which is forked, and expands twelve inches: the gill-fins are broad, about eight inches long, and play horizontally: a little behind their insertion the back fin takes its original, where it is about seven inches high, but slopes very suddenly, running down very near the tail, and at its termination becomes a little broader: the belly-fins are very strong, and placed near the middle of the body: a narrow fin also runs from the anus

PLATE XCVII.

to the tail: all the fins, and also the tail, are of a fine scarlet; but the colours and beauty of the rest of the body, which is smooth and covered with almost imperceptible scales, beggars all description: the upper part being of a bright green, variegated with whitish spots, and enriched with a shining golden hue, like the splendour of a peacock's feather: this by degrees vanishes in a bright silvery, and near the belly the gold again predominates in a lighter ground than on the back."

The third specimen, which, as before observed, was taken in Torbay, in the year 1772, is thus described by Mr. Pennant, upon the authority of a gentleman who saw the fish soon after it was taken, and transmitted an account of it to be inserted in the *British Zoology*.—"This fish weighed a hundred and forty pounds. The length was four feet and a half: the breadth two feet and a quarter: the greatest thickness only four inches. Its general colour was a vivid transparent scarlet varnish over burnished gold, bespangled with oval silver spots of various sizes: the breast was a hard bone, resembling the keel of a ship. The flesh looked, and tasted like beef."

Several of the French Naturalists describe the Opah either under the name of *Poisson de Lune*, after Duhamel, or the more modern appellation of *Chrysostose Lune*, (*Chrysostosus*) which latter was assigned to it by Lacepede, when he separated it from the *Zeus* genus, in which it stands in the Gmelinian *Linn. Syst.* and constituted a new genus for the reception of this single species. Bosc, one of the latest of those writers, affords a lively description of the Opah, in the following words. "C'est un magnifique poisson. Des reflets d'azur, de vert clair, d'argent, se jouent sur un fond d'or, au milieu d'un grand nombre de taches couleur de perle ou de saphir. Les

PLATE XCVII.

nageoires sont d'un rouge éclatant. Il a la lèvre supérieure extensible ; la machoire inférieure plus longue ; la nageoire dorsale en forme de faux, avec un ou deux rayons aiguillonnés et quarante-six articulés ; un rayon aiguillonné et trente-cinq articulés à l'anale ; la caudale fourchue ; ses écailles sont unies. Le Chrystose lune se pêche, mais très rarement, dans les mers d'Europe: il acquiert quatre a cinq pieds de long."

Since the publication of Mr. Pennant's Zoology, three specimens of the Opah have been caught on the coast of Scotland ; two in the Firth of Forth, and the third at no very considerable distance from that place. One of the latter, a fish in fine preservation, is at present in our collection. Another, rather smaller, was discovered stranded on the coast, by some labourers employed in the colliery trade, and was eaten at a neighbouring cottage ; and the fate of the third is not correctly known. Besides those Scottish specimens, another was caught some time ago on the western coast of England, by the fishermen of those parts ; who afterwards disposed of it in a mutilated state to S. P. Bryer, Esq. of Weymouth ; some account of which has recently appeared in a work entitled the British Miscellany*.

* Pl. 22. *Brit. Misc.* It might be improper to conclude our account of the Opah without adverting to a few observations that have recently appeared in the work above mentioned. The compiler informs us, " he knows of no coloured figure of this fish," from the tenor of which it is possible the reader might conclude that no such figure had been previously published, which would not be correct, as a coloured plate of it does actually occur in the Naturalist's Miscellany of Dr. Shaw, vol. iv. pl. 140. This is an oversight that might easily be committed, though it were better to have been avoided. With regard to the other remarks they appear, to us at least, incomprehensible. We are told, for instance, " it is rather astonishing that Linnæus, Gmelin or Turton, do not men-

PLATE XCVII.

The history of this fish is so highly interesting, that we have been tempted to digress at more than usual length, in order to insert whatever

tion it!"—Can the compiler be really serious in this assertion?—If he should be so, such observations are too puerile and presuming to merit criticism.

Lest however an assertion so confidently advanced, might tend to mislead the uninformed, it will be incumbent to say that the Opah is very fully described by Gmelin in his edition of the *Systema Naturæ*, and it is equally certain that Dr. Turton speaks of it at considerable length; not precisely in the words of his original (the *Gmelinian Syst. Nat.*) for he has even amplified upon the subject by collecting additional information from other sources: the author of *Vivarium Naturæ* it is very evident, though Dr. Turton does not mention it, has furnished him with the specific character which he has adopted in preference to that proposed by Gmelin. He likewise adds, that the Opah is found on the British coasts, a circumstance omitted in the Gmelinian description. We conceive it may not be amiss to transcribe the words of Gmelin at length, and also those of Turton, in order to remove the slightest possibility of doubt on this subject that may be occasioned by the unqualified assertions of the British Miscellany.

“ Zeus Luna: cauda sublunari, corpore rubente albo-guttato. *Du Hamel des pêches* 3. p. 74. t. 15. Poisson de lune.

Habitat in mari Normaneniam alluente, ultra 3 pedes longus, diu extra aquam vivat, squamis vix conspicuis, uti exalbida parum adhaerentibus vestitus, extra aquam aureo, argenteo, caelesti splendore refulgens.*

Caput breve, rotundatum, rubrum, hinc inde aureum; oculi magni; dentes minutissimi; rictus amplus; pinna rubra, cauda fere alba.” *Gmel. Linn. Syst. Nat. T. 1. p. 3. 1225. n. 7.*

* Gmelin is correct in describing the scales of this fish as being very small: in our specimen they may be observed on close inspection, but at the first glance the skin appears perfectly smooth. The figure of the Opah in the British Miscellany is inaccurate therefore in this respect, for although it does not exceed the length of four or five inches, the scales are represented more conspicuous than they appear in a specimen that measures two or three feet in length.

PLATE XCVII.

might appear in the slightest degree material, from the observations of preceding authors. We shall now proceed to offer an accurate though concise account of the specimen before us, with the view of pointing out in the clearest possible manner, those particulars in which our fish accords, or disagrees, with the descriptions those authors have previously afforded.

The total length of our specimen, from the extremity of the jaws to the tip of the tail, is three feet two inches; and the greatest depth, one foot five inches. The relative proportions of the respective parts are delineated with sufficient accuracy to render any minute detail in this respect superfluous. The same may be observed with regard to the general aspect and disposition of its colours, allowing only for the imperfection of the imitative art;—for the inability of the artist to convey that precise idea of its matchless combination of changeable, vivid, and metallic hues, with which the splendid original is adorned by the hand of nature!—The prevailing colours on the back is deep blue inclining to regal purple, below which the purple is glossed in various directions of light with a reddish and golden hue, blending into green upon the sides, and the green fading to yellow as it approaches the silvery white of the abdomen. In some speci-

“Zeus Opah. Z. cauda sublunari, corpore nunc rubente, nunc viridi, nunc purpureo, albo-guttato.” *Vivarium Naturæ. Nat. Miscel. 4. t. 140.*

“Zeus Luna: Opah-King-Fish. Tail somewhat lunate; body beautifully red, green or purple, with oval white spots.

“Inhabits the coast of Normandy: rarely found on the British: above three feet long; is of all the European fish the most rich and splendid in its colours; body very deep from the back to the chest, and tapering very small to the tail, covered with hardly visible scales. Head short, rounded, red, with golden patches; eyes large; teeth very small; mouth large; fins scarlet.” *Turton, v. 1. p. 760.*

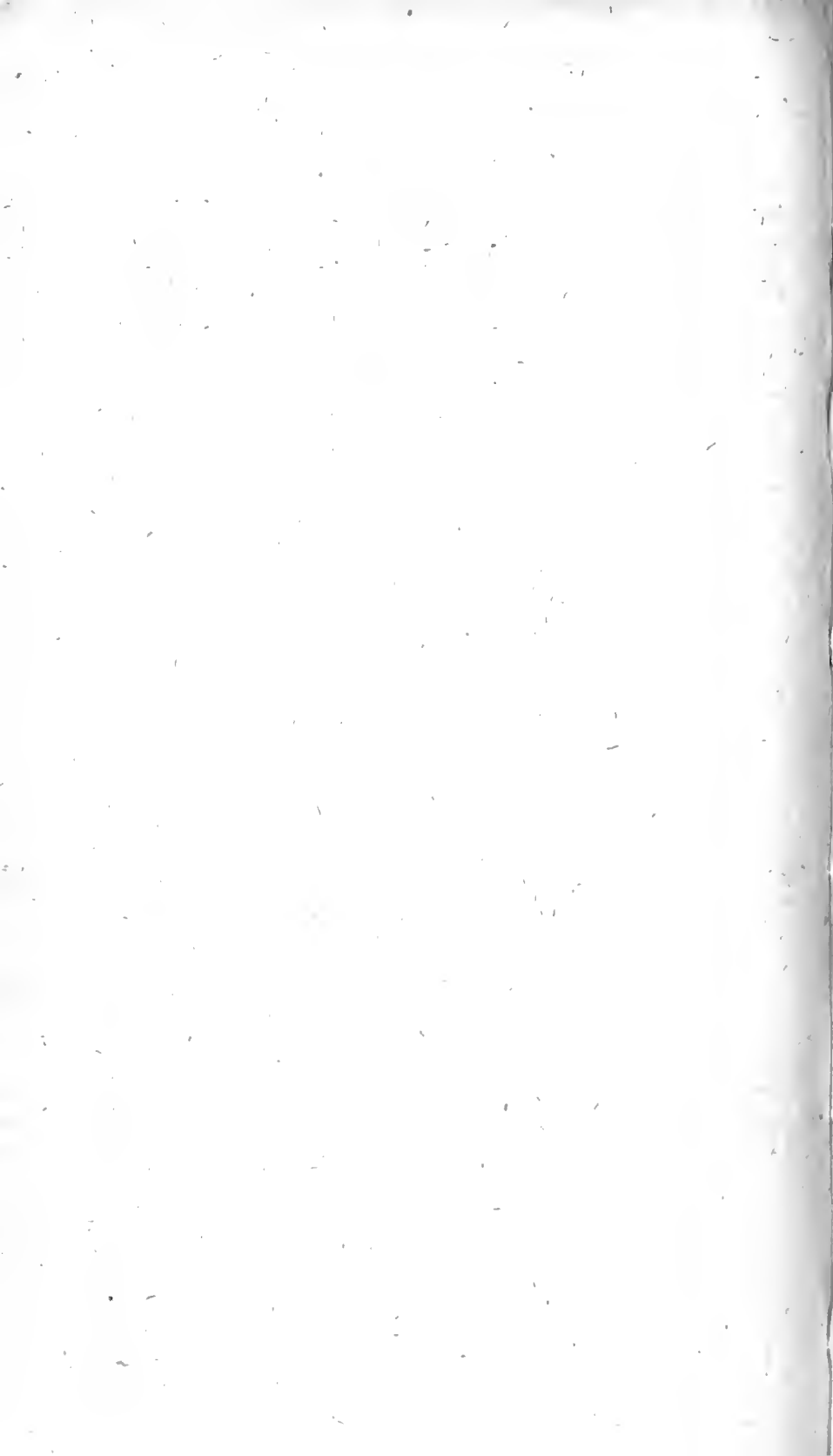
PLATE XCVII.

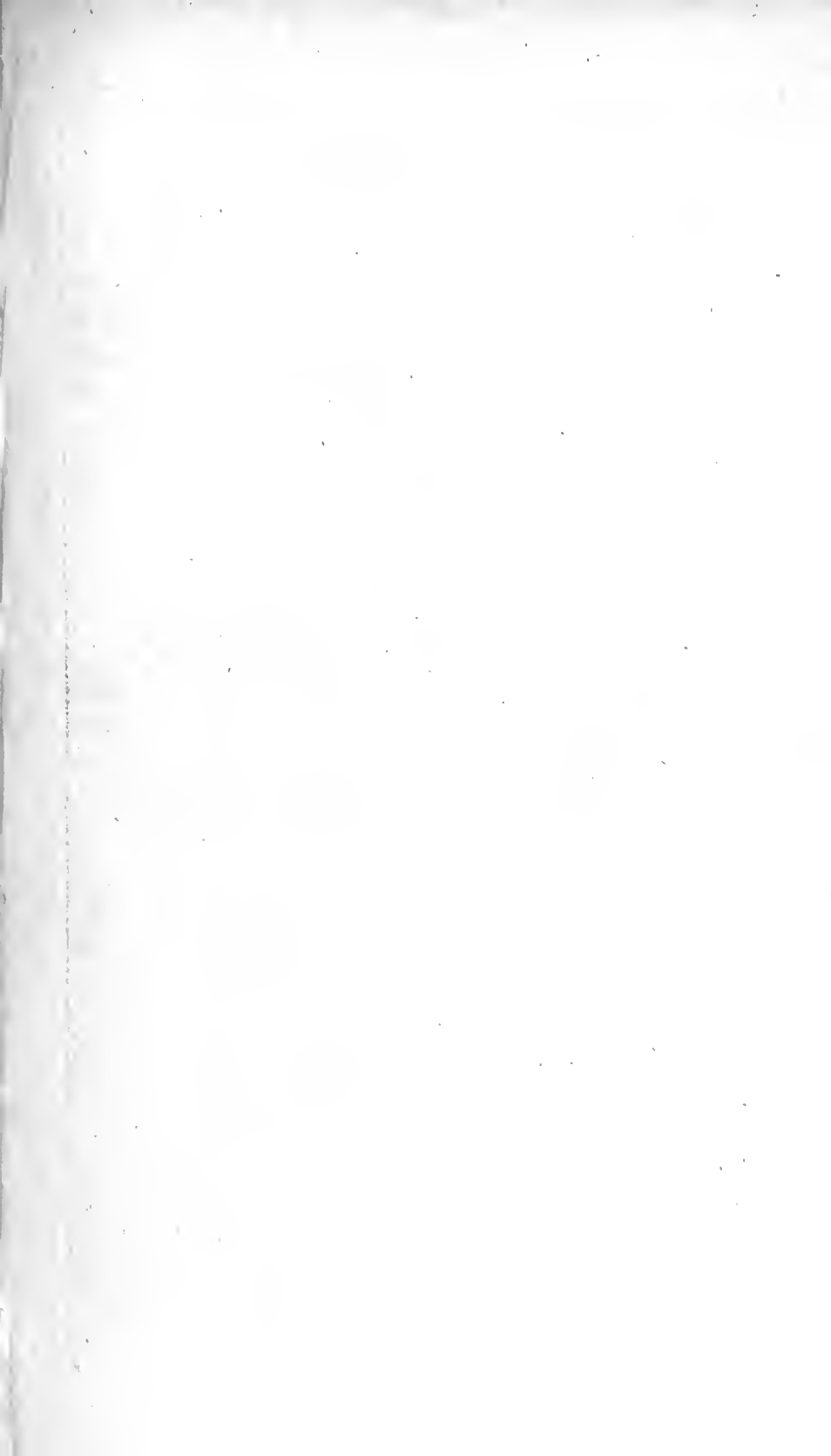
mens we rather suspect the general ground colours are darker, or more inclining to purple, or reddish, instead of green, on the sides. The whole of the body is covered with a great number of large distinct oval silvery spots, which produce an appearance no less singular than grand in the aspect of the fish; and what still more contributes to its beauty, is the brilliant colour of the fins, all of which are a fine scarlet. The surface of the skin is remarkably smooth, and covered with scales that are scarcely perceptible: the lateral line is irregular, and somewhat incurvated at the commencement.

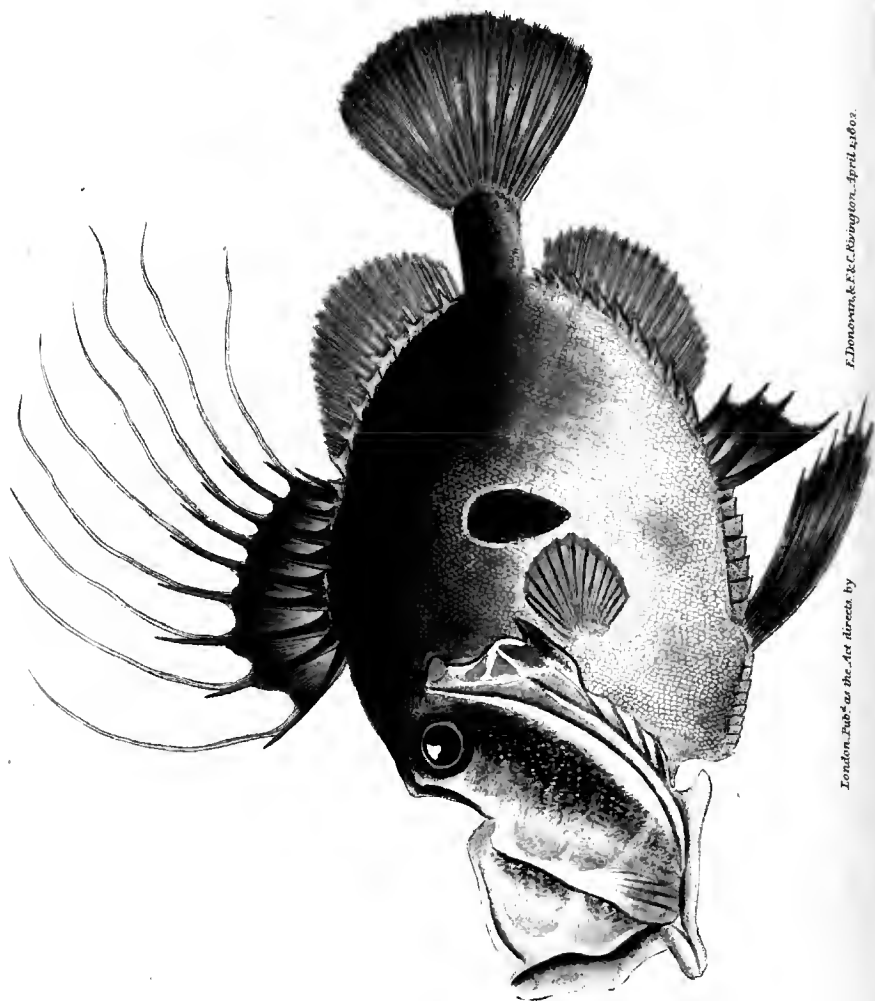
It will be observed, on a slight inspection of our drawing, that some material difference exists between our specimen and those represented by former writers. That this difference may have arisen from the less perfect condition of the fish examined by those writers, rather than from any oversight, we may possibly admit. But to say the least, if we are to rely on the figures and description that have previously appeared, the specimens they have examined must have been defective. In proof of this we need only adduce one particular, the preposterous length of the pectoral fins, a circumstance which none of the British writers have mentioned. Those fins, in the perfect fish are so remarkably long, that when placed erect, they reach even above the back, insomuch that the tips of both those fins are seen in this position, rising above the dorsal fin towards the middle of the back. This is a most striking character of the fish, and does not appear in any of the figures at present extant that we are acquainted with. It should however be remembered, that very few of those figures which do occur are original: that which first appeared in the Philosophical Transactions, to illustrate the description given by Dr. Mortimer, is the subject repeated in the British Zoology of Mr. Pennant, in the General Zoology of Dr. Shaw, and

PLATE XCVII.

various other works, all which represent the pectoral fins much too short: those fins were probably mutilated in the fish examined by Dr. Mortimer, and having been so represented in his drawing, would of necessity be represented in the same manner in other figures copied exclusively from it. The dorsal fin at the commencement, the ventral fins, and the extreme tips of the tail, are also longer and more falcated than are usually represented. The dorsal fin contains fifty-four rays: pectoral, twenty-eight rays: ventral, ten rays: anal, twenty-six rays; and tail, thirty.







F. Donovan, & F. C. Kingston, April 1860.

London, Pub^d as the Act directs by

P L A T E VIII.

ZEUS FABER.

DOREE.

THORACICI.

GENERIC CHARACTER.

Head compressed, sloping: upper lip arched by a transverse membrane. Tongue subulate.

SPECIFIC CHARACTER

AND

SYNONYMS.

Tail rounded, a large brown ocellated spot on the sides. Two anal fins.

ZEUS FABER: cauda rotundata, lateribus medius oculo fusco, pinnis analibus duabus. *Gmel. Linn. Syst. Nat. p. 1223. sp. 3.*

A Doree. *Will. Ichth. 294.—Raii. syn. pisc. 99.*

Doree. *Penn. Br. Zool. p. 221. sp. 100.*

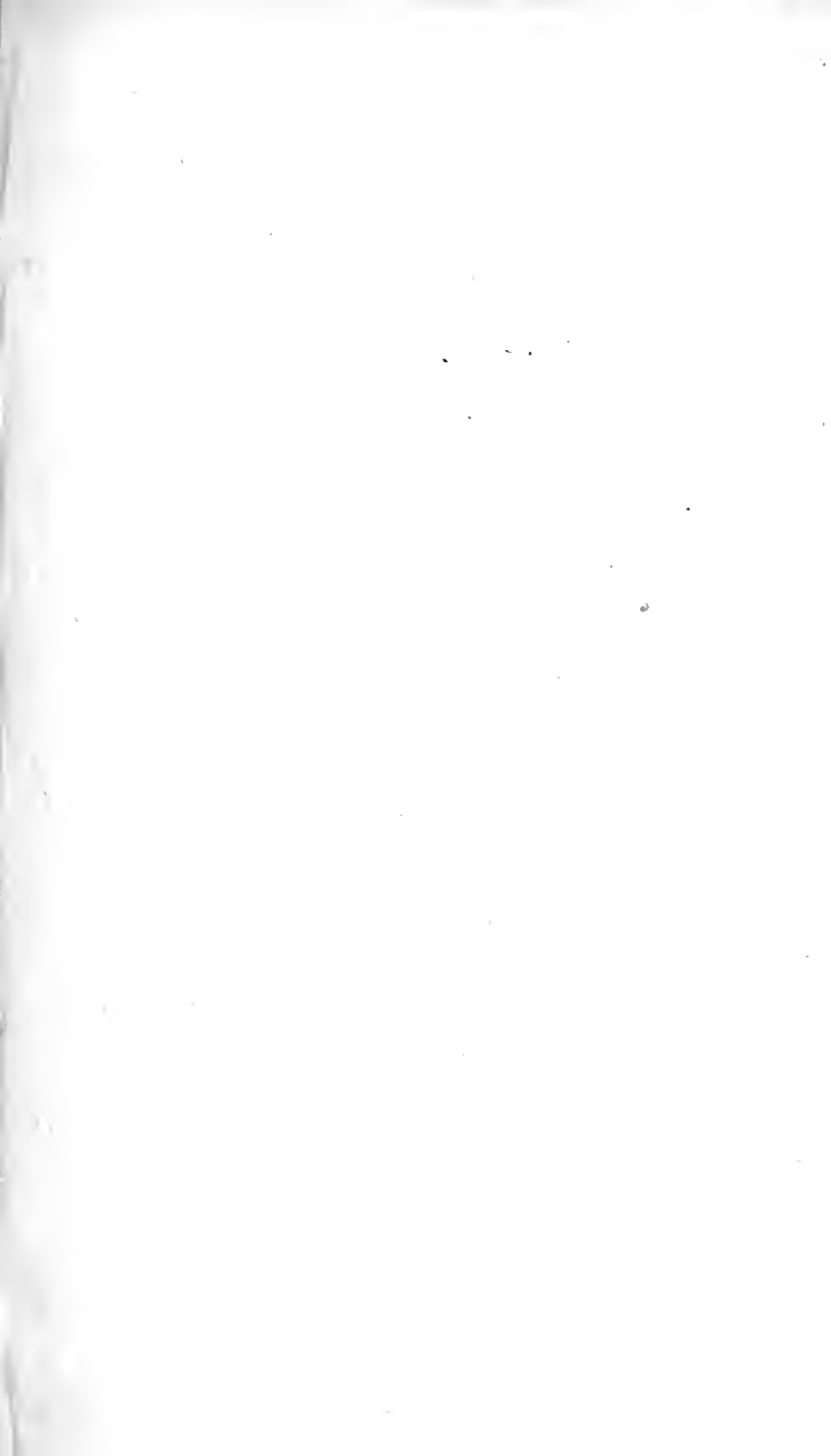
The Doree, notwithstanding its hideous aspect, is in much esteem for its delicious flavour. It is said we are indebted to the epicurean Mr. Quin for overcoming those prejudices which its peculiar deformity had excited, and introducing it to the table.

PLATE VIII.

Like the Haddock, this species, according to Pennant, was formerly an object of superstition. Some credulous authors believing that St. Christopher, in wading through an arm of the sea, caught a Doree, and, as a memorial to posterity of the fact, left an impression on its sides. Others believe it is the identical species, out of whose mouth St. Peter took the tribute money.

The colours of this fish when living, are olive, or lead colour, varied with blue and white, and the whole appears finely glossed with a golden hue, as its significant names, Faber and Doree, imply.

The first dorsal fin contains ten rays, which are strong, and furnished at the end with a long filament; the second twenty-four short rays; pectoral fourteen, ventral seven; in the first anal fin four spiny rays, second twenty-two soft ones, and in the tail fourteen.



HOLIBUT.

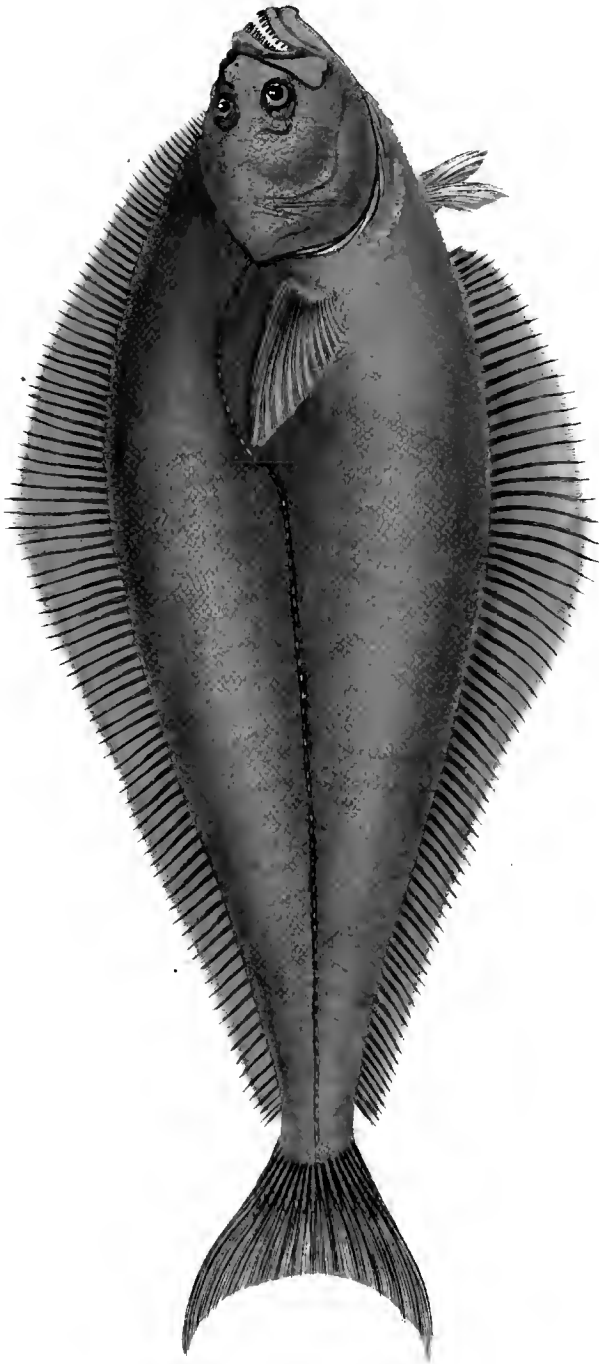


PLATE LXXV.

PLEURONECTES HIPPOGLOSSUS.

HOLIBUT.

* *PISCES THORACICI.*

GENERIC CHARACTER.

Head small. Eyes spherical, both on the same side of the head, and near each other. Mouth arcuated. Jaws dentated, unequal. Gill-membrane with from four to seven rays. Gill-covers of three plates in general. Body compressed, carinated: upper side sub-convex: beneath flat and pale. Vent nearer the head.

SPECIFIC CHARACTER

AND

SYNONYMS.

Body entirely smooth: caudal fin lunated.

PLEURONECTES HIPPOGLOSSUS: corpore toto glabro, pinna caudali lunulata.

PLEURONECTES HIPPOGLOSSUS corpore toto glabro. *Fn. Suec.* 329. *Gmel. Linn. Syst. Nat. T. 1. p. 3. 1227. sp. 4.*

Pleuronectes oculis a dextra, totus glaber. *Arted. gen. 17. syn. 31.*

Pleuronectes pinna caudali lunulata. *Bloch Fisch. Deutschl. 2. p. 47. n. 6. t. 47.*

HOLIBUT. *Penn. Brit. Zool. 3. p. 226.*

PLATE LXXV.

The Holibut is beyond comparison the largest of the *Pleuronectes* tribe: some say even of all aquatic animals with the exception only of the whale tribe, but to this we cannot give our entire assent; there are other monsters of the "vasty deep" that may vie in magnitude with the Holibut. This fish is commonly found of seventy, eighty, or one hundred pounds in weight: individuals of this size are not very unfrequent in the London markets in the spring, or early in the summer, at which time they quit the deep recesses of the ocean, and approach the shores, with the view of depositing their spawn in places of safety. We have seen them even of two hundred pounds weight, or more, at that season of the year, in the markets of our metropolis, where they obtain a ready sale among the lower orders of society at about the average price of six-pence or seven-pence per pound. The flesh is not held in very high estimation, being hard, dry, and of indifferent flavour; the head, and fatty part beneath the pectoral fin excepted. In Holland, where those fish are common, the head and shoulders are admitted to the tables of the great, but no other part. Some think the smaller ones, weighing from five, or six, to ten pounds, better than those of a larger size, but this is not a very general opinion.

Pennant speaks of the Holibut being caught in the British seas of considerable magnitude, namely, from one to three hundred weight. On the coast of Iceland, and other northern regions, it is said to grow much larger, or from four to five hundred pounds each;—what indeed must be the weight of that Holibut which Olafsen tells us he has seen, that measured five French ells in length!

These fish are very abundant in the North Seas. On the coast of Greenland the natives eat it fresh in summer, and prepare a large

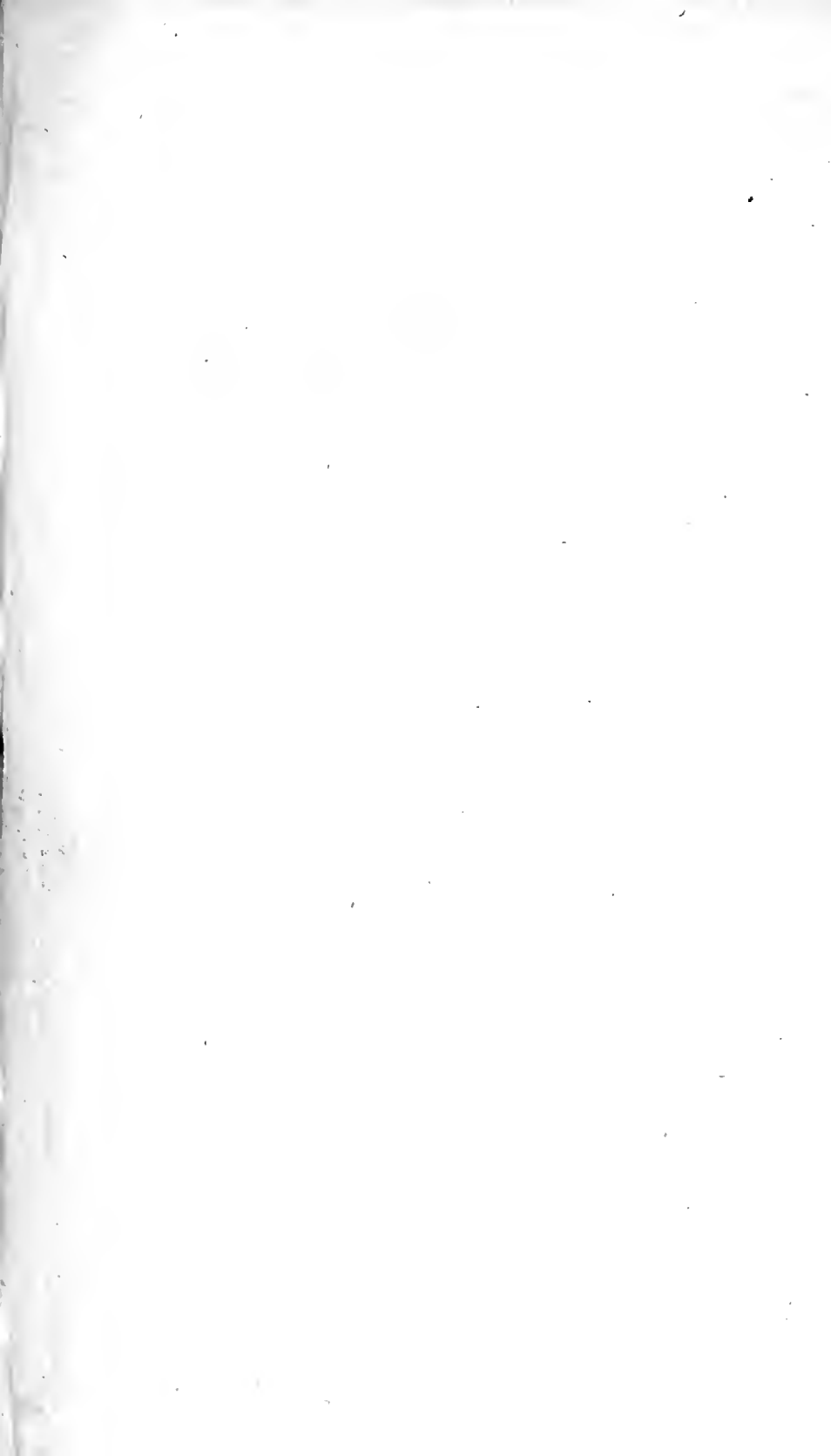
PLATE LXXV.

quantity of it during that season as an article of their winter store of provisions by a very simple process, first cutting the fish into long slips of moderate thickness, and afterwards allowing them to dry gradually in the sun. Upon our coasts it does not appear to be a very common species except towards the southern parts of the kingdom. It is found on the western coasts we believe most frequently. We have received small specimens from Scotland, where it is also taken occasionally of a vast size. On the coast of Wales we are inclined to think it cannot be very common. The appearance of a Holibut some years ago in the straits of Menai, between the northern extremity of Caernarvonshire and the island of Anglesea, was considered as a very extraordinary incidence by the Rev. Hugh Davies, of Beaumaris, who informed us of the circumstance, in one of our visits to that country, and pointed out the spot on which it was stranded, not far distant from Portaethwy.

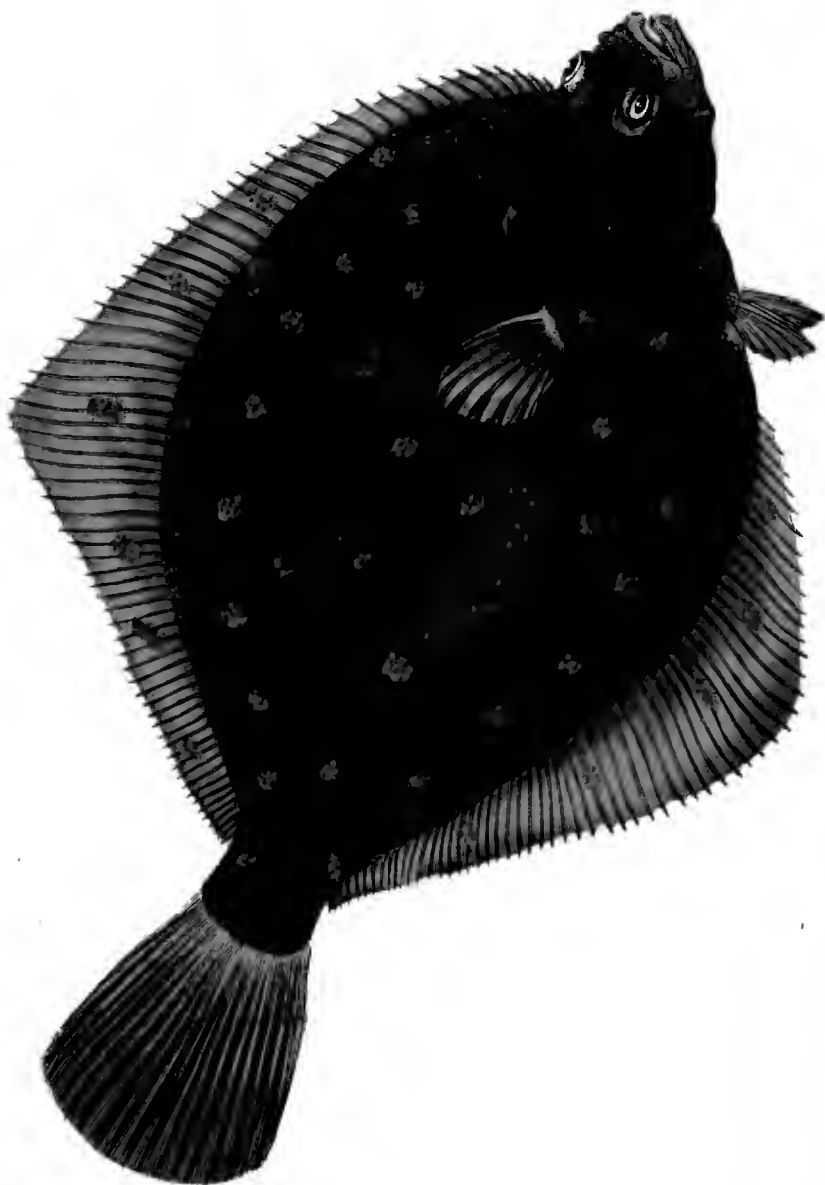
The Holibut is a voracious fish, but from its habits of prowling, and swimming near the bottom of the sea, or close under the shelter of rocks, subsists chiefly on the smaller kinds of flat fish, on crabs, lobsters, and other crustacea; and on the lump sucker, which latter they find abundantly common, attached under water to the rocks by means of their adhesive organ, or sucker. These are the chief objects of its prey. In its turn it has many enemies; when young, or in the egg state, the Holibut is the prey of all the various species of the ray tribe, as it is of the porpoise and sharks when full grown. The Holibut is taken on the coast of Greenland, Iceland, and Norway, by means of strong hooks and lines, similar to those employed in the cod fisheries, but for the capture of the larger fishes the spear, or harpoon are generally used with most success.

PLATE LXXV.

The whole of the superior surface of this fish is perfectly smooth to the touch, the scales being small, and soft, and the body covered with a peculiar sort of mucous. Its colour is dusky brown, most commonly inclining to a liver colour, and free from spots: the tint of colour is variable, and it has been remarked that in proportion as the fish is in poor condition it becomes blackest, or more dusky: the lower surface is uniformly white. The Holibut is of a more elongated figure than almost any other fish of its genus, and tapers much towards the tail, the crescent form of which is a very distinguishing criterion of this species. The specimen now before us contains one hundred and one rays in the dorsal fin: pectoral fin fourteen: ventral fin five: anal fin seventy-three; and tail seventeen.



PLAISE.



P L A T E VI.

PLEURONECTES PLATESSA.

PLAISE.

* THORACICI.

GENERIC CHARACTER.

Head small. Eyes spherical, both on the same side of the head, and near each other. Mouth arcuated. Jaws dentated, unequal. Gill-membrane with from four to seven rays. Gill-covers of three plates in general. Body compressed, carinated; upper side sub-convex: beneath flat and pale. Vent near the head.

SPECIFIC CHARACTER

AND

SYNONYMS.

Body smooth, a row of six tubercles on the head.

PLEURONECTES PLATESSA: corpore glabro, tuberculis sex capitis.

Gmel. Linn. Syst. Nat. p. 1228. sp. 6.

Plaise. *Will. Icth. 96.—Raii. syn. pisc. 31.—Plaise. Penn. Br.*

Zool. p. 228. sp. 103.

This very common species has been taken upon our coasts of the weight of fifteen pounds. The principal fishery of them is off the coast of Holland, from which circumstance they derived the name of Dutch Plaise.

PLATE VI.

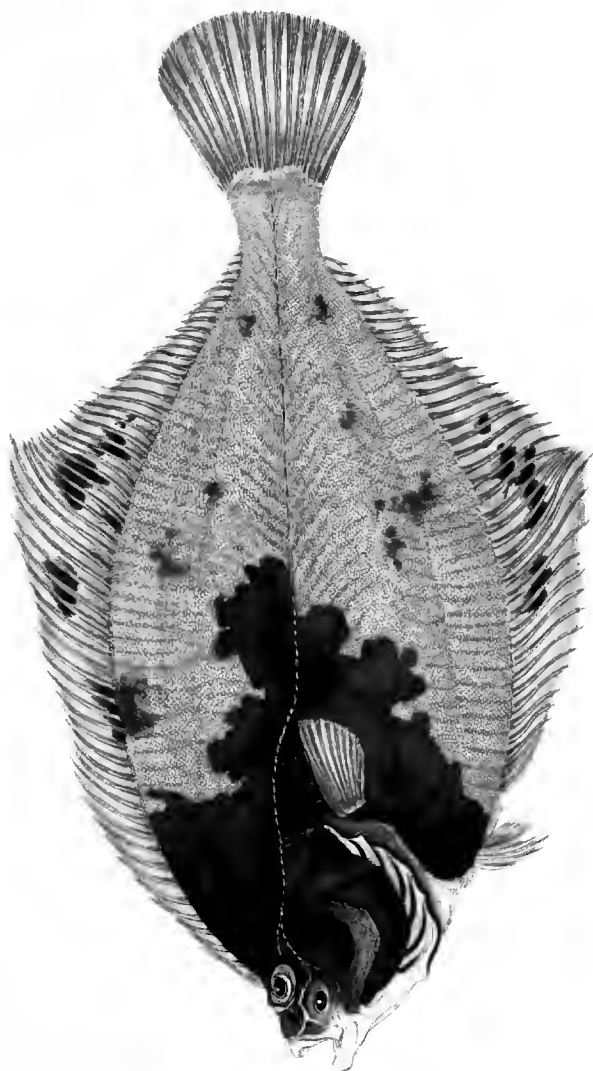
The dorsal fin of the specimen we examined, contained seventy-two rays, pectoral fin ten, ventral five, anal fifty-four, and tail eighteen.

Spawn in February and March.



FLOUNDER.

94
34



P L A T E X C I V .

P L E U R O N E C T E S F L E S U S .

F L O U N D E R .

*** P I S C E S T H O R A C I C I .

G E N E R I C C H A R A C T E R .

Head small. Eyes spherical, both on the same side of the head, and near each other. Mouth arcuated. Jaws dentated, unequal. Gill-membrane with from four to seven rays. Gill-covers of three plates in general. Body compressed, carinated; upper side sub-convex: beneath flat and pale. Vent nearer the head.

S P E C I F I C C H A R A C T E R

A N D

S Y N O N Y M S .

Eyed side with the scales at the base of the pectoral fin, and lateral line larger, and somewhat asperous.

P L E U R O N E C T E S F L E S U S : latere oculato ad basin pinnæ pectoralis lineaque lateralis squamis majoribus subasperis.

P L E U R O N E C T E S F L E S U S : linea laterali aspera spinulis ad pinnas.
Linn. Fn. Suec. 327.—*Gmel. Linn. Syst. nat.*
 1229. *sp.* 7.

PLATE XCIV.

PLEURONECTES spinulis plurimis in latere superiore. *Bloch. Fisch. Deutschl.* 2. p. 39. n. 3. t. 44.

Pleuronectes linea laterali aspera, spinulis ad radices pinnarum in latere oculato. *Art. spec.* 59.

Pleuronectes oculis a dextra, linea laterali aspera, spinulis superne ad radices pinnarum in latere oculato. *Art. Gen.* 17. *Syn.* 31.

Passer fluviatilis. *Rondel, Gesn. &c.*

FLOUNDER. *Brit. Zool. Vol. 3. p. 229. n. 104*

The Pleuronectes Flesus, or true Flounder, approaches in the general appearance so nearly to the Plaise, Pleuronectes Platessa, and is so frequently confounded with it, that it will not be amiss to advert to both, in order to point out the precise character by which they are to be distinguished. The Plaise is usually of a much larger size than the Flounder; the body rather wider, and its thickness proportionately less. The head of the Plaise is beset behind the left eye with a row of distinct tubercles, that reach to the lateral line, none of which appear on the head of the true Flounder. The upper surface of the body and fins, are marked with large roundish spots of a bright orange colour, which are paler or deeper in different fishes, but are almost invariably present, and those are never, or very rarely seen on the Flounder, although this fish is subject to more considerable variations, than almost any other. The flesh of the true Flounder is firmer, and of a flavour far superior to the Plaise; it is also much less frequent, the Plaise being the fish commonly sold for Flounders in the London markets.

PLATE XLIV:

The Flounder inhabits both the salt and fresh waters, and is found equally in the North and Baltic Seas, and in the larger rivers that have access to the sea. It inhabits likewise, many parts of the British Seas, and rivers, the Thames especially, where at certain seasons, as spring, and autumn, they are taken in great plenty. Those found in the sea, are larger and more robust than such as are caught in the rivers, but the latter are preferable for the table. It is observed, that the Flounder never attains to any considerable size in the rivers, or even in the open sea; the largest mentioned by Pennant, Bloch, and others, weighed no more than six pounds; we once saw a Flounder that weighed between four and five pounds, after having a great portion of the lower half of the back bitten off by a shark, or some other voracious fish: it was caught on the shore of the Irish channel, and is the largest we ever saw. In the beginning of November 1800, a Flounder of uncommon magnitude is said to have been captured upon the Duddon sands, Lancashire, that weighed forty five pounds, and measured from the nose to the extremity of the tail, four feet and an inch. Whether this enormous fish differed specifically from our common Flounder cannot be determined, we repeat it on popular report, admitting only the probability of such an extraordinary circumstance.

The varieties of the common Flounder, in point of colour, are more numerous beyond example, than in any other species, insomuch that it is scarcely possible to find even two exactly corresponding. The prevailing colour on the upper surface is brown, and the lower white. Sometimes the former is marbled with silvery white: with white tinged with yellowish, or of a rosy hue: in others, either of the latter tints constitute the ground colour, and the spots are brown of various hues. Those having either the anterior or posterior half of a

P.L A T E X C I V.

deep brown, and the rest of a light colour are frequent. Others of a more uniform appearance, have the whole of the superior surface olivaceous brown, and the lower white. The variety called by the fishermen the Sea Flounder, is nearly as dark on the lower surface as above, and is more variegated with livid and yellow, than in the fresh water Flounders. This marine kind instead of being being dark is sometimes pale on both surfaces, the pervading colour partaking either of a yellowish, or rosy hue.—The specimen selected for delineation, is one of that singularly beautiful variety of fresh water Flounders which is often taken in the Thames, the ground colour of which varies from whitish to deep rose colour, and is elegantly mottled, or otherwise variegated with brown: the length of this fish was six inches and a half. A Flounder rather exceeding this in size, and perfectly of a rose colour was taken a few years ago in the river Thames, and preserved in the late Leverian Museum. This fish was first described by Dr. Shaw, in the Naturalist's Miscellany, as a new species under the name of *Pleuronectes roseus*, rose coloured Flounder; and is again repeated in the General Zoology of that author*:

* This fish is described specifically by Dr. Shaw, as the "*Pleuronectes roseus*, Rose coloured Flounder, with the eyes towards the right."—"General proportions, those of a Flounder: length about nine inches: colour most delicate rose, slightly tinged in some parts with yellowish, and in other with silvery white: lower surface paler, or very nearly white: fins and tail pale yellow-brown: skin apparently destitute of scales, though marked by very minute, scale-like reticulations, and void of all asperity, either on the side line, or at the origin of the fins." Shaw's Nat. Hist. v. 7. pl. 238.—Gen. Zool. v. 4. p. 2. 302.

The individual specimen thus described, being at this time before us, we are enabled to advert to a few circumstances, which attentively considered, will sufficiently demonstrate that the supposed species *Pleuronectes roseus*, is only a variety of the common Flounder.—The description corresponds in most particulars with the fish in question, but not entirely, and in one essential point, there is an evident oversight which ought

PLATE XCIV.

it is also introduced as a new British species in Dr. Turton's edition of the Gmelinian Systema Naturæ upon the authority of the work first mentioned. This fish is certainly not specifically distinct from the common Flounder, *Pleuronectes flesus* of Linnæus, but is one of the varieties before enumerated. There is finally another variation of this fish that merits particular remark, this is the reverse kind, in which the eyes and lateral line are situated on the left side instead of the right, as they appear in common. The reversed Flounder is described by Linnæus, Bloch, and a number of Ichthyological writers, as a distinct species. Pennant considers it a variety only, and we

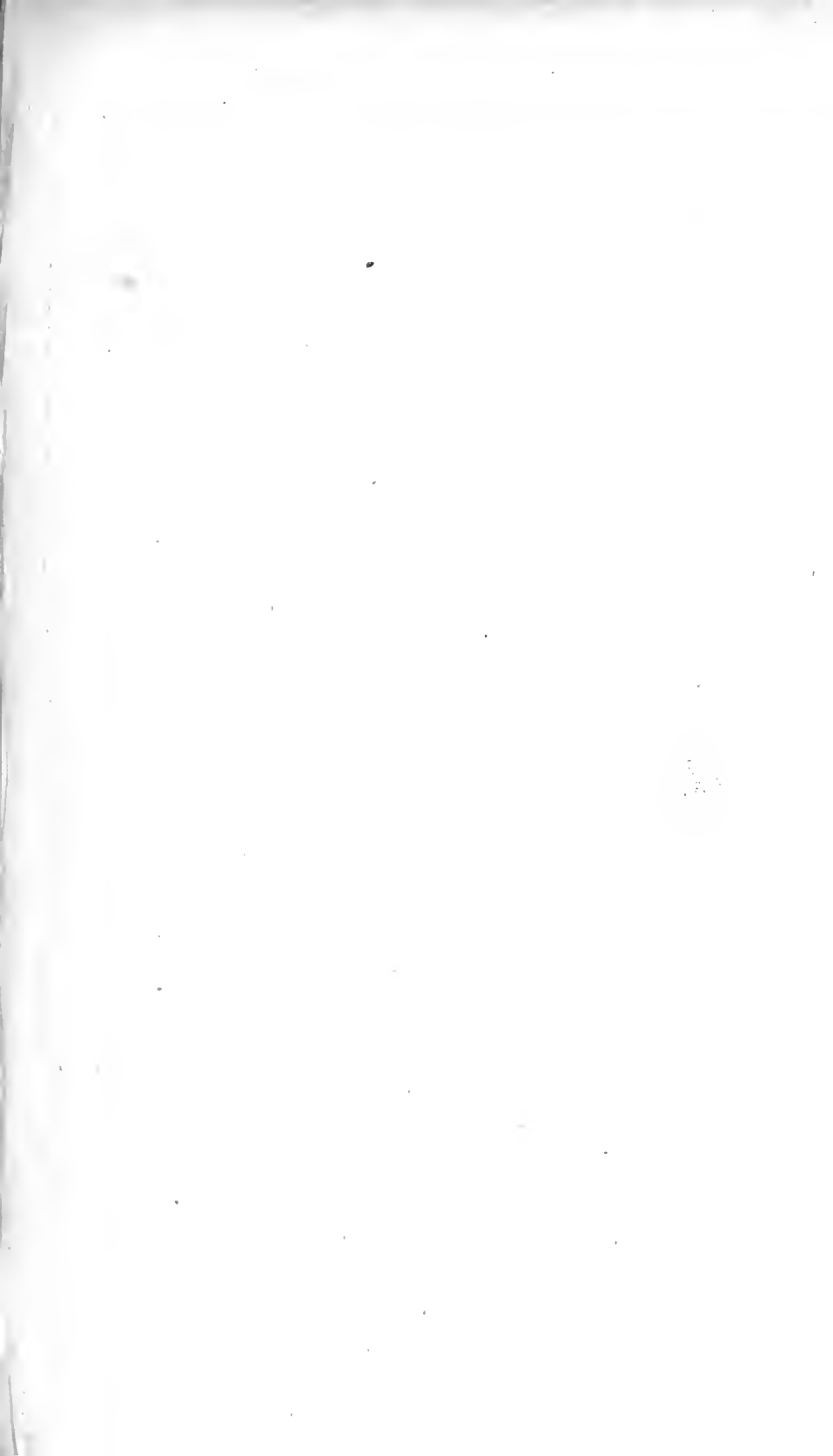
to be corrected; this relates to the extreme smoothness of the skin, which is stated to be void of all asperity either on the side line, or at the origin of the fins. If by this we are to understand the large subasperous scales which occur at the base of the pectoral fin, and which descends in a linear series a short way down on each side the lateral line, as in the common Flounder, the observation is inaccurate. The skin Dr. Shaw observes, appears to be only marked with scale-like reticulations without asperities, but in fact it has merely this appearance at the first glance, (except in those places where the true scales have been rubbed off,) and this is owing to the transparency of the scales assimilating with the pale colour of the skin to which they are attached: when attentively examined the remaining scales are apparent; they are perceptible to the touch, and perfectly visible with the aid of a glass. Those scales have not the asperity that is to be expected from the expression "*spinulis ad radices pinnarum*," adopted in the specific character of the common Flounder, neither have we scarcely ever observed the scales at the base of the fins in the latter so spinous as to merit this appellation. But they are as obvious in *Pleuronectes roseus*, as general in the common Flounder, being of a superior size to the rest, a circumstance determined by those scales which still adhere to the skin at the commencement of the lateral line, and at base of the pectoral fin; and even where the scales are obliterated, the region of the skin usually occupied by those larger scales, is marked with larger scale-like reticulations than the rest of the body, as is observable in this part of the common Flounder when deprived of the scales. There is besides a slight appearance of asperity in the scales at the base of the tail, as in the common

PLATE XCIV.

rather incline to his opinion. Such reverse Flounders occur more numerous with the ordinary sort than is commonly imagined: we have observed many. The fishermen maintain that it is by this characteristic circumstance, the two sexes of the common Flounder is to be distinguished.

In the dorsal ray of the fish selected for our figure, there were fifty five rays: in the pectoral fin, eleven: ventral, five: anal, thirty nine: and tail, eighteen.

Flounder. This is the only character by which *Pleuronectes roseus* could be specifically distinguished from *Pleuronectes flesus*, the colour of the body, as before shewn, constituting no criterion whatever of the species.—The only figures extant of the *Pleuronectes roseus*, is that in the Naturalist's Miscellany, pl. 238, and the same repeated in the General Zoology. This figure is ambiguous and very indifferent, the drawing of the head is lost; the eyes in particular are represented both of equal size, large, prominent, and placed exactly parallel to each other, while in the fish the very structures of the skull would prevent such a disposition of the eyes. In the fish itself they are disposed obliquely, one lower than the other, and differ in no respect from those of the common Flounder. The lateral line also, which is curved at the base, as in all the varieties of this fish, is delineated in the above mentioned figure as almost straight throughout.



SMALL HEADED, OR SMEAR DAB.

42 35



PLATE XLII.

PLEURONECTES MICROCEPHALUS.

SMALL HEADED, OR SMEAR DAB.

* *PISCES THORACICI.*

GENERIC CHARACTER.

Head small. Eyes spherical, both on the same side of the head, and near each other. Mouth arcuated. Jaws dentated, unequal. Gill-membrane with from four to seven rays. Gill-covers of three plates in general. Body compressed, carinated; upper side sub-convex: beneath flat and pale. Vent nearer the head.

SPECIFIC CHARACTER

AND

SYNONYMS.

Body oblong, head small, mouth diminutive, lateral line somewhat incurvated.

PLEURONECTES MICROCEPHALUS: corpore oblongo, capite parvo ore minimo, linea laterali subincurvata.

Vraie Limandelle. *Duhamel Traité des Pech. T. 3. p. 2. sect. 9. pl. 6. fig. 3, 4.*

This is a kind of Flounder that appears to form an intermediate link between the Sole and the Dab, partaking in some measure of the

PLATE XLII.

characters of both. We first observed one of this species in a trawling net, on the sandy shore of South Wales, among a parcel of Soles and other flat fish. Since that period we have seen it occasionally exposed for sale in the London markets, to which we are informed it is brought from Brighton, and other places on the coast of the Western counties.

The form of this fish is oblong: above, the colour is obscure, blackish, or dusky brown; beneath white, and both above and beneath is perfectly free from spots. In comparison with the size of the body the head is small, but in particular the mouth is remarkably so, and the lips are a little protruded. Exactly over the pectoral fin, the lateral line takes a very gradual curvature, after which it proceeds along the body to the tail in a straight direction.—This being the true Smear Dab, Mr. Pennant was certainly misinformed at the fishmongers in London, which he speaks of, where he was told a fish corresponding with the *Kit* of the Cornish fishermen, was commonly known in the Metropolis, by the name of Smear Dab. The Cornish *Kit* is not unknown to us, and we have reason to believe it to be one of those kinds of flat fish, that is scarcely ever brought to the London markets. So far also as our own enquiries have extended, the fishmongers call the species we are now describing, the Smear Dab, and do not seem to recognise any other fish by that name.

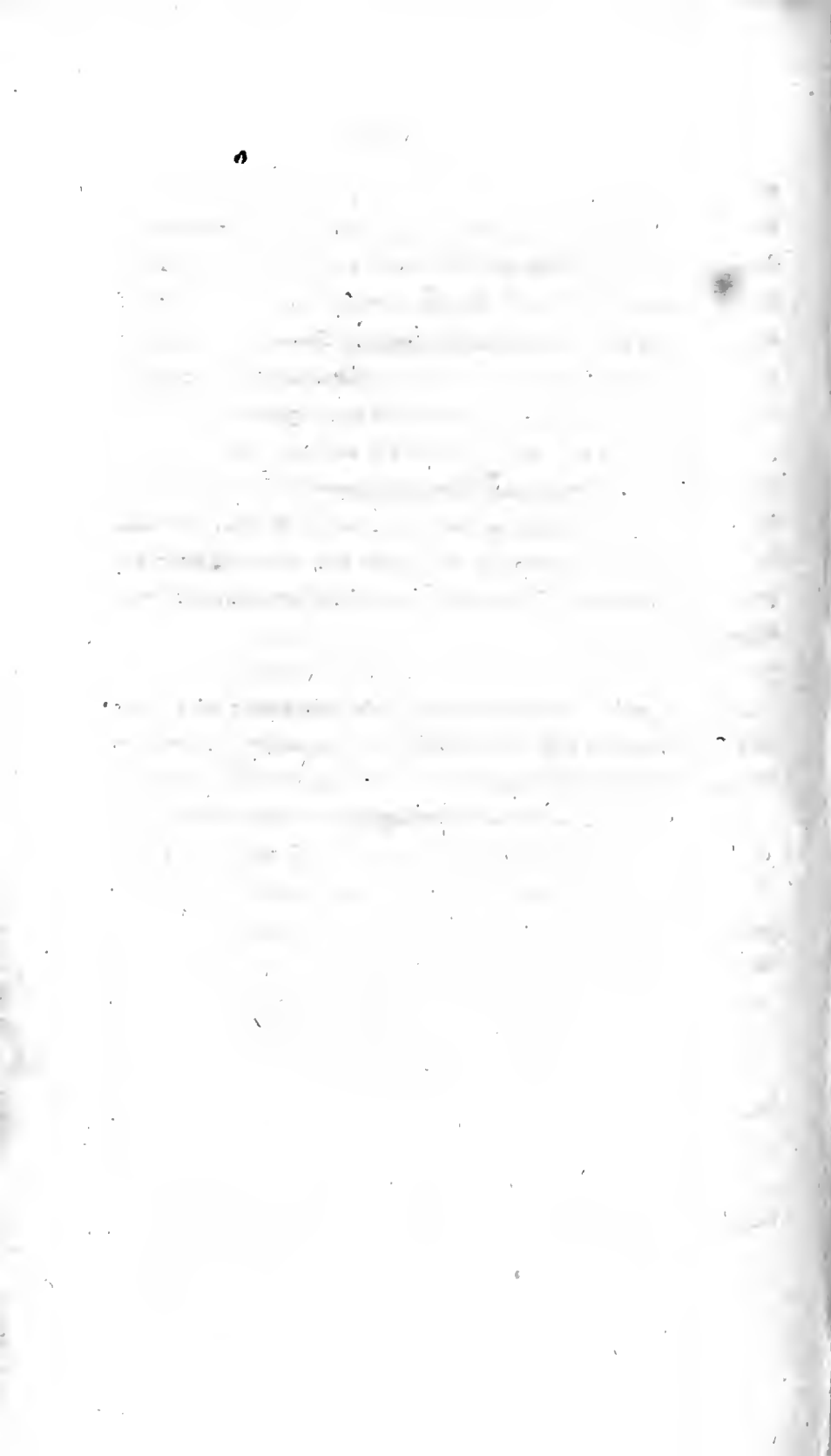
Neither of the described species of the *Pleuronectes* genus, in Gmelin's *Systema Naturæ*, answers to the description of our fish. That to which it appears to approach the nearest, is the *P. limanoides* of that Author, but in one very striking particular our species differs so essentially from that fish, that if it be described correctly, we have no hesitation in admitting them to be distinct. The mouth in *limand-*

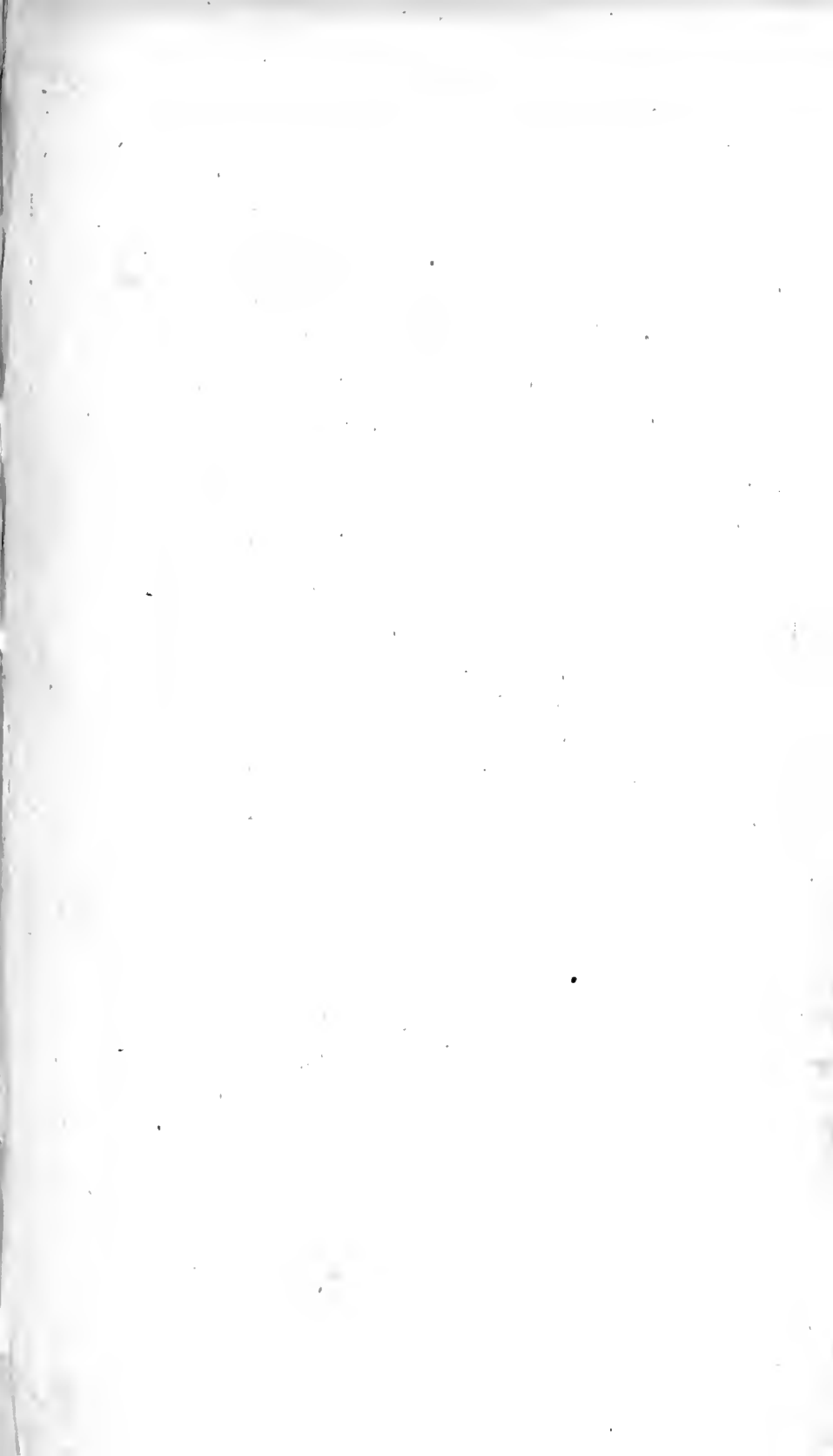
PLATE XLII.

oides is stated to be of a large size, the upper-lip consisting of two bony parts, which may be protruded or retracted at the pleasure of the creature. In our fish there is no such contrivance in the upper lip; the mouth is small, and the fish does not possess the faculty of extending it to any very considerable length. Besides this, the fish is by no means distinguished by such an uncommon degree of roughness in the scales that invest the body, as to merit the appellation of "cor-pore aspero," for they are comparatively smooth. In the French edition of Bloch's Fishes, this kind is represented under the name of *La Plie rude*. This figure shews the scales to be both large and rough; the head comparatively of a great size: the eyes large and prominent: opening of the mouth wide, and the jaws furnished with many teeth.

Duhamel in his *Traité des Peches*, is the only author who seems to have known this fish, and described it with accuracy. He notices the strong affinity it bears both to the Sole and the Dab, observing very justly, that the body is wider in proportion to its length than that of the Sole, and on the other hand of a more elongated form than that of the Dab: his figures are well expressed, especially that of the upper surface, in which the characteristic diminutiveness of the mouth is well exemplified; the curvature of the lateral line over the pectoral fin is indeed rather faulty, in being too widely extended in its progress towards the head. Duhamel acquaints us that this is a scarce species on the coasts of France, being in many places entirely unknown.

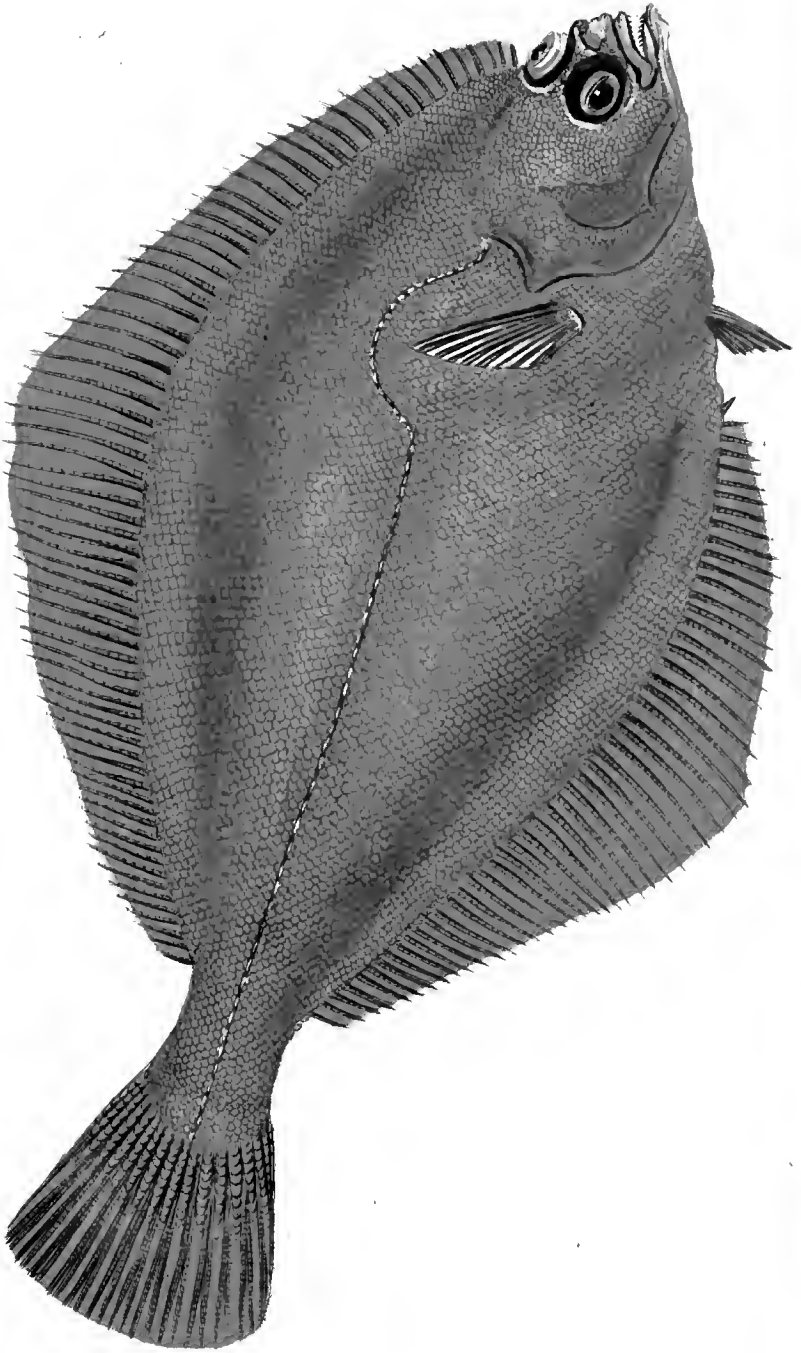
In our fish the dorsal fin contains ninety rays: pectoral fin seven rays: ventral six rays: anal seventy-three rays: tail seventeen.





DAB.

44 36



P L A T E XLIV.

PLEURONECTES LIMANDA.

DAB.

* PISCES THORACICI.

GENERIC CHARACTER.

Head small. Eyes spherical, both on the same side of the head, and near each other. Mouth arcuated. Jaws dentated, unequal. Gill-membrane with from four to seven rays. Gill covers of three plates in general. Body compressed, carinated; upper side sub-convex: beneath flat and pale. Vent nearer the head.

SPECIFIC CHARACTER

AND

SYNONYMS.

Scales ciliated, spinules at the root of the dorsal and anal fin with obtuse teeth.

PLEURONECTES LIMANDA: squamis ciliatis, spinulis ad radicem pinnarum dorsi anique, dentibus obtusis.
Linn. Mus. ad. Fr. 2. p. 68.—Gmel. 1231.
sp. 8.

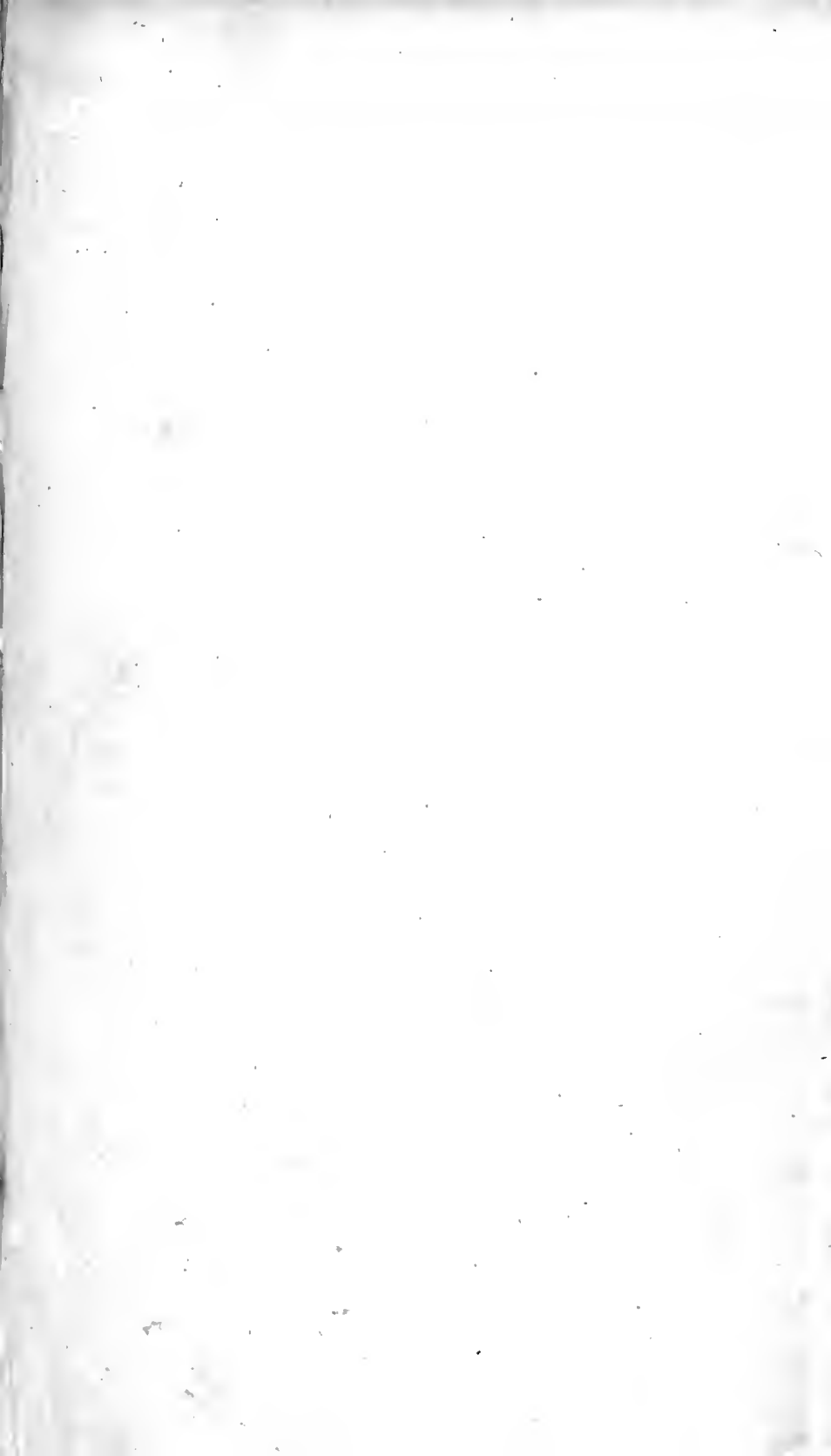
DAB *Penn. Brit. Zool. p. 230. sp. 105.*

The common Dab is an inhabitant of all the sandy shores in the Northern Seas of Europe. In England, as in other places, it is ob-

PLATE XLIV.

served to be less abundant than the common Plaise, to which it approaches in some respects very nearly. The form in both is almost the same, but the colour of the common Dab is generally of a lighter colour, and invariably destitute of those remarkable red spots, which are usually found on the upper surface of the Plaise. Sometimes the Dab is dappled obscurely with dark brown. The under-side is white.

This fish is in the highest state of perfection for the table during Spring, when they are preferred by some to the Plaise, or even to the Flounder. Late in the month of May, or beginning of June they spawn, and after that time the flesh becomes flabby, soft, and of an ill flavour. The Dab feeds upon the young of other fishes, and on crabs and other marine insects which inhabit sandy shores. Its usual length is five, six, or seven inches. In one specimen which we examined, the dorsal fin contained seventy-three rays: pectoral fin eleven: ventral six: anal fifty-three; tail fifteen.



COMMON SOLE.

623
37



P L A T E L X I I .

PLEURONECTES SOLEA.

COMMON SOLE.

* PISCES THORACICI.

GENERIC CHARACTER.

Head small. Eyes spherical, both on the same side of the head, and near each other. Mouth arcuated. Jaws dentated, unequal. Gill-membrane with from four to seven rays. Gill-covers of three plates in general. Body compressed, carinated; upper side sub-convex: beneath flat and pale. Vent near the head.

SPECIFIC CHARACTER

AND

SYNONYMS.

Body oblong, rough: lower jaw longest.

PLEURONECTES SOLEA: corpore aspero oblongo maxilla superiore longiore. *Linn. Fn. Suec.—Gmel. Syst. Nat.*
1232. sp. 9.

Pleuronectes Tunga. *It. Wgoth.* 178.

Pleuronectes maxilla superiore longiore corpore oblongo, squamis utrinque asperis. *Art. Gen.* 18. *Syn.* 32.
spec. 60.

PLATE LXII.

- Pleuronectes squamis asperis, maxilla superiore longiore. *Bloch. Fisch. Deutschl.* 2. p. 42. n. 4.
- Pleuronectes solea, corpore aspero oblongo, maxilla superiore longiore, oris latere albo cirroso. *Brün. pisc. mass.* p. 34. n. 47.
- Solea squamis minutis. *Klein. miss. pisc.* 4. p. 31. n. 1.
- Solea. *Plin. Hist. Mund. lib.* 19. c. 16. 20.
- Tungen. *Schonevelde.* 63.
- La Sole. *Belon.* 142. &c.
- Buglossus. *Rondel.* 320.—*Gesn. pisc.* 666.
- Buglossus, the Sole. *Will. Ichth.* p. 100.
- SOLE. *Penn. Brit. Zool.* 3. p. 231. sp. 107.
-

This common Fish is readily distinguished from all the other species of the Pleuronectes tribe, by the oblong form of the body, the roughness of the scales, and the protrusion of the lower jaw beyond the upper one, as Linnæus mentions. The mouth is besides fringed on the side with very fine cirri. Above, the colour is an olivaceous brown, sometimes dark, and obscurely spotted with black: specimens do occasionally occur, in which the black spots are intermixed with others of a pale grey, or whitish hue. The tip of the pectoral fin on the upper side is black. Under surface of the fish dull white.

Except the turbot, the Sole is held deservedly in much greater estimation for the table than the other kinds of flat fish, and is by many considered superior even to that of the turbot. The flesh is firm and white, and when in high perfection, of a most delicious flavour.

PLATE LXII.

The quality of this fish appears to vary with the nature of its food, for we cannot otherwise account for the difference in the Soles caught at the same season of the year, on different parts of our coasts. The old fishermen affirm, that the far greater number of the soles resort to particular spots or beds in the sea, in which they trawl with more success than upon any other. They further say, that the fish which haunt particular spots, differ from those they find elsewhere in quality; sometimes they are much superior, both in size and goodness, and at others greatly inferior, which seems undoubtedly to depend upon the nature of the food, that attracts them to those particular haunts. Even the Soles found in the same place in the following season, does not invariably prove of the same quality, as those caught before. Thus for instance, in the London markets, the fishmongers make the distinction of Brighton Soles, Brixham Soles, West country Soles, Thames Soles, Slips, &c. When a new bed, or haunt of Soles, happens to be discovered, samples of the fish are transmitted to the markets, in order, by trial, to ascertain the relative goodness of the sort, which not always depending upon the size, cannot otherwise be well determined. A kind of criterion is thus established, by means of which even the fluctuating price of this article is in a certain measure governed afterwards. The Brighton Soles brought by land carriage have maintained the superiority for some years past in the London markets.

The most considerable fisheries for the Soles is carried on upon the western coasts, where they are found of a much larger size than on any other part of our coasts. These, we are informed, are not unfrequently taken of five or six pounds weight. Pennant speaks of them even rather larger. It is remarkable, that upon the eastern coast they are rarely taken of a size by any means so considerable; seldom,

PLATE LXII.

if ever, exceeding a pound, or a pound and a half in weight. About three years ago, a bed of very large Soles was however found at a distance from land in the Yorkshire sea: they were remarkably fat, but soft, and of an indifferent flavour. Soles of an excellent quality are found on the sandy shores of the Severn, and other coasts of Wales, but they are generally of the middle size. The Bristol market is supplied chiefly with the Soles caught in the Severn sea. Thames Soles are very delicate; the Slips are only those of a small size, seldom exceeding five or six inches in the length, and differing a little in the elongated form of the outline, a variation to which Soles are often liable. The excellent flavour of the Sole has obtained it the name of *Perdix de Mer* with the French.

This is a general inhabitant of various parts of the world, being found in the North, and Baltic seas: in the Mediterranean, and also those of both North, and South America. It delights in a fine shallow, sandy bottom, and feeds on the eggs of other fish, on crabs, and testaceous vermes, or shell-fish. They are commonly taken with other flat fish in the trawling net.

The dorsal fin, in the specimen we have represented, contains ninety-seven rays: pectoral fin ten: ventral eight: anal eighty-three: caudal seventeen. The number of rays in the fins of the Sole, it should be observed, are extremely liable to vary; for instance, Linnæus describes one with seventy-one rays in the dorsal fin: another mentioned by Bloch, had eighty rays in that fin; and a third by Artedi, ninety-one; the number of rays in all the other fins, differed likewise materially.



VARIEGATED SOLE.

47 38



PLATE CXVII.

PLEURONECTES VARIEGATUS.

VARIEGATED SOLE.

****PISCES THORACICI.*

GENERIC CHARACTER.

Head small. Eyes spherical, both on the same side of the head, and near each other. Mouth arcuated. Jaws dentated, unequal. Gill-membrane with from four to seven rays. Gill-covers of three plates in general. Body compressed, carinated; upper side sub-convex: beneath flat and pale. Vent nearer the head.

SPECIFIC CHARACTER.

Body oblong; pale, clouded or marbled with fuscous: scales large.

PLEURONECTES VARIEGATUS: corpore oblongo, pallido fusco-nubuloso: squamis magnis.

This interesting acquisition was caught on our coast in the month of April 1807, and brought by the fishermen with other flat fish for sale to the Billingsgate market. The fish is very curious, and constitutes an intermediate species between several of the described kinds of the *Pleuronectes* genus, being allied in some particular

PLATE CXVII.

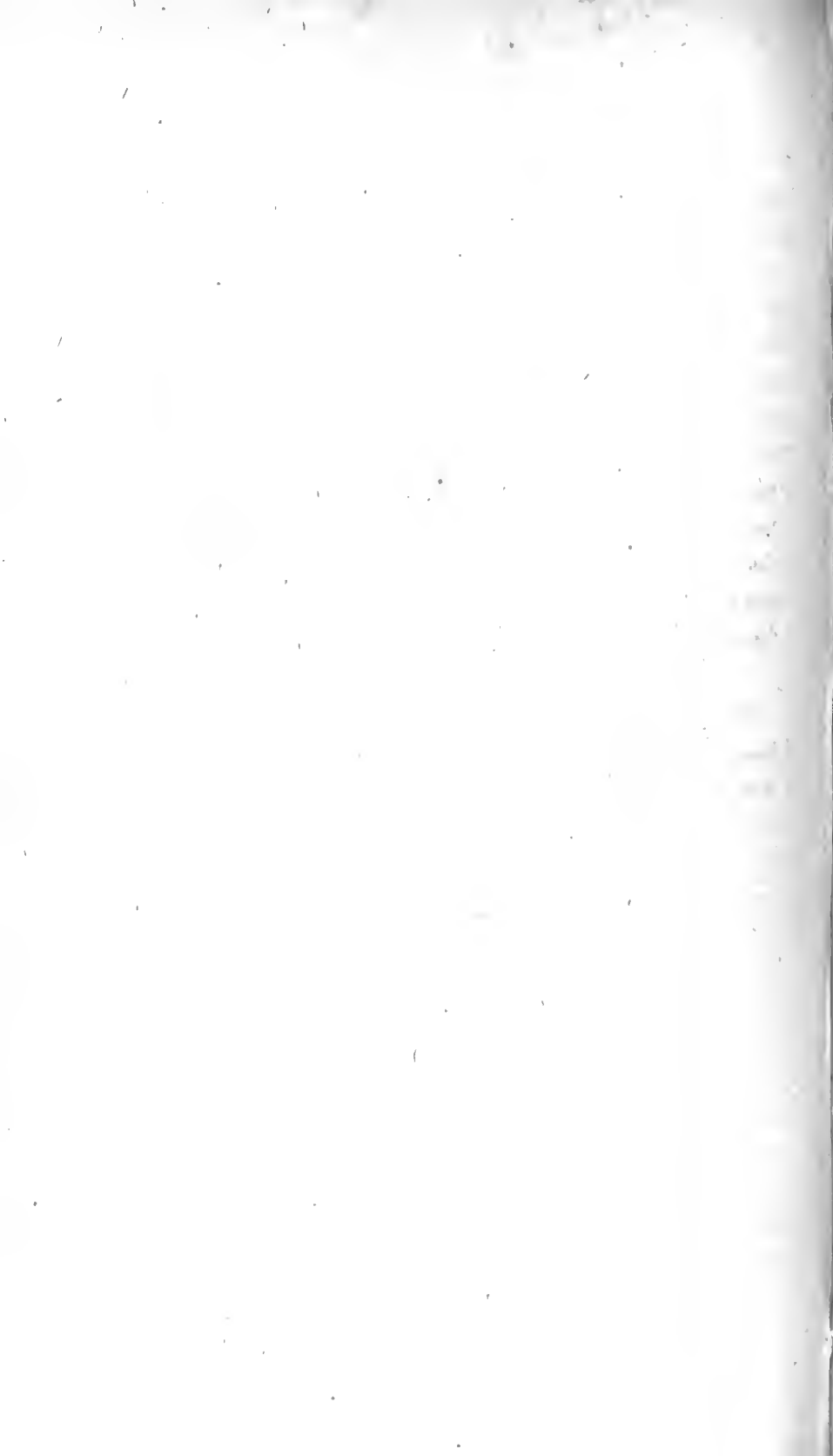
respects to three or four different species, though not according altogether with either.

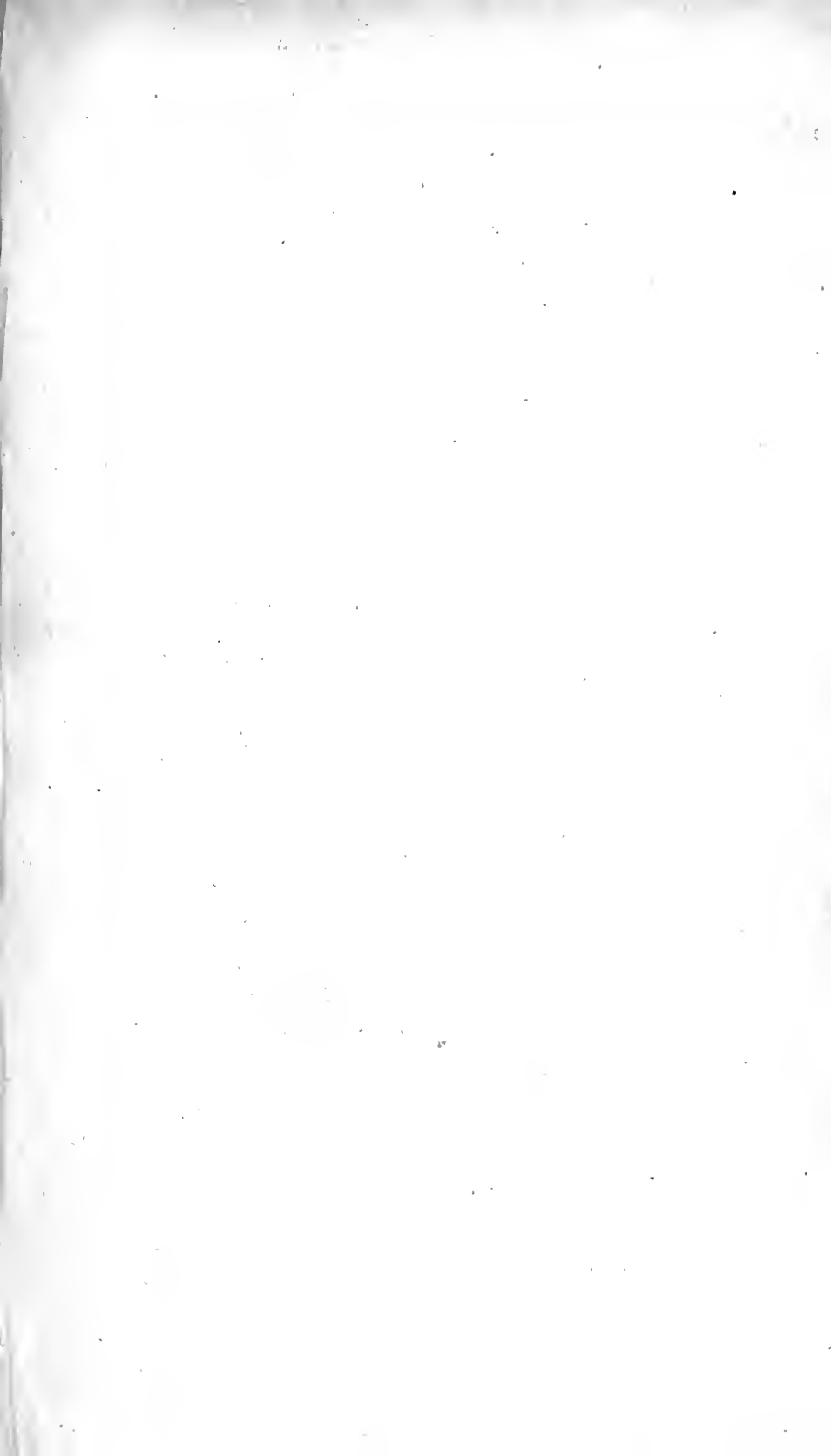
The species bears the nearest resemblance to the common Sole; it differs in its general outline, being rather shorter and of a somewhat more rounded figure. In the form of the mouth and perfect straightness of the lateral line it agrees with the Sole, but it again differs in the extremity of the dorsal and anal fin not reaching so near the tail as in the common Sole, and in having the scales considerably larger than in that fish. It is the comparative magnitude of its scales in particular that at once removes it from the common Sole, which Klein so well defines by the appellation of *Solea squamis minutis*; and yet they are not of sufficient size to authorise us in referring the species to the large-scaled Sole of Rondeletius. The scales in the common Sole are remarkably diminutive, in the large-scaled Sole of considerable size, and our present species forms a medium between the two. In order that no doubt may remain on this subject it should be observed, that independently of the scales in our present fish being rather less than half the size of those in the large-scaled Sole, the latter species is of a more lengthened form, with the head long, pointed, and destitute of scales; and the mouth very wide and armed with large teeth: on the contrary, the form of the head in our fish agrees with the common Sole, is covered with scales, and has the mouth of a small size.—The marbled appearance of its upper surface seems to correspond in some degree with the *Achire marbré* of Cope, the scales of which are, however, scarcely perceptible, which immediately determines that it cannot be of this species.—In the disposition of the principal fuscous marks across the body of our fish, forming as it were a series of interrupted bands, there appears to be some affinity between this fish and the

PLATE CXVII.

Zebra Sole, and of which indeed it might be mistaken for a variety at the first view. The resemblance, however, merely consists in this fasciated appearance; on examination it will be found that in the Zebra Sole the dorsal and anal fins are united by a common membrane at the posterior extremity to the tail, while in our fish it is perfectly detached.—The *Linguatula* of Bellonius and Willoughby bears some resemblance likewise to our fish, so far as the accounts afforded of that ambiguous species assist opinion; but the mouth of *Linguatula* is said to be very wide, which is not the case with the fish before us.—These are the only species of *Pleuronectes* described by authors that seem to accord with our present species, and which we therefore presume must be considered as a non-descript.

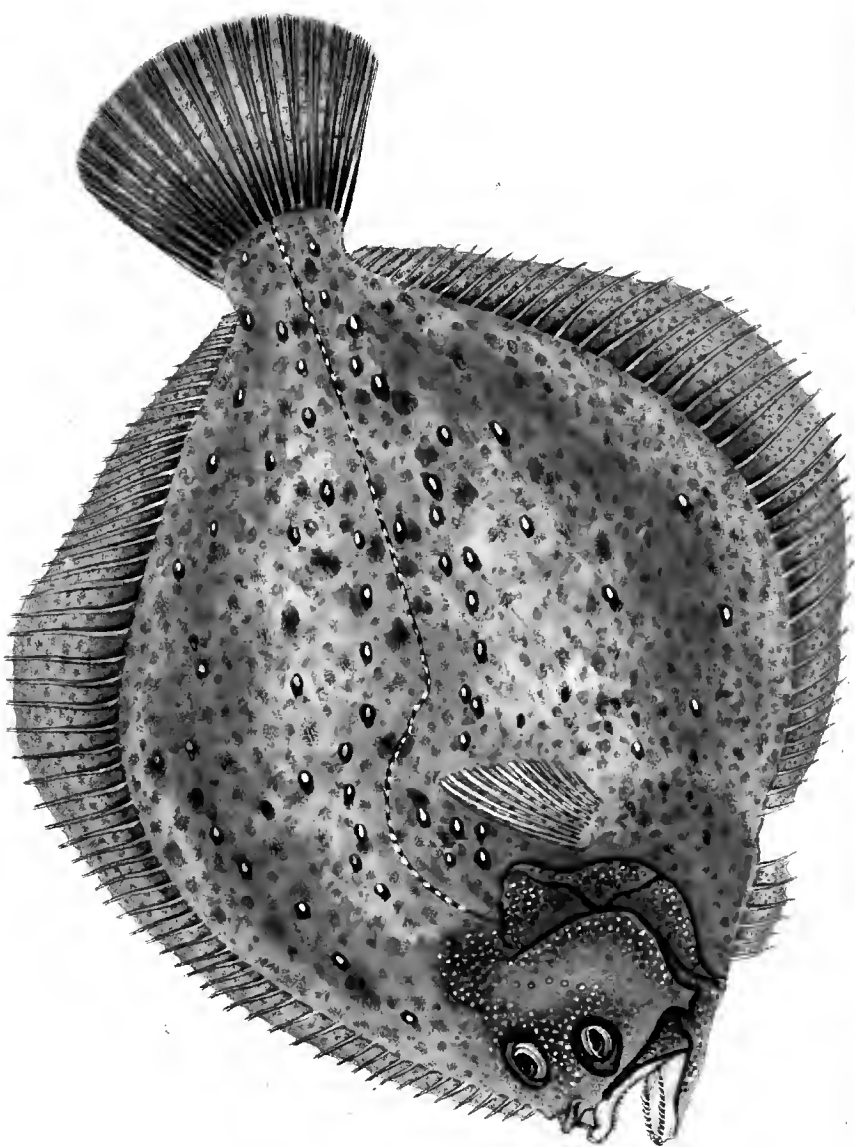
The specimen is represented nearly in its natural size, the length being nine inches. Its upper surface, as appears in the figure, is pale, clouded with fuscous, the lower white. The dorsal fin contains sixty-eight rays: anal fifty-three: and the tail sixteen.





TURBOT.

46
39



London, Fish^d as the flat dorset by J. Donovan, R. E. & C. Kingston, Dye^s, 1873

P L A T E XLVI.

PLEURONECTES MAXIMUS.

TURBOT.

* PISCES THORACICI.

GENERIC CHARACTER.

Head small. Eyes spherical, both on the same side of the head, and near each other. Mouth arcuated. Jaws dentated, unequal. Gill-membrane with from four to seven rays. Gill-covers of three plates in general. Body compressed, carinated; upper side sub-convex: beneath flat and pale. Vent nearer the head.

SPECIFIC CHARACTER

AND

SYNONYMS.

Body rotundate, above griseous, variegated with fuscous, and tuberculated.

PLEURONECTES MAXIMUS: corpore rotundato supra griseo fusco-variegato tuberculato.

PLEURONECTES MAXIMUS: corpore aspero. *Linn. Fn. Suec.* 325.
—*Mus. Ad. Fr.* 2. p. 69.—*Gmel. Syst. Nat.* p. 1236. sp. 14.

PLEURONECTES tuberculis osseis scaber. *Bloch Fisch. Deutschl.* 2. p. 53. n. 8. t. 49.

PLATE XLVI.

Rhombus aculeatus nigricans, &c. et Rhombus cineritius, aculeis
asperrimus, &c. *Klein. Miss. pisc.* 4.
p. 34. n. 1. et 35. n. 2. t. 8. f. 1, 2.
t. 9. f. 1.

The Turbot is to be easily discriminated from the analogous kinds of flounders, by the many sub-acute tubercles, with which both the upper, and the under surface of this fish are beset. There is besides a remarkable rotundity in the outline of this species, by which it may be known. The colour on the upper surface is yellow, varied, clouded and spotted with darker brown. The skin is covered with scales, but those are extremely small. It should be also observed, that the tubercles on the upper surface are larger and more numerous than those on the under-side, the colour of which is perfectly white. The peculiar excellence of the Turbot is so very generally acknowledged, that it might be thought superfluous on our part to speak in commendation of it.

There is a species of this tribe of flat fishes, called by English writers the Pearl, the Pleuronectes Rhombus of Linnæus, which very much resembles the Turbot, but the surface of it is uniformly destitute of the prominent tubercles, which are so very obvious on that fish. The flesh of this is inferior in point of firmness, delicacy and flavour to that of Turbot, for which it is sometimes sold.

Upon the information of Bloch, and various other Ichthyologists, who have entered minutely into the history of this fish, we may conceive the Turbot to be a very general inhabitant of all the Northern Seas, and also of the Mediterranean. Many of our own coasts

PLATE XLVI.

abounds with them, yet upon the whole there are few fisheries established for its capture, that are carried on with any proper degree of spirit; those on the eastern side of the island perhaps excepted. At Scarborough, we are assured by an intelligent friend, Mr. Travis *

* To the reader who may be desirous of obtaining information respecting the Turbot Fishery, the following extract from a letter communicated by the father of this gentleman to Mr. Pennant, and afterwards inserted in the British Zoology, may not prove unacceptable, as being the most correct and ample we have been able to obtain upon this subject.

“ When they (the fishermen) go out to fish, each man is provided with three lines: each man’s lines are fairly coiled upon a flat, oblong piece of wickerwork; the hooks being baited, and placed very regularly in the centre of the coil: each line is furnished with fourteen score of hooks, at the distance of six feet two inches from each other: the hooks are fastened to the lines upon sneads of twisted horse-hair, seventeen inches in length: When fishing, there are always three men in each cobble, and consequently nine of these lines are fastened together, and used as one line, extending in length near three miles, and furnished with 2520 hooks; an anchor and a buoy are fixed at the first end of the line, and one more at each end of each man’s lines, in all four anchors, which are commonly perforated stones, and four buoys made of leather and cork: the line is always laid across the current: the tides of flood and ebb continue an equal time upon our coast, and when undisturbed by winds, run each way about six hours: they are so rapid that the fishermen can only shoot and haul their lines at each turn of the tide, and therefore the lines always remain on the ground about six hours: the same rapidity of the tide prevents their using hand-lines, and therefore two of the people commonly wrap themselves in the sail and sleep, while the other keeps a strict look-out, for fear of being run down by ships, and to observe the weather; for storms often rise so suddenly, that it is with extreme difficulty they can escape to shore, leaving their lines behind. The cobble is twenty feet six inches long, and five feet extreme breadth: it is about one ton burthen, rowed with three pair of oars, and admirably constructed for the purposes of encountering a mountainous sea: they hoist sail when the wind suits.”

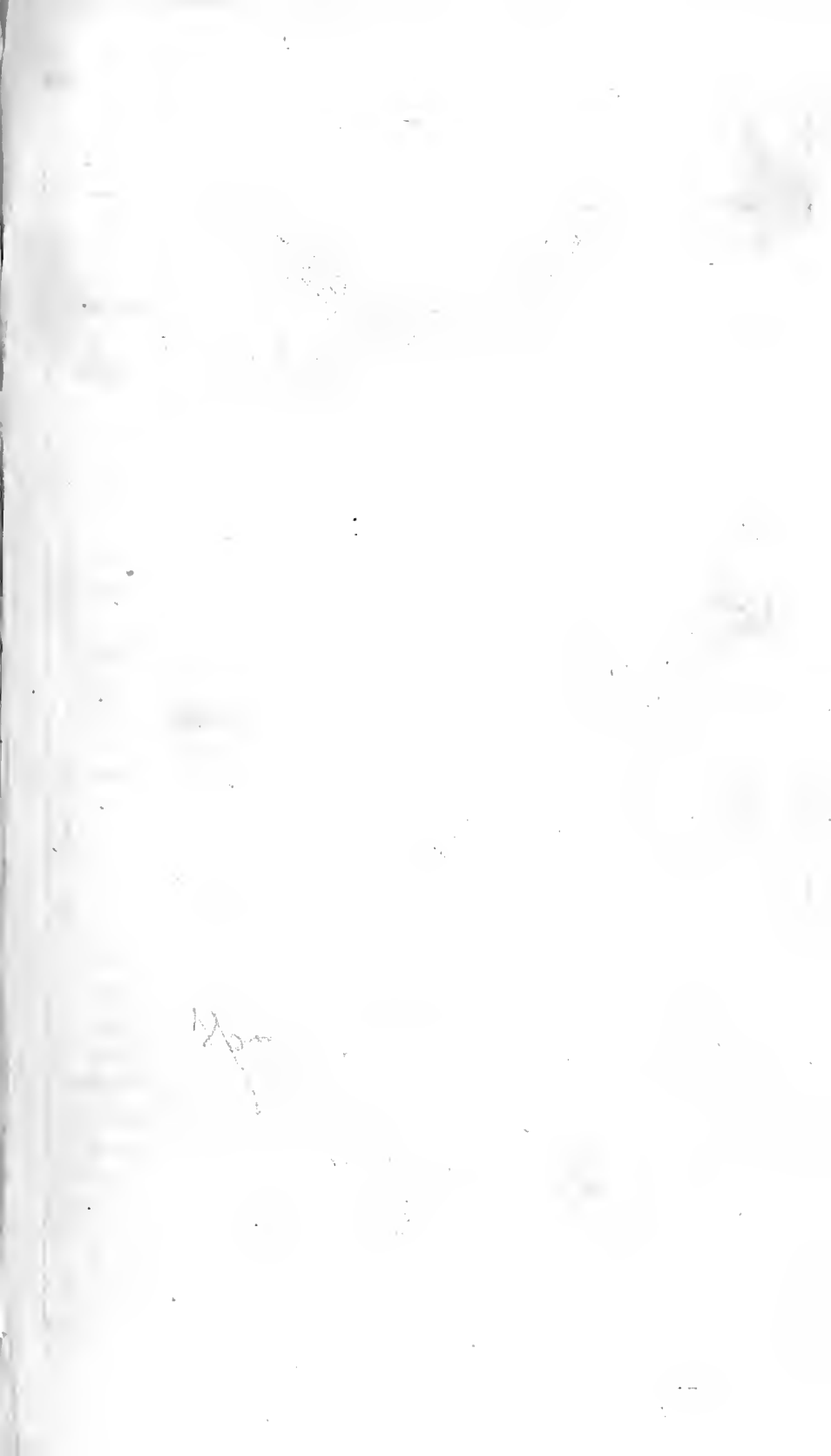
PLATE XLVI.

of that place, that the Turbot Fishery is considered there as a very important concern.

The Turbot grows to a large size, being sometimes caught of fifteen or twenty pounds weight; there are instances of its being found even of thirty pounds weight, but Turbots of this size are far from common.

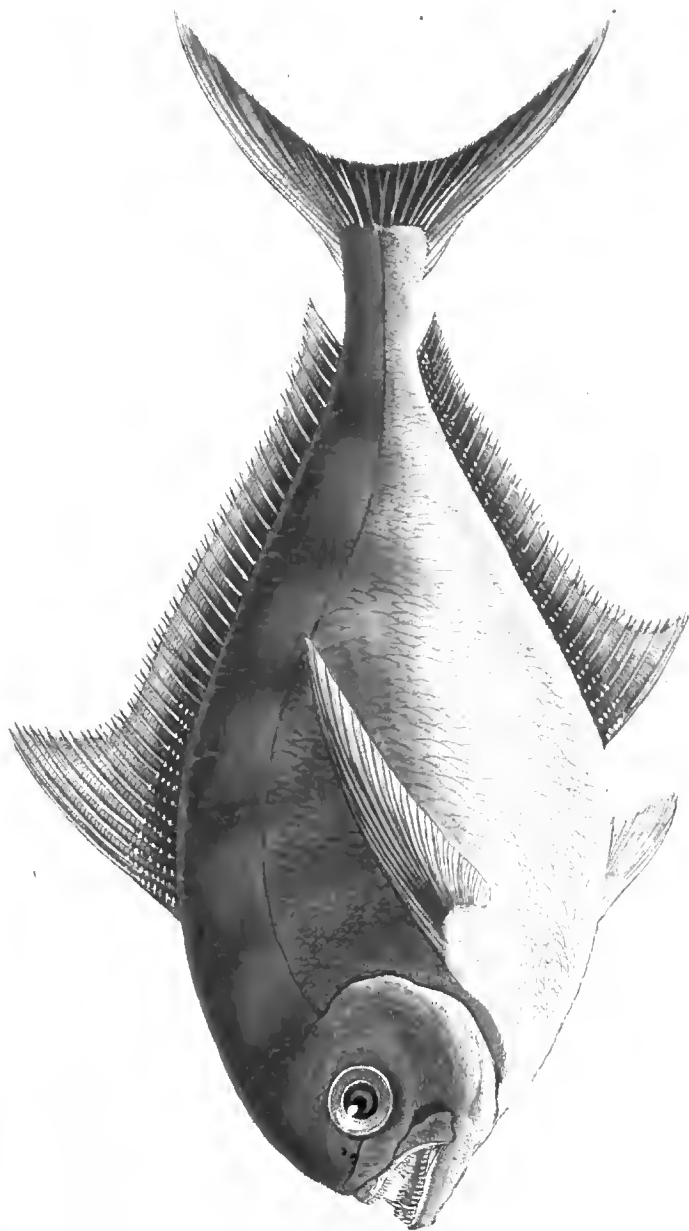
In the dorsal fin of one specimen we counted sixty rays: pectoral fin twelve: ventral six: anal forty-three: and in the tail seventeen.

The Turbot, it may be added, is commonly taken with the hook and line, baited principally with small pieces of other fish, especially herrings. The Dutch fishermen make use of the smaller Lamprey, that is found in the river Thames, about Mortlake, vast quantities of which they purchase of the English fishermen for this purpose, as well as for baiting the apparatus employed in their extensive Cod-Fisheries in the North Seas.



RAY'S TOOTHED GILT-HEAD.

40



London, Published as the Act directed by E. Dapson, & F. W. H. Kingston, Prop^{rs}, 1853

PLATE XXXVII.

SPARUS RAII.

RAY'S TOOTHED GILT-HEAD,

THORACICI.

GENERIC CHARACTER.

Teeth strong ; grinders rather obtuse and crowded ; lips doubled.
Five rays in the gill-membrane, the cover scaly. Body compressed ;
lateral line curved on the posterior part ; pectoral fins rounded.

SPECIFIC CHARACTER

AND

SYNONYMS.

Blueish-silvery : fins covered with scales : two teeth larger than
the rest in the lower jaw.

SPARUS RAII: subargenteo-cærulescens, pinnis squamatis ; maxilla
inferiore longiore dentibus duobus majoribus.

SPARUS RAII. S. pinnis squamatis. *Bloch.*

Brama marina cauda forcipata. *D. Jonston. Raii syn. pisc.* 115.

TOOTHED GILT-HEAD. *Penn. Brit. Zool. n.* 114.

La Castagnole. *Duhamel Trait de Pêch. T. 3. p. 26. pl. 5. f. 1.*

Brême dentée. S. Brama. S. pinnâ caudali

P L A T E XXXVII.

forcipatâ pinnarum dorsi et ani radiis septem
prioribus elongatis. *Bonaterre Encyc.*
Ichth. p. 104. n. 36. pl. 50. fig. 192.

The toothed Gilt-head is to be considered as the rarest of the fish tribe hitherto discovered on the British coasts, with the exception of two or three very doubtful species mentioned by Pennant, after Ray and Willughby. A fish of this kind (the toothed Gilt-head) was communicated to Mr. Ray by Mr. Jonston, a gentleman of Yorkshire, who informed him it was found at the mouth of the Tees, on the 18th of September, 1681; and a figure of it was in consequence given in Willughby's work, where it appears under the following designation, *Brama marina cauda forcipata*. To this account and figure Mr. Pennant refers; whether he ever saw the fish itself is uncertain: for he does not speak of it as a native of our seas, upon any other authority than that of Ray above quoted.

Since the time of Ray there is no instance within our knowledge on record, to prove that the toothed Gilt-head has been taken, or seen upon our coasts till the year 1792, when a fish of this species was caught at St. Andrew's, Scotland, and presented by James Lumsdaine, Esq. of Innergellie, to the late Mr. Weeks, Proprietor of the Edinburgh Museum, who caused it to be finely preserved, and exhibited. After the dissolution of the Museum the subject came into our possession, and thus enabled us to submit a figure of this extraordinary creature to our readers, the drawing of Plate 37, being taken from it.

PLATE XXXVII.

We have reason to believe that our specimen is the only one of the species that has been found on the British coasts since the year 1681; and if we may be allowed to judge from the figures given by Ray, is far more complete than his was at the time his drawing was taken. The execution of his figure, however bad, is certainly excusable, when we consider the state of the imitative arts in this country at those days in which he lived; but there are several misrepresentations in the character of the fish itself that can only be accounted for by supposing the specimen in his possession had sustained considerable injury. For example, the dorsal and anal fins are divided into a number of smaller fins, or rather tufts in a whimsical manner; a mistake that seems to have arisen from the mutilated state of the fins; the membranes of which were most likely split in various places, and might suggest to the artist the idea that they were really to be shewn as distinct fins: all the scales with which the fins are imbricated seem to have been rubbed off, and the spinous rays are also wanting. The omission of the lateral line may be an oversight: the teeth perhaps were mutilated, or at least are very carelessly expressed: they appear perfectly setaceous, and at the same time the two teeth which are larger than the rest in the under jaw, are entirely omitted. In Pennant's figure, which seems to be an improvement upon that of Ray, the divided portions of the dorsal and anal fins are connected in a proper manner, they are slightly imbricated with scales, and the canine teeth are represented, but still the lateral line is wanting.

This species has been captured on the coast of France as well as England; in the former it is observed to be scarcely more frequent than with us. Duhamel, in his history of fishes, delineates it, as does also Bonaterre, but the drawing of the latter is confessedly a copy from Pennant's. The figure of Duhamel is defective, wanting

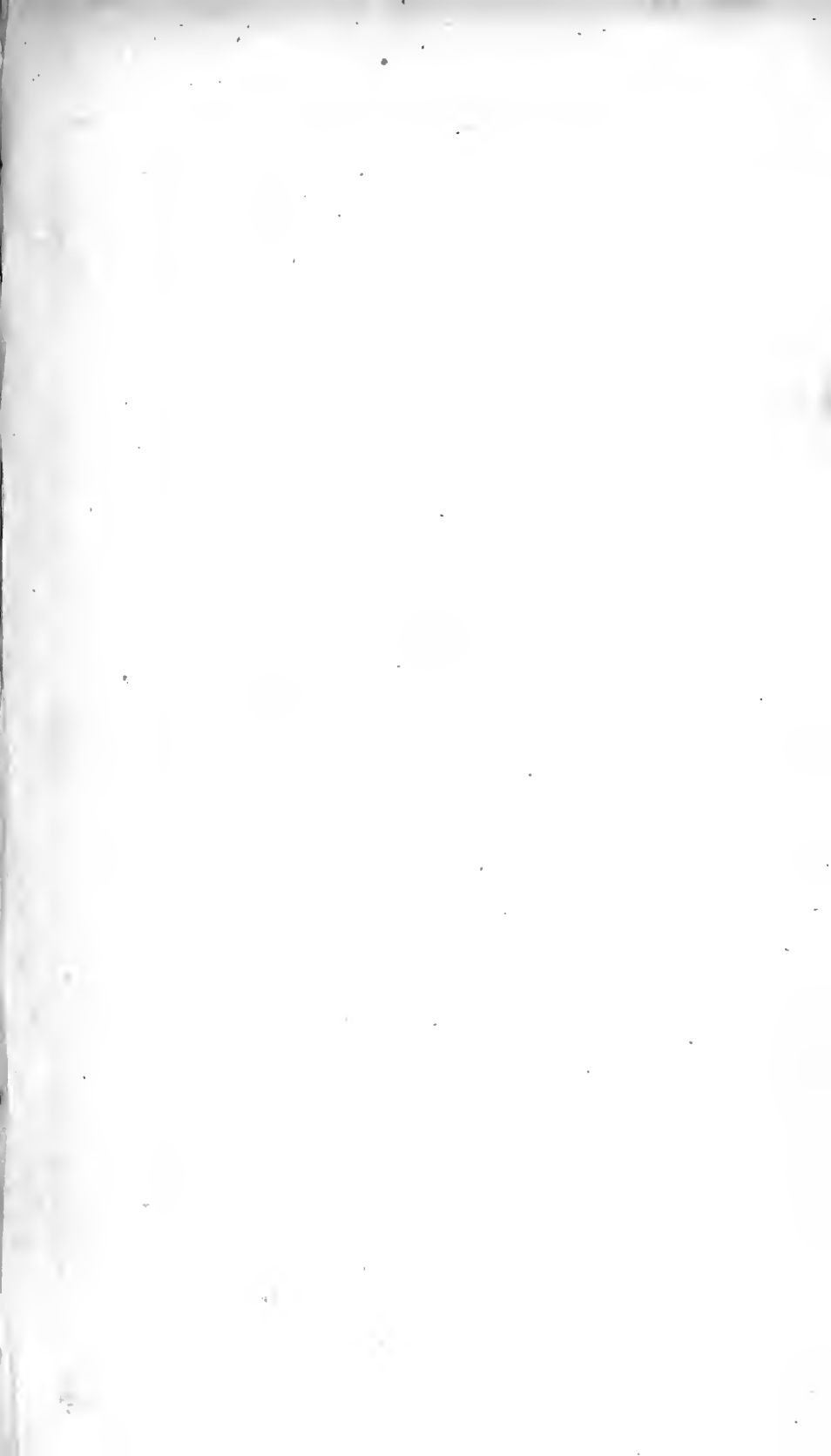
PLATE XXXVII.

the scales upon the fins. Bloch has given an incomplete representation of it also, his specimen not having the two canine teeth in the inferior jaw; a circumstance which this author does not pass over in silence. He animadverted upon Pennant, for having represented two such teeth, observing that they were not found either in his own fish, in the figure of Ray, nor in that given by Duhamel; and hence infers that Pennant is in an error. This remark of Bloch is equally vague, and contradictory, for Duhamel shews them very distinctly as well as Pennant; and it is only evident that they were accidentally wanting in the specimen in Bloch's collection, for in that which we possess they are perfectly distinct.

Neither Linnæus, nor Gmelin after him, speak of this species: perhaps they were unable to ascertain its characters from Ray, and having never seen the fish, did not think proper to hazard any opinion concerning it. Bloch, who mentions this, assigns to it the specific name of *Raii*, in memory of Mr. Ray, who first introduced the species to our observation; a name, we feel it highly proper to retain: the character which Bloch has offered for its specific distinction, with some addition, we have adopted likewise; we agree with him that the imbricated scales on the fins, are a striking character of the species, at the same time that the canine teeth which were not visible in his specimen, are in our mind of too much consequence to remain unobserved.—*Sparus dentex*, *Sparus Cynodon*, &c. are furnished with canine teeth, but in those species they are situated in both jaws, and in other respects they are quite different from the toothed Gilt-head. Duhamel calls our fish *La Castagnole*, a title, it will be proper to apprise the reader, under which three distinct fishes are known in France; the *Castagnole* of the Genoese and Sardinians, is another fish likewise.

PLATE XXXVII.

The dorsal fin in our specimen, contains thirty-seven rays; the pectoral fin twenty-four; ventral fin seven; anal fin thirty-one; tail fin twenty-five.



BRILL, OR PEARL.

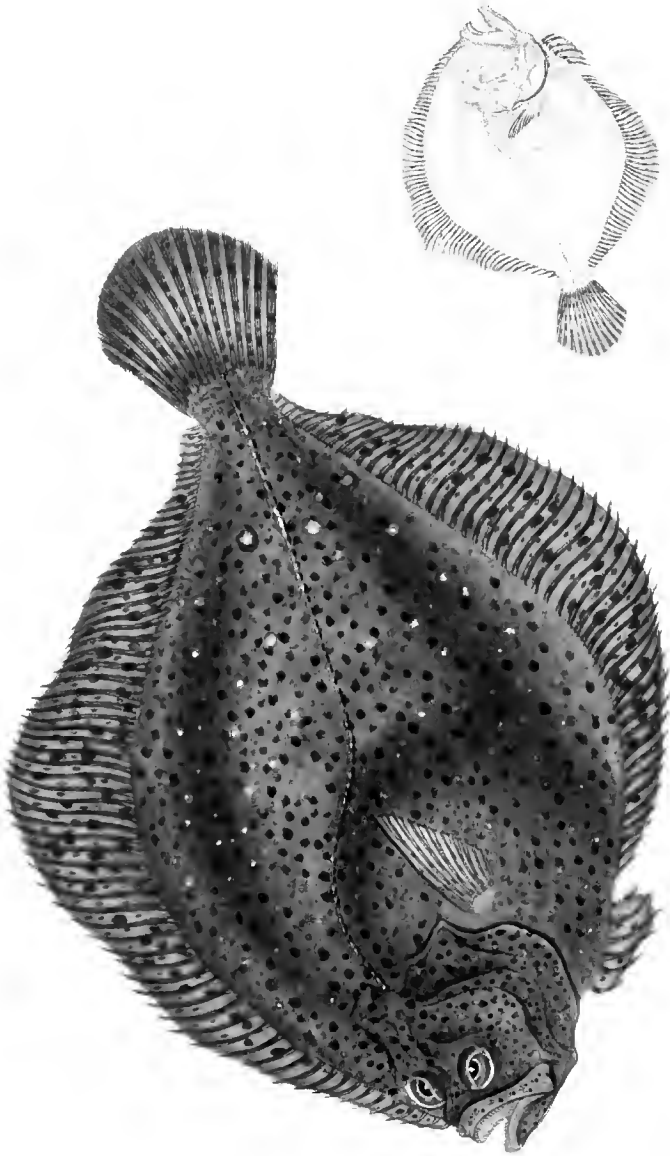


PLATE XCV.

PLEURONECTES RHOMBUS.

BRILL, OR PEARL.

*** PISCES THORACICI.

GENERIC CHARACTER.

Head small. Eyes spherical, both on the same side of the head, and near each other. Mouth arcuated. Jaws dentated, unequal. Gill-membrane with from four to seven rays. Gill-covers of three plates in general. Body compressed, carinated; upper side subconvex: beneath flat and pale. Vent nearer the head.

SPECIFIC CHARACTER

AND

SYNONYMS.

Body broad, and glabrous: above fuscous with black spots, and numerous pale dots: beneath white.

PLEURONECTES RHOMBUS: corpore lato glabro supra fusco nigromaculato punctis pallidis numerosis; subtus albo.

PLEURONECTES RHOMBUS: corpore glabro. *Linn.—Mus. Ad. Fr. 2. p. 69.—Gmel. T. 3. p. 1235. sp. 12.*

Pleuronectes Piggvarf. *Linn. It. Wgoth. 178.*

Pleuronectes arenarius. *Ström söndm.*

Pleuronectes corpore lato et glabro. *Bloch. Fisch. Deutschl. 2. p. 36. n. 2.*

PLATE XCV.

Rhombus lævis: *Jonst. pisc. p. 99. t. 22.*—*Raii pisc. p. 32. n. 7.*

Will. ichth. p. 96.

Rhombus alter gallicus: *Bell. aquat. p. 141.*

PEARL. *Penn. Brit. Zool. v. 3. p. 238.*

The Brill, or Pleuronectes Rhombus ranks among the most common kinds of flat fish, being found in abundance on many of the sandy shallows in the North and Mediterranean seas, as well as in those on the coasts of Britain.

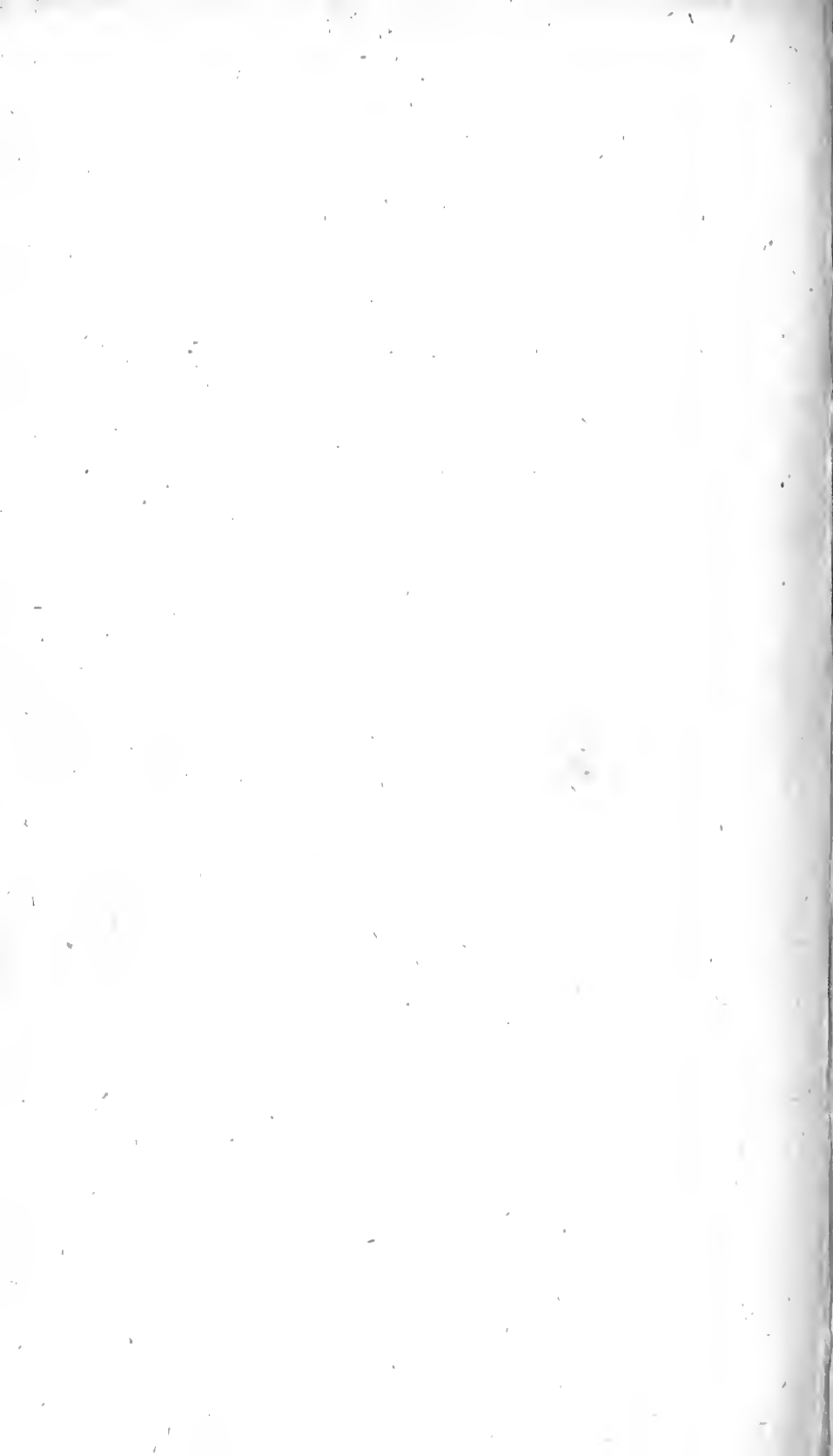
This species resembles the Turbot in its general appearance and outline; it is a firm and well-flavoured fish, though inferior to the former, and may be easily distinguished from it by the extreme smoothness of the skin, for it is destitute even of the slightest trace of those tuberculated aculeations which appear so conspicuous on the surface of the Turbot. In point of colour they differ also, the upper surface of the Brill being of a darker hue, or more inclining to fuscous, and having the spots of deep brown more numerous and diffused; besides which, there is an intermixture of livid yellow blotches, and a number of white dots besprinkled over the surface. The fins are nearly the same colour as the body, and are spotted and dotted in a similar manner. The lower surface of the body is white, as appears in the smaller specimen introduced in our plate. The dorsal fin extends from the upper jaw to which it is connected, close to the region of the tail. This fin contained, in one specimen we examined, sixty-five rays: in the pectoral fin were eleven rays: the ventral fin included six rays: the anal fin forty-eight rays; and the tail sixteen.

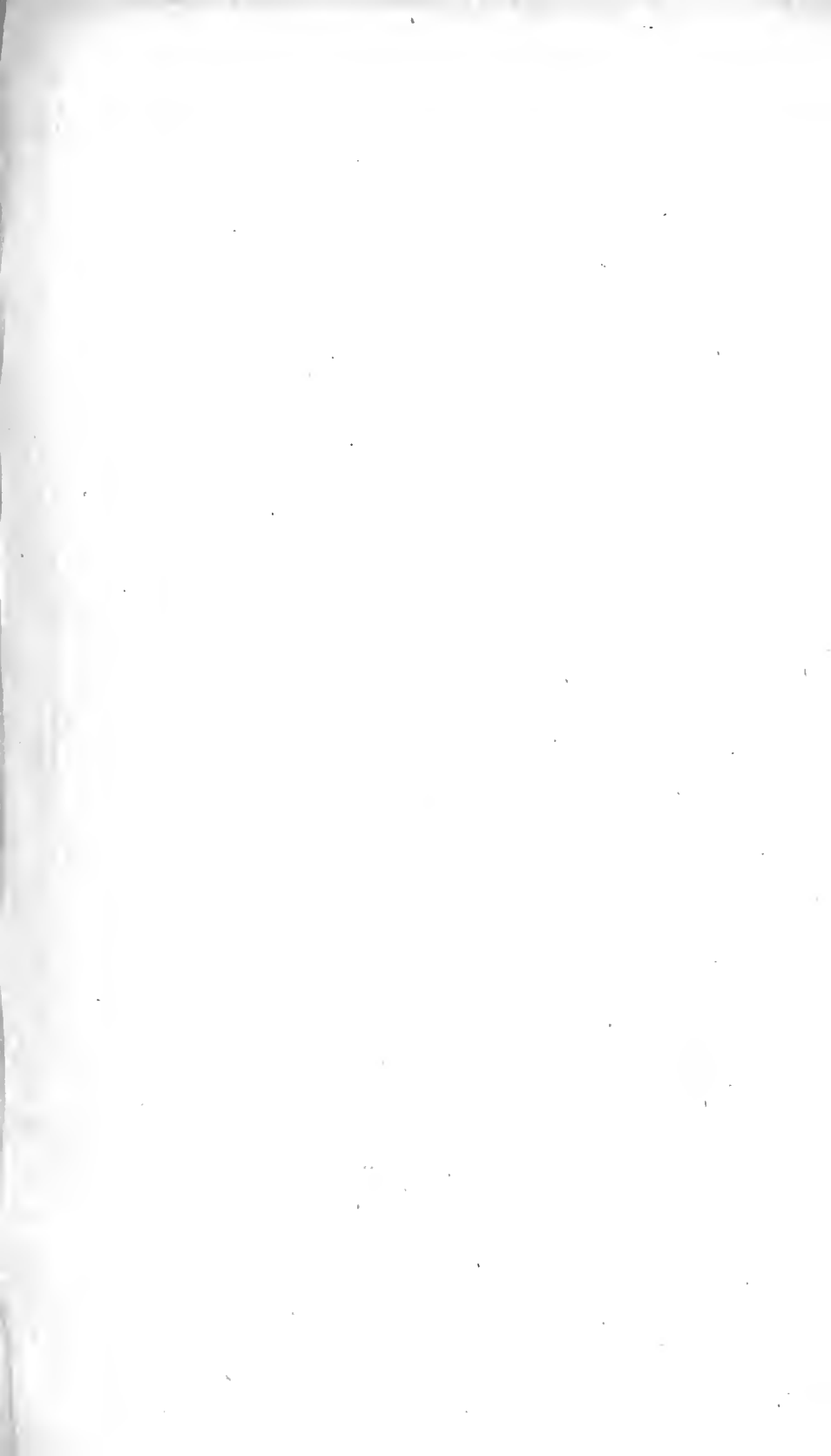
PLATE XCV.

The Brill and Turbot are considered the broadest of the Flounder tribe, but in this particular they are both inferior to our new species *Pleuronectes Cyclops*, which is distinguished by a greater proportional breadth than either. The ordinary size of this fish is commonly less than that of the Turbot. There are instances of its attaining to a much larger size than any of the Turbot hitherto discovered, not to mention the individual, supposed to be of this species, that was captured in the Italian Seas in the reign of the Emperor Domitian, which is reported to have measured twenty feet, or, as some say, as many ells in length*! From the coast of Cornwall we have obtained it of a large size, by the name of Kite, or Kit Fish.

Mr. Pennant describes this fish under the English name of Pearl. We rather prefer that of Brill, the latter being the appellation by which it is known in the markets of the metropolis.

* The enormous fish alluded to, is mentioned by Pliny, under the name of *Rhombus*. Artedi believes it of the same species as our fish, and his opinion is received by most modern authors. From the writings of Pliny it may be learned, however, that the eyes of the fish known among the ancient Romans, by the name of *Rhombus*, were on the right side, as in the Sole, instead of the left, as in the *Pleuronectes Rhombus* of modern authors. Whether, therefore, this fish was an individual of our species, admits of doubt. Domitian is said, by Juvenal, to have ludicrously ordained a *senatus consultum* to determine on the best mode of bringing this enormous fish to table.





WHIFF.

42

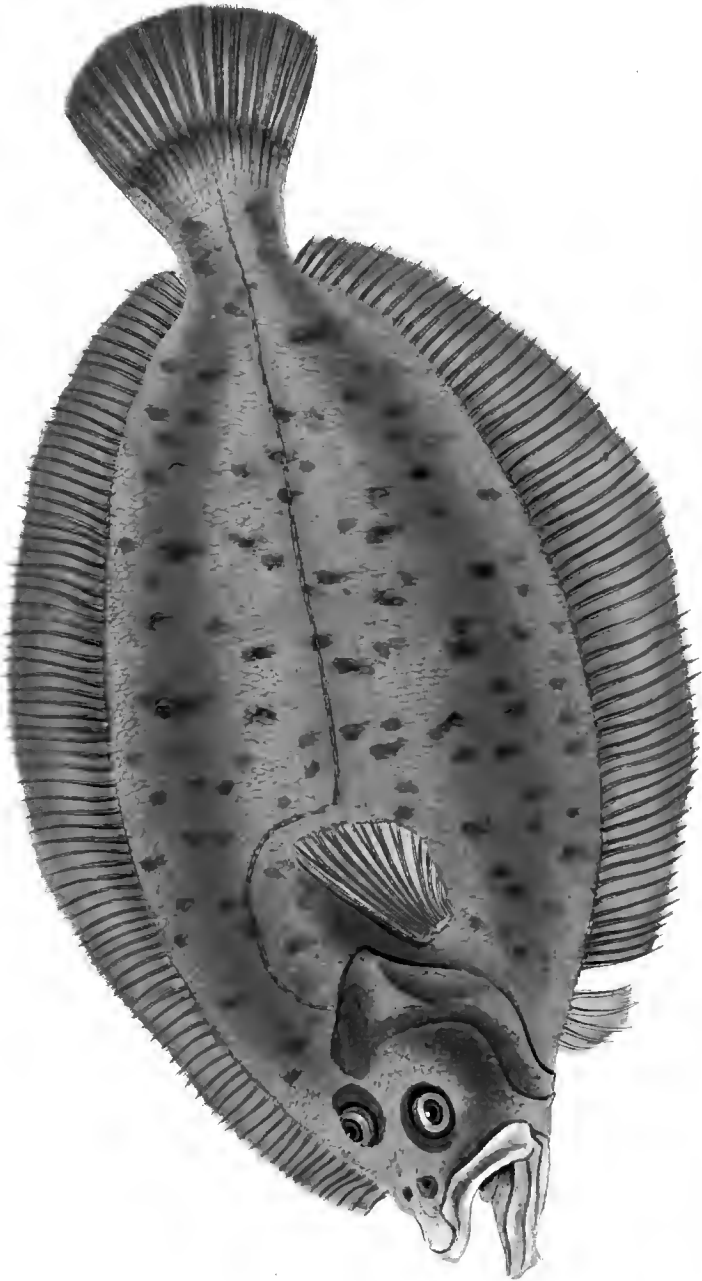


PLATE LI.

PLEURONECTES MEGASTOMA.

WHIFF.

PISCES THORACICI.

GENERIC CHARACTER.

Head small. Eyes spherical, both on the same side of the head, and near each other. Mouth arcuated. Jaws dentated, unequal. Gill-membrane with from four to seven rays. Gill-covers of three plates in general. Body compressed, carinated; upper side sub-convex: beneath flat and pale. Vent nearest the head.

SPECIFIC CHARACTER

AND

SYNONYMS.

Body oblong, livid variëgated with blackish: mouth large, inferior jaw advanced: lateral line incurvated

PLEURONECTES MEGASTOMA: corpore oblongo livido nigricante-variëgato, ore magno: maxilla inferiore porrecta, linea laterali incurvata.

WHIFF. *Ray Syn. p. 162. pl. 1. f. 2.*

Penn. Brit. Zool. 3. p. 111.

PLATE LI.

This Fish appears to be described for the first time by Ray, in the Appendix to his Synopsis, under the provincial of Whiff; the name by which it is commonly known in the maritime parts of Cornwall. Mr. Ray speaks of this Fish only on the authority of Mr. George Jago, by whom it is said to have been originally discovered; or, in other words, discriminated with sufficient accuracy to be considered as an undescribed species. It is thus defined specifically: “*Passer Cornubiensis asper, magno oris hiatu;*” and in the Plate which accompanies the description, the Whiff is represented with tolerable fidelity.

The author of the British Zoology (Mr. Pennant) next includes this species among the fishes of this country. The resemblance which he perceives between the Whiff and the Holibut is by no means obvious to us; but although no figure is annexed to the account given of his fish, we have no hesitation in admitting it to be the same as that before described by Mr. Ray under the name of Whiff. Mr. Pennant says one was brought to him by his fisherman, October 31, 1775, and gives the following description of it.—“Its length was eighteen inches, the greatest breadth not seven, exclusive of the fins. The mouth extremely large: teeth very small: the under jaw hooks over the upper: the eyes large, and placed on the left side. The scales great and rough: the side-line uncommonly incurvated at the beginning. After making a sharp angle, goes strait to the tail, and is tuberculated: the tail is rounded. The colour of the upper part of the body is cinereous brown, clouded in parts, and obscurely spotted: the under side white, tinged with red.” This is all that Mr. Pennant relates respecting the Whiff in the British Zoology, but the same fish is again mentioned in his Tour through North Wales, wherein he informs us, that “in the year 1777, (about the month of November) that rare species of

PLATE LI.

flounder, the Whiff, was taken in the estuary of the Dee, in Flintshire;" and a figure of it, from the pencil of his artist, Moses Griffiths, is subjoined to that remark.

Some time ago, in a visit to Aber, Caernarvonshire, we were very kindly presented with the drawing of a Whiff, found upon that coast on the 6th of August, 1787, by the Rev. Hugh Davies, now of Beaumaris, Anglesea. This drawing proved the more valuable, as it exemplified some peculiarities that had escaped the cognizance of Mr. Pennant. The tongue Mr. Davies found to be of a subulate conic form, and white; the eyes placed on the left side, having the pupil black, and the iris yellowish. Ten or twelve large dusky circular spots on the back, eight of which formed a circle not very indifferently represented by Mr. Jago in the figure given by Ray. The tail in Mr. Pennant's figure he observed to be too much rounded, and the lower jaw extended further than it ought to be. We think it incumbent to be thus minute in relating the particulars of this communication, in return for the friendship and liberality of this gentleman's assistance. Since that period, we have learnt that the fish itself is by no means so unfrequent on the British coasts as we were at first induced to imagine. From the coast of Cornwall we have more than once received it in fine condition, and are thus enabled to add still further to the history of this curious fish. Besides the local name of Whiff, it is called by the Cornish fishermen the Merry-sole, from the extreme activity of its motions in the water.

We are convinced that this is not the *Pleuronectes punctatus* of Bloch, as Gmelin describes it. The Whiff of Ray, of Pennant, and ourselves, are strictly the same, but the *Pleuronectes punctatus* of Bloch and Gmelin is of another species, altogether distinct. The

PLATE LI.

latter is "*le Targuer*," or "*Grosse Plie*" of Duhamel, and other French writers. Dr. Bloch describes *P. punctatus* with accuracy, but he is certainly mistaken in believing that fish to be the Whiff of Ray, and Pennant, as his synonyms imply. Gmelin adopts the same references as Bloch, most probably relying in confidence on his authority. Dr. Shaw has been also misled in this respect, as well as Gmelin, for he describes minutely as the same species both the Whiff of Pennant, and the *Pleuronectes punctatus* of Dr. Bloch.

Thus we perceive two very different species of the *Pleuronectes* genus are confounded under the provincial English name of Whiff, and it is to be regretted that Dr. Turton increases that confusion by describing even a third species under the very same appellation. The latter writer, in his Translation of Gmelin's *Systema Naturæ*, contrary to the letter of his author, assigns the name of Whiff to the *Pleuronectes Passer* of Gmelin, and Linnæus. The figure of the *Pleuronectes Passer*, as it appears in the History of Fishes published by Dr. Bloch *, accords, we must observe, pretty nearly with the Whiff of Ray, and Pennant, in its general form, and might have induced Dr. Turton to call it the Whiff, in preference to the *Pleuronectes punctatus* to which Gmelin refers. But upon the whole, we are persuaded, notwithstanding this apparent degree of similarity,

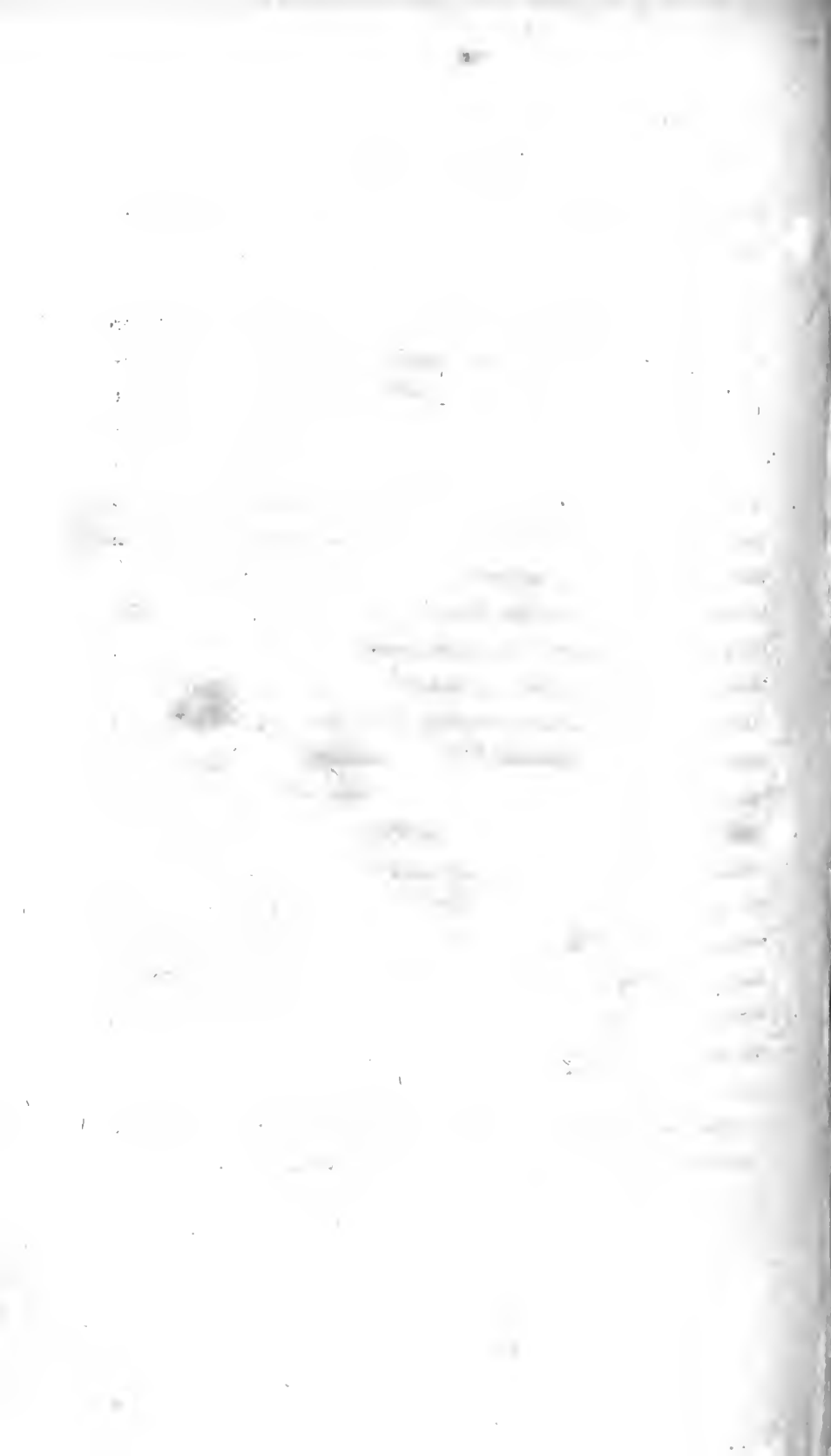
* Whether the figure in Bloch's Fishes, inscribed *Pleuronectes Passer*, be really the same as Linnæus means, is doubtful; we rather think it is not. The *Pleuronectes Passer* of Linnæus is so nearly allied to the common flounder (*Flesus*) except in having the eyes placed towards the left side of the head instead of the right, that Gronovius and Pennant, with some other Ichthyologists of repute, believe it to be only an accidental variety of that fish; and certainly Bloch's figure does not convey any very striking idea of its similitude to the common flounder.

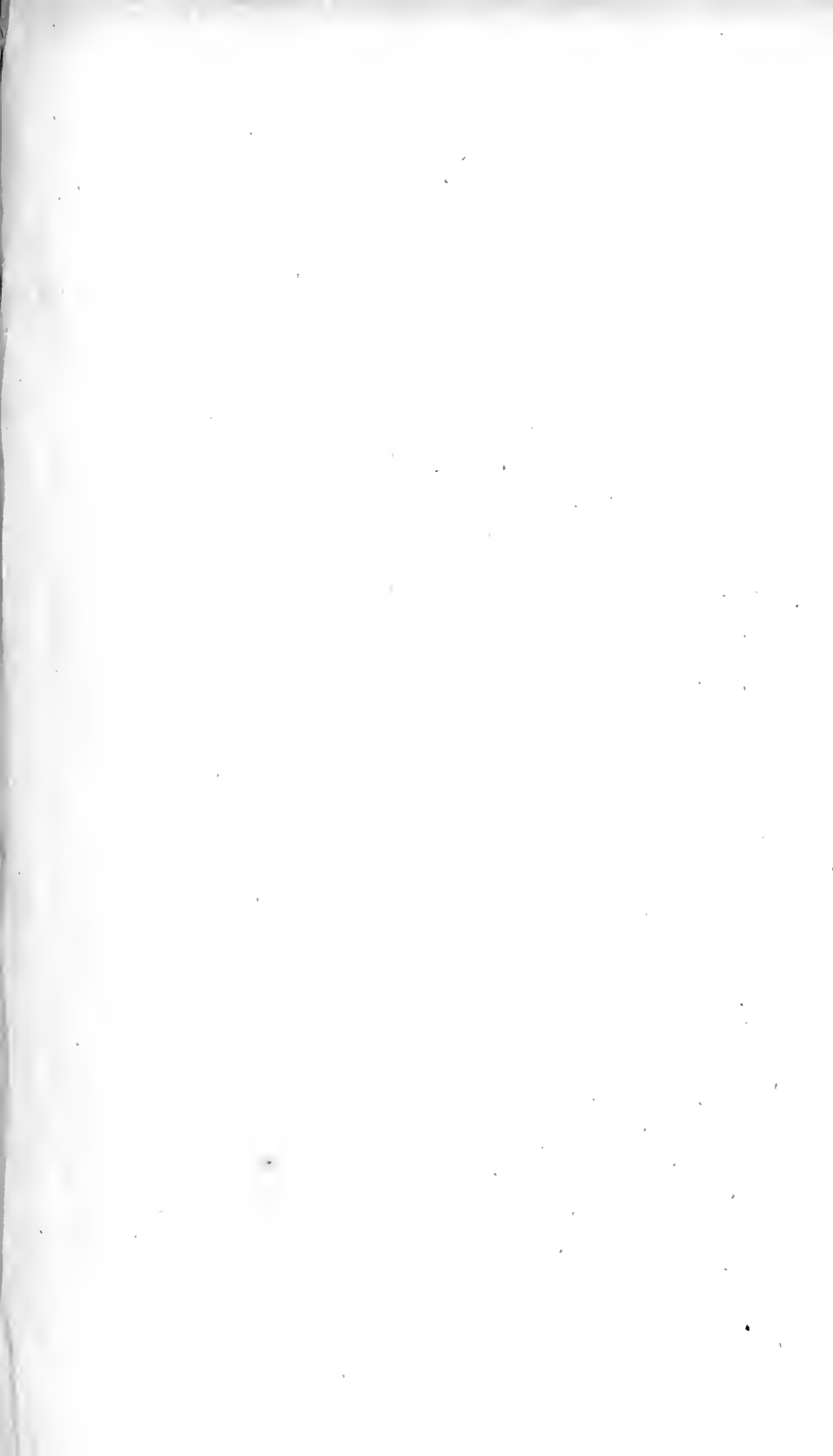
PLATE II.

that the fish described by Bloch under the specific name of *Passer*, ought on no account to be confounded with our Whiff.

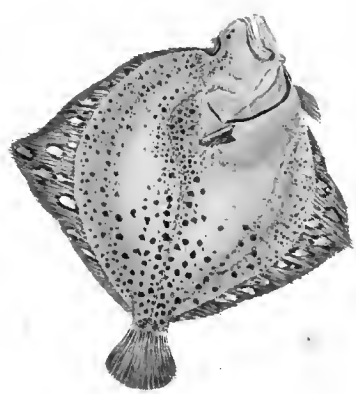
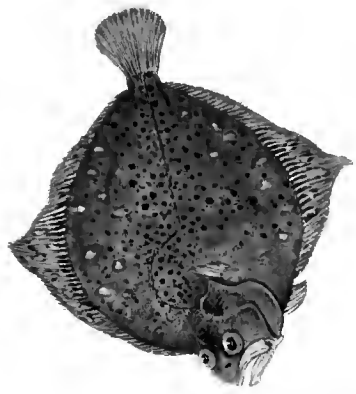
In the conclusion of these remarks, it will not be deemed improper to draw a slight comparison between the English Whiff and the *Pleuronectes punctatus*, in order to point out the characters of both with due precision. The form of our fish is oblong, the body being much more elongated than that of *P. punctatus*. The singular rotundity of appearance that prevails in the latter fish, is increased by the curvature of the dorsal and anal fin near the posterior extremity, where they are wider than in any other part, becoming gradually narrower as they proceed towards the head: on the contrary, in the Whiff, the fins are widest across the middle, and slope gradually in breadth towards the head and tail: the mouth is full of large teeth in *P. punctatus*: in our fish the mouth is large, and furnished only with small teeth. The body and fins are marked alike with large black spots, having the intermediate spaces interspersed with red spots of a smaller size in *P. punctatus*: our fish, though marked with spots, have them neither so numerous, nor of such a black colour, and there is not the least trace of the scarlet specklings and spots that appear profusely scattered over the surface of the other. Duhamel's figure is not so darkly spotted as that of Bloch, but the obtuse rotundity of outline by which this species is distinguished from our Whiff, is as apparent in the figure of Duhamel as in that of Bloch.

The dorsal fin in our Whiff contains eighty-five rays: pectoral thirteen: ventral five: anal sixty-one: and tail nineteen.





CYLOPS FLOUNDER.



Leland. Publ. at the Address of F. Donner & Co. 178. 1/2. 1/2. 1/2.

PLATE XC.

PLEURONECTES CYCLOPS.

*CYCLOPS FLOUNDER.**** *PISCES THORACICI.*

GENERIC CHARACTER.

Head small. Eyes spherical, both on the same side of the head, and near each other. Mouth arcuated. Jaws dentated, unequal. Gill-membrane with from four to seven rays. Gill-covers of three plates in general. Body compressed, carinated; upper side sub-convex: beneath flat and pale. Vent nearer the head.

SPECIFIC CHARACTER.

Left eye sub-vertical, and visible both sides.

PLEURONECTES CYCLOPS: oculis sinistro subverticali, in utro latere visu.

Our *Pleuronectes Cyclops* was discovered a few years since by Capt. Merrick of Aberfraw in Anglesea, North Wales, on the sea coast near his own residence: he observed it in a shallow cavity of one of the rocks at a small distance below high water mark, where it had apparently been recently left by the retiring tide. The fish was

PLATE XC.

alive when he perceived it, and particularly attracted his attention by being enveloped in a froth similar to that occasioned by the larva of the Cicadæ in which they conceal themselves on the leaves of plants, or what is generally denominated the *Cuckoo-spit*.—Captain Merrick had the curiosity to preserve this little acquisition in spirits, and in our visit to that part of the island some time ago very liberally favoured us with the fish, and the above particulars relative to its capture.—We are the more minute in stating those circumstances as we consider it as a new fish, and not merely so as an inhabitant of the British Seas, but as a species of *Pleuronectes*.

Neither Linnæus, Gmelin, Bloch, Lacepede, or any other of the Ichthyological writers within our knowledge mention any species that can apply to the present. The specimen in our possession is small, the figures in the annexed plate which exhibit both the superior and lower surface being enlarged to admit of greater accuracy in delineation. The fish is an inch and three eighths in length, measuring from the tip of the jaw to the extremity of the tail: in other respects those figures convey a correct idea of the species.

It is highly probable this fish has by no means attained to its ordinary magnitude, the smallness of its size suggests that it is rather the young of some larger species, than a fish arrived at full maturity. This cannot indeed be adduced with any certainty of a species with which we are unacquainted except from one solitary specimen. As a species we can speak with more decision, notwithstanding its diminuteness, for it is sufficiently ascertained that fishes, unlike many other productions of the animal kingdom, receive in their first formation the figure of the parent brood so completely that from the smallest to those of the largest size, the naturalist has little difficulty in tracing

PLATE XC.

any particular species through all its gradations and varieties. With this impression we shall endeavour to point out a few characters in which our present species differs specifically from either of those already described.

Our fish is of the section "*oculis a latere sinistro,*" or such as have the eyes placed on the left side of the head. Those species of the *Pleuronectes* genus that have the eyes on this side, amount to about twelve, exclusive of one or two varieties, which some authors think distinct. Of these, the only species that resembles it, even in a remote degree, are *P. Maximus*, *P. Rhombus*, *P. Argus*, *P. Punctatus*, *P. Mancus*, *P. Lunatus*, and *P. Japonicus*; and it agrees with neither of those. In the general contour, one of the strongest characters in fishes, it approaches nearest to the two first mentioned, those being the broadest of the Flounder tribe:—from *P. Maximus*, (Turbot) it differs, in having the surface perfectly smooth, and free from those tuberculations which are obvious in the smallest of that species. It approaches *P. Rhombus*, (the brill) more closely than the Turbot, in having the skin free from all asperities, but it is broader than this fish, being even more so than the Turbot; it also differs in having the middle rays of the dorsal and anal fin longer than the rest, in the lateral line being much more incurvated over the pectoral fin, and having a number of the dusky spots on the superior surface of the body, surrounded by a whitish ring.—Though, in this last particular, it seems to agree rather with *P. Argus*, it differs from that fish altogether in the deeper rhombic figure of the body.—*P. Punctatus* is somewhat broader, and is spotted, but does not still accord with this.—*P. Mancus* is spotted on the under surface as well as above, like our fish, but is of an oblong elliptic form, and is covered with rather large scales, while in our fish the scales are

PLATE XC

inconspicuous, the skin appearing entirely smooth.—The tail is rounded, which distinguishes it sufficiently from *P. Lunatus*, the latter having the tail lunated;—and the smoothness of the tongue removes it from *P. Japonicus*, in which the tongue is rough. The other species are too remote to require comparison.

Should either of those dissimilar circumstances be attributed to the immaturity of our fish, in which the true character of the species might be supposed to be not entirely disclosed, there are one or two other particulars in which it differs so materially as to silence every doubt: this is the protrusion of the head, and situation of the left eye, the head being much further advanced than in either of the above mentioned fishes, and the left eye most singularly placed in the middle of the lateral edge or forehead. In a swimming position, therefore, as shewn in the figure, representing the lower surface, this eye appears nearly vertical, and from its situation, a very slight inclination of the body is sufficient to give the fish a perfect view of the objects on both sides of it, while its appearance directly in front, or when viewed on the lower surface, conveys precisely the idea we have of a cyclops animal. So singularly different is this from the rest of the pleuronectes that it seems to militate even against the character of the genus, which requires that both the eyes should be placed on one side: we were almost tempted, from this consideration, to constitute a new genus of this curious fish.

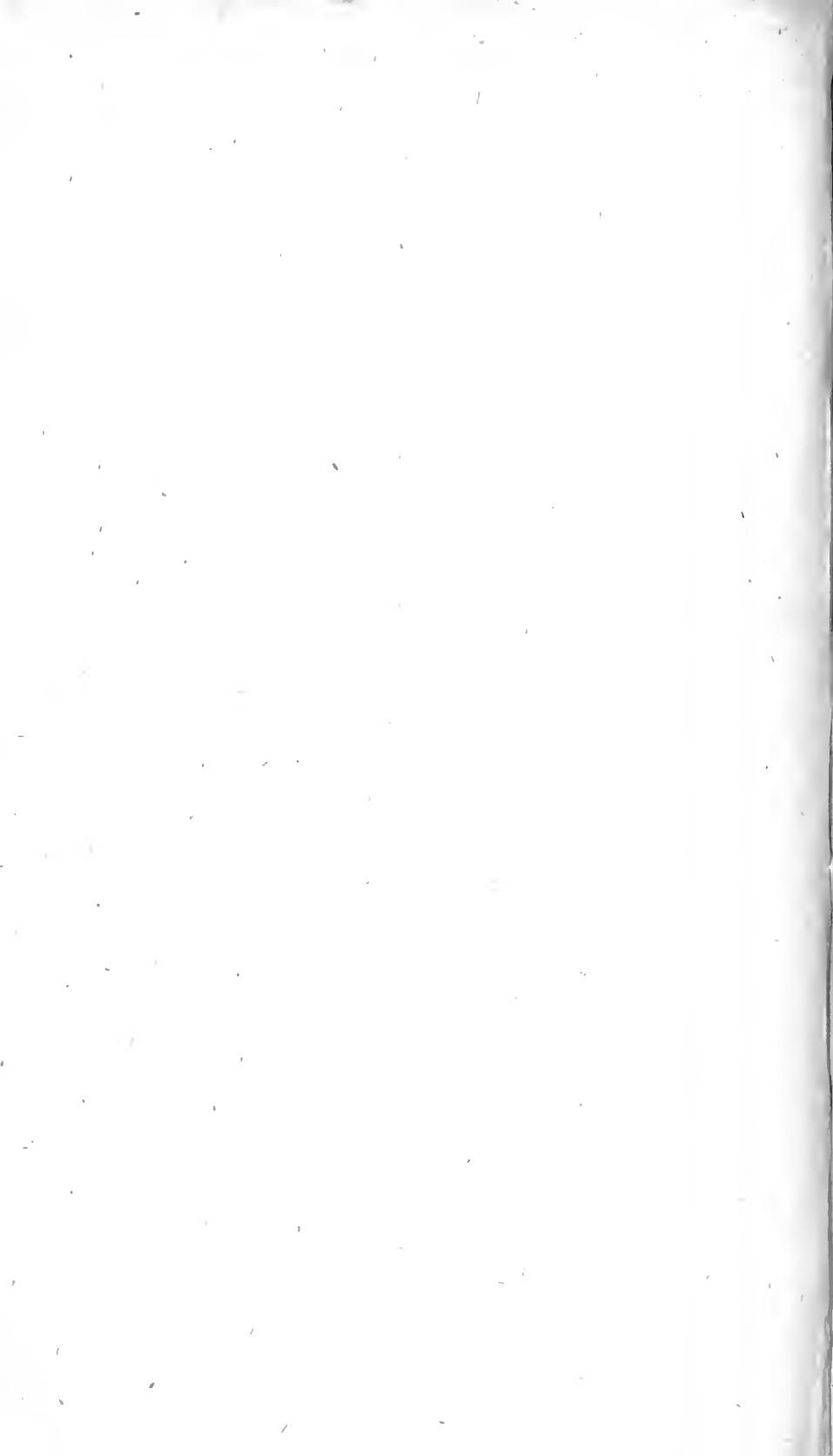
Owing to the elongation of the head and subvertical situation of the left eye, the commencement of the dorsal fin takes place behind the eye, a character of itself sufficient to remove it from either of the fishes above mentioned; for in all of those, the dorsal fin commences close to the upper jaw, and is, in fact, in a greater or less degree, connected with it. This is fully exemplified in the Turbot

PLATE XC.

and the Brill, in both which the dorsal fin commences close to the upper jaw*.

Thus it appears the advancement of the head, and situation of the eyes sufficiently determine this to be a nondescript species, independent of other circumstances in which it differs from the species before described. To this it may be added, as secondary characters, that the body is of a greater proportional breadth than in any other of the *Pleuronectes* genus; and that the elongation of the middle rays of the dorsal and anal fin contribute to give it the appearance of still greater breadth than it really possesses. The whole contour of the fish is somewhat quadrangular. The lateral line is pretty much curved over the pectoral fin. The first dorsal fin contains sixty-six rays; pectoral fin eleven; ventral seven; anal fifty-two; and tail sixteen.

* See lower surface of the Brill, in plate 94 of this work.





LUNULATED GILT-HEAD.

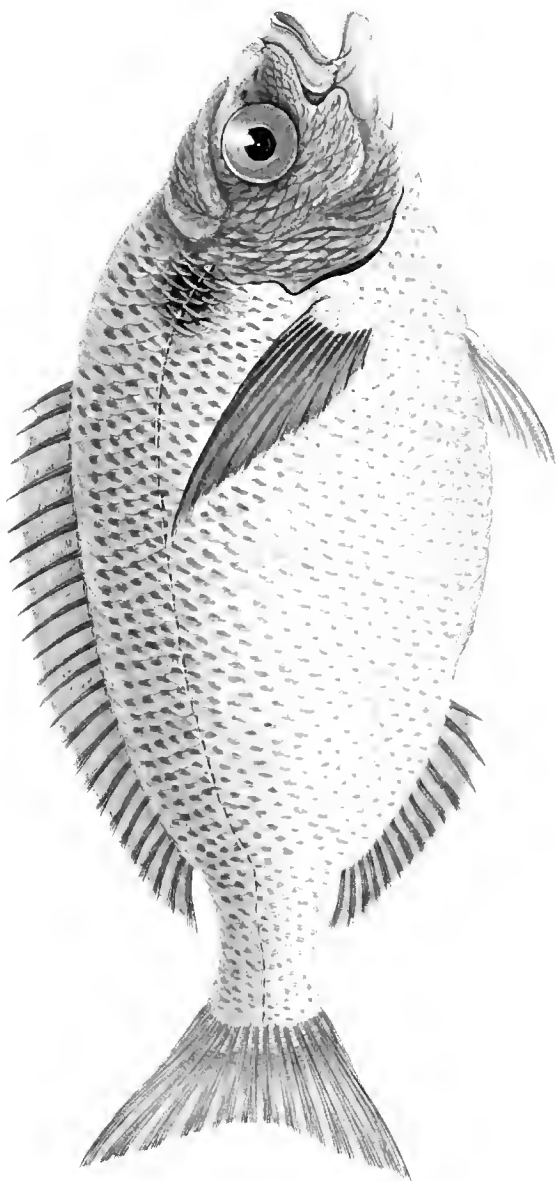


PLATE LXXXIX.

SPARUS AURATA.

LUNULATED GILT-HEAD.

** PISCES THORACICI.

GENERIC CHARACTER.

Teeth strong, those in front disposed in one series, or more; grinders somewhat obtuse and crowded; lips doubled in most species: branchiostegous membrane five-rayed, cover scaly; body compressed: lateral line incurvated behind: pectoral fin rounded.

SPECIFIC CHARACTER

AND

SYNONYMS.

Over the eyes two pale semilunar spots edged with gold; sides with a blackish spot intersected by the base of the lateral line.

SPARUS AURATA: lunulis duabus pallidis aureo-cinctis supra oculos, linea laterali basi maculam nigricantem dissecante.

SPARUS AURATA: lunuli aurea inter oculos. *Linn. Mus. Ad. Fr.* 2. p. 72.—*Gmel. Linn. Syst. nat. T. 3. p.* 1270. *sp. 1.*

Sparus dorso acutissimo, linea arcuata aurea inter oculos. *Art. gen.* 25. *syn. 63.*

PLATE LXXXIX.

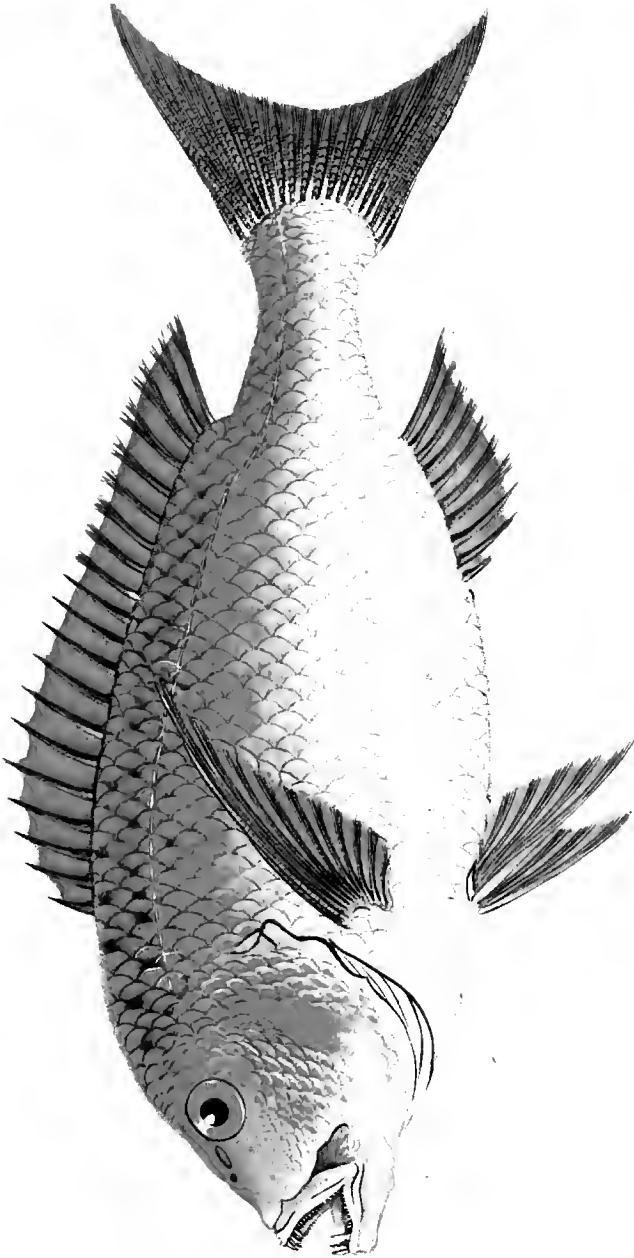
possibly occur in which they are not perceptible. Those marks, however, as before intimated, do not occur precisely as Linnæus mentions; several specimens that we had an opportunity of inspecting on the coast of Wales, almost immediately after their capture, enables us to speak more decidedly on this point, than if our observations had been confined to less recent specimens. Immediately over each eye, is a plain, semi-lunar, or crescent formed space, scaly like the rest of the fish, but rather of a paler colour, and which nearly approximate in the middle of the forehead: those two species are circumscribed by a brilliant shining margin of a filmy texture, free from scales, of a moderate breadth, and possessing the colour as well as lustre, of burnished gold. Other parts of the head are glossed with this metallic splendour, and especially at the lower sutures of the gill covers; but the margins of the spots abovementioned are the most conspicuous. The dusky spot at the base of the lateral line was of a rich purplish hue. Linnæus notices a black spot in the tail of this fish, which we think Bloch may be correct in deeming accidental. Catti could not perceive any such mark, neither did any such spot appear in either of the specimens that have fallen under our observation.

The figure in the annexed plate is copied from a specimen twenty-one inches in length. In the dorsal fin, which extends nearly the whole length of the back, are thirteen spiny rays, and eleven soft ones; the pectoral fin is long and pointed, and contains eleven rays; the ventral six rays; the anal three spines, and eleven soft rays; and the tail, which is furcated, twelve long rays, and four short ones laterally.



FOUR-TOOTHED SPARUS.

45



London: Publ^d as the Act direct^d by H. Deane & F. & C. Robinson May 1869.

THE
NATURAL HISTORY
OF
BRITISH FISHES.

PLATE LXXIII.

SPARUS DENTEX.

FOUR-TOOTHED SPARUS.

* *PISCES THORACICI.*

GENERIC CHARACTER.

Teeth strong, those in front disposed in one series, or more: grinders somewhat obtuse and crowded: lips doubled in most species: branchiostegous membrane five-rayed, cover scaly: body compressed: lateral line incurvated behind: pectoral fin rounded.

SPECIFIC CHARACTER.

Tail furcated: body reddish, variegated with fuscous: four teeth in each jaw larger than the others.

SPARUS DENTEX: cauda furcata, corpore rufescente fuscoque variegato, dentibus quatuor majoribus.

PLATE LXXIII.

SPARUS DENTEX. *Linn.—Arted. Gen. 36. Syn. 60.—Bloch, t. 268.*

On the 9th of April, 1805, we were agreeably surprised at receiving from one of our assiduous correspondents, a fresh specimen of this curious Sparus, as a supposed overgrown individual of the Lunated gilt-head, Sparus lunatus. This acquisition is of the more importance, as the species is not mentioned by Pennant, nor any other writer on Ichthyology, as having before appeared in the British seas; neither do we recollect a specimen of it as a foreign fish in any collection of natural history we have seen. The particulars of its capture are few, and of little interest: it was caught in the sea off the coast of Hastings, in Sussex, and brought by one of the fishing-smacks, with other fish, to Billingsgate for sale, where our correspondent met with it. As a Mediterranean fish, Sparus Dentex is perfectly well known to the continental naturalists: its importance rests upon its being British, and in this point of view we shall be allowed to consider it as a valuable accession to the *British Fauna*.

Generally speaking, this is a fish of large size. Willughby observes, that small fishes of this species are rarely taken, and the same circumstance has been mentioned by later writers. The smallest of those that occur in common, according to Bloch, are seldom less than three or four pounds in weight. In the environs of Rome they usually exceed that size by at least one half. Our specimen was considerably larger, weighing about sixteen pounds; but this even is comparatively trifling to some occasionally found in the warmer parts of Europe. In the fish-markets at Narbonne, where this species of Sparus is frequently

PLATE LXXIII.

exposed for sale, they have been often seen of twenty, or thirty pounds each. The largest on record was, however, far superior to those, weighing no less than seventy-six pounds*: it is mentioned by Duhamel, on the authority of Gortier, who sent him an account of this gigantic example of *Sparus Dentex*.

A more voracious fish is scarcely known; and when we consider its ferocious inclination, and the strength of its formidable canine teeth, we must be fully sensible of the great ability it possesses in attacking other fishes, even of a superior size, with advantage. It is asserted, that, when taken in the fishermen's nets, it will seize upon the other fishes captured with it, and mangle them dreadfully. Being a swift swimmer, it finds abundant prey, and soon attains to a considerable size. During the winter it prefers deep waters, but in the spring, or about May, it quits this retreat, and approaches the entrance of great rivers, where it deposits its spawn between the crevices of stones and rocks.

The fisheries for this kind of *Sparus* is carried on upon an extensive scale in the warmer parts of Europe. In the rivers of Dalmatia and the Levant, the capture of this fish is an object of material considera-

* An inadvertency of expression, that may possibly mislead, has escaped from the pen of Dr. Shaw, in treating of *Sparus Dentex* in his *Gen. Zoology*. This fish, he observes, is of the *general size and shape of a carp*; but, from the preceding remarks, it will evidently appear, that its ordinary size is much superior to the carp, at the same time that its figure bears but a very remote resemblance indeed to that well-known fish. *Vide Gen. Zool.* Vol. IV. p. 2.—408.

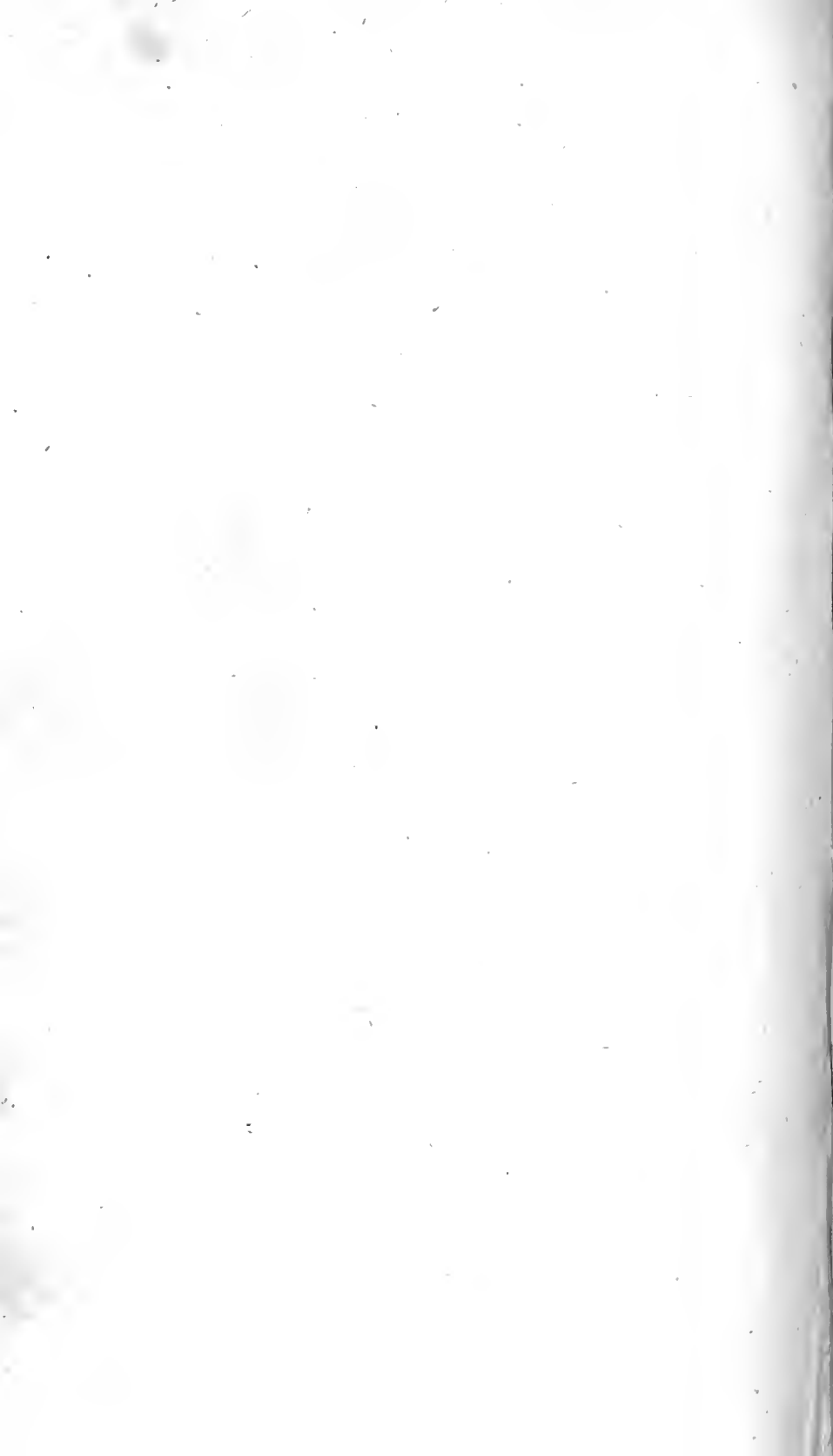
PLATE LXXIII.

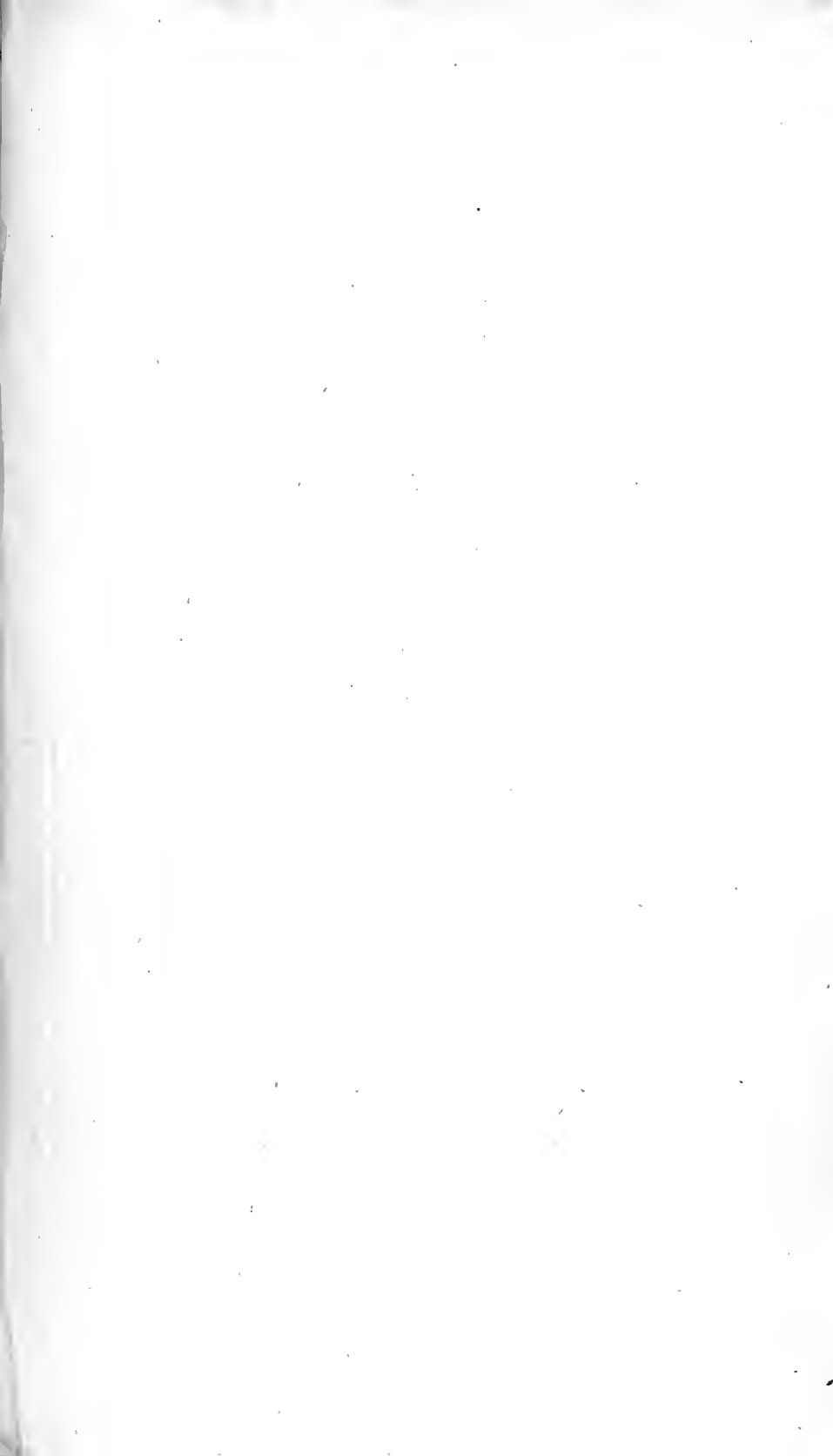
tion, both to the inhabitants generally, as a wholesome and palatable food, when fresh ; and to the mercantile interests of those countries as an article of commerce. They prepare the fish according to ancient custom, by cutting it in pieces, and packing it in barrels with vinegar and spices, in which state it will keep perfectly well for twelve months.

The plate accompanying this description may render any minute, or copious detail of the general appearance of this fish superfluous: the drawing was made, and the colours copied with fidelity, from the specimen, within two or three hours after we became possessed of it. We are aware, however, from the descriptions given of this fish by other writers, that in the last particular it is liable to considerable variations, not only in different stages of its growth, but at different seasons of the year. The back and sides, to a short depth below the lateral line, is generally reddish, more or less tinged with yellow, and varied with obscure spots, or clouds of fuscous. The highly metallic gloss, or silvery splendour, which Bloch speaks of, was scarcely visible in our specimen: he also speaks of the ventral and anal fin being deep yellow, the pectoral bordering upon red, and the dorsal fin and tail yellow, edged with blue or bluish, neither of which circumstances were observable in our specimen. He allows, that the fish assumes a purple colour as it grows old, and that it is said to become white in winter. These particulars are therefore variable, and cannot well be said to constitute any part of its specific character, with the exception of the back colour, which appears to be more constant than any other: this even might perhaps be omitted in defining the species, for the four large distinct canine teeth in the front of each jaw, sufficiently distinguishes this fish from every other species of Sparus at present known.

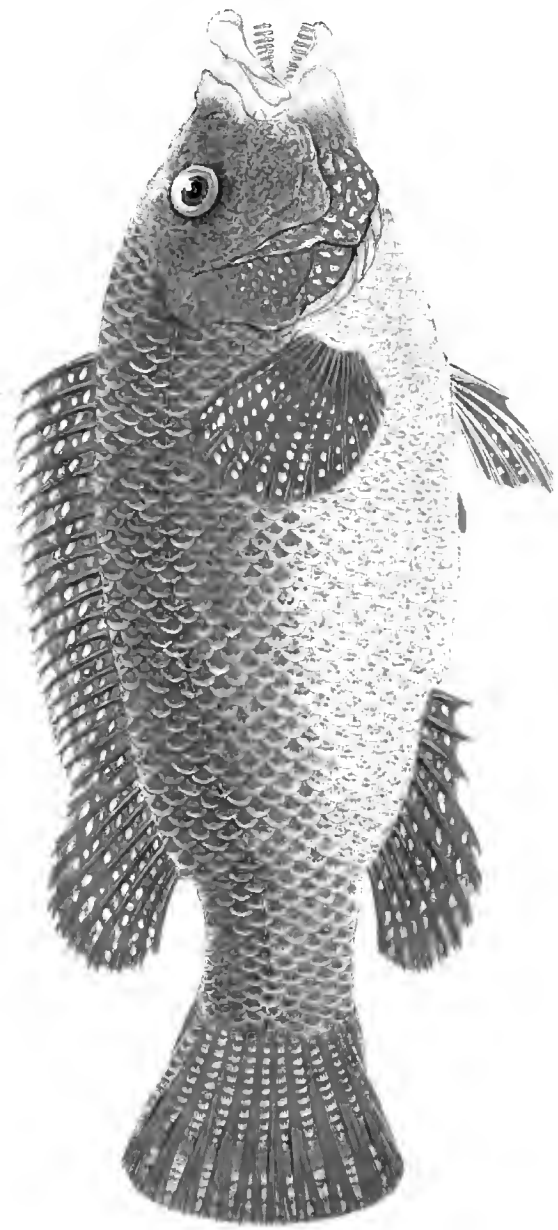
PLATE LXXIII.

The length of our specimen is two feet six inches: in the dorsal fin are eleven spiny rays and nine soft: the pectoral fin contains twelve rays: ventral five rays: anal ten rays, the three anterior ones of which are spinous: and tail nineteen.





ANCIENT WRASSE, OR OLD WIFE.



*London, Fish, as the *As* direct by E. Donovan & F. C. J. Richardson, Jan. 1. 1864.*

PLATE LXXXIII.

LABRUS TINCA.

ANCIENT WRASSE, or OLD WIFE.

* PISCES THORACICI.

GENERIC CHARACTER.

Teeth acute: lips simple: branchiostegous membrane with about six rays, and scaly covers: dorsal fin with a slender skin beyond the end of each ray: pectoral fin acuminated: lateral line straight.

SPECIFIC CHARACTER

AND

SYNONYMS.

Dorsal fin ramentaceous: body yellowish, variegated with blue and spots of red: fins red with fuscous margins, and dotted with white.

LABRUS TINCA: pinna dorsali ramentacea, corpore flavescente cœruleo variegato rubroque maculato, pinnis rubris fusco marginatis albo-guttatis.

LABRUS TINCA: rostro sursum reflexo, cauda in extremo circulari.
Art. Gen. 33. syn. 56.

LABRUS VETULA. *Bloch. 293.*

TURDUS VULGATISSIMUS. *Will. Ichth. 319.*

PLATE LXXXIII.

Vieille, Poule de Mer, Gallot. *Belon*.

WRASSE, or OLD WIFE. *Hist. syn. pisc.* 136.

Penn. Brit. Zool. v. 3. p. 244. 115.

This charming species of Wrasse cannot but be considered as one of the most beautiful of the fish tribe observed to this time on the coasts of Britain: it is distinguished in general by a peculiar richness of colouring, and such a happy diversity of spots and markings, as we rarely see excelled in the more splendid productions of hotter climates; and, with the exception of a very few species, stands wholly unrivalled in this particular among the fishes of this country.

We have obtained this species from Scarborough, and other Eastern coasts of England, more than once: we have received it also from Cornwall; from the Skerry islands, north of Anglesea; and from Scotland; but have been uniformly led to believe it a species not very common on either of those coasts, except near Scarborough. The specimen chosen for our figure is from Cornwall, this exhibiting a greater variety of brilliant colours than either of the others. The usual length of this species is about fifteen or eighteen inches, and its form rather bulky in proportion to its length. The prevailing colour is yellowish, inclining to greenish, or olivaceous on the back, and white towards the belly: the markings variable in form, and differing much in colour. The whole of the back and sides are spotted with red, varying in different specimens from a deep or purplish crimson to a reddish orange; and even in some varieties almost to fulvous, and curiously marked with irregular lines, dots, and specklings of cerulean blue, especially

PLATE LXXXIII.

about the head: the fins are red, with a broad dusky border inclining more or less to purple, and elegantly marked with numerous roundish dots of white.—Bloch considers the dusky border of the fins (which in the specimen he delineates is black) as a sufficient indication of the species. In his fish the black border was distinct only in the ventral, anal, and caudal fins; to which may be added that the dorsal fin is commonly dusky or purplish as well as those before mentioned. The number of rays is variable; the dorsal fin in our Cornish specimen contained twenty spiny rays and ten soft ones: pectoral fin fourteen soft rays: ventral one spiny and five soft rays: anal three spinous and nine soft rays, and the tail fourteen rays, all which are soft.

Bloch describes this fish under the title of *Labrus vetula*, as a native of the coasts of Brittany, Normandy, and the North Sea, from the last of which he received it through the medium of his friend M. Spengler. Gmelin mentions it as an inhabitant of the British coasts, probably on the authority of Ray and Willughby. But the species is not confined to Europe, a specimen of it taken among a variety of other fishes by Capt. Cook in the South Seas is at this time in our possession.

The haunts of this fish are deep waters on the boldest rocky shores, where it subsists chiefly on crabs and testaceous animals, for the maceration of which the three tuberculated bony processes of its throat are admirably constructed. This fish takes bait eagerly, and is more commonly caught with the hook and line, than in the net, or by any other mode of capture.

It appears Mr. Pennant had not considered the varieties of this fish attentively, or we think the Ballan wrasse would not have been de-

PLATE LXXXIII.

scribed as a species distinct from *Labrus tinca*. The Ballan wrasse of that writer, is certainly the same as our fish, from which it differs only in being of a paler colour, and in having the body marked with yellowish, instead of orange, or red. Such pale coloured varieties occur pretty frequently, and are indeed more common than those of deeper, or more lively colours. Dr. Turton suspects the Ballan wrasse to be a variety only of the *Labrus tinca* of Linnæus, though he describes it as a species with this distinctive character: "body yellow spotted with orange: above the nose a deep sulcus: farther gill-cover with a deep depression radiated from the center." In those particulars, Dr. Turton was misled by the account given by Mr. Pennant, without reflecting that the same characters apply precisely to *Labrus tinca*. Mr. Pennant informs us, his Ballan "was the form of the common wrasse, only between the dorsal fin and tail was a considerable sinking: above the nose was a deep sulcus: on the farthest cover of the gills was a depression radiated from the center." It is already shewn that the spots on this fish vary considerably, to which may be added that the sinking between the dorsal fin and tail is conspicuous in all the varieties of *Labrus tinca*, and so also is the sulcus above the nose. With regard to the last characteristic the radiated depression on the gill-covers, one, two, or more such depressions are apparent on those parts when divested of the large scales that adhere to them; every scale, of which there are several on the gill-covers, leaving such a radiated depression on the thin membranaceous skin when taken off. —Those particulars inclined us to believe Mr. Pennant was in some measure misled by the imperfect state of the Scarborough specimen he examined*, and our opinion has been since confirmed by various cir-

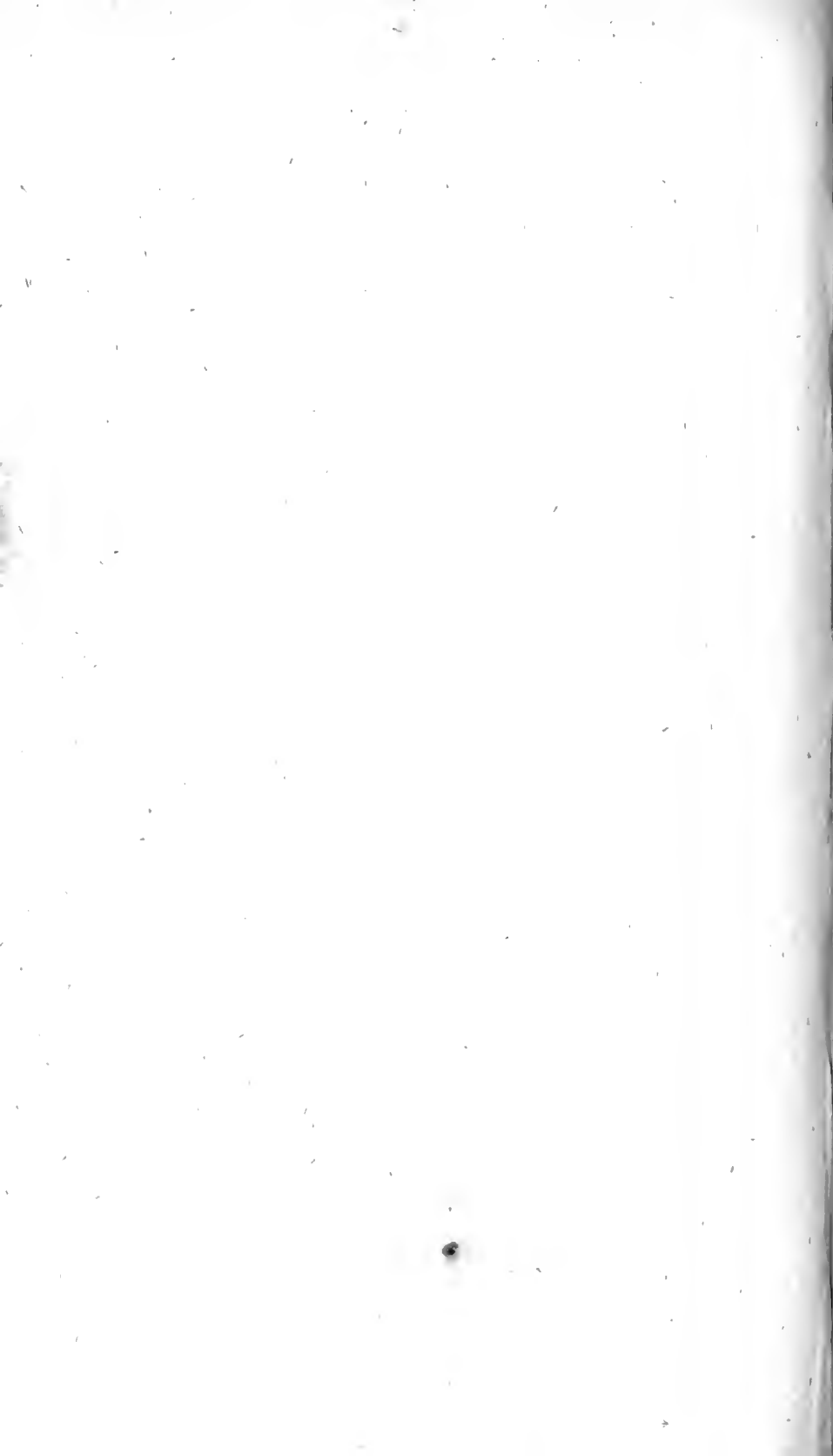
* The figure of the Ballan wrasse in plate 44 of the British Zoology, seems to have been taken from a fish in a mutilated condition: the scales especially, which in the

PLATE LXXXIII.

circumstances. Mr. Travis, the son of the medical gentleman who furnished Mr. Pennant with the specimen he describes, informs us, the Ballan wrasse is the fish commonly known by the name of the old wife among the fishermen on the Scarborough coasts where it appears in shoals in the summer, and that there is only one sort usually found in those parts; this we have examined, and have no hesitation in saying it is the Ballan wrasse of Pennant, and the *Labrus tinca* of every other Ichthyological writer.

perfect fish are semicircular appear of no determinate figure, scarcely two being formed alike.—The Ballan wrasse in *Shaw's Gen. Zool. v. 4. p. 2. 499.* is merely a repetition of the same figure, and of course exhibits the same defect. In the last mentioned work it is recorded as a species on the authority of Pennant.

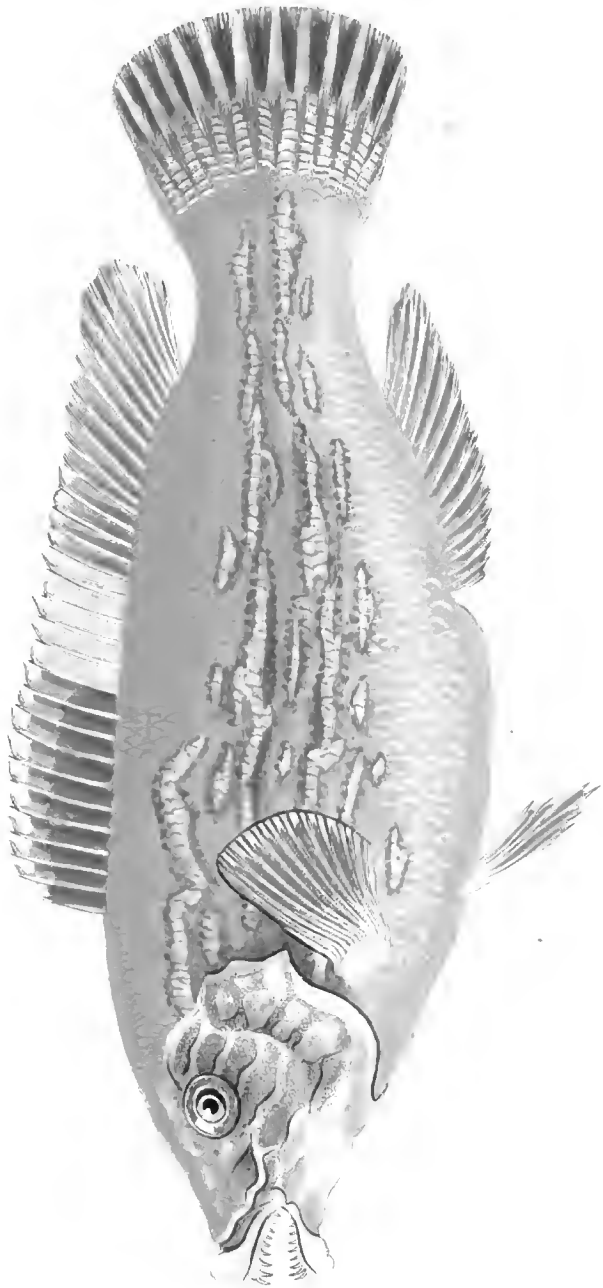
No small degree of ambiguity is attached likewise to the figure and history of the ancient wrasse in Pennant's *British Zoology*. His description accords with the common wrasse, but the figure given of the ancient wrasse is entirely at variance with it. This latter is referred to as doubtful, but we are surprized the author could have entertained the least conception of its being the same, if that figure be correct. In *Brit. Zool. v. 3. pl. 47. n. 115.* He describes the ancient wrasse as having sixteen spiny rays, and nine soft, while in his figure of that fish there are no less than twenty five spiny rays, and thirteen soft; the tail also contains sixteen rays instead of fourteen as described, and the anal fin thirteen soft rays besides the spiny ones in lieu of the nine enumerated. It is further observable that in this figure there is neither a sinking between the dorsal fin and tail, nor any sulcus on the nose. It might be therefore from a comparative view of this figure with the "Ballan wrasse," that Mr. Pennant was induced to consider the latter as a species distinct from the ancient wrasse, which last, it is probable, he copied from the work of another author.





STRIPED WRASSE.

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London: Published by E. Dutton & F. A. C. Huntington, Dredgers.

PLATE XXI.

LABRUS VARIEGATUS.

STRIPED WRASSE.

* *PISCES THORACICI.*

GENERIC CHARACTER.

Teeth acute: lips simple: branchiostegous membrane, with six rays, and scaly covers: dorsal fin, with a slender skin beyond the end of each ray; pectoral acuminate: lateral line straight.

SPECIFIC CHARACTER

AND

SYNONYMS.

Red, with four lateral parallel olive stripes, and an equal number of blue ones.

LABRUS VARIEGATUS: ruber, striis lateralibus parallelis olivaceis 4, totidemque cæruleis. *Gmel. Linn. Syst. Nat. T. 1. p. 3. p. 1294. sp. 58.*

STRIPED WRASSE. *Penn. Brit. Zool. T. 3. p. 207. n. 4.*

The Striped Wrasse does not appear to be described by any of the continental writers on Natural History, except Gmelin, in the last edition of the Linnæan Systema Naturæ, and even there it is

PLATE XXI.

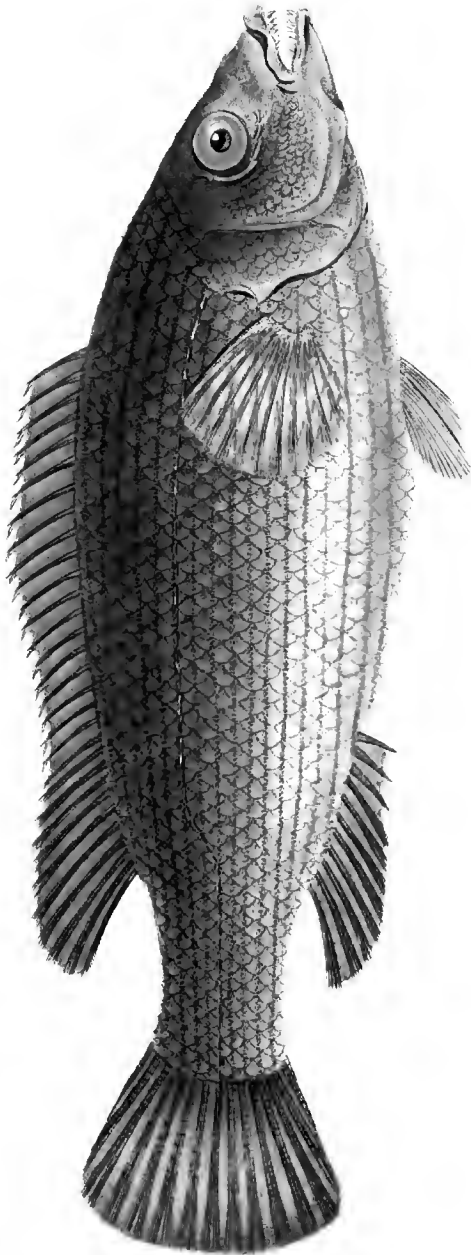
mentioned on the authority of the British Zoology only ; we therefore conclude it has not been hitherto discovered on any other than the British coasts, where it is perfectly local and very rare.

To Mr. Pennant we are indebted for the first account of this fish : he was so fortunate as to discover it some years ago on the coast of Anglesea, off the Skerry Islands. The length of his specimen was ten inches ; but we procured both sexes at the same place, and of a size rather larger, the female measuring fourteen inches in length, and the male twelve.



STREAKED WRASSE.

1/4 48



Zandem: Fish of the West Coast of America, p. 11, November 1885, C. H. Sargent, May 1885.

P L A T E LXXIV.

LABRUS LINEATUS.

STREAKED WRASSE.

* PISCES THORACICI.

GENERIC CHARACTER.

Teeth acute : lips simple : branchiostegous membrane with about six rays, and scaly covers : dorsal fin, with a slender skin beyond the end of each ray : pectoral fin acuminated : lateral line straight.

SPECIFIC CHARACTER.

Fins greenish, dorsal one ramentous : body green, with numerous yellowish longitudinal lines.

LABRUS LINEATUS: pinnis viridescentibus dorsali ramentacea, corpore viridi lineis longitudinalibus flavescensibus numerosis.

We have sought in vain among the best Ichthyological writers for a satisfactory description of our *Labrus lineatus*. It is a fish of beautiful figure, and eminently interesting, if considered only as a new British acquisition ; but when it is further ascertained to be in all reasonable probability a nondescript species, we are still more disposed

P L A T E LXXIV.

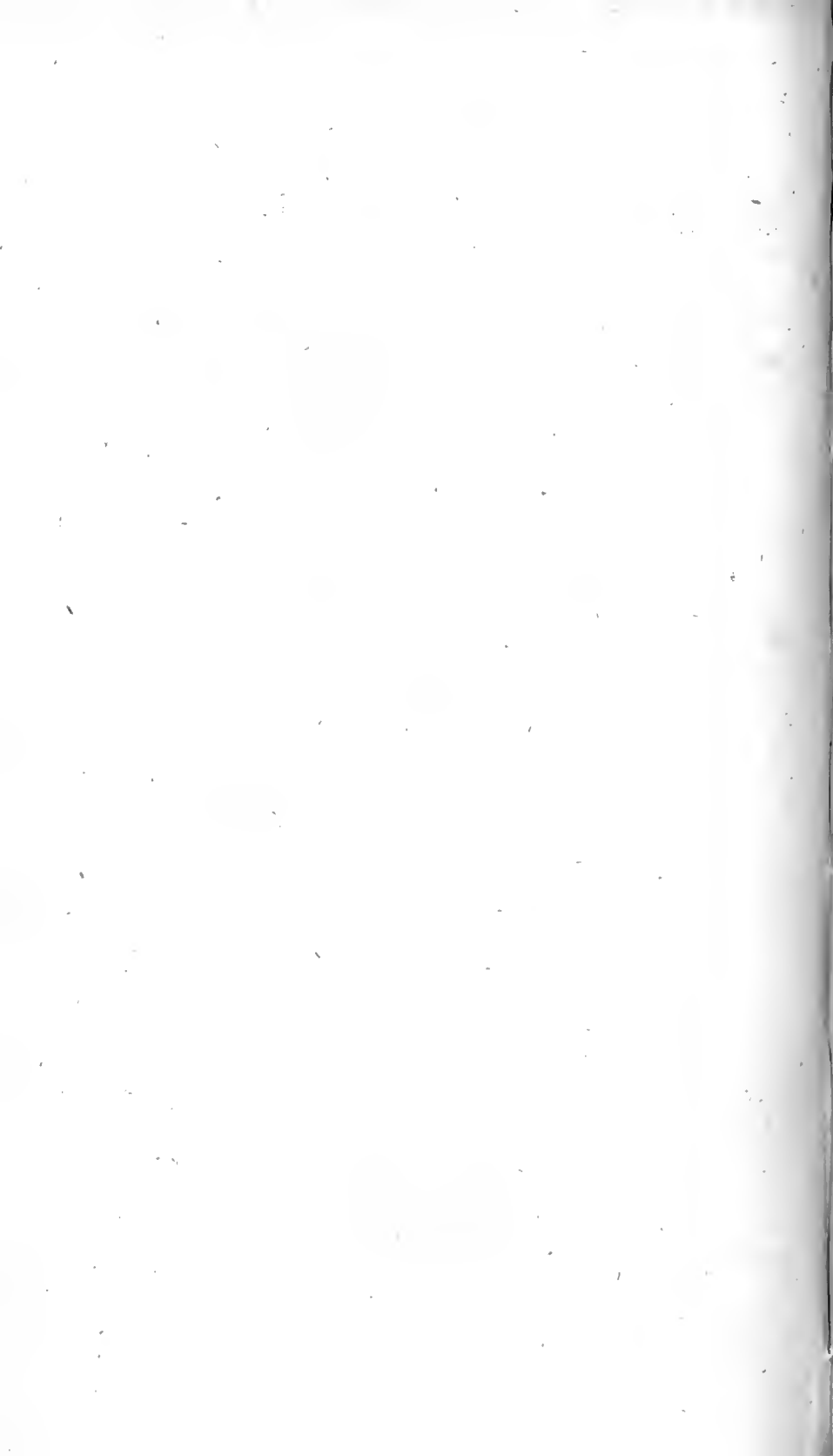
to congratulate the reader and ourselves upon its discovery. At first it was imagined this might be the species *Labrus viridis* of Artedi, but which we are now persuaded it is not. Neither is it of the same kind as the Japanese fish called by Bloch *Labrus viridis*. If it be mentioned by any author it must be Pennant. We are not indeed entirely free from suspicion but that it really may be the *pale green Wrasse* alluded to by that author in his concluding observations on the genus *Labrus*, in his *British Zoology*, although the description left of that fish is confessedly too ambiguous to authorise any opinion. The passage in which we conjecture that it may be mentioned is as follows: "Besides these species," says our author, "we recollect seeing taken at the Giant's Causeway in Ireland, a most beautiful kind of a vivid green spotted with scarlet, and others at Bandooran in the county of Sligo of a *pale green*. We were at that time inattentive to this branch of natural history, and can only say they were of a species we have never since seen." This is the only instance in which the *pale green Wrasse* is mentioned in his work, so that nothing certain can be inferred from it.

Our *Labrus lineatus* is an occasional visitor, as we are credibly informed, to the coast of Cornwall, where it is provincially known by the name of *green-fish*: it usually appears in the summer, and is esteemed the rarest species of its tribe by the fishermen in those parts. The specimen now in our possession, and from which the figure in the accompanying plate is delineated, was taken on this coast a few years ago by Captain Bray. This specimen is seven inches long, and having been carefully divested of the flesh while perfectly fresh, and the skin well prepared, the natural colours of the fish are admirably well retained. Besides this genuine British specimen, we possess another in excellent preservation from the Mediterranean sea,

PLATE LXXIV.

that differs only in being smaller, and having the head, back, and sides of the body of a brighter green.

The dorsal fin in the Cornish specimen contains twenty bony rays and ten soft ones: pectoral fourteen: ventral eight: anal eleven: the first three of which are spinous; and the tail fifteen.



INDENTED-STRIPED WRASSE.



PLATE XCVI.

LABRUS JULIS.

INDENTED-STRIPED WRASSE.

** PISCES THORACICI.

GENERIC CHARACTER.

Teeth acute: lips simple: branchiostegous membrane with about six rays, and scaly covers: dorsal fin with a slender skin beyond the end of each ray: pectoral fin acuminate: lateral line straight.

SPECIFIC CHARACTER

AND

SYNONYMS.

Above fuscous and green: beneath white, with a fulvous dentated stripe each side: two fore-teeth longest.

LABRUS JULIS: supra fuscus viridisque subtus albus vitta fulva utrinque dentata, dentibus duobus primoribus supra longioribus.

LABRUS JULIS: lateribus cærulescentibus, vitta longitudinali fulva utrinque dentata. *Linn. Mus. Ad Fr. 2. p. 75.*
—*Gmel. Linn. Syst. Nat. 1288. sp. 15.*

PLATE XCVI.

Labrus palmaris varius, dentibus duobus majoribus maxilla superioris.

Art. gen. 34. syn. 53.

LABRUS JULIS. *Bloch. t. 287. f. 1?*

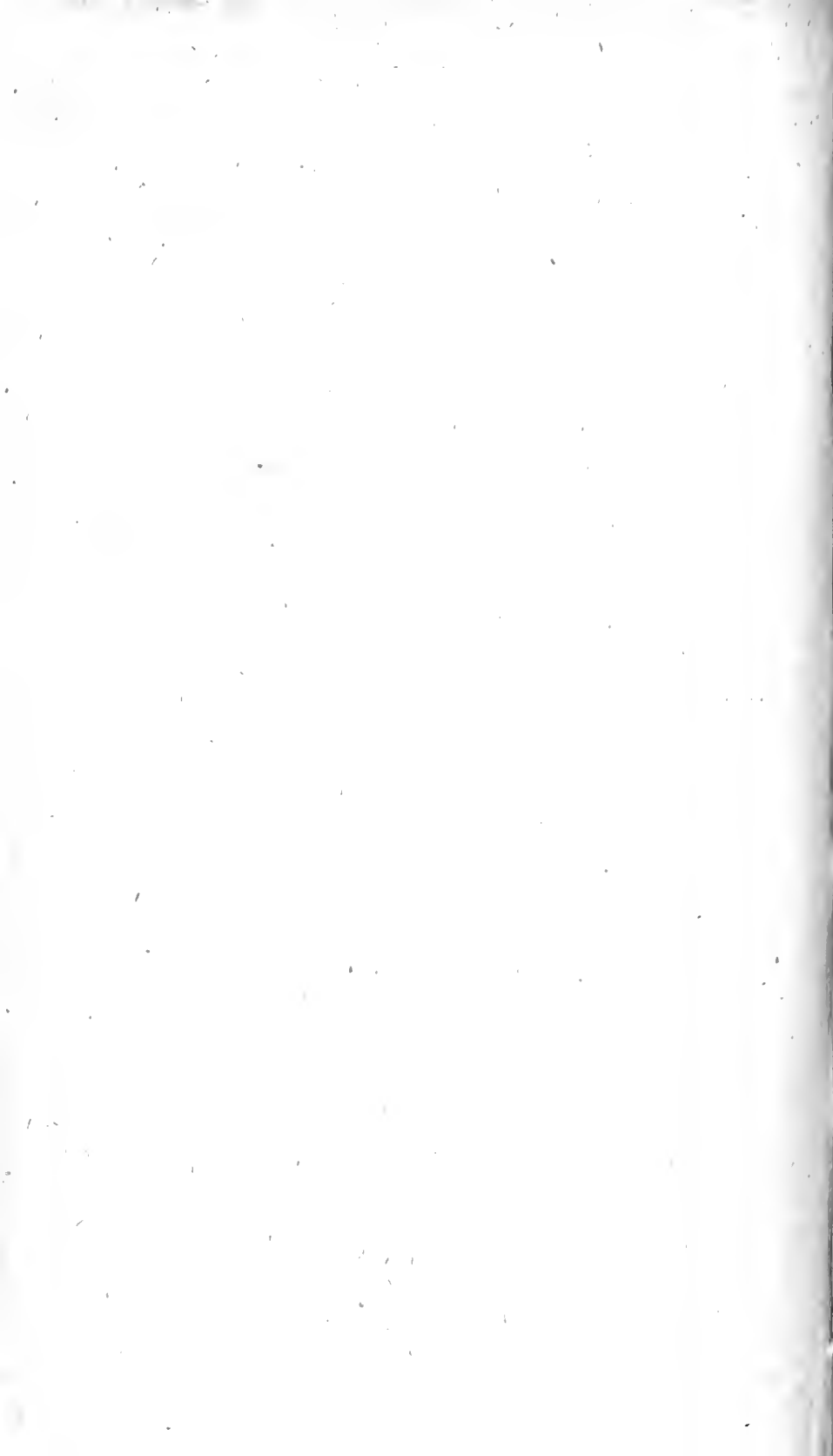
We are happy to introduce this elegant species of *Labrus* into the *British Fauna* upon indubitable authority. In the summer of the year 1802, we received a specimen of it in a recent state, among other fishes caught upon the coast of Cornwall, where they were procured from the fishermen by Miss Pocock, and obligingly communicated to us. As a native of the Mediterranean sea, this fish is mentioned by various writers, but as a British species it is perfectly new, not having been recorded as such by either Willughby, Ray, Borlase, Pennant, or any other writer on the Zoology of this country. The Cornish fishermen, we understand, call those fishes young Sturgeons.

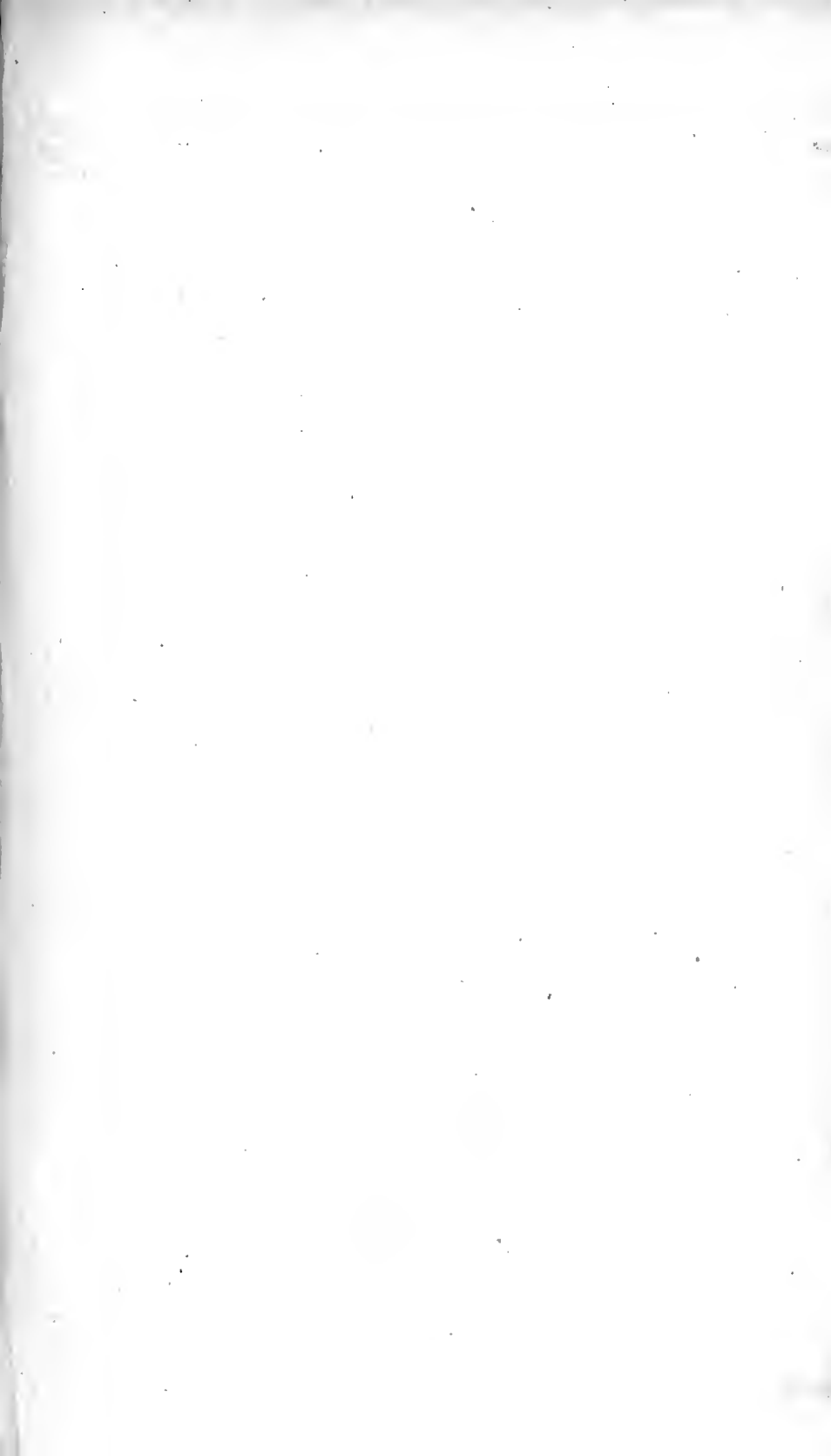
The specimen sent to us rather exceeded the length of seven inches; it was of a slender, or elongated form, and remarkable for the elegant distribution of its colours, which were changeable in various directions of light; but the most striking peculiarity was the broad dentated stripe, extending along each side, from the head nearly to the tail, the colour of which was silvery and fulvous, and with the rest of the colours, produced an effect equally singular and beautiful. The dorsal ray contained nine spiny rays, and thirteen soft ones: pectoral fin twelve rays: ventral one spiny ray, and five soft ones; anal two spiny and thirteen soft ones; and the tail thirteen rays.

This fish has arrested the attention of many ichthyologists among the ancients as well as moderns, the former of whom, pronounced it

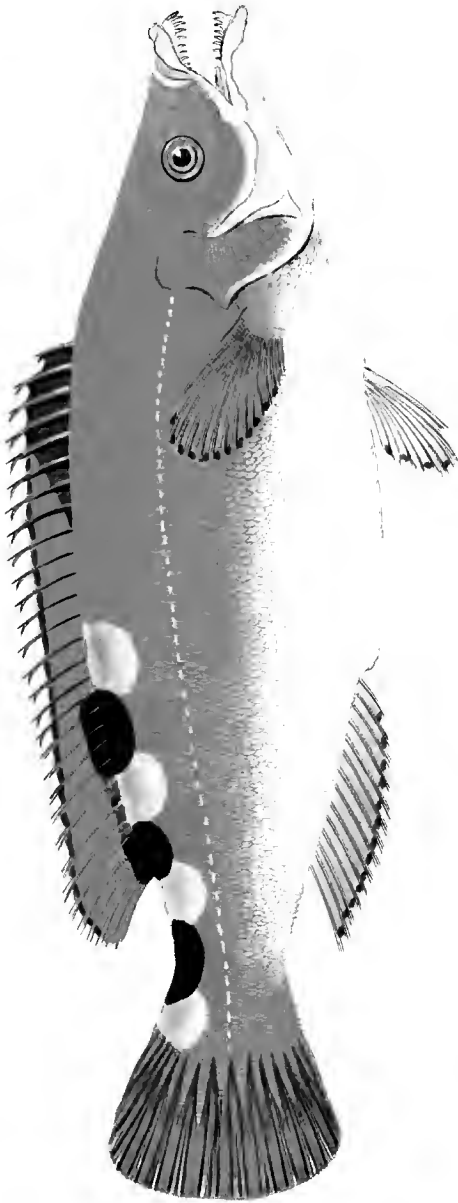
PLATE XCVI.

the most beautiful of European fishes. It may be collected from the works of Elian, Aristotle, Salvian, Aldrovandus, and others, that this fish is common at certain seasons in the Mediterranean. Elian speaks of it, however, as a poisonish fish, and of such a venemous nature, that it would be unsafe to eat it, or even the flesh of any other fish that had been touched by it. Galen mentions it, on the contrary, as wholesome food. The male of this species is distinguished according to some writers, by having the back of a black colour instead of green, as in the female; but it appears in this, and various other respects, to be an extremely variable species. Neither are its habits and manners correctly known; it is generally asserted, that it swims in small shoals; Aristotle speaks to this effect, but this is contradicted by Salvian and others, who describe it as a more solitary fish. It must be, indeed, confessed, that the history of the *Labrus Julis* altogether, as related by the different writers above-mentioned, is obscure and contradictory, and that little reliance can be placed in their observations till we become better convinced of their accuracy, through the medium of modern ichthyologists.





TRIMACULATED WRASSE.



London, Publ. for the Brit. Mus. Nat. Hist., by E. Dutton & Co. Ltd., 1914.

THE

NATURAL HISTORY

OF

BRITISH FISHES.

 PLATE XLIX.

LABRUS TRIMACULATUS.

*TRIMACULATED WRASSE.**PISCES THORACICI.*

GENERIC CHARACTER.

Teeth acute: lips simple: branchiostegous membrane with six rays, and scaly covers: dorsal fin, with a slender skin beyond the end of each ray; pectoral fin acuminated: lateral line straight.

SPECIFIC CHARACTER

AND

SYNONYMS.

Red: on each side at the base of the dorsal fin two dark spots, and a third between the dorsal fin and tail.

PLATE XLIX.

LABRUS TRIMACULATUS: ruber, maculis 2 utrinque ad basin pinnæ dorsalis, tertiaeque inter hanc et caudam. *Gmel. Syst. Nat.* 1294. *Sp.* 57.

Labrus Carneus, Le Paon Rouge. *Bloch t.* 289.

Trimaculated Wrasse. *Penn. Brit. Zool. V.* 3. *p.* 207. *n.* 4.

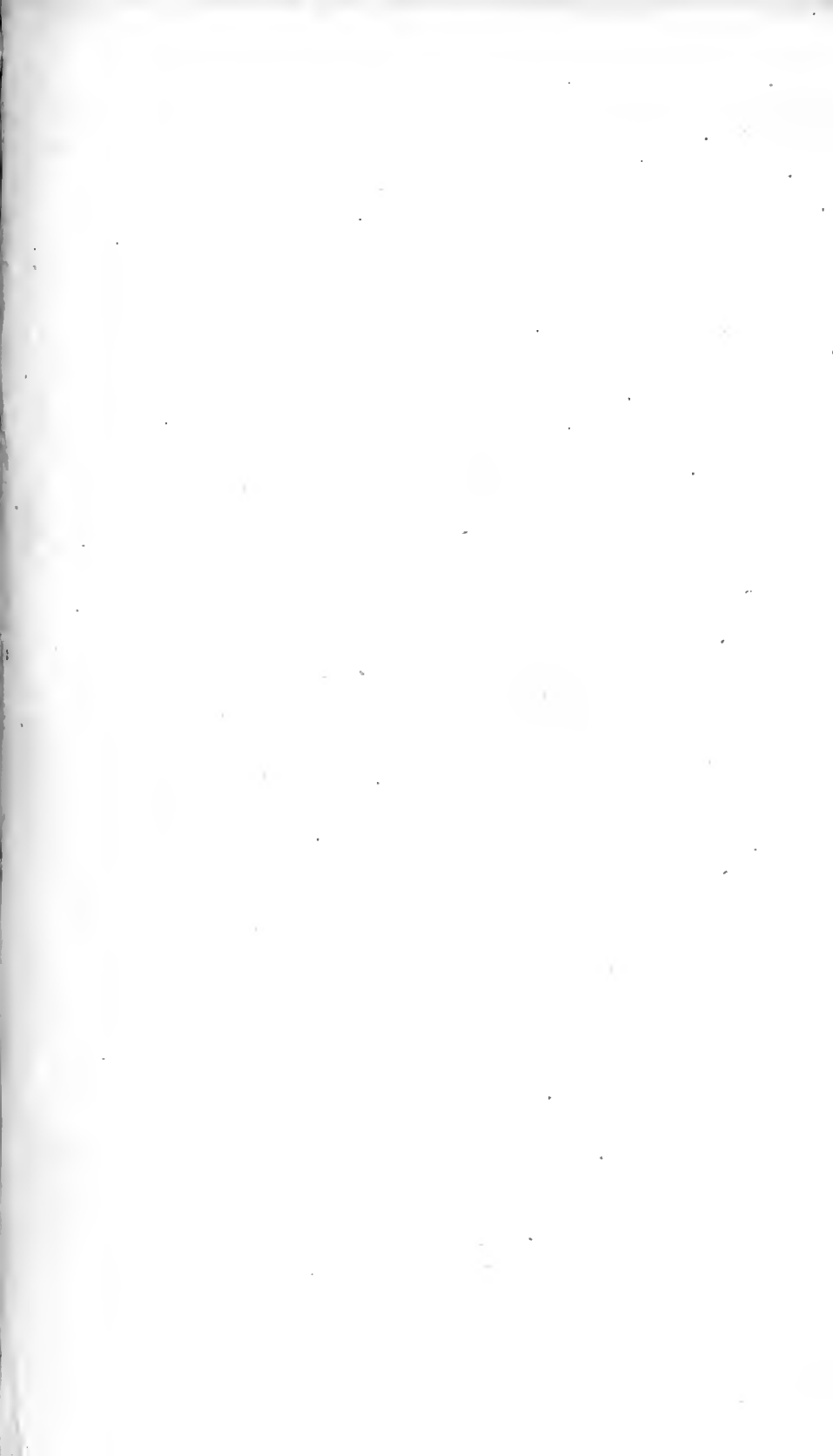
In the month of June, 1801, Mrs. Wyatt, a lady resident in Devonshire, most obligingly favoured us with a fine specimen of this interesting Fish, that had been caught on the south coast of that county, near Exmouth.

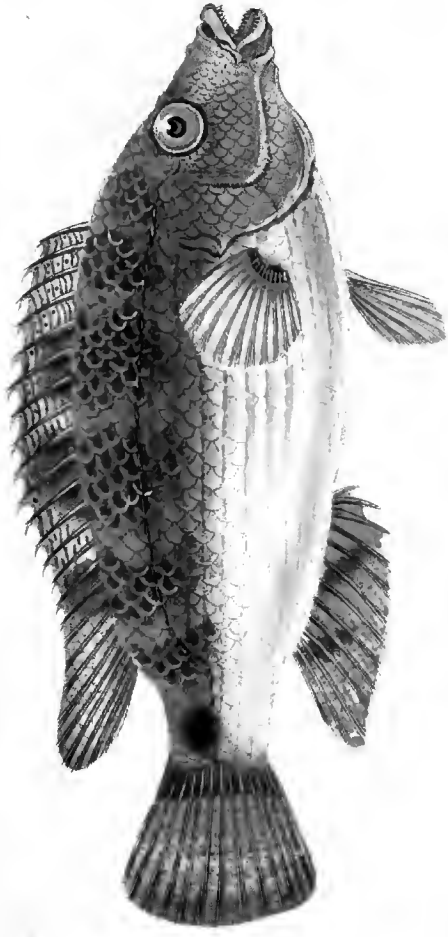
The length of the specimen is almost twelve inches: its form is graceful, and the colours, when recent, were peculiarly elegant and lovely. A fine orange varying to red upon the back, and becoming paler and whiter towards the belly, is the chief and most pervading colour. The dorsal fin and tail were of a rich orange: the former was also strongly marked with dark purplish black, and prettily edged with blue; and the rest of the fins were of a paler hue. The three dark spots at the posterior extremity of the back, which principally constitutes the specific distinction of this kind of Wrasse, were of a rich blackish purple. There were also four other spots of a delicate rose colour, situated contiguous to these, which do not appear to have been mentioned by any writer. Two of these spots are disposed in the space between the three darker ones before spoken of, and the third and fourth are placed one at each extremity of the outermost ones, so as to form together a series of seven spots, which are alternately of a pale rose colour, or a very deep purple.

PLATE XLIX.

The Fish above described has thirty rays in the dorsal fin: in the pectoral fin sixteen, ventral fin six, anal fin fourteen, and tail fourteen.







London, 1844, as the Gift of the Trustees of the British Museum, April 17, 1845.

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P L A T E LXXII.

LABRUS CORNUBIUS.

(Cornubiensis)

GOLDFINNY.

** PISCES THORACICI.

GENERIC CHARACTER.

Teeth acute: lips simple: branchiostegous membrane with six rays, and scaly covers: dorsal fin, with a slender skin beyond the end of each ray; pectoral fin acuminate: lateral line straight.

SPECIFIC CHARACTER

AND

SYNONYMS.

Body variegated with green: near the tail a large fuscous spot: anal fin yellow obliquely banded with fuscous.

LABRUS CORNUBIUS: corpore viridi-variegato, macula prope caudam magna fusca, pinna anali flava fusco oblique fasciata.

LABRUS CORNUBIUS: macula prope caudam magna, pinnaque dorsalis radiis primis nigris, cauda æquali. *Gmel. Syst. Nat. T. I. p. 3. p. 1297. Sp. 67.*

GOLDFINNY: *Raj. pisc. p. 163. f. 3.*

GOLDFINNY. *Penn. Brit. Zool. p. 251. Sp. 121.*

PLATE LXXII.

Our enquiries after this curious and most interesting British Fish, has ultimately proved successful, for we have lately obtained a specimen of it in fine condition, that was caught off the Lizard point on the coast of Cornwall. The acquisition of this rare article is an object of no small importance, the species itself being not only extremely uncommon, but the very existence of such a species having rested for almost a century, from the time of Ray to the present crisis, upon the sole authority of Mr. Jago, the person by whom it is recorded to have been discovered. He found it on the coast of Cornwall. A drawing of this Fish, made by Mr. Jago, was communicated by him to Mr. Ray, who inserted it, upon the credit of Mr. Jago, in his Synopsis of Fishes, and it does not seem to have been observed by any writer since that period till the present.

Mr. Pennant speaks of this Fish in his British Zoology, confessing however, at the same time, that he never had an opportunity of examining it*, and is therefore obliged to have recourse to the description given of it by Mr. Jago, who thus describes it. "In the whole form of the body, lips, teeth, and fins, it resembles the Wrasse: it is said never to exceed a palm in length: near the tail is a remarkable black spot: the first rays of the dorsal fin are tinged with black."—"The *Melamurus of Rondletius* takes its name from the black spot near the tail; but in many instances it differs widely from

* This expression is explicit, and in the words of Mr. Pennant; but in another part of the same description he tells us, he suspects this species was sent to him from Cornwall. See Vol. 3. p. 252. Brit. Zool.

PLATE LXXII.

this species ; the tail of the first is forked, that of the Goldfinny is even at the end.”

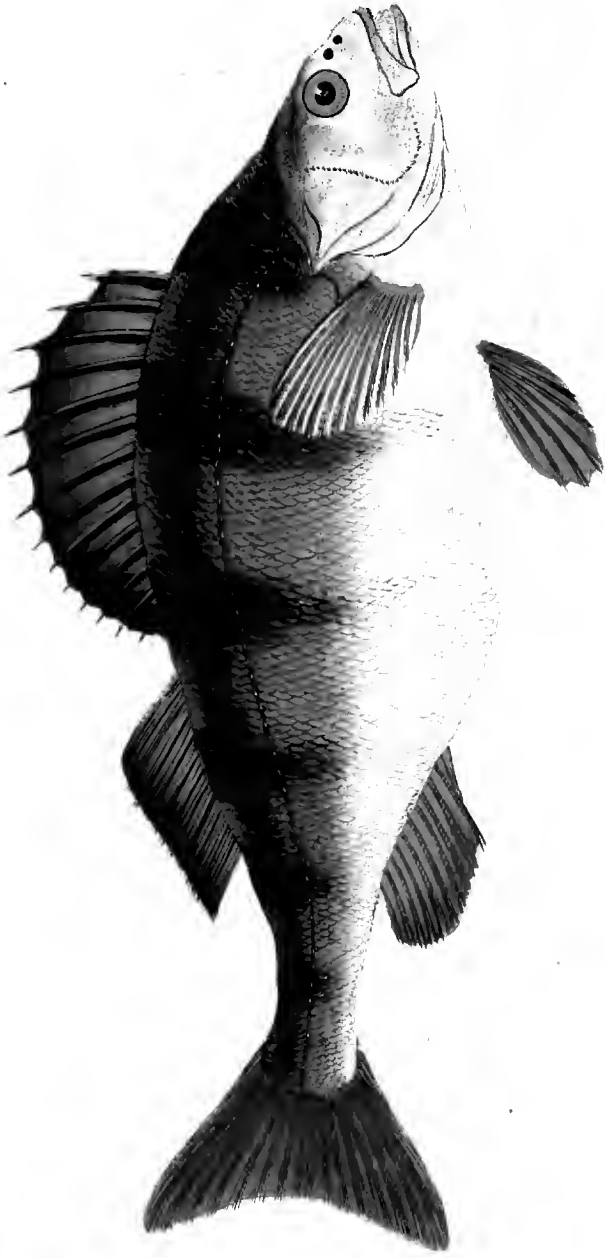
From the above account, and from a reference to their figures, it will be apparent that the Fish we have met with is the same as the Goldfinny, of Jago and Ray, and consequently of Pennant. This point ascertained, we may conceive an accurate drawing of the Fish, likely to prove acceptable to the Ichthyologist, since it will be found to exhibit various characteristic features of this beautiful creature that are not been mentioned by Mr. Jago. None of the continental naturalists seem to be acquainted with it, so far as we have been able to ascertain. Gmelin it is evident relies upon Ray and Pennant, but had Gmelin seen the Fish, or a figure of it, that could be depended on for its fidelity, it is scarcely probable he would have adopted the vague specific character that appears for this species in the last edition of the *Systema Naturæ*. It will be right to observe, that from the name of Goldfinny which it bears, some writers have been led to suppose that all the fins are yellow, which is not the case : it is only the anal fin which appears conspicuously of that colour ; the pectoral and ventral fins are of a much paler hue, and the rest are green, variegated with darker lines of the same, and spots of ferruginous and rufous brown. The jaws are richly tinged with golden yellow, and the sides are yellowish, and silvery.

Our figure represents this Fish in its natural size. In the dorsal fin there are twenty-five rays, the first sixteen of which are soft : pectoral twelve rays, ventral one spiny ray and six soft ones : anal, three spiny rays and ten soft ; and in the tail fourteen rays.

The first part of the report
 concerns the general situation
 of the country and the
 progress of the work
 during the year. It is
 found that the work has
 been carried out in a
 satisfactory manner and
 that the results are
 encouraging. The second
 part of the report
 deals with the financial
 position of the institution
 and the expenditure for
 the year. It is shown
 that the financial position
 is sound and that the
 expenditure has been
 well controlled. The
 third part of the report
 contains a list of the
 names of the members
 of the institution and
 their addresses. It is
 hoped that this list
 will be of use to the
 members and to the
 public.



PERCH.



London. Pub. at the Act. directed by R. Johnson. S.P.C.K. & Co. London. March 1. 1864.

PLATE LII.

PERCA FLUVIATILIS.

PERCH.

* PISCES THORACICI.

GENERIC CHARACTER.

Jaws unequal. Teeth acute, and incurvated. Gill covers of three plates, scaly; the upper plate serrated. Seven rays in the gill membrane. Lateral line arched with the back, scales hard and rough. Fins spinous.

SPECIFIC CHARACTER

AND

SYNONYMS.

Olive, with black bands: dorsal fins olivaceous, the rest sanguineous.

PERCA FLUVIATILIS: olivacea nigro-fasciata, pinnæ dorsali olivacea, caeteris sanguineis.

PERCA FLUVIATILIS: pinnarum dorsalium secunda radiis 16. *Linn. Fn. Succ.* 332.—*Gmel. Syst. Nat.* p. 1306. 168. sp. 1.

Perca pinna ani radiis 11. *Bloch Fisch. Deutschl.* 2. p. 66. n. 2. t. 52.

Borstling, Barschling. *Marsigl. Danub.* 4. p. 65. t. 23. f. 2.

PERCH. *Ray, pisc.* p. 97.

Will. ichth. p. 291.

Brit. Zool. 3. p. 211.

PLATE LII.

The Linnæan specific character of the *Perca fluviatilis* being taken exclusively from the number of rays in the second dorsal fin, is liable to objection, because the amount of these rays is not always precisely sixteen, as that author states them. Bloch mentions this, and observes, for instance, that in the specimen he describes there were only fourteen rays in the second dorsal fin. The specific character of this fish he considers, perhaps with an equal degree of impropriety, may be defined from the number of rays in the anal fin, which he says amount to eleven. These being as liable to vary in point of number, as the rays in the dorsal fin, a much more constant criterion may be observed by attending to the dark transverse bands, which descend from the back across the sides, and point towards the abdomen; the Perch, though liable to variations in colour like all other fishes, being never found entirely destitute of these bands. Beside these, it may not be amiss to speak of the pectoral, ventral, and anal fin, together with the tail, which are always observed to be of a bright red colour.

The Perch remains in those rivers, lakes, and other clear waters, which it inhabits, all the year: affording delicious food, and excellent sport to those fond of the amusement of angling. The manners of this Fish are whimsically described by old Walton. In the *Complete Angler* he tells us, "The Perch is a very good, and a very bold biting fish; he is one of the fishes of prey, that, like the pike and trout, carries his teeth in his mouth, which is very large; and he dare to kill and devour several other kinds of fish: he has a hooked or hog back, which is armed with sharp and stiff bristles, and all his skin armed or covered over with thick, dry, hard scales, and *hath, which few other fishes have, two fins on his back*; he is so bold, that he will invade one of his own kind, which the pike will not do so willingly, and you may therefore easily believe him to be a bold biter." From this writer we

PLATE LII.

learn that the Perch is very abstemious in winter, and will not readily take the bait except in the middle of the day when the weather proves warm and fine. He says they love to accompany one another, and go together in troops, and "that if there be twenty or forty in a hole, they may be all caught at one standing, they being like the wicked of the world, not afraid though their fellows and companions perish in their sight."

"The baits for this bold fish (continues Walton) are not many; I mean he will bite as well at some or at any of these three, as at any, or all others whatsoever: a worm, a minow, or a little frog, of which you may find many in hay-time; and of worms, the dunghill-worm, called a brandling, I take to be best, being well scoured in moss or fennel; or he will bite at a worm that lies under cow-dung, with a blueish head. And if you rove for a Perch with a minow, then it is best to be alive, you sticking your hook through his back-fin; or a minow with the hook in his upper lip, and letting him swim up and down about mid-water, or a little lower, and you still keeping him to about that depth by a cork, which ought not to be a very little one: and the like way you are to fish for the Perch with a small frog, your hook being fastened through the skin of his leg, towards the upper part of it; and lastly, I will give you but this advice, that you give the Perch time enough when he bites, for there was scarce ever any angler that has given him too much."

The months of May and June are the spawning season for the Perch, when a single female of this prolific race, of a moderate size, have been known to lay between two and three hundred thousand eggs; these are all retained together by means of a glutinous sort of

PLATE LII.

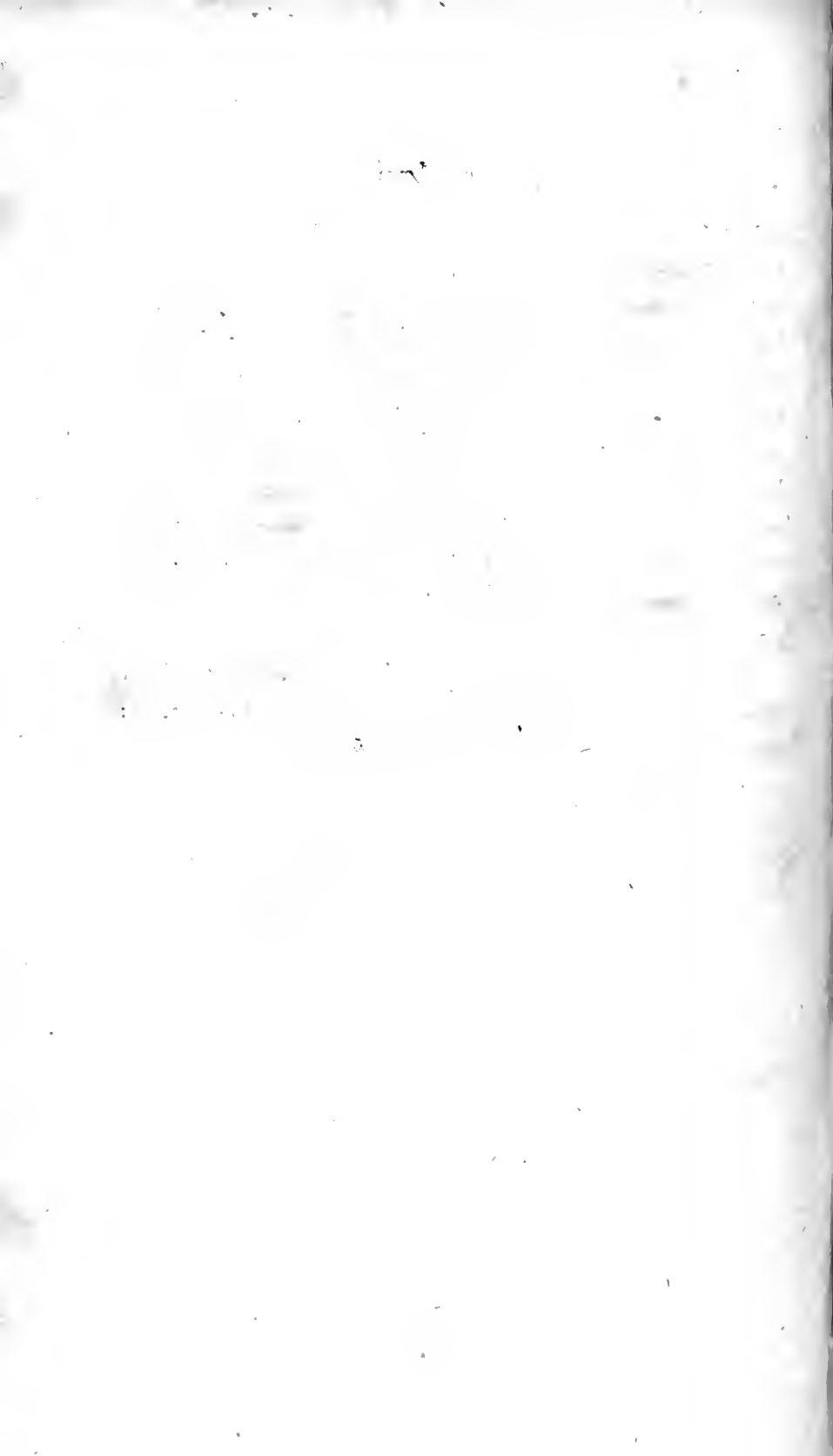
jelly, which renders them the favourite food of the smaller kinds of fishes. The Perch is so tenacious of life, that it will live many hours, or even two, three, or four days, after being taken out of the water, and may be easily transported alive, with proper care, to any distance not exceeding sixty or eighty miles. Perch of six or seven inches in length are esteemed of good size for the table, but in many waters where they are suffered to remain unmolested they become much larger. The biggest we have seen was one taken in the Great Pool of Bala, or Pimblemere, near North Wales, that weighed almost five pounds. We have also caught them in the Dee, near its junction with that Pool, of a large size, though much inferior in that respect to the fish abovementioned. Mr. Pennant speaks of one that was taken in the Serpentine River, Hyde Park, that weighed nine pounds, but this writer intimates, that Perch of such magnitude are very uncommon. The Author of the Angler's Sure Guide says, he once saw the figure of a Perch drawn with a pencil on the door of a house near Oxford, that was twenty-nine inches long, and was informed it was the true dimension of a Perch then living*. In the lakes among the mountains of Lapland and Siberia, the Perch is often found of a monstrous size. Bloch assures us, that in one of the churches in Lapland, the dried head of a Perch caught in a contiguous river is preserved as a curiosity, and such it may very truly be considered, that part alone measuring almost twelve inches in length. The enormous fish to which this head belonged when living, may be estimated in length at between four and five feet.

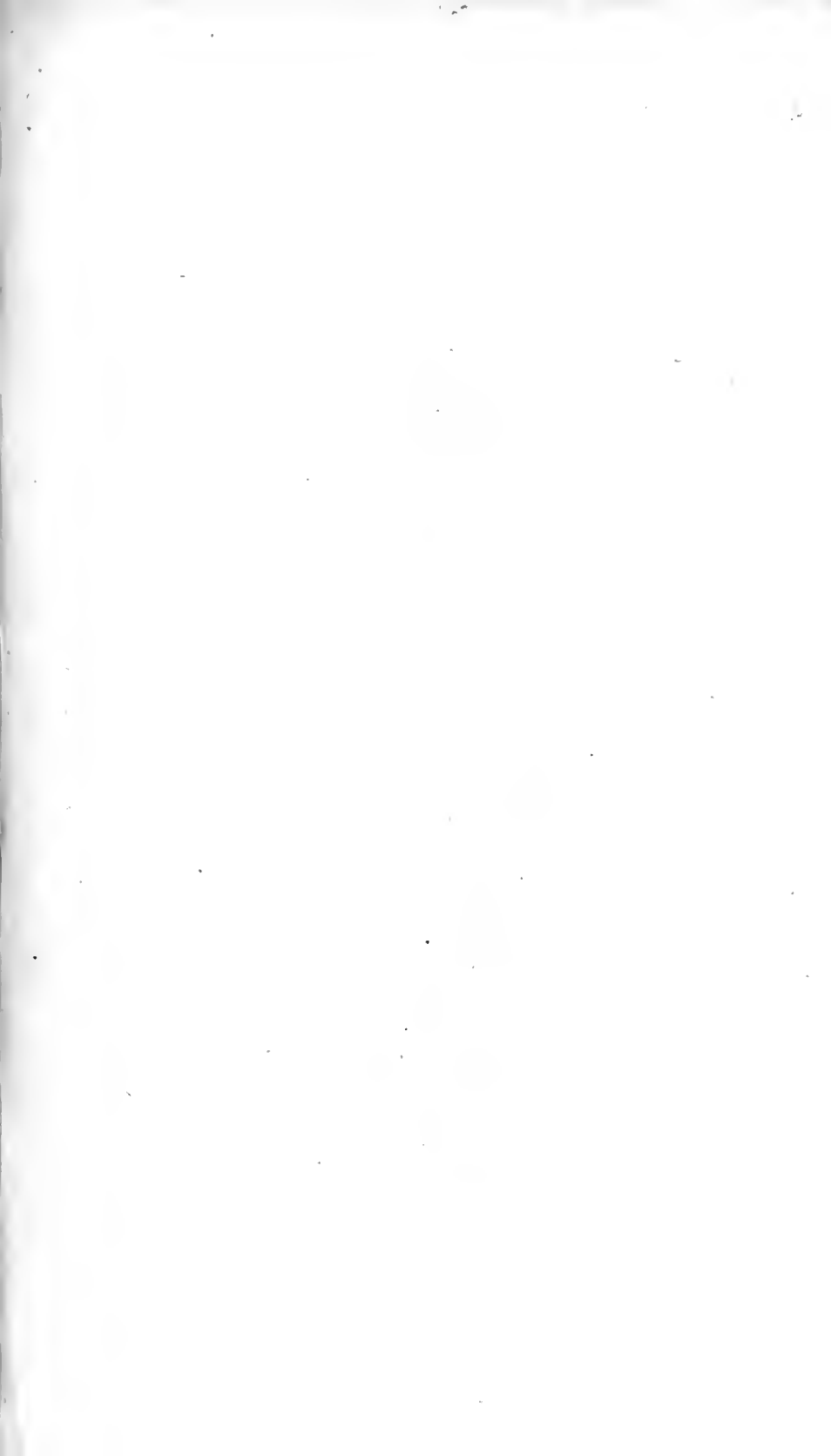
An accidental variety of the species called the crooked, or hump-backed Perch, having the back more elevated near the first dorsal fin,

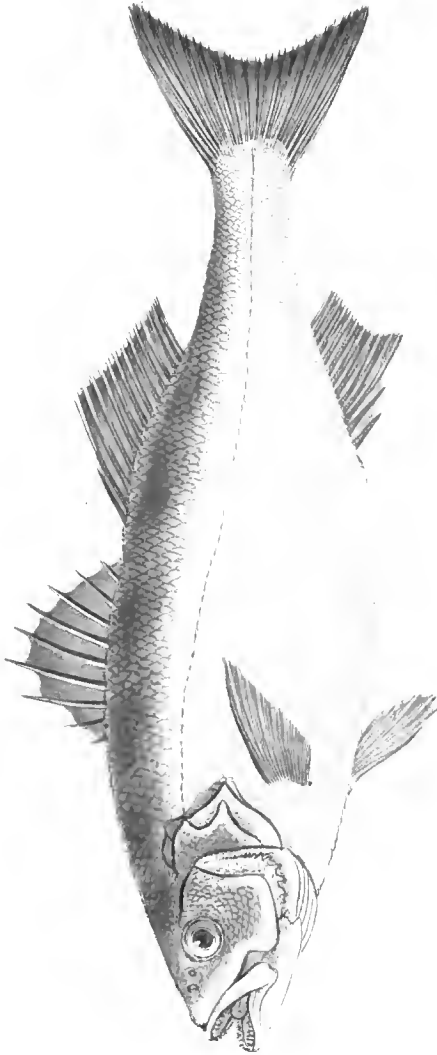
PLATE LII.

and the lower part of the back bone near the tail very strangely distorted, is mentioned by Linnæus as being sometimes observed in the rivers of Sweden. Pennant records this variety also, stating that it is found in a lake called Llyn Raithlyn in Merionethshire. This variety, it must be acknowledged candidly, we have never had the opportunity of inspecting; but since Dr. Bloch has intimated his suspicions that both Linnæus and Pennant are mistaken, we must add, that there can be little doubt of the existence of a variety so distorted, however its deformity may be occasioned. We are credibly informed by some experienced old fishermen in Merionethshire, that it is still found in more than one of the lakes near the Arrenig mountain.

In the first dorsal fin of our fish there are fifteen spiny rays; and fifteen soft rays in the second dorsal fin: pectoral fin fourteen: ventral eight: anal twelve: and caudal twenty-one.







Zanden. Zuid? en de die afkomst by E. J. van der Meer. Dierk. 1. 1863.

PLATE XLIII.

PERCA LABRAX.

. BASSE.

* PISCES THORACICI.

GENERIC CHARACTER.

Jaws unequal. Teeth acute, and incurvated. Gill covers of three plates, scaly; the upper plate serrated. Seven rays in the gill-membrane. Lateral line arched with the back. Scales hard and rough. Fins spinous.

SPECIFIC CHARACTER

AND

SYNONYMS.

Second dorsal fin with fourteen rays: back dusky, blueish, belly silvery.

PERCA labrax: pinna dorsalis radiis quatuordecim dorso subfusco cærulescenti abdomine argenteo.

PERCA LABRAX: pinnæ dorsalis secundæ radiis 14. *Linn. Syst. Nat. Mus. Ad. Fr. 2. p. 82.*

PERCA PUNCTATA. *Gmel. Syst. Nat. 1311. sp. 4.*

PLATE XLIII.

PERCA radiis pinnæ dorsalis secundæ 13, ani 14. *Art. Gen. syn.* 69.
SCIÆNA LABRAX, Le Loup. *Bloch.*

During the summer months, this delicious fish is caught on several of the sea coasts, in the southern parts of England. At different times we have received this kind both from Devonshire and Cornwall, and also from the coast of Wales. Near the entrance of the Loughor river, that bends its course from the Bristol channel, along the westward of Glamorganshire, we have seen them in some abundance.

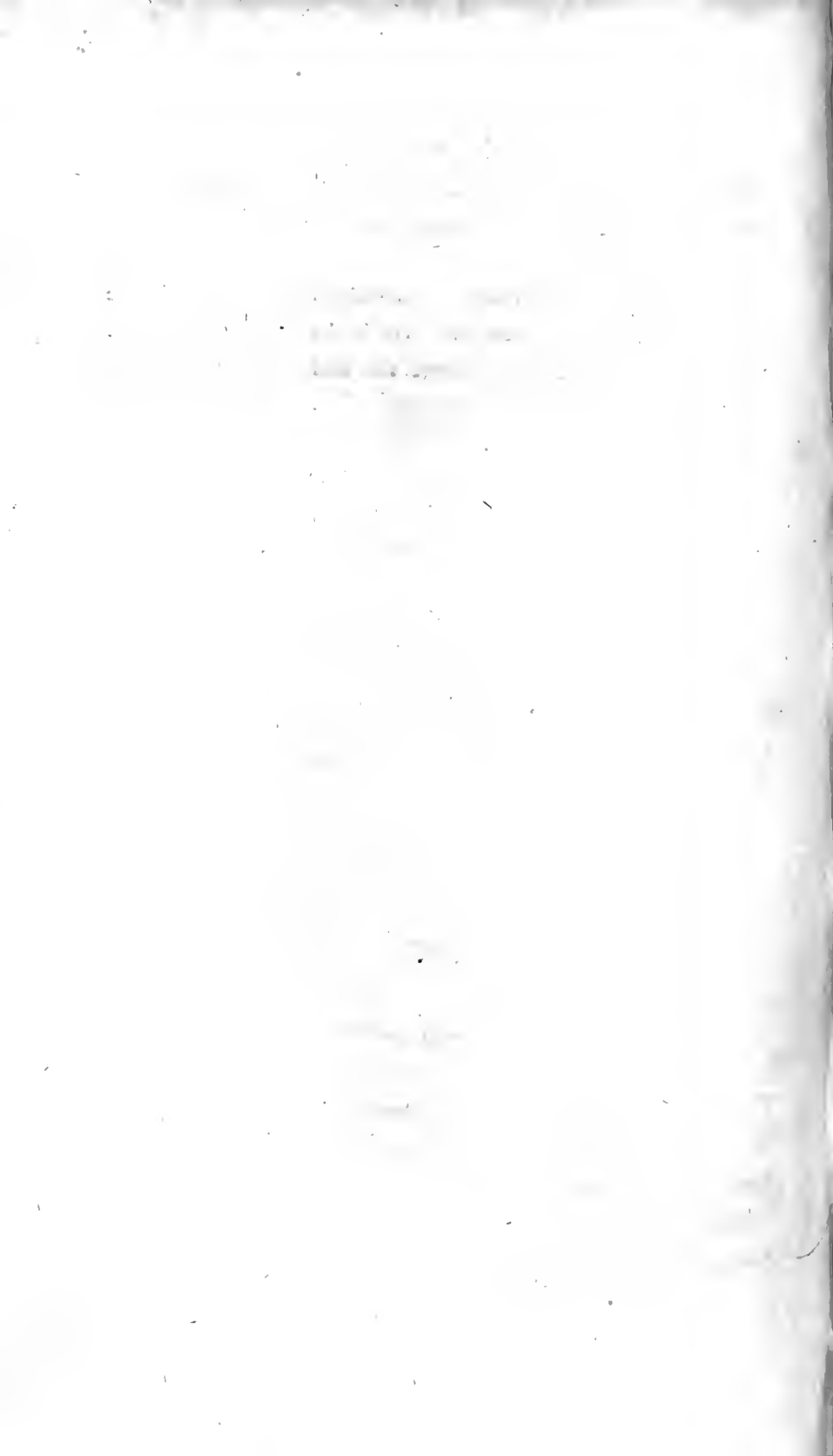
The Basse, we believe in point of size, very rarely exceeds the length of eighteen or twenty inches. The largest among those which have occurred to our notice, at least did not exceed those dimensions, and generally speaking, they were seldom above a foot or fifteen inches in length. That the Basse does sometimes attain to a vast size need not be disputed: Writers assure us, that it is known to grow to the length of several feet. Willughby speaks of its weighing fifteen pounds, and Duhamel tells us, that it is taken occasionally of double that weight, near the Isle of Noirmoutier, upon the coast of Brittany.

This fish is a native of the temperate parts of Europe. In the Mediterranean sea, the Basse is caught on the coast of Egypt, and the Grecian islands, and it is also met with as far north as Greenland. On the coast of Holland, there are stated fisheries for this species, which they call *See-Snoeck*. Ancient writers distinguish it by the name of Labrax and Lupus, or the Wolf, in allusion to its voracious appetites, its strength, activity, and general man-

PLATE XLIII.

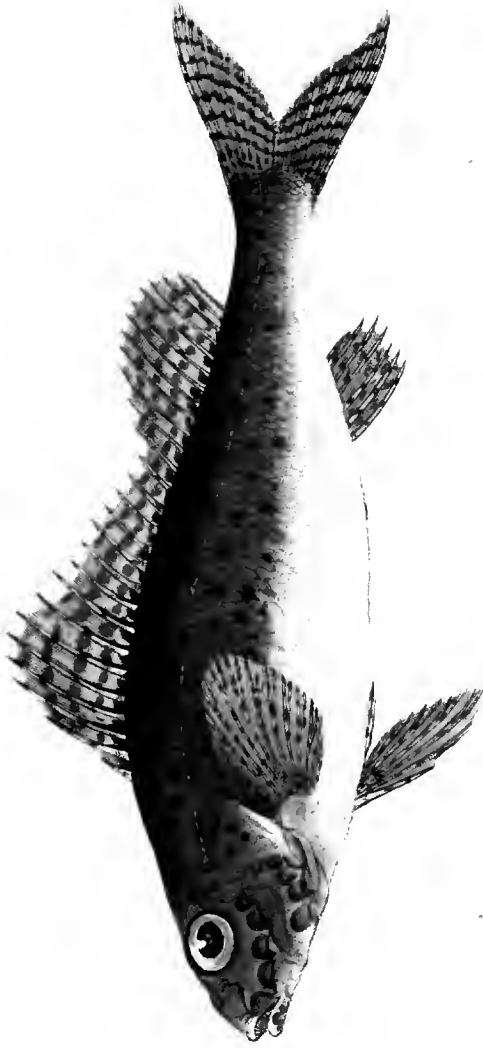
ners. Worms of the testaceous tribes, and the smaller kinds of fish, are the principal food of this species.

Our specimen of the Basse has nine sharp spinous rays in the first dorsal fin: and fourteen soft rays in the second one: in the pectoral fin are eighteen rays: ventral six: anal fourteen: and caudal twenty-one.





RUFFE.



London. This is the Act. Made by J. Donovan & F. & C. Barington. Sept. 1803.

PLATE XXXIX.

PERCA CERNUA.

RUFFE.

THORACICI.

GENERIC CHARACTER.

Jaws unequal. Teeth acute, and incurvated. Gill covers of three plates, scaly; the upper plate serrated. Seven rays in the gill membrane. Lateral line arched with the back, scales hard and rough. Fins spinous.

SPECIFIC CHARACTER.

Dorsal fin with twenty-seven rays; the first fifteen spinous.

PERCA CERNUA: pinnæ dorsalis radiis 27, spinis 15. *Linn. Fn. Succ. 335. Gmel. Linn. Syst. Nat. 1320. sp. 30.*

RUFFE. *Penn. Brit. Zool. T. 3. n. 174.*

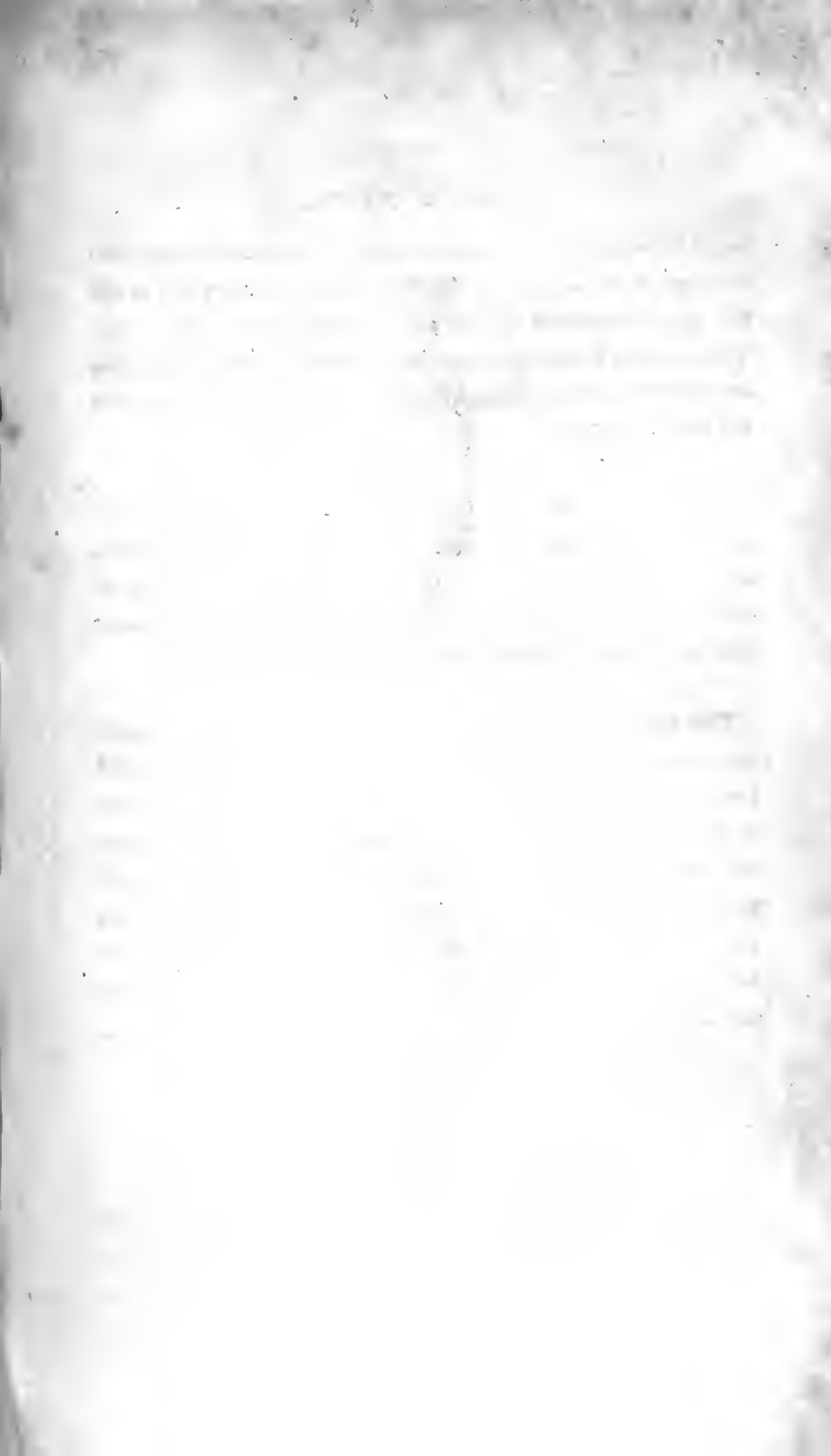
This kind of Perch proves to be a general inhabitant of all the countries in the north of Europe: its haunts are chiefly clear streams, lakes, and rivers, where it delights in the deepest waters; and preferring cold to warm situations, appears to be most abundant in those of mountainous places. Mr. Pennant observes, that it is

PLATE XXXIX.

found in several of the English streams, which may be the fact. So far as we are acquainted with its haunts, and history as a British fish, there is reason to conclude, it is at least local. In the river Virny, which flows through the eastern confines of Merionethshire, and some contiguous streams in Shropshire, we have perceived it to be not very uncommon.

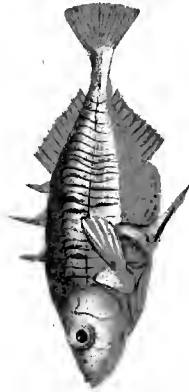
The flesh of this fish, like that of the Common Perch is excellent, particularly in the spring or autumn. The Ruffe is a small creature, seldom attaining above five or six inches in length: the form is slender; and more graceful than the common Perch, at the same time, that in point of beauty, the Ruffe is far beneath the other.

This species feeds on smaller fishes, worms, and aquatic insects, and is in its turn, the food of larger voracious fishes; or of the wild fowl that frequent its haunts. The Ruffe spawns about the month of March: multiplying prodigiously in many of the vast lakes upon the continent of Europe; and assembling in shoals in the deepest parts of the water. The number of rays in the dorsal fin, is the character by which this fish is usually distinguished: in the pectoral fin are thirteen rays; in the ventral one spinous and six soft rays; the anal fin contains seven rays: tail nineteen.



THREE SPINED STICKLEBACK.

55



P L A T E X I.

GASTEROSTEUS ACULEATUS.

THREE SPINED STICKLEBACK.

* THORACII.

GENERIC CHARACTER.

Head oblong, smooth ; jaws armed with small teeth : tongue short, and obtuse : palate smooth : eyes moderate, very little prominent and lateral. Branchiostegous membrane with three, six, and sometimes seven rays : operculum of two pieces, rounded and striated. Body carinated on each side and covered with bony plates : distinct spines before the dorsal fin : lateral line straight : ventral behind the pectoral fins, but above the sternum.

SPECIFIC CHARACTER

AND

SYNONYMS.

Three spines on the back.

GASTEROSTEUS ACULEATUS : spinis dorsalibus tribus. *Linn. Fn.*

Succ. 336. *Gmel. T.* 1. p. 3. p. 1323.

Centriscus duobus in dorso arcuato aculeis, totidem in ventre. *Klein.*

miss. pisc. 4. p. 48. n. 2. t. 14. f. 45.

THREE-SPINED STICKLEBACK : *Penn. Brit. Zool.* 3. p. 217.

Stickling, Stachelfisch. *Wulff. ichth.* p. 30. n. 37.

PLATE XI.

The three-spined Stickleback is a very common species in many of our rivers, as in those of Europe in general; and, as Mr. Pennant writes of those in the fens of Lincolnshire, sometimes appear in the rivers on the continent in such amazing quantities that they become a perfect nuisance, and are taken to manure the lands. "At Spalding," says the author, "there are once in seven or eight years, amazing shoals that appear in the Welland, and come up the river in the form of a vast column. They are supposed to be the multitudes that have been washed out of the fens by the floods of several years, and collected in some deep hole, till overcharged with numbers, they are periodically obliged to attempt a change of place. The quantity is so great, that they are used to manure the lands, and trials have been made to get oil from them; a notion may be had of this vast shoal, by saying that a man employed by the farmer to take them has got for a considerable time four shillings a day by selling them at a half-penny per bushel." Gmelin says they are also used to fatten ducks and pigs, and others observe that they are taken in great quantities about Dantzic, by people who press an oil from them.

This fish is certainly not entirely peculiar to fresh water, for we have known it taken at a great distance out at sea in the Sprat and Herring fisheries: such however we observed differed a little in colour, being of a greener and more silvery cast than those found in the fresh waters, but they are undoubtedly in no respect specifically different from them. The colours of those in fresh water also vary at certain seasons, and it cannot have escaped remark, that when the female is in full roe, the chin and breast assumes a lovely red colour.

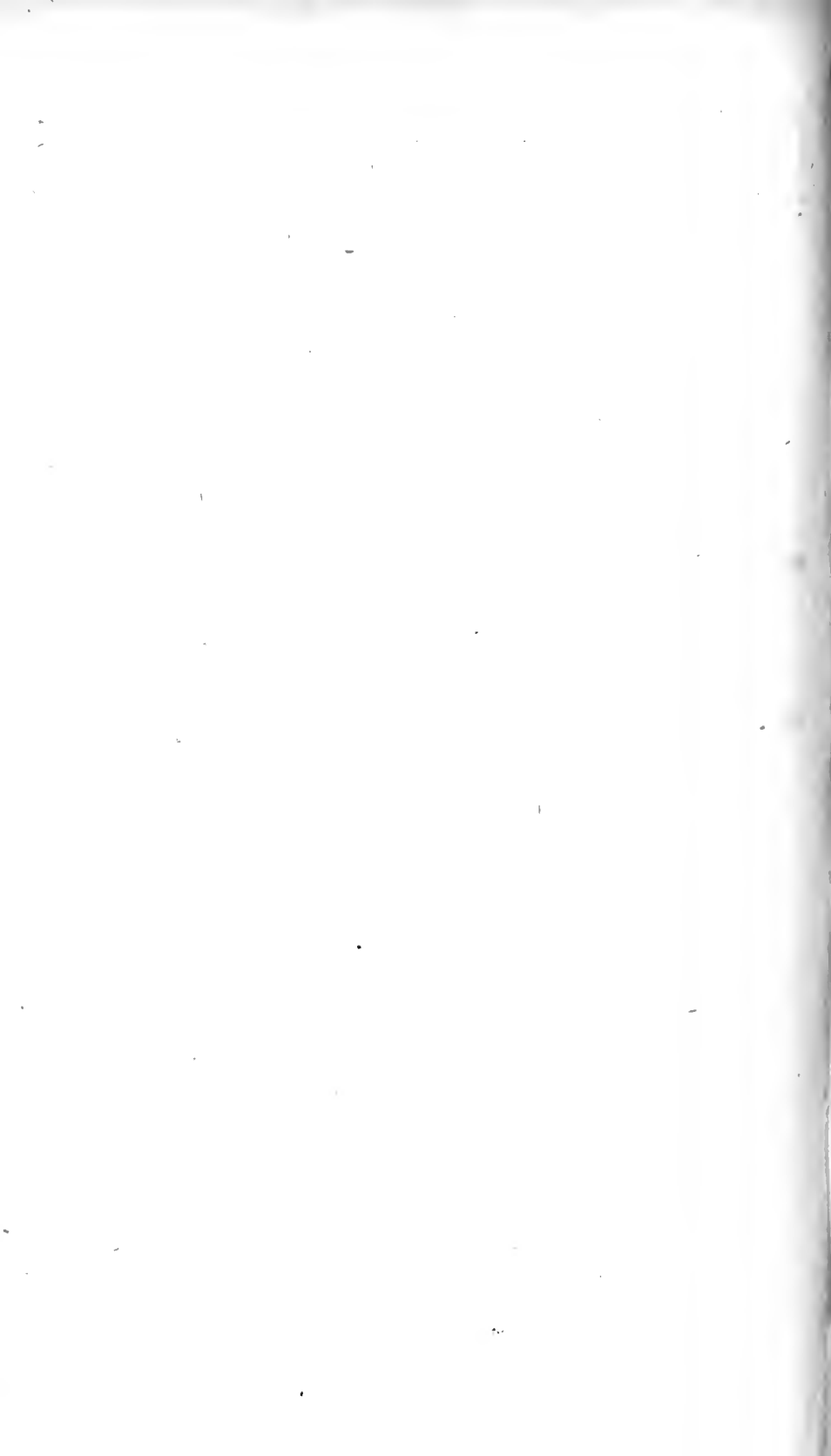
The length of this species rarely exceeds two inches; in this country, it is usually when full grown about an inch and an half, or at

PLATE XI.

most an inch and three quarters ; but it arrives apparently at a greater size in other parts of Europe, as its length is commonly described by continental writers at about three inches.

It is esteemed a very short-lived creature, compared with others of the finny tribes, and has been called the “ Ephemera of Fishes” for that reason : it commonly dies in the first or second year, and rarely indeed lives through the third. The spawning season is in April and June, when it deposits a number of very minute eggs upon the stalks of aquatic plants, and at the bottoms of rivers. It is a voracious little creature, and feeds on worms and insects. Frisch, Pallas, and M. Fabricius, who have each entered into its history, observe, that it is greatly tormented with worms at certain seasons ; a fact sufficiently obvious to every common observer.

The head of this fish is rather compressed, and the eyes remarkably prominent : the sides are covered with a series of hard bony plates as in other species of the same genus ; near the tail the body is square, and beneath the vent is a short spine. The dorsal spines which characterise the species may be erected or depressed at pleasure : the dorsal fin, which is near the tail, consists in our specimen of eleven rays, pectoral fin of ten rays, the ventral fin of a plate-like spine of three parts : anal fin one spiny and nine soft rays, and twelve rays in the tail.





LESSER OR TEN SPINED STICKLEBACK.

56



Illustrated by E. D. Sisson, B.F. & C. Thompson, July 1, 1913.

PLATE XXXII.

GASTEROSTEUS PUNGITIUS.

LESSER OR TEN SPINED STICKLEBACK.

* THORACICI.

GENERIC CHARACTER.

Head oblong, smooth; jaws armed with small teeth: tongue short, and obtuse: palate smooth. eyes moderate, very little prominent and lateral. Branchiostegous membrane with three, six, and sometimes seven rays; operculum of two pieces, rounded and striated. Body carinated on each side and covered with bony plates: distinct spines before the dorsal fin: lateral line straight: ventral behind the pectoral fins, but above the sternum.

SPECIFIC CHARACTER

AND

SYNONYMS.

Dorsal spines about ten; and the sides destitute of plates.

GASTEROSTEUS PUNGITIUS: spinis dorsalibus sub-decim, lateribus absque scutis.

GASTEROSTEUS PUNGITIUS: spinis dorsalibus decem. *Fn. Suec.* 337.—*Gmel. Syst. Nat.* 1326. *sp.* 8.

Centriscus spinis decem vel undecim non perpendiculariter erectis, &c. *Klein. pisc. miss.* 4. *p.* 48. *n.* 4.

PLATE XXXII.

Pungitius alterum genus. *Aldro. pisc. p. 628.*

Spinarella Pusillus. *Bell. La petite épinocbe de mer. Bloch.*

LESSER STICKLEBACK. *Willughby Ichth. p. 342.*

Ten spined Stickleback. *Penn. Brit. Zool. 3. p. 219. n. 2.*

The lesser Stickleback is allowed to be the most diminutive of the fish tribe known: very rarely exceeding, when full grown, an inch and a half in length, and is even seldom found of that size. Some specimens in our possession we should however add, that were taken in the open sea, are full as large as the *G. Aculeatus*, or three spined Stickleback found in our fresh waters: the colours were remarkably clear, greenish on the back, and silvery on the belly and sides, but in other particulars they agree with such as we have found occasionally of a smaller size in little creeks on the sea shore.

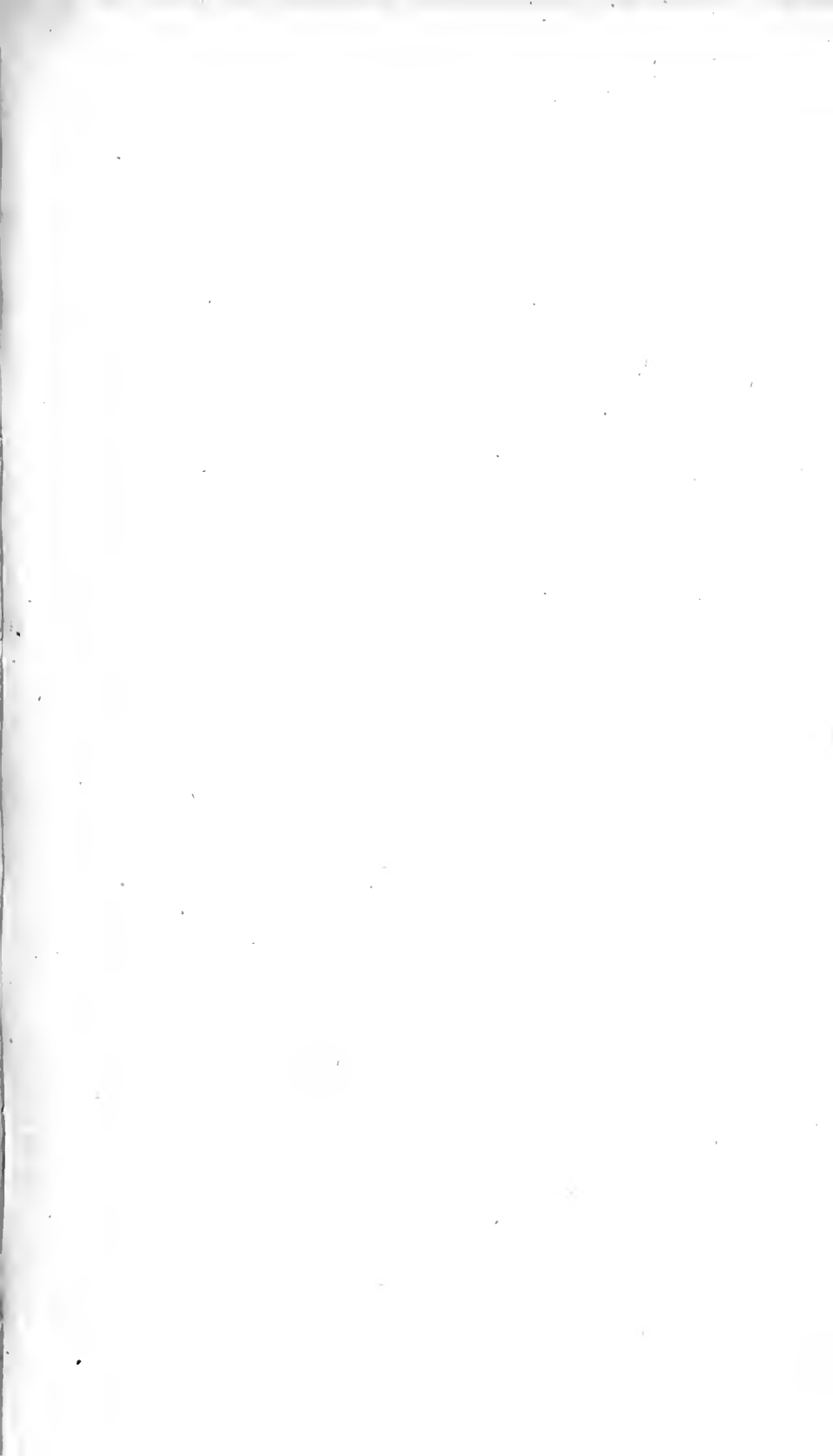
This species is of a rather more slender shape than the common kind, and the jaws a little longer in proportion: colour on the back, olive: sides, yellowish, and beneath silvery. The number of the dorsal spines Linnæus and Gmelin admit as the principal distinction of the several species in this genus: so far as relates to the kind before us, we may venture to say the number of them is not always the same. We have them with ten spines, as those authors describe it; we have it also with nine; and one specimen with only eight. This has induced us to make a small, and it is conceived an allowable addition to the specific character given by those authors. They resemble in a general manner the common kind as before remarked, but are destitute of those remarkable plates on the sides so conspi-

PLATE XXXII.

cuous in the others, and this is, in our opinion, a strong and unerring particular, by which this kind may be distinguished.

In the dorsal fin of one specimen we found ten rays, and in the pectoral fin the same number : in the anal fin nine rays ; and twelve in the tail.





FIFTEEN SPINED STICKLEBACK.

57



London, Publ'd at the Art directors by H. Dinsmore & F. & C. Rivington, March 1. 1864

PLATE XLV.

GASTEROSTEUS SPINACHIA.

FIFTEEN SPINED STICKLEBACK.

* PISCES THORACICI.

GENERIC CHARACTER.

Head oblong, smooth; jaws armed with small teeth: tongue short, and obtuse: palate smooth: eyes moderate, very little prominent and lateral. Branchiostegous membrane with three, six, and sometimes seven rays: operculum of two pieces, rounded and striated. Body carinated on each side and covered with bony plates: distinct spines before the dorsal fin: lateral line straight: ventral behind the pectoral fins, but above the sternum.

SPECIFIC CHARACTER

AND

SYNONYMS.

Dorsal spines fifteen.

GASTEROSTEUS SPINACHIA: spinis dorsalibus quinquedecim. *Linn. Fn. Suec.* 338. *Gmel. Syst. Nat.* 1327. *sp.* 10.

Gasterosteus pentagonus. *Muf. Ad. Fr. p.* 34. *Klein. miss. pisc.* 4. p. 48. n. 1.

PLATE XLV.

Aculeatus vel pungitius marinus longus. *Ray. pisc. p. 145. n. 15.*
Will. Ichth. p. 340. t. X. 13. f. 2. app.
p. 23.

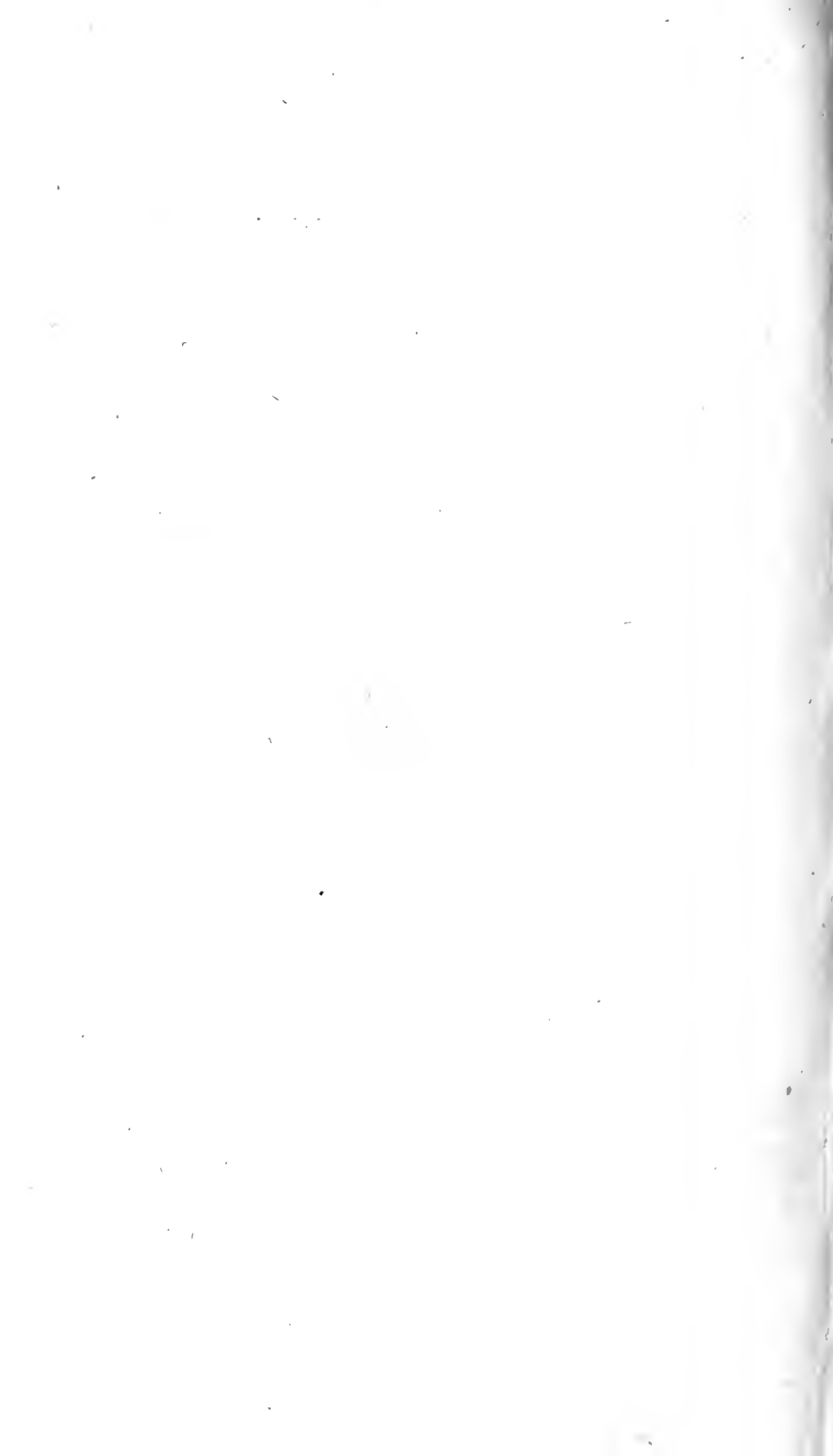
Grande épinoche. *Bloch. Fifteen spined Stickleback. Penn. Brit.*
Zool. p. 263. sp. 131.

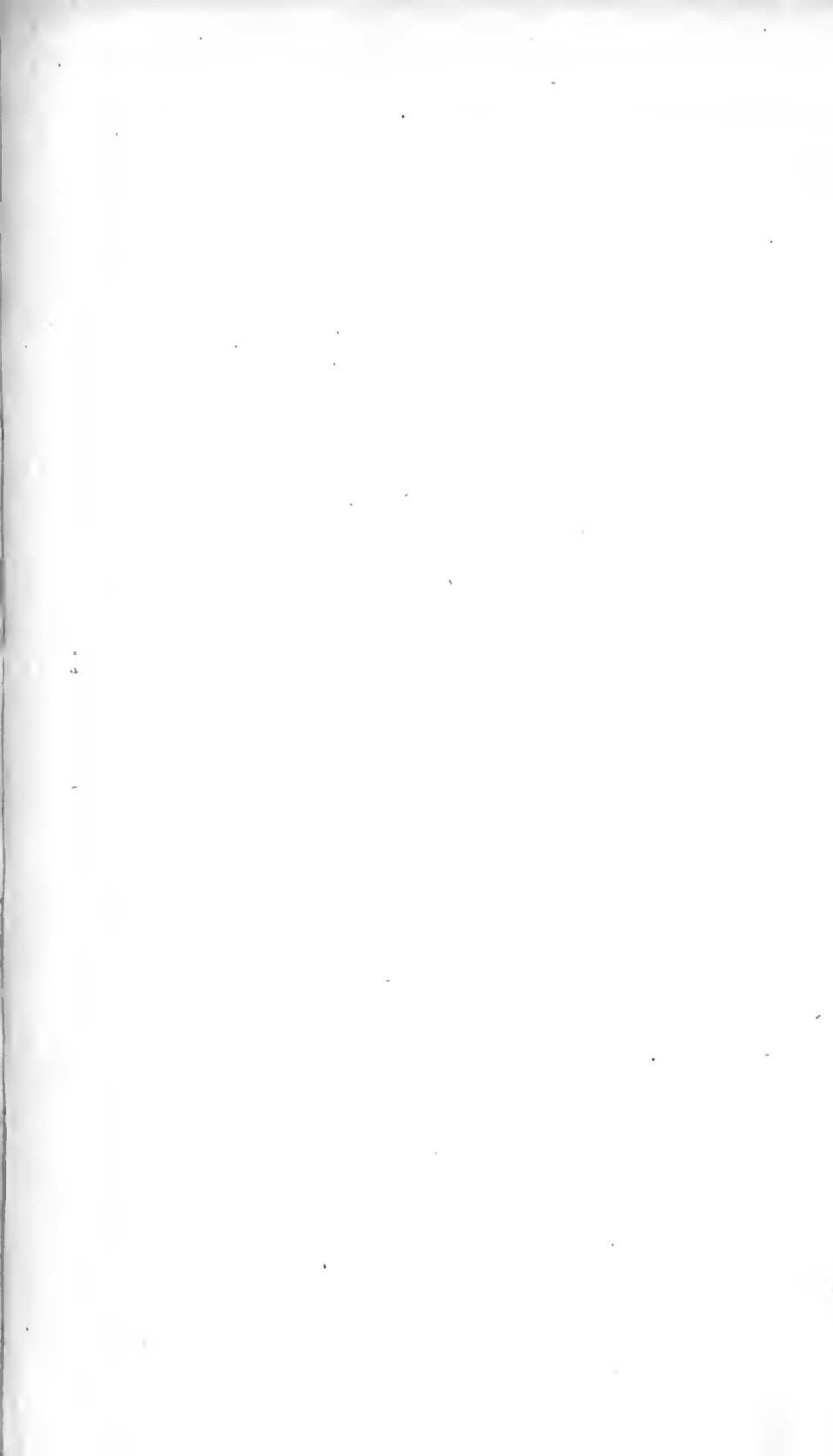
Three species of this genus are natives of this country, the most common of which are the *aculeatus* and *pungitius*, two kinds that are found chiefly in rivulets, brooks, and other fresh waters. *Gasterosteus spinachia*, the third species, is an inhabitant of the sea, and is never found in fresh waters, except by accident when it happens to stray to a short distance up rivers, that have an immediate communication with the marine element. We have observed the fry of this latter species on the sea coast of Anglesea, especially in the bay of Holyhead, from whence we may conclude, that it breeds contiguous to the shore. A specimen of the full grown fish about five inches in length occurred also in this spot.

There is every reason to presume that this species, although abundant in the northern parts of Europe, is very far from common on the sea coasts of this country. In the Baltic and the North Sea, they are observed to be most frequent: Upon the coast of Holland, they appear sometimes in such vast numbers, as to be made use of for manuring the land. They are also caught for the sake of an oil that is expressed from them, which is used for burning in lamps, and other domestic purposes. The fish itself is seldom eaten except by the lower orders of people.

PLATE XLV.

The head of this fish is of a remarkable tubular form; the body slender: back armed with fifteen shark spines, and the lateral line composed of small, somewhat prominent, and pointed scales. General colour above olive, variable, and tinged with gold, beneath white. In the individual specimen, we are describing the second dorsal fin, or that situated at the extremity of the dorsal spines, contains seven rays: pectoral fin ten rays; the ventral fins, or rather spines, consists each of an acute bony process: in the anal fin are eight rays, the first of which is short and spinous; and the tail contains twelve rays.





MACKAREL.



London, Paris, et les autres villes par Edmond F. A. J. Bourgeois, 1867.

PLATE CXX.

SCOMBER SCOMBER.

MACKAREL.

*** PISCES THORACICI.

GENERIC CHARACTER.

Head compressed, smooth: branchiostegous membrane of seven rays. Body smooth; lateral line carinated behind. Generally some spurious fins near the tail.

SPECIFIC CHARACTER

AND

SYNONYMS.

Spurious fins five both above and beneath.

SCOMBER SCOMBER: pinnulis quinque in margine utroque caudæ.

Bloch. Fisch. Deutschl. 2. p. 88. n. 1. t. 54.

Scomber scomber: pinnulis quinque. *Linn. Fn. Suec. 339. Gmel.*

Linn. Syst. Nat. T. 1. p. 1328. sp. 1.

Scomber pinnulis quinque in extremo dorso, spina brevi ad anum.

Art. gen. 30. syn. 48. spec. 68.

Palamis corpore castigato, &c. *Klein. miss. pisc. 5. p. 12. n. 5.*

t. 4. f. 1.

Mackarel. *Ray. Pisc. p. 58.*

Will Ichth. p. 181.

Penn. Brit. Zool. 3. p. 221.

PLATE CXX.

The great resort of the Mackarel is within the polar regions, where it is found in immense shoals, and of a larger size than in any other part of the world.

Besides the polar regions, this highly elegant and splendid fish is an inhabitant of the European, Atlantic, American, and Mediterranean seas, in all of which it appears at particular seasons of the year in vast shoals, bending their course, it is commonly supposed, from the frozen seas of the arctic circle in search of climates more favourable to the fulfilment of the great ordinance of nature,—the deposition of their spawn, and providing in an efficient manner for the security of the future brood.

This was the popular opinion long entertained, not only relative to the Mackarel, but also the Herring, and various other fishes which are known to inhabit high northern latitudes, and appear at stated seasons annually in the European seas. A contrary idea is at present maintained. Bloch, Lacepede, and some other late Ichthyologists, believe that those fish never leave the respective seas in which they appear at those regular intervals, but merely quit the vicinity of the shores at the approach of winter, and retire to the deep recesses of the sea, at some short distance. At those times it is imagined they conceal themselves in the mud and sand, and remain in a quiescent state till the warmth of the returning spring revives them to their wonted activity, when they again seek the shore to deposit their spawn, and after the breeding season is over, return as before to their hiding-places at the bottom of the sea.

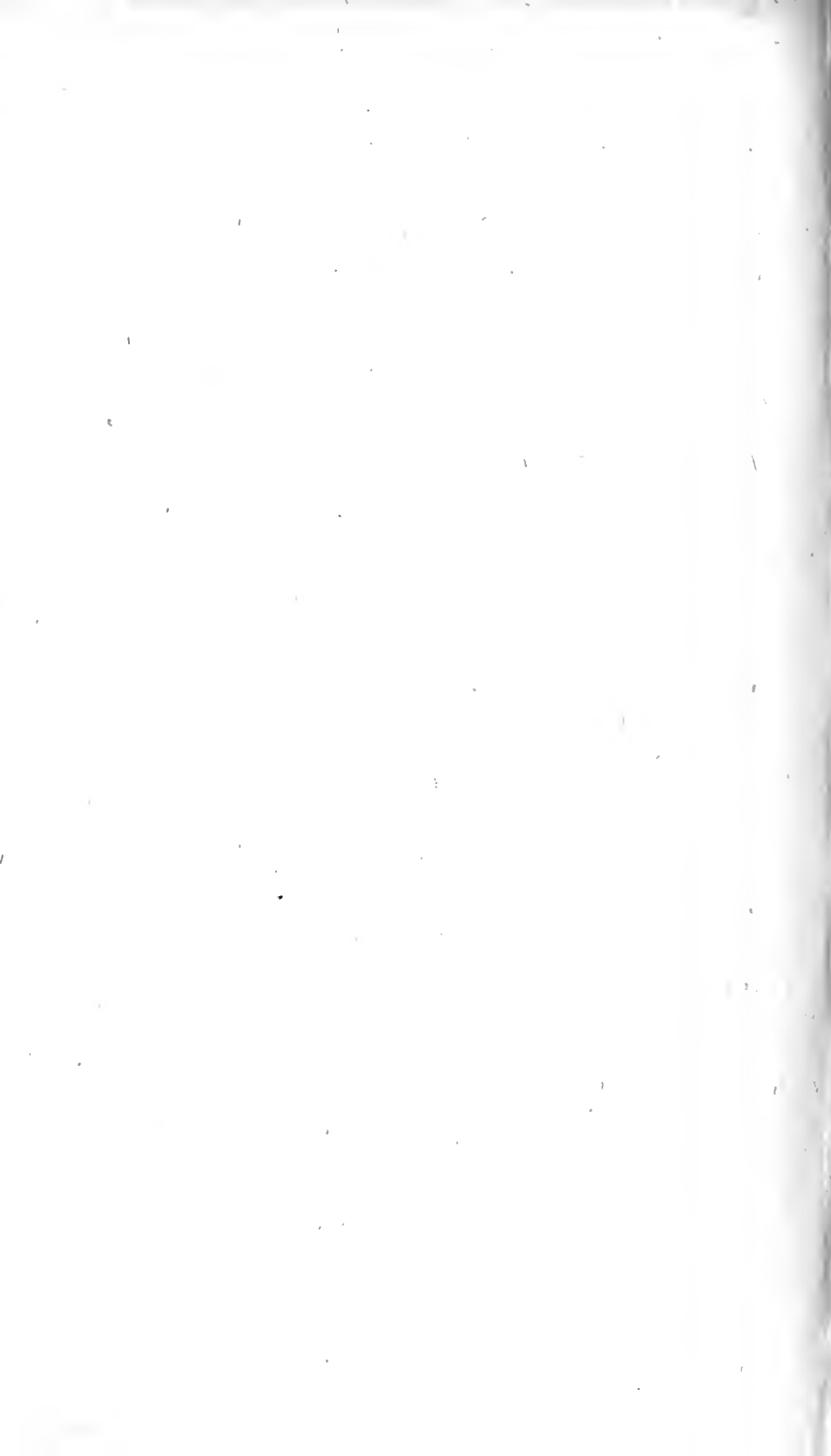
The general size of the Mackarel is from twelve to fifteen or eighteen inches in length; it is reported to attain sometimes to the

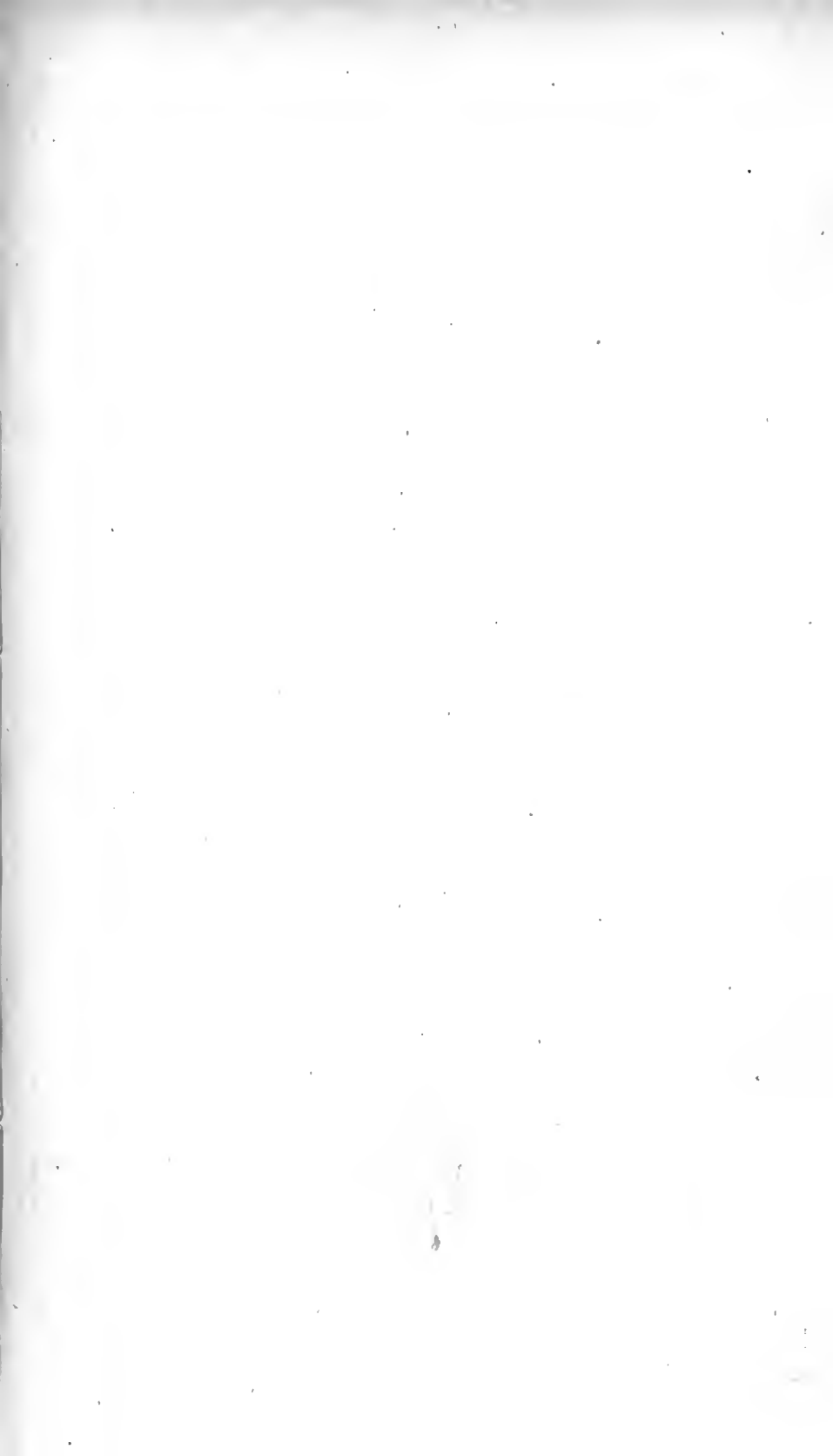
PLATE CXX.

length of two feet. Mr. Pennant speaks of one that weighed five pounds and a quarter. This fish is of an inconceivable splendour when alive and first taken out of the water, at which period it emits a vivid phosphoric light. The male is of a more slender form than the female, and is also distinguished by having the transverse fasciæ or bands of black on the back and sides nearly straight, while in the female those bands are elegantly undulated.

The excellence of the Mackarel as an article of food is so generally admitted as to require no comment. Most commonly it is eaten fresh: in the county of Cornwall, upon the coasts of which it appears in immense shoals during the summer, it is occasionally salted. The Mackarel maintained considerable reputation among the epicures of ancient Rome, who, among other articles of luxury, prepared a celebrated garum or pickle of this fish, which they distinguished, according to Pliny, by the title of *Garum Sociorum*.

The number of rays in the fins of the specimen of the Mackarel selected for representation were as follow: in the first dorsal fin ten rays: second thirteen: pectoral thirteen: ventral six: anal eleven: and caudal twenty-two.





TUNNY.

59



P L A T E V.

SCOMBER THYNNUS.

TUNNY.

* THORACICI.

GENERIC CHARACTER.

Head compressed, smooth; branchiostegous membrane of seven rays. Body smooth; lateral line carinated behind. Generally some spurious fins near the tail.

SPECIFIC CHARACTER.

Eight spurious fins on the back, and an equal number on the belly.

SCOMBER THYNNUS: pinnulis utrinque octo. *Gmel. Linn. Syst. Nat. p. 1530. sp. 3.*

Scomber pinnulis 8 seu 9. in extremo dorso, sulco ad pinnae ventrales. *Art. gen. 31. syn. 49.*

Thunnus. *Rondel. 241.—Gesn. pisc. 957.*

Tunny fish, or Spanish Mackrell. *Wil. Icth. 176.—Raii. syn. pisc. 57.—Sibbald Scot.*

Tunny. *Penn. Br. Zool. p. 266. sp. 133.*

This is a very generally diffused species, being found in different seasons in all parts of the world. They enter the Mediterranean sea in immense shoals, swimming with great swiftness, forming a

PLATE V.

regular parallelogram, and making a loud hissing noise. On the coasts of Sicily there are established fisheries for the Tunny, where they are taken and salted, or dried, and form a considerable article of trade with the adjacent kingdoms.

Tunnies sometimes frequent the most northern parts of the British coasts in pursuit of herrings, but not in shoals; and were not known to visit the southern parts of the kingdom till the summer of 1801, when three were captured near the entrance of the river Thames, and brought to Billingsgate market for sale.

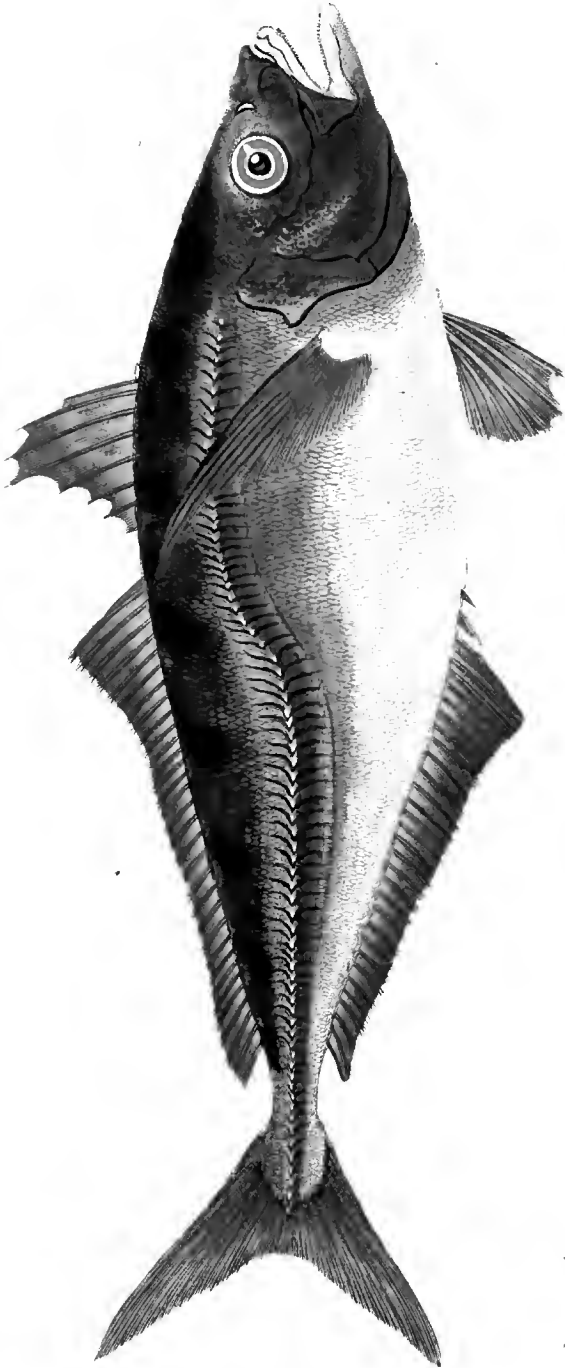
The usual length of this species is about two or three feet; those of six or seven feet in length are not common, and it is very rarely that they exceed ten feet.

The flesh is tolerable: when raw, it looks like beef, but becomes of a much paler hue in boiling. Its flavour is between that of salmon and mackrel, though certainly inferior to either.



SCAD.

3 60



London, Fish, for the Act directed by E. Donovan & F. & C. Rivington, April, 1862.

PLATE III.

SCOMBER TRACHURUS.

SCAD.

* THORACICI.

GENERIC CHARACTER.

Head compressed, smooth. Branchiostegous membrane of seven rays. Body smooth. Lateral line carinated behind. Generally some spurious fins near the tail.

SPECIFIC CHARACTER

AND

SYNONYMS.

Dorsal spine recumbent, lateral line a series of spinous plates.

SCOMBER TRACHURUS: spina dorsali recumbente, linea laterali lorica-
cata. *Gmel. Linn. Syst. p. 1335. sp. 6.*

Amoen. Acad. 4. p. 249.

Scomber linea laterali squamis latis pinnata.

Scad, Horse-Mackrell. *Will. Ich. 290. Raii. syn. pisc. 92.*

SCAD. *Penn. Br. Zool. p. 269. sp. 134.*

A specimen of this scarce fish was taken upon the western coast in the month of June; that which Mr. Pennant saw, was taken in October.

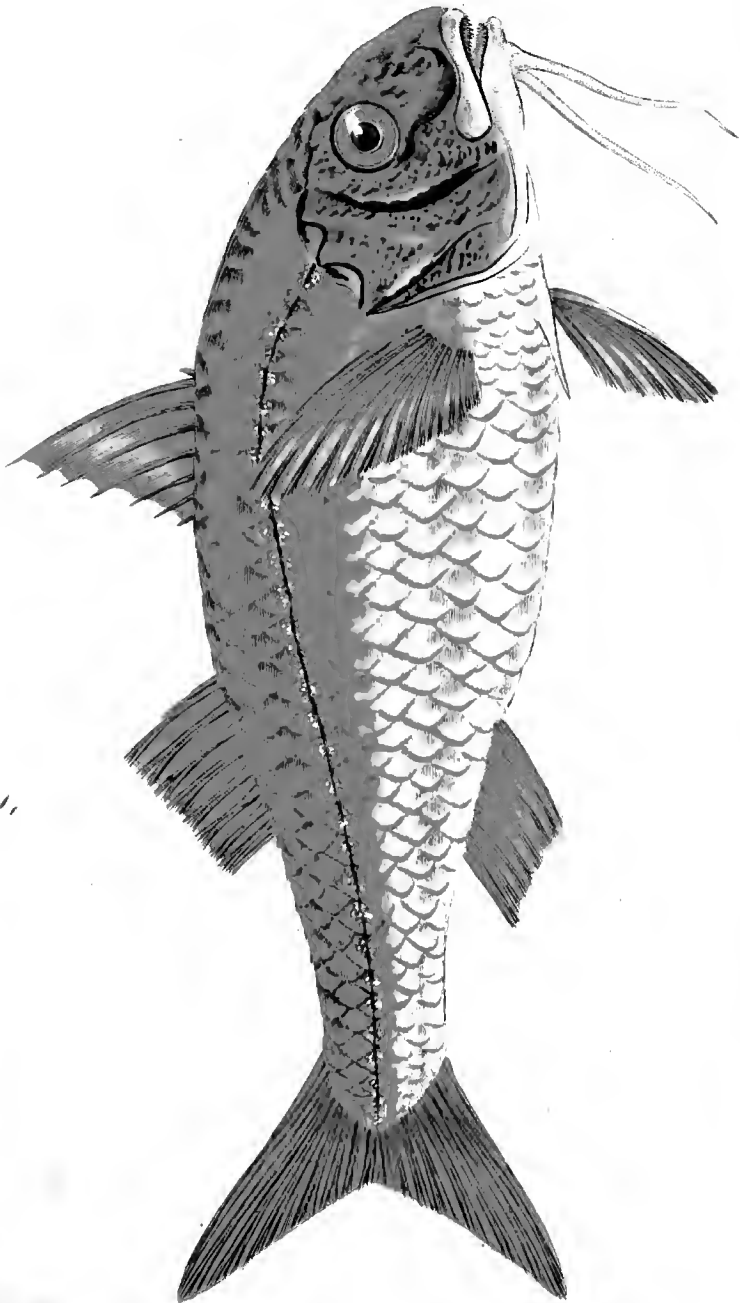
PLATE III.

The first dorsal fin contains eight strong rays, the second forty-two rays, the pectoral fin twenty, ventral fin seven, anal fin forty, and in the tail twenty-two rays.



STRIPED SURMULLET.

61



London: Pub. by the Act directed by E. Dumeril, F. & C. Barington, April 1862.

P L A T E X I I .

MULLUS SURMULLETUS.
STRIPED SURMULLET.
* THORACII.

GENERIC CHARACTER.

Head compressed, sloping, covered with scales: eyes oblong, placed near each other, vertical, and furnished with a nictitant membrane: nostrils double and minute; mandibles and palate beset with small teeth: tongue short, narrow, smooth and immoveable. Branchiostegous membrane with three rays: the covers of three plates very finely striated: aperture moderate. Body round elongated, red; scales large and very deciduous.

SPECIFIC CHARACTER

AND

SYNONYMS.

Two beards: body marked with longitudinal yellow lines.

MULLUS SURMULLETUS: cirris geminis, lineis luteis longitudinalibus. *Gmel. T. 1. p. 3. p. 1339. sp. 2.*

Trigla capite glabro, lineis utrinque quatuor luteis longitudinalibus. *Art. gen. 43. syn. 72.*

Mullus corpore argenteo luteo longitudinaliter lineato, desquamato rubro. *Brünn. pisc. mass. p. 71. n. 88.*

STRIPED SURMULLET. *Penn. Brit. Zool. T. 3. p. 229. n. 2. t. 13.*

PLATE XII.

There is a singular discordance of opinion amongst the ablest naturalists concerning the two kinds of *Mullus* described by Linnæus under the specific names of *Surmulletus* and *Barbatus*, some conceiving them to be varieties only, or rather differing at a certain age, and others with Linnæus believing them to be distinct species.

Linnæus, in the early editions of the *Systema Naturæ*, seems to have adhered in some measure to the opinion of Artedi, and in defining these species observes, that *Barbatus* has two beards, and body red, and *Surmulletus* two beards and body marked with longitudinal yellow lines. Artedi states the number of those yellow lines on the latter to be four on each side, but from the subsequent observations of other naturalists, it is evident these vary exceedingly in different specimens. Block remarks that his agrees with that of Salvianus in having only three of them: in a MS. of Father Plumier five are mentioned; Mr. Pennant speaks only of two, and these, he adds, "with the red colour of the dorsal fins and the number of rays, Mr. Ray makes the character of the Cornish Surmullet." It is therefore evident, the number of yellow lines can by no means assist us in defining the species, and it has been doubted whether the total absence of them, as in *Barbatus*, is a sufficient proof of a specific difference.

That which is uniformly red, we have not seen. Mr. Pennant says he heard of the *Red Surmullet* being taken on the coast of Scotland; and a little further remarks, that Salvianus makes it a distinct species, as it was of a purple colour, striped with golden lines. By this oblique allusion to the fish described by Salvianus, it is probable he meant one of the striped kind only: for it is apparent he was not well acquainted with either of the Surmullets when he

PLATE XII.

wrote the British Zoology: the striped sort we know is found on several of our coasts, and probably on those of Scotland also.

The Red Surmullet is said to be smaller than the other, and some have conjectured, that after a certain age these lines appear. Block hints that the male may be that which is striped, and the other the female: Gronovius and some others are of opinion that they are merely varieties of each other. Having seen small ones of five or six inches in length that were striped, as in the larger sort, and having the assurance of the fishermen on the western coast, where they are most abundant, that they have no other than the striped sort, we cannot assent to the first opinion: the second is equally inadmissible, because we have both sexes of them so characterized; and as to the last, it is most probable; but not having seen the red kind, it would be improper to offer any further opinion respecting it.

Neither is it more clearly ascertained which of the two kinds was so highly valued by the Romans, or whether they made any distinction. Both kinds, it is said, are found in the Mediterranean; they inhabit the Italian shores, and might have had an equal claim to that honour. Or, indeed, since the striped kind is said to be the largest, this should have the preference, for those prodigal epicures always valued them in proportion to the size. Linnæus and Gmelin think otherwise, and say it was the Red Mullet; and Block, who prudently forbears to separate the two kinds, thinks however that it was the largest, and consequently the Striped Surmullet.

The excess to which the Romans carried their extravagance for this fish, is scarcely to be credited in our days. From Horace, Juvenal, Pliny, and others of the ancients we learn, that one of six pounds was

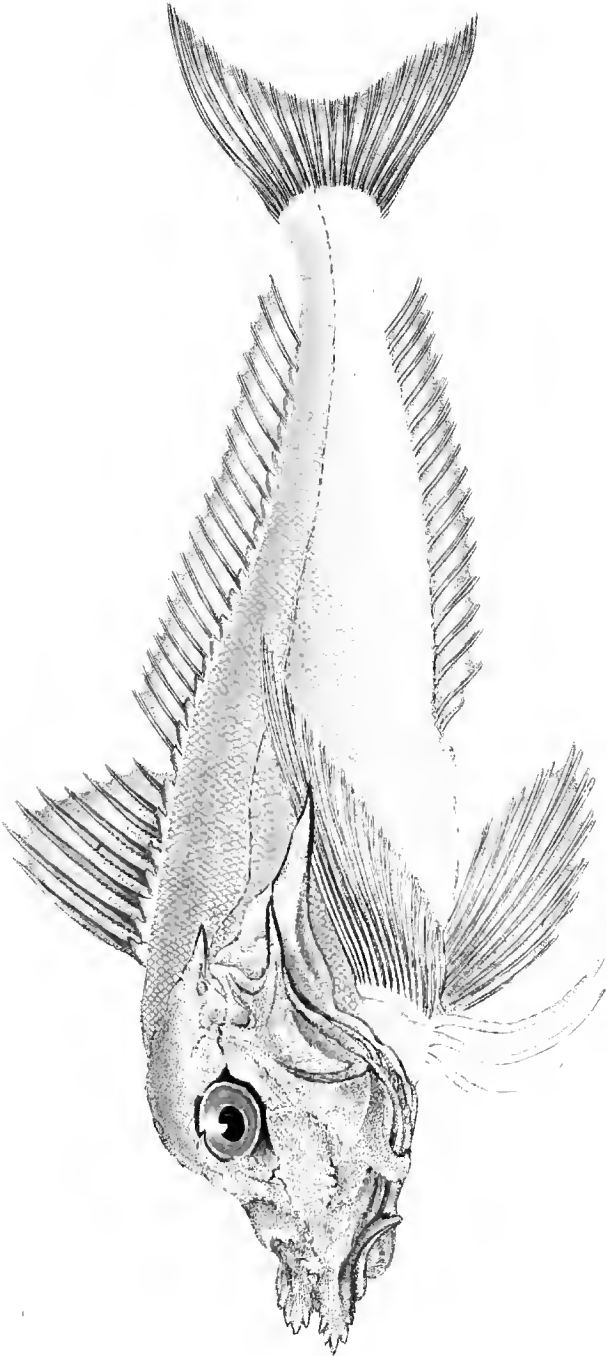
PLATE XII.

deemed a prodigious rarity, and fetched a price truly enormous: six thousand pieces, a sesterce for each pound. Callidore is reproached for having paid twelve hundred sesterces for four Surmulletts to put into a single dish of soup. Pliny says, Asinius Celer gave eight thousand nummi * for one; and Suetonius afterwards bought three of the same fishes for 30,000 sesterces. The delicacy of its flesh was not the only incitement to pay such excessive prices; they had also a high degree of pleasure in watching the changes of its vivid colours while it lay expiring, and at their sumptuous feasts, the Mulletts were brought from a vessel under the table in which they were kept alive, and put into transparent vases for that purpose. Seneca says it was worth nothing unless it died in the hands of the guests.

It is usually about a foot in length: the colour the finest red, whitish on the belly, and striped with yellow. It feeds on other fishes, Crabs, &c. and approaches the shores in spring to deposit the spawn. Our specimen has in the first dorsal fin seven rays, in the second nine: sixteen rays in the pectoral fin: seven in the ventral fin: eight in the anal fin, and twenty in the tail.

* £. 64. 11s. 8d.

PIPER.



Fundulus. Pub. Soc. the. Nat. Science. by. L. Brown. in. J. E. S. D. B. in. the. Amer. J. Sci.

P L A T E C X V I I I .

TRIGLA LYRA.

PIPER.

*** PISCES THORACICI.

GENERIC CHARACTER.

Head large, mailed and marked, with rough lines. Eyes large, round, placed vertically. Mouth large. Palate and jaws armed with sharp teeth. Nostrils double. Gill-cover, a single piece, radiated and spined. Seven rays in the gill-membrane. Body wedge-shaped, and covered with small scales. Back straight, with a longitudinal groove serrated on the margins. Lateral line nearer the back, and straight. Abdomen thick. Ventral and pectoral fin large, with articulated appendages before them.

SPECIFIC CHARACTER

AND

SYNONYMS.

Appendages three: nostrils tubular:

TRIGLA LYRA: digitis ternis, naribus tubulosis. *Gmel. Linn.*

Syst. Nat. T. I. p. 3. 1342. sp. 2.

Trigla rostro longo diacantho, naribus tubulosis. *Art. Gen. 46.*

syn. 74.

PLATE CXVIII,

PIPER. *Will. Ichth. p. 282.*

Ray, Pisc. p. 89.

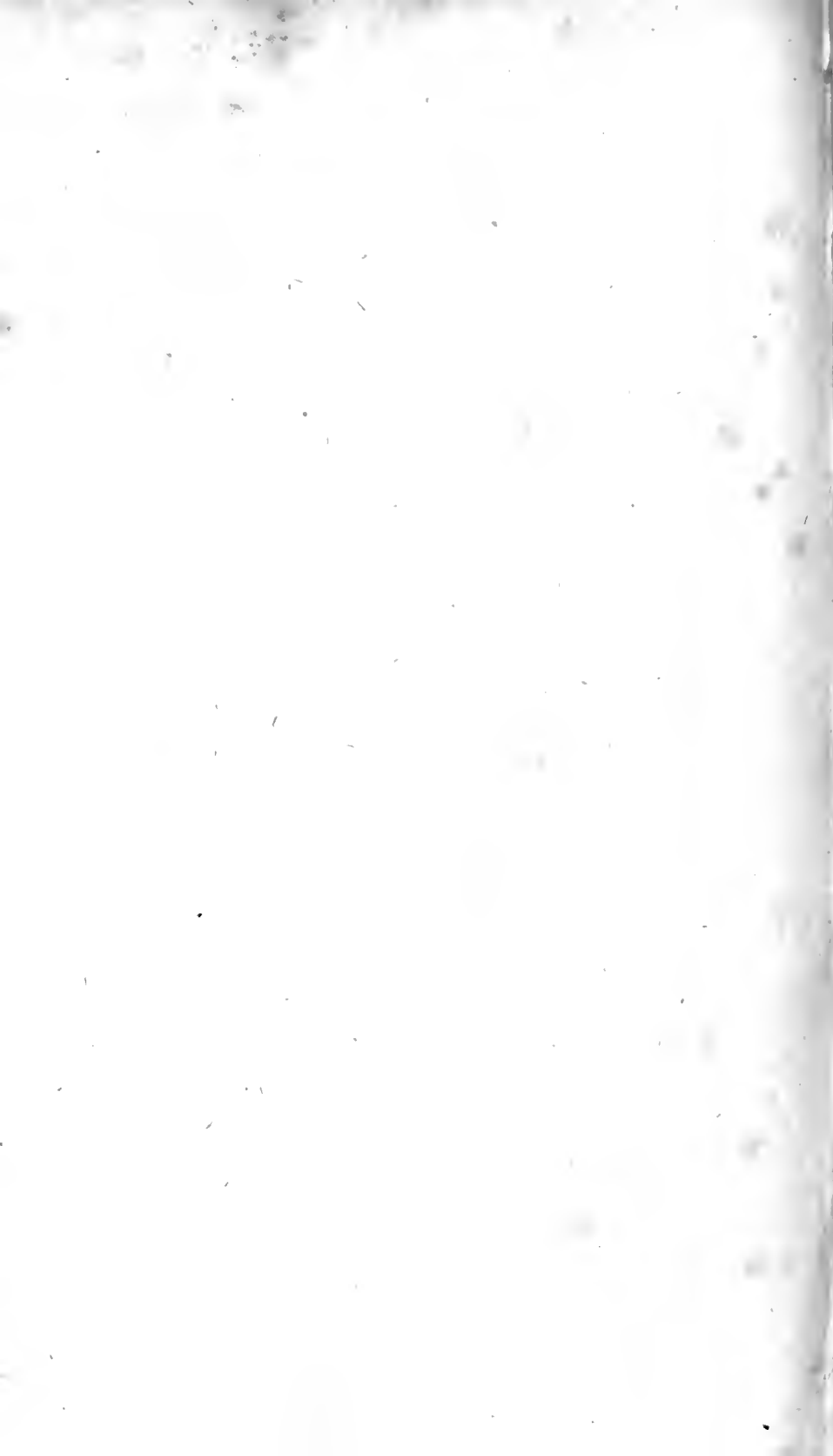
Penn. Brit. Zool. 3. p. 234. n. 3. t. 14.

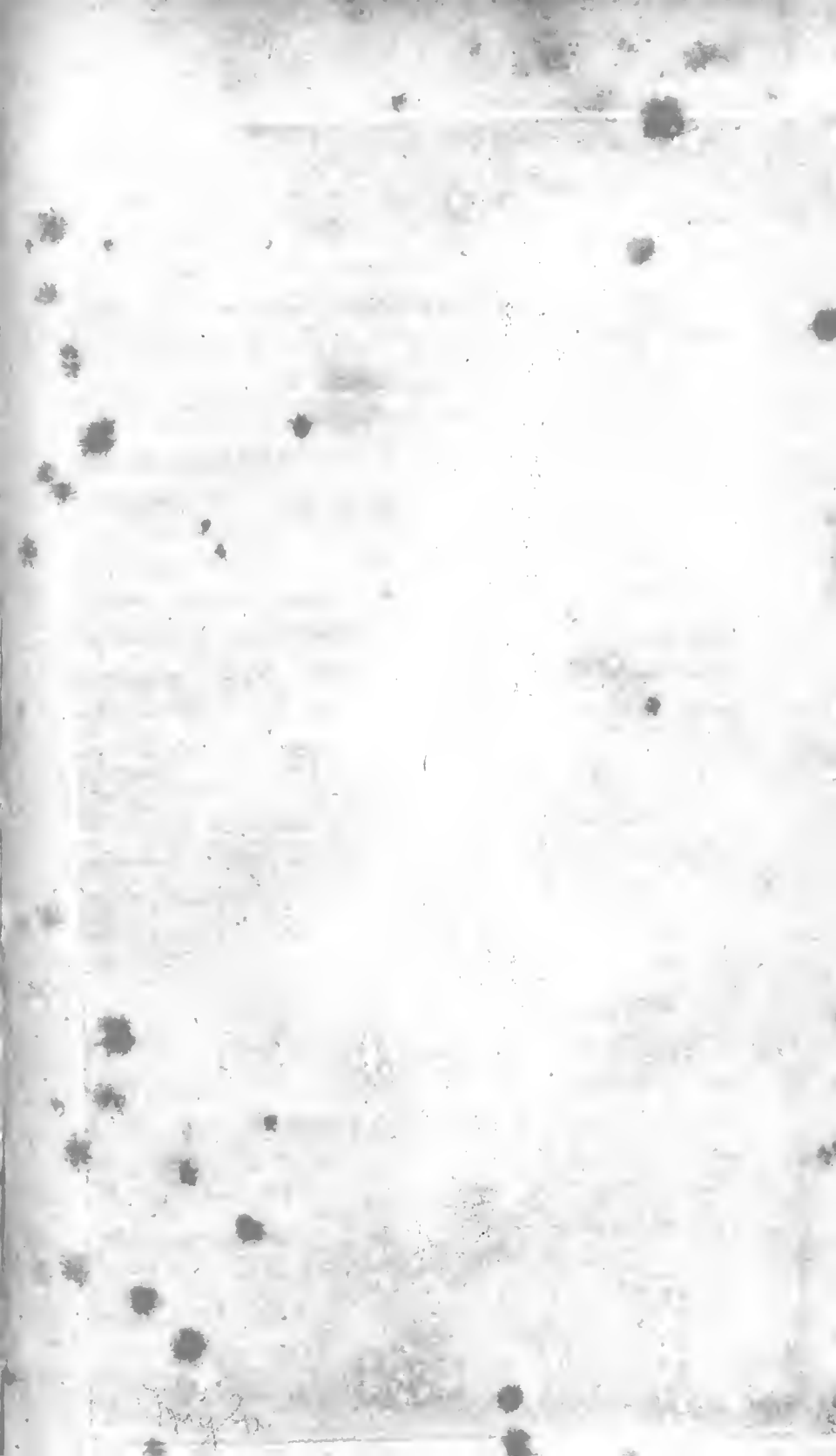
The Piper appears to be a local fish on the British coasts, and is far more rarely brought to the London markets than any other of the Gurnard tribe known to be natives of our seas, the Trigla lineatus excepted. Mr. Pennant received this species from Mr. Pitfield, of Exeter, and says he has been informed this fish is found at all times of the year on the western coast, and is taken in nets. If this information be correct, it is possible this fish may have become more scarce of late; for we must observe, that our enquiries after the species on the western coasts have not hitherto proved successful, although Gurnards in general are abundant in that part of Britain. Neither have we met with this fish in Anglesea, upon the coast of which, the same writer informs us, it is also found. It does not appear, upon the credit of the best writers, to be common in other parts of Europe: Gmelin speaks of it only as a native of the British seas.

Our specimen of this fish is about eighteen inches in length; it is said to grow to the length of two feet, and three pounds and a half in weight. The general colour is a pale flesh-colour, rosy or darker on the back, and the belly white; the fins bluish at the base, and tinged with reddish towards the extremities; the eyes full, with the irides of a fine golden yellow, and the pupil purplish black.

PLATE CXVIII.

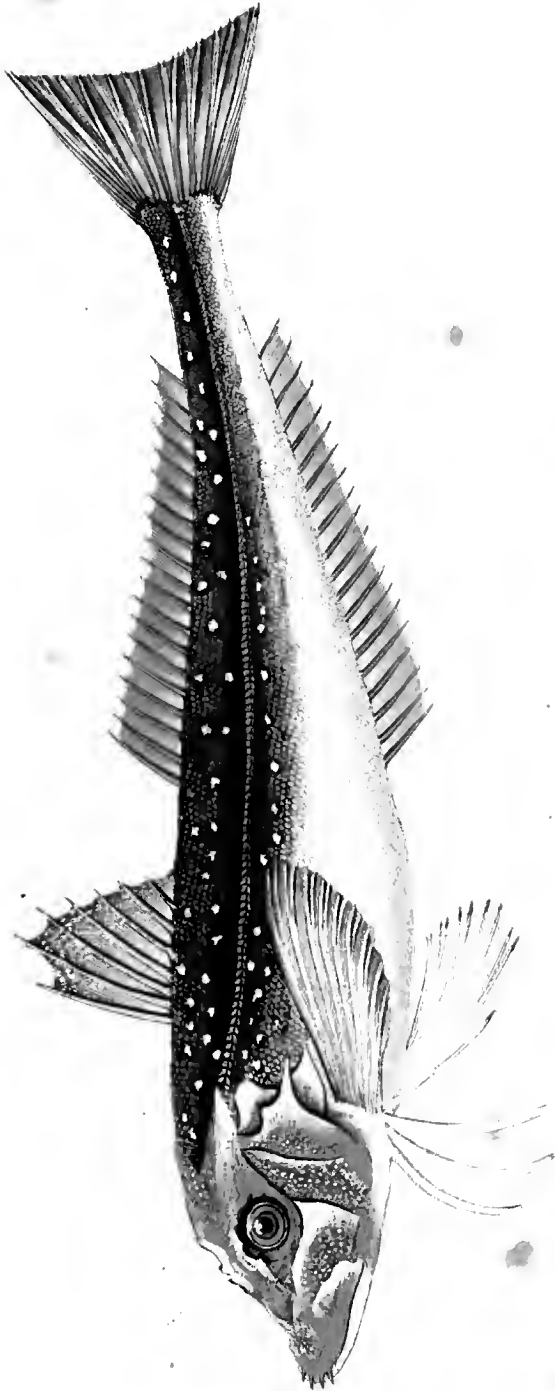
The rays of the first dorsal fin are bony, serrated anteriorly, and eight in number; the second dorsal fin contains twenty soft rays; the pectoral fin twelve, ventral nine, anal eighteen, and caudal eighteen. The dentated tubular processes into which the front of the head is elongated, forms a striking character of this fish; it may be also added, that neither of the other British species of Gurnards have the gill-covers armed with spines of such considerable strength and size as the Piper.





GREY GURNARD.

63



Lenden. Publ. in the Atlas of the Fishes of the British Museum, 1859.

P L A T E X X X .

TRIGLA GURNARDUS.

*GREY GURNARD.** *THORACICI.*

GENERIC CHARACTER.

Head large, mailed, with rough lines. Eyes large, round, placed vertically. Mouth large. Palate and jaws armed with sharp teeth. Nostrils double. Gill cover, a single piece, radiated and spined. Seven rays in the Gill membrane. Body wedge-shaped, and covered with small scales. Back straight, with a longitudinal groove serrated on the margins. Lateral line nearer the back, and straight. Abdomen thick. Ventral and pectoral fins large, with articulated appendages before them.

SPECIFIC CHARACTER

AND

SYNONYMS.

Appendages three; back cinereous with white spots: lateral line broad and aculeated.

TRIGLA GURNARDUS: digitis ternis, dorso cinereo albo-maculato, linea lateralis lata aculeato.

TRIGLA GURNARDUS: digitis ternis, dorso maculis nigris rubrisque.
Gmel. p. 1342. sp. 3.

PLATE XXX.

Trigla varia, rostro diacantho, aculeis geminis ad utrumque oculum.

Artedi gen. 46. syn. 74.

Gurnatus seu gurnadus griseus, the grey Gurnard, *Will. Ichth. 279.*

—*Raii, Syn. pisc. 88.*

Trigla lateribus nigro alboque punctatis, linea laterali lata aculeato.

Bloch Fisch. Deutsch. 2. p. 121.

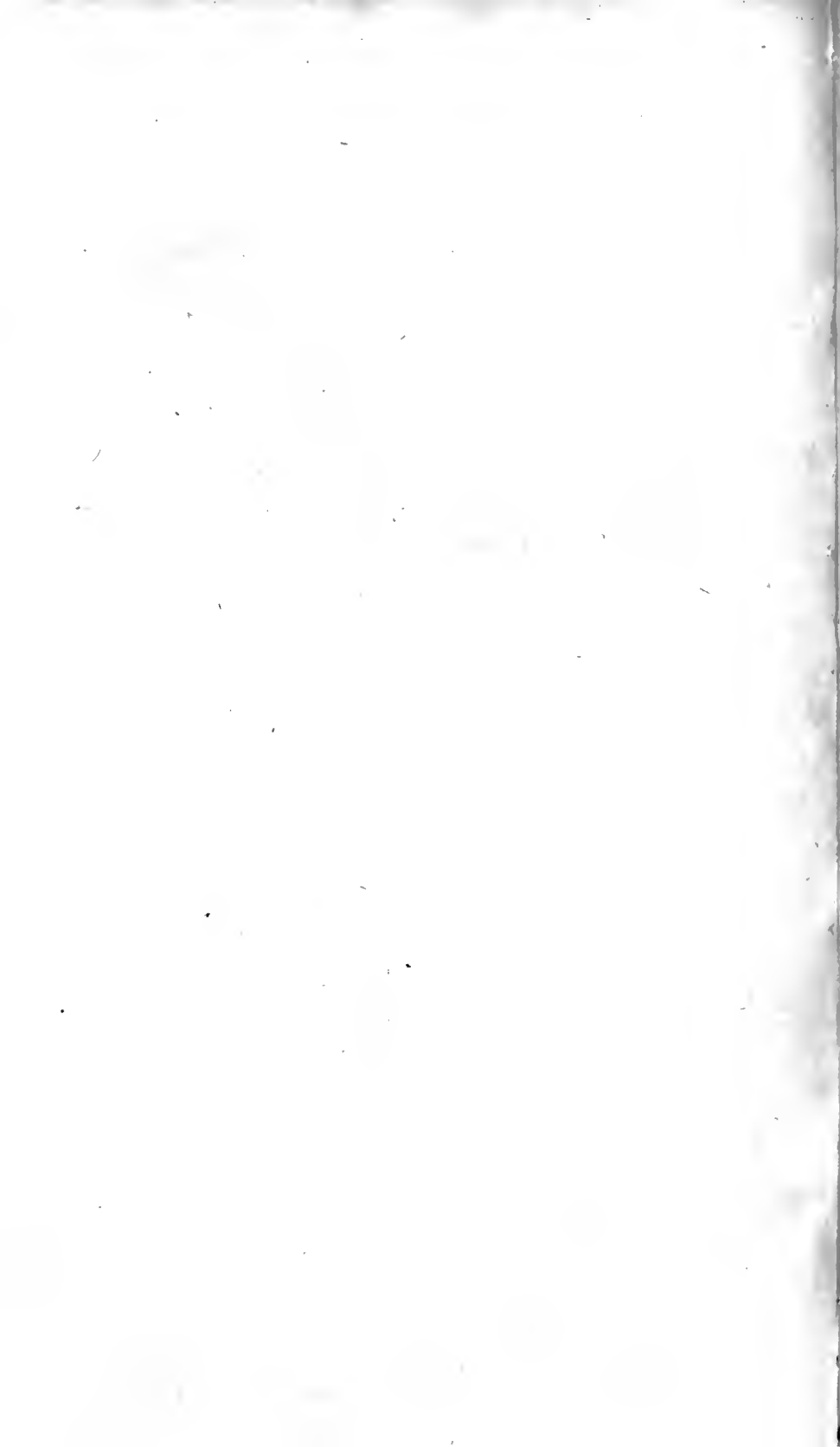
GREY GURNARD, *Penn. Brit. Zool. 3. p. 276.*

The Grey Gurnard is usually from ten, or twelve, to eighteen inches in length, and according to Mr. Pennant and others, is sometimes taken of nearly double that size. The colour of the back varies from a pale to a deeper ash, and the spottings of black and white, or yellowish, seem liable to variation in a similar degree. Gmelin characterizes it specifically as being spotted on the back with black and red, to which M. Bloch objects, that none of those he has seen were spotted with the latter colour; and we must confess that although we have seen them tinged with red on that part, it was not in any instance disposed in spots so as to merit the epithet, *dorso maculis nigris rubrisque*. The lateral line in this species is marked by larger scales, and is more strongly serrated than in the other Gurnards, as Bloch observes; and in the opinion of that naturalist is a distinctive character of the species. The nose is bifurcated, and each side armed with smaller spines, a circumstance remarked by Artedi, but being by no means peculiar to this kind, ought not, as that writer imagined, be considered as a character of the species; and the same may be said of the two spines near the eyes which Artedi mentions. It is rather of a slender shape: the bones of the first dorsal fin strong,

PLATE XXX.

and seven in number : in the second dorsal fin are nineteen rays : in the ventral, six : pectoral, eleven : anal, twenty : and tail, fourteen.

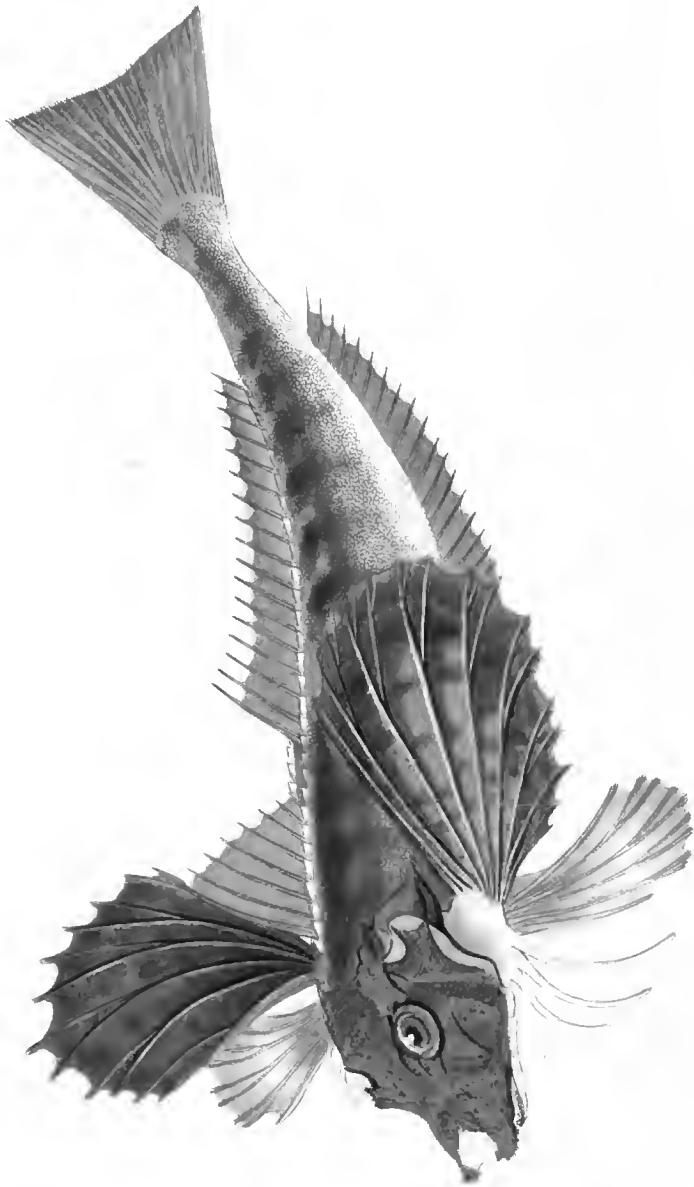
This, like the rest of the Gurnards, feed on crabs, testaceous animals, and the fry of fish. Its flesh is excellent. The Grey Gurnard is taken with the others in nets ; but will eagerly take bait : it is said that they are either so voracious, or so wanton, that they will even bite at a piece of red cloth put into the water, and suffer themselves to be taken rather than lose their hold. It is found in most of the northern parts of Europe.





SAPPHARINE GURNARD.

64



London, Pub. d. at the Art. Jurets by F. Donovan, & F. C. Raunson, April, 1872.

THE
NATURAL HISTORY
OF
BRITISH FISHES.

PLATE I.

TRIGLA HIRUNDO.

*SAPPHARINE GURNARD.** *THORACICI.*

GENERIC CHARACTER.

Head large, mailed, with rough lines. Eyes large, round, placed vertically. Mouth large. Palate and jaws armed with sharp teeth. Nostrils double. Gill-cover, a single piece, radiated and spined. Seven rays in the gill-membrane. Body wedge-shaped, and covered with small scales. Back straight, with a longitudinal groove serrated on the margins. Lateral line nearer the back, and straight. Abdomen thick. Ventral and pectoral fins large, with articulated appendages before them.

PLATE I.

SPECIFIC CHARACTER

AND

SYNONYMS.

Three appendages. Lateral line prickly. Pectoral fins large, green and blue.

TRIGLA HIRUNDO: digitis ternis, linea laterali aculeata. *Gmel. Linn. Syst. Nat. p. 1344. Sp. 6.—Müll. prodr. Zool. dan. p. 47. n. 400.—Fn. Sv. 340.—It. Wgöth. p. 176.*

Trigla capite aculeato, appendicibus utrinque tribus ad pinnas pectorales. *Art. gen. 44. syn. 73.*

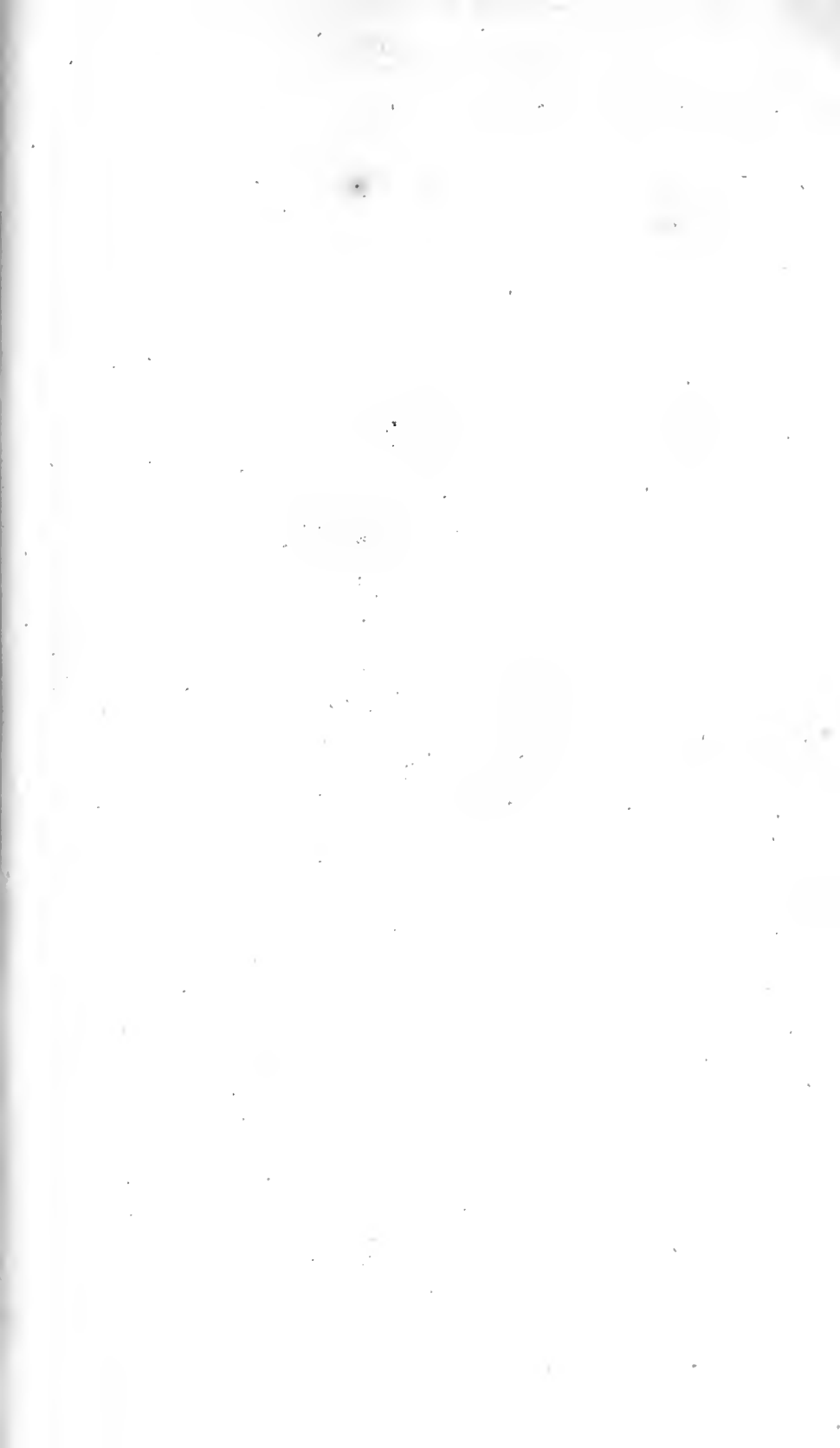
Hirundo prior. *Aldr. pisc. p. 135.*

Tubfish. Cornub. *Wil. Ich. 280.—Raii. syn. pisc. 88.*

Few genera of the fish tribe are more distinguished by a peculiar brilliancy of colours than that of Trigla in general. Of this genus we have five species on our coasts, and of those the Sappharine Gurnard is certainly the most remarkable, if not the most beautiful. This kind is, in particular, distinguished by the magnitude of the pectoral fins, which, when expanded, might seem capable of supporting it in such little aerial flights as some kinds of fishes are known to undertake when pursued by enemies in their native element.

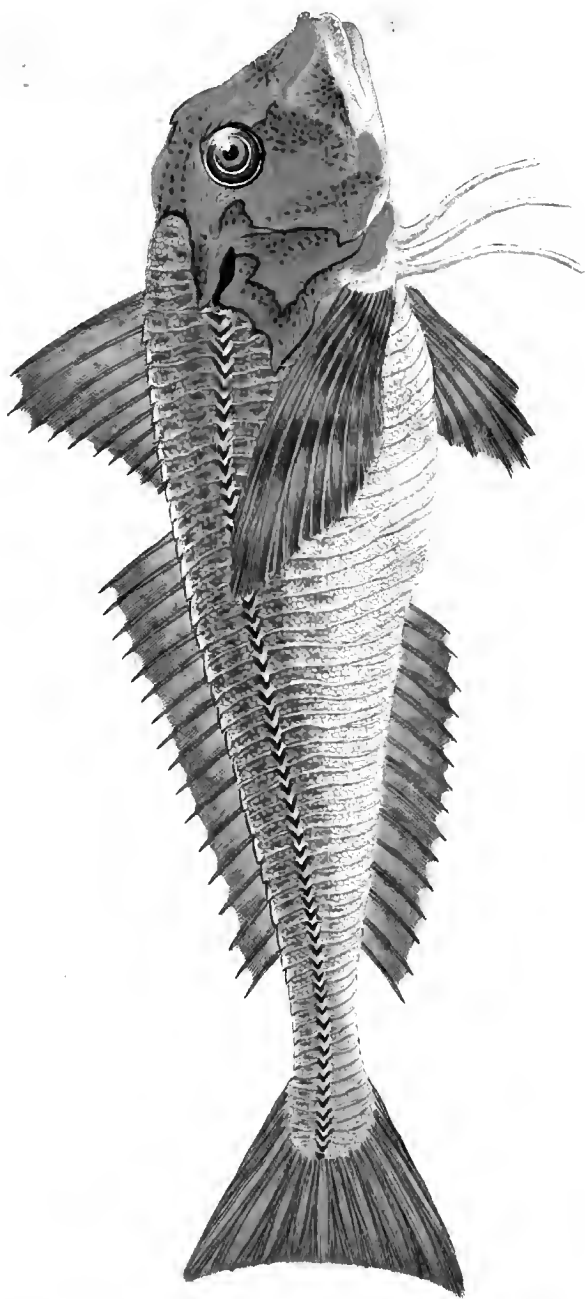
The first dorsal fin consists of nine rays, the second of seventeen, the pectoral fin of nine, ventral six, anal fourteen, and caudal sixteen.

This species is found on the southern shores of Wales; and we have also seen it from Devonshire. It is usually from ten to eighteen inches in length.



STREAKED GURNARD.

65



London. Published for the Author by E. Parry, & F.K.C. Buntington. April, 1862.

P L A T E I V .

TRIGLA LINEATA.

STREAKED GURNARD.

* THORACICI.

GENERIC CHARACTER.

Head large, mailed, with rough lines. Eyes large, round, placed vertically. Mouth large. Palate and jaws armed with sharp teeth. Nostrils double. Gill-cover, a single piece radiated and spined. Seven rays in the gill-membrane. Body wedge shaped, and covered with small scales. Back straight, with a longitudinal groove serrated on the margins. Lateral line nearer the back, and straight. Abdomen thick. Ventral and pectoral fins large, with articulated appendages before them.

SPECIFIC CHARACTER

AND

SYNONYMS.

Striated transversely, red; beneath white.

TRIGLA LINEATA: striata rubra, subtus alba. *Linn. Syst. Nat.*

Gmel. p. 1345. sp. 12.

Cuculus lineatus. The Streaked Gurnard. *Raii. syn. pisc. 165.*

fig. 11.—Penn. Br. Zool. 3. p. 236. n. 5.

PLATE IV.

This is an extremely rare species ; and hitherto, it appears, has been only found on the British coasts. It is one of the Cornish fishes communicated to Mr. Pctiver by Mr. Jago, and described and figured by Mr. Ray.

Mr. Pennant describes it upon this authority, having only seen the figure, and Gmelin arranges it from the same authors as a new species, under the name of *Lineata*.

The most prevalent colour of our specimen is red, except on the belly, which is white. The transverse streaks are very remarkable, and at once distinguish it from the other species: they consist of little thread-like ridges, that pass from the back through the lateral line, in a direction nearly parallel with each other, and become ramose or branching upon the belly. Pennant observes, that by the figure above quoted, the nose seems not to be bifurcated, which, in our specimen, is particularly characteristic, though the spines are small and obtuse.

This is the only species of *Trigla*, described by Gmelin, in which the number of rays in the fins and tail is not mentioned; and no other author seems to have ascertained them. In our specimen, the first dorsal fin has ten rays, and the second seventeen; pectoral fins ten rays; ventral fin six rays; anal fin fifteen, and caudal sixteen.— This specimen was taken upon the eastern coast.



